APAO 2024

BALI INDONESIA

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The 39th Asia-Pacific Academy of Ophthalmology Congress
in conjunction with
The 49th Indonesian Ophthalmologists Association Annual Meeting

Beyond All Limits

ABSTRACT BOOK

Host: Asia-Pacific Academy of Ophthalmology

Co-host: PERDAMI

Co-sponsor: Ophthalmologica International

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CONTENTS

INSTRUCTION COURSES

AI, Digital Innovation and Virtual Health

Feb 22, 2024 (Thu)
09:00 – 10:30
Venue: Kintamani 5 (BNDCC1–MF)

How to Set Up a Virtual Glaucoma Clinic – The Singapore Experience

*Chief Instructor: Rahat **HUSAIN***
*Instructor(s): Victor Teck Chang **KOH**, Vivien **YIP***

Objective: To give guidance to eye centres across the Asia-Pacific region on how to set up a virtual glaucoma clinic.

Synopsis: Glaucoma virtual clinics are the future of glaucoma care. Leveraging new technology, it is now possible to manage some glaucoma patients more cost-effectively but without significant compromises in safety. We will share the experience from 3 different centres in Singapore where virtual clinics have been running for a few years. Guidance will be given on how to start setting up a clinic, what manpower is needed, how to measure success, and other tips on potential pitfalls.

Course Outline: Presenters from the Singapore National Eye Centre, National University of Singapore and Tan Tock Sen Hospital will each present their virtual clinic model from beginning to end. They will present data on cost-effectiveness, patient satisfaction, and safety. Time will be given at the end of the presentations to take questions from the audience in order to give practical advice on any problems they may be facing in setting up their own clinic. An example of a video consultation will be shown, and the legal aspect of this needs to be taken into consideration.

Cataract

Feb 23, 2024 (Fri)
14:30 – 16:00
Venue: Kintamani 7 (BNDCC1–MF)

Cataract Surgery in Previously Operated Complex Eyes: A Video-assisted Course

*Chief Instructor: Gaurav **LUTHRA***
*Instructor(s): Mahipal **SACHDEV**, Namrata **SHARMA**, Rishi **SWARUP**, Jeewan **TITIYAL***

Objective: To highlight the challenges and impart the special techniques and precautions needed in planning and executing cataract surgery in previously operated eyes with compromises and complex cataract situations.

Synopsis: The video-assisted course will include surgical pearls from experienced faculty in complex previously operated eyes with cataract requiring expert management. Lectures will include phaco in eyes following PK/ DSEK/ DALK, after glaucoma surgeries including trabeculectomy and shunt procedures, post radial keratotomy and laser refractive surgery, post phakic lens implantation and in vitrectomized eyes with silicon oil/ gas in situ among other challenging situations. At the end of the course, attendees will be better equipped to handle such complex situations in their practice.

Course Outline: Introduction 1: Cataract surgery in post PK/ DSEK eyes 2: Cataract surgery in eyes with previous radial keratotomy 3: Phaco in eyes with previous glaucoma surgery/ seton implants 4: Phaco in ICL induced cataract 5: Cataract surgery in eyes with previous ocular trauma surgery 6: Phaco in vitrectomized and silicon oil/ gas filled eyes 7. Cataract surgery in complex eyes with previously aborted cataract surgery; Panel discussion.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Kintamani 6 (BNDCC1–MF)

IOL Fixation Techniques

*Chief Instructor: Mohan **RAJAN***
*Instructor(s): Soon-phaik **CHEE**, Sujatha **MOHAN**, Nivean **MADHIVANAN**, Shin **YAMANE***

Objective: Attendees will adapt to different techniques of IOL implantation in the presence of weak capsular support.

Synopsis: This video-based Master Class shows IOL fixation techniques when capsular support is lacking. Experts make these complex surgeries look simple when they are really not. In this course, each step will be critically analyzed, and the logic behind each maneuver will be clarified to make correct surgical decisions. A methodical way of planning for and performing IOL fixation surgery. The various options for IOL implantation in the absence of capsule support, including glued IOLs and Retro Iris fixated IOL's, will be discussed. We will also discuss and demonstrate with the help of videos the management of a dropped nucleus and dropped IOL.

Course Outline: Weak Capsular Support is not an uncommon complication during phaco. There is always a dilemma among surgeons which IOL to implant in the presence of weak capsular support. This course will clear all the doubts regarding this particular intraoperative situation.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Kintamani 2 (BNDCC1–MF)

Brown Black and White Cataract

*Chief Instructor: Sujatha **MOHAN***
*Instructor(s): Soon-phaik **CHEE**, Soosan **JACOB**, Nivean **MADHIVANAN**, Mohan **RAJAN***

Objective: To enable the Phaco Surgeon to apply the state-of-the-art Phaco Chop techniques for the Black and White Cataracts.

Synopsis: Management of hard cataract is a difficult task for a phaco surgeon. The course highlights the various techniques and management of complicated cataract surgeries, and guides experienced surgeons as well as beginners.

Course Outline: This video-based course will cover advanced Phaco Chop Techniques for very difficult cases like mature white cataracts, hard brown cataracts, pseudoexfoliation, and small pupils, which are very common in today's practice. These lenses are hard to maneuver and typically occupy a larger volume. The lens capsule is thin and fragile; zonules are weak. Some of them are associated with small pupils and other situations like zonular dialysis. The course will highlight various innovative techniques for managing hard brown & mature white cataracts for a good refractive outcome.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Mengwi 6,7,8 (BNDCC2–GF)

Transitioning to Complex Anterior Segment Surgery for General Ophthalmologists

*Chief Instructor: Zain **KHATIB***
*Instructor(s): Suhas **HALDIPURKAR**, Tanvi **HALDIPURKAR**, Aarti **HEDA**, Aditya **SETHI***

Objective: To help cataract surgeons upgrade their surgical skills by learning the basics of complex anterior segment surgeries including pupilloplasty, anterior segment reconstruction, subluxated IOLs, secondary IOLs etc.

Synopsis: There is a large proportion of ophthalmologists who are extremely comfortable with performing routine cataract surgeries, but stay away from more challenging surgical scenarios like ocular trauma, subluxated lenses and iris reconstruction. These surgeries generally require a different skill set and some conceptual understanding. This course aims to focus on the teaching of these specific surgeries through a bouquet of surgical videos and case scenarios from a group of experienced surgeons.

Course Outline: This course will individually cover each of the below-mentioned specific surgical topics by all the speakers: 1. IOL exchange 2. Secondary IOLs 3. Subluxated cataracts and lenses 4. Pupilloplasty and iris reconstruction 5. Pupil expansion devices in cataract surgery The aim of this course is not to show off extremely challenging cases by the speakers, but rather teach basics. The aspects that would be focused on would be points like which cases are ideal to choose for beginners, what should be the ideal hand position, and how to proceed and abort in difficulties, etc.

Cornea, Dry Eyes, External Eye Diseases and Eye Banking

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 6,7,8 (BNDCC2-GF)

How Do Current Perspectives Alter Management Strategies of Keratoconus

*Chief Instructor: Murugesan **VANATHI***
*Instructor(s): Shweta **AGARWAL**, Sunita **CHAURASIA**, Ray **MANOTOSH**, Radhika **TANDON**, Stephanie **WATSON***

Objective: This course aims to enhance participants' knowledge in decision-making in keratoconus, primarily updating the audience on various management strategies that have evolved recently, dealing specifically with the latest developments.

Synopsis: The course will begin an introduction to the concerns faced in keratoconus management and will highlight practical approaches to common clinical queries in the management of allergy, collagen crosslinking (CxL), latest advances in CxL, best practices in hydrops management, DALK, Intracorneal ring segments, intrastromal keratoplasty, and research trends in keratoconus. Interactive panel discussions and question-and-answer sessions will be useful for the audience attending the session.

Course Outline: (1) Concerns in management of keratoconus - Prof. Dr. M Vanathi (2) Collagen Crosslinking: evidence-based learning - Prof. Dr. Ritu Arora (3) Pediatric collagen crosslinking: Practical questions answered - Dr. Shweta Agarwal (4) Corneal hydrops - What helps as better strategy for an early outcome - Dr. Sunita Chaurasia (5) Keratoplasty interventions in keratoconus - Dr. Manotosh Ray (6) Newer surgical approaches - Prof. Dr M Vanathi (7) Research trends in keratoconus - Dr. Stephanie Wilson.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2-GF)

Keratoprosthesis Surgery: The Routine and the Complex

*Chief Instructor: Geetha **IYER***
*Instructor(s): Shweta **AGARWAL**, Rajesh **FOGLA**, Jodhbir **MEHTA**, Bhaskar **SRINIVASAN***

Objective: To highlight the varied challenges in managing patients with keratoprosthesis in addition to discussing the newer improved designs and modifications to help improve outcomes.

Synopsis: The course offers a comprehensive program to enhance expertise in the field of keratoprosthesis. It will begin with an overview of keratoprosthesis, highlighting indications and patient selection criteria. Expert surgeons will delve into various surgical techniques, donor tissue preparation, implantation methods, and suturing techniques. Attendees will learn to manage complications through case-based discussions. Moreover, the course will emphasize the significance of postoperative care protocols and long-term follow-up strategies to ensure successful visual rehabilitation and reduce complications. Additionally, insights into the application of keratoprosthesis in complex cases, involving a multidisciplinary approach, emerging technologies, and future perspectives will be shared.

Course Outline: (1) Surgical Techniques for Keratoprosthesis Implantation- Shweta Agarwal (2) Postoperative Care and Long-term Follow-up- Type 1 Kpro-Rajesh Fogla (3) Postoperative Care and Long-term Follow-up – Type 2 Kpros-Bhaskar Srinivasan (4) Keratoprosthesis in Complex Cases: A Multidisciplinary Approach- Geetha Iyer (5) Emerging Technologies and Future Perspectives – Jodhbir Mehta.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 6,7,8 (BNDCC2-GF)

Video-based Surgical Pearls In Cornea -From Surface to Endothelium

*Chief Instructor: Shweta **AGARWAL***
*Instructor(s): Rajesh **FOGLA**, Geetha **IYER**, Bhaskar **SRINIVASAN**, Rishi **SWARUP***

Objective: To highlight critical steps and nuances of varied corneal surgeries in order to encourage participants to think critically, evaluate alternative approaches, and accordingly adapt surgical techniques.

Synopsis: Cornea presents with a myriad of diseases affecting vision, each requiring a slightly different outlook. Multiple factors influence surgical decisions, necessitating a very careful and comprehensive approach. This primarily video-based course will demonstrate important surgical pearls on when, how, and what to do in most commonly performed corneal surgical interventions from surface to endothelium, thus helping participants to critically assess complex situations and propose effective solutions. It will highlight critical steps and nuances that contribute to surgical success.

Course Outline: 1. Principles of ocular surface reconstruction: Dr Geetha Iyer:15mins 2. Penetrating keratoplasty in different scenarios: Dr Shweta Agarwal: 15 mins 3. Anterior lamellar keratoplasty: Dr Rishi Swarup: 15 mins 4. Posterior lamellar keratoplasty: Dr Rajesh Fogla: 15 mins 5. Tectonic Grafts: Dr Bhaskar Srinivasan: 15mins 6. Discussion.

Glaucoma

Feb 22, 2024 (Thu)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

The Quandary of a Failing Bleb: "Strike When the Bleb Is Hot"

*Chief Instructor: Madhavi **PILLAI***
*Instructor(s): Devendra **MAHESHWARI**, Nimrita **NAGDEV**, Amit **PORWAL**, Ramakrishnan **RENGAPPA***

Objective: Avoid trabeculectomy failure and learn to nurture bleb with this video-based instructional course. This course dives deep into nuances of bleb care and highlights crucial tips for success.

Synopsis: Trabeculectomy still remains the most commonly performed glaucoma surgery. Failure of trabeculectomy is dependent both on surgeon and patient factors. This video-assisted course is to help attendees identify the likelihood of bleb failure preoperatively, take appropriate preop measures, diagnose failing bleb at the earliest and proactive measures to revive a blebThis course will elucidate preoperative, intraoperative and postoperative measures to make trabeculectomies a success. It includes the use of anti-metabolites, the role of laser suture lysis, an in-depth illustration of different techniques for bleb needling, its complications, and management. This highlights the importance of identifying early signs of failing filters and the nuance of bleb-needling techniques with instructive video clippings.

Course Outline: (1) A battle well prepared is half won; pre-op evaluation, intra-op measures to prevent failure (2) "Catch it Early" - Role of AS OCT in failing bleb & future of OCT angiography (3) Early interventions – Ocular massage, suturolysis, add on injections of MMC/5FU- When and how? (4) Time to needle!!! Techniques of bleb needling including ab interno needling (5) Repeat trabeculectomy and post resurrection bleb care. The course will start with an elaborate video-based step-by-step description of the procedures. Each of the didactic lectures will be followed by a short Q and A session. Our team of co instructors is well experienced and experts in the concerned field. A separate hints and hacks session and troubleshooting session with the assistance of videos will be done at the end of the didactic sessions for the attendees. Relevant literature and information will be provided to the attending delegates.

Neuro–Ophthalmology

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Kintamani 5 (BNDCC1–MF)

A Patient with Diplopia: A Case-based Approach

*Chief Instructor: Rashmin **GANDHI***
*Instructor(s): Manjushree **BHATE**, Clare **FRASER**, Ambika **S**, Rohit **SAXENA**, Prem **SUBRAMANIAN***

Objective: This instruction course aims to equip eye care professionals with the practical skills necessary for the identification of warning signs in patients with diplopia.

Synopsis: This course on diplopia will provide comprehensive ophthalmologists with practical skills for tackling double vision. Beginning with an overview of the underlying causes and classifications, the course delves into different fellow travelers with diplopia. A key focus is to provide an algorithm based on points in history and clinical examination in each case and highlight the most suitable investigation modalities. By the end of this comprehensive course, attendees will be fully equipped to weed out dangerous causes of diplopia effectively, enhancing patient care.

Course Outline: This course will cover five scenarios. An approach to a patient with horizontal diplopia, a patient with vertical diplopia, patients with diplopia and ptosis, patients with diplopia and red eyes, and patients with diplopia and visual impairment will be covered by different speakers. Each talk will start with a typical case and will build into an appropriate clinical workup, investigation, and potential red herrings. Each talk will conclude with a summary of important signs that one should not miss.

Ocular Oncology and Pathology

Feb 22, 2024 (Thu)
09:00 – 10:30
Venue: Kintamani 3 (BNDCC1–MF)

A to Z of Ocular Surface Tumours for General Ophthalmologists

*Chief Instructor: Anasua **KAPOOR***
*Instructor(s): Tarjani **DAVE**, S **KALIKI**, Sanjana **MOLUGU**, Suryasnata **RATH***

Objective: To make the audience understand the key red flag signs of ocular surface malignancy and imaging

features of the same, thus helping them differentiate these tumours from other masquerades.

Synopsis: Ocular surface tumors include a spectrum of neoplasms arising from the squamous epithelium, including squamous papilloma to malignant invasive squamous cell carcinoma, melanocytic tumors including benign nevus to malignant melanoma, and conjunctival stromal tumors including lymphoma. It is common to encounter these tumors in our ophthalmology practice. However, these tumors are often misdiagnosed, leading to catastrophic outcomes. This instruction course aims to create awareness amongst general ophthalmologists in correctly diagnosing these conditions and thus treating them appropriately.

Course Outline: In this instruction course, we will be highlighting the key red flag signs in the diagnosis and management of ocular surface malignancies, the anterior segment imaging findings in such cases, features differentiating the varied types of pigmented ocular surface tumors, and tips and tricks of management of ocular surface squamous neoplasia. Interesting case scenarios of ocular surface malignancies masquerading as other benign tumors will also be discussed with crisp takeaway pearls for general ophthalmologists. (1) Tips and tricks of managing OSSN. (2) Pigmented conjunctival tumors- The good, the bad and the ugly (3) Conjunctival lymphoma: Diagnosis and management (4) Imaging in ocular surface tumors (5) The clinical masquerades of ocular surface tumors: A case-based discussion.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Kintamani 3 (BNDCC1–MF)

Ocular Surface Tumors: Comprehensive Insights and Management Strategies

*Chief Instructor: Geetha **IYER***
*Instructor(s): Anshu **ARUNDHATI**, Santosh **HONAVAR**, Swathi **KALIKI**, Bhaskar **SRINIVASAN***

Objective: To enhance the understanding of ocular surface tumors and their effective management.

Synopsis: The course is designed for ophthalmologists, ocular oncologists, and eye care professionals seeking a deep understanding of ocular surface tumors and their effective management. This course will cover the diverse spectrum of ocular surface tumors, encompassing diagnosis, imaging, treatment modalities, and the collaborative approach required for successful patient outcomes.

Course Outline: Overview and Imaging Modalities for OST - Anshu Arundhati Surgical vs Topical Therapy for OSSN - Geetha Iyer Plaque Therapy - Indications and Masquerade Situations - Swathi Kaliki Pigmented Lesions - Practical Pearls - Santosh Honavar Lymphoproliferative Lesions - Approach and Differentials - Bhaskar Srinivasan.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Kintamani 3 (BNDCC1–MF)

Retinoblastoma 2024 - They Live and See

*Chief Instructor: Santosh **HONAVAR***
*Instructor(s): Rolika **BANSAL**, Fairooz Puthiyapurayil **MANJANDAVIDA**, Mrittika **SEN**, Carol **SHIELDS***

Objective: To enable the participants to incorporate recent advances in diagnosis and management of retinoblastoma into their practice, with improved life, eye and vision salvage.

Synopsis: Recent advances in the diagnosis and management of retinoblastoma have dramatically improved the outcomes. Clinically validated staging and grouping are in use. Strategies such as wide-field imaging; optical coherence tomography (OCT); OCT angiography; transpupillary thermotherapy; brachytherapy; and intravenous, intra-arterial, periocular, intravitreal, intracameral, and bicameral chemotherapy are effective in improving eye and vision salvage. There is a new classification and management of retinoblastoma seeds. Adjuvant therapy for histopathologic risk factors has reduced the risk of metastasis. Multimodal protocol is effective in orbital retinoblastoma. Genetics aid prenatal diagnosis and screening. This course will highlight practical aspects of the current standard of care for retinoblastoma.

Course Outline: (1) Comprehensive Evaluation of a Child with Retinoblastoma, and Grouping and Staging- Dr. Rolika Bansal (2) Psueudoretinoblastomas - An Overview - Dr. Mrittika Sen (3) Intraocular Seeds in Retinoblastoma - Dr. Santosh G Honavar (4) Intravenous and Intra-arterial Chemotherapy and Focal Therapy in Retinoblastoma - Dr. Carol L Shields (5) Enucleation in Retinoblastoma and Post-enucleation Protocol - Dr. Santosh G Honavar (6) Classification and Management of Orbital Retinoblastoma - Dr. Fairooz PM.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Kintamani 3 (BNDCC1–MF)

Surgical Resection of Large Choroidal Melanoma

*Chief Instructor: Jianhong **LIANG***
*Instructor(s): Xiaoxin **LI***

Objective: To introduce the methods of surgical resection of choroidal melanoma, visual prognosis, survival rate and surgical complications.

Synopsis: The choice of treatment options for choroidal melanoma mainly depends on the size and location of the tumor. Brachytherapy is most commonly used in the treatment of uveal melanoma. Brachytherapy is suitable for tumors less than 7 mm in thickness. Thick tumor requires high radiation doses, resulting in

potential radiation complications. Surgical resection is suitable for large tumors with more than 7 mm in thickness and less than 20 mm in diameter. There are two surgical resection techniques: endoresection and exoresection. Exoresection is suitable for anterior tumor, endoresection is applicable to both anteriorly and posteriorly located tumors.

Course Outline: (1) To briefly introduce the treatment methods and indications of uveal melanoma. (2) The specific methods of choroidal tumor resection are introduced by surgical video: a) The first case is a large anterior uveal melanoma with 12.7 mm in thickness, involving 6 clock hours of the ciliary body (from 10 to 4 o'clock), treated by transretinal endoresection. b) The second case is a large Posterior choroidal melanoma, endoresection is carried out by means of a peripheral retinectomy, in which the retina is folded away from the tumour. c) The third case is a large anterior choroidal melanoma with 8.8 mm in thickness and l0.1 mm in diameter, treated by exoresection. (3) To introduce visual prognosis, survival rate and surgical complications.

Ocular Trauma

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Expert Guided Approach to Ocular Trauma

*Chief Instructor: Mehul **SHAH***
*Instructor(s): Rupesh **AGRAWAL**, Purendra **BHASIN**, Ashok Kumar **GROVER**, Dr Sundram **NATRAJAN**, Shreya **SHAH***

Objective: The objective is to prevent blindness caused by ocular trauma by training eye care personnel.

Synopsis: "Dive into Ocular Trauma: A Vital Instruction Course. Covering diagnosis, treatment, and management of eye injuries, this concise course equips medical professionals with essential skills. Learn from leading ophthalmologists, mastering emergency procedures and long-term care. Elevate patient outcomes through hands-on simulations and case studies. Become a proficient practitioner in ocular trauma assessment and intervention." Experts from different subspecialties will deliver talks and have interactions.

Course Outline: Expert Guided Approach to Ocular Trauma. Speaker - 8 minutes (1) Classification Of Ocular Trauma - Dr. Rupesh Agrawal (2) Complex Periocular trauma and - Dr. A K Grover (3) Management of Canalicular Injuries - Dr. Shreya Shah (4) Corneal Injuries: The 5 Point Principles - Dr. Sanjiv Mohan (5) Traumatic Cataract and Lens Subluxation: Rings and Hooks Come to Rescue - Dr. Sudarshan Khokhar (6) Posterior Segment Manifestations of Blunt Trauma - Dr. Prashant Bawankule (7) Post Trauma Endophthalmitis - Dr. Mehul Shah (8) Intraocular Foreign body: Localization and Retrieval ?/ OGI Management - Dr S Natarajan (9) Traumatic Glaucoma - Dr. Sharmila.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

The Trauma Series: Management of Eyelid, Orbit and Lacrimal Injuries

*Chief Instructor: Ashok **GROVER***
*Instructor(s): Shaloo **BAGEJA**, Mohammad **MOIN**, Gangadhara **SUNDAR**, Rwituja **THOMAS***

Objective: To educate the oculoplastic surgeon on managing eyelid, orbit and lacrimal trauma. This will give the attendees the confidence to diagnose with and incorporate newer modalities in their practice.

Synopsis: Injuries of the ocular adnexa take place due to road traffic accidents, industrial mishaps, and intentional assaults. These injuries can involve the eyelids, lacrimal system, or orbital wall, either in isolation or in conjunction with midfacial injuries. This course will focus on the recognition of traumatic conditions related to the eyelids, orbit and lacrimal. The course will highlight the principles and current practices in the primary management of traumatic eyelid injuries and canalicular tears. The management of orbital fractures and secondary deformities that take place will be brought out. We will also cover patient-specific implants (PSI) and navigational surgery.

Course Outline: (1) Assessment of Adnexal injuries (2) Management of eyelid trauma (3) Canalicular and Lacrimal trauma (4) Orbital fractures – Imaging and classification management (5) Treating secondary traumatic eyelid deformities (6) Advances in orbital fracture management and patient-specific implants.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Beyond the Eye: Navigating Orbito-Facial Trauma

*Chief Instructor: Raghuraj **HEGDE***
*Instructor(s): Tarjani **DAVE**, Prerana **KANSAKAR**, Akshay **NAIR**, Shruthi Tara Vasudev **SHRUTHI**, Gangadhara **SUNDAR***

Objective: Treating orbito-facial trauma is one of the most challenging areas in ophthalmology. This course aims to inform and guide with a case-based approach to how to manage orbitofacial trauma.

Synopsis: This offers a focused and in-depth exploration of the intricate world of orbito-facial trauma, delving into vital aspects beyond eye injuries. Tailored for

general ophthalmologists who see a lot of trauma in their regular practice as well as fellowship-trained oculoplastic surgeons who are new into practice. This course aims to enhance participants' expertise in managing complex injuries affecting the orbit and facial regions via case-based discussions.

Course Outline: In this course, participants will learn beyond the conventional focus on globe injuries, providing a more rounded understanding of the intricacies of orbito-facial trauma. From assessing the immediate aftermath of trauma to orchestrating sophisticated reconstruction, this course serves as a guide to addressing multifaceted challenges that arise from fractures, soft tissue injuries, and other complex cases. The topics from various experts in the region are given below: (1) Applied Anatomy in Ophthalmic Trauma (2) Approach soft tissue injuries- Papercuts to deep cuts! (3) Orbito-facial imaging - Basic to cutting edge (4) Orbital Blowout fractures - Past, present and the future (5) Multi-disciplinary management in facial poly-trauma- How more is better! (6) PEEK into the future: Patient-specific Implants (PSIs)- latest in orbito-facial reconstruction. (7) Scar modulation: The latest advances in the treatment of scars.

Ophthalmic Epidemiology and Prevention of Blindness

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

A Focus on the Role of Sex and Gender in Eye Health

*Chief Instructor: Grace **SUN***
*Instructor(s): Carmen **CHAN**, Helen **DANESH-MEYER**, Rinku **PAUL**, Erin **SHRIVER**, Fasika **WORETA**, Ciku **MATHENGE***

Objective: To discuss innovations in diseases that disproportionately affect women and the impact of social determinants of health.

Synopsis: Globally, women are at a higher risk of developing vision impairment and serious eye disease. Disparities in eye diseases due to sex and gender are even greater when considering the social determinants of health. Innovations in the diseases that disproportionately affect women, such as age-related macular degeneration, thyroid eye disease, chronic dry eye disease, optic neuritis, and cataract may address these inequities in eye health and improve the quality of life of women. Achieving gender equity and representation in the field of ophthalmology may positively impact women's eye health.

Course Outline: An international panel of women ophthalmologists will: (1) Describe how sex and gender impact eye health outcomes globally (2) Highlight innovations in those diseases that disproportionately affect women, including advances in the management and treatment of: • Age-related macular degeneration • Thyroid eye disease • Dry eye disease •Optic neuritis •Cataract (3) Utilize a population health approach to identify health disparities as it relates to women including access to care (4) Propose a path forward to achieve health equity in women's eye health including areas of representation, leadership, training, reimbursement and research.

Orbital and Oculoplastic Surgery

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Orbital Vascular Anomalies - Management Update

*Chief Instructor: Golam **HAIDER***
*Instructor(s): Syeed **KADIR**, Riffat **RASHID**, Rwituja **THOMAS**, Hunter **YUEN***

Objective: (1) To describe the outline of ISSVA classification (2) To demonstrate the imaging characteristics of vascular lesions (3) To present the therapeutic and surgical management.

Synopsis: Vascular anomalies of the orbit are a heterogeneous group of vascular lesions. A thorough understanding of the natural course, nomenclature, clinical findings, and imaging characteristics is vital for correct diagnosis and appropriate management. Many available therapeutic and surgical techniques are very often unsatisfactory due to the complex anatomy of the orbit, lack of understanding of the natural course of the disease, and variable clinical behavior. Recurrences are common. This course will present the current ISSVA classification, clinical and imaging features vital to the diagnosis, the natural course of the conditions, and the current practices in the management of their complex disorders.

Course Outline: (1) Clinical Evaluation and ISSVA Classification of Orbital Vascular Tumours –Dr. Syeed Mehbub Ul Kadir (2) Oral Propranolol in Infantile Orbital and Periocular Capillary Haemangioma - Dr. Riffat Rashid (3) Tips and Tricks for the Surgical Management of Orbital Low Flow Venous Malformation - Dr. Rwituja Thomas (4) Diagnostic Role of imaging in Orbital Vascular lesions - Dr. Hunter Yuen (5) Meeting the Challenges in the Management of Orbital Vascular Malformation - Dr. Golam Haider.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

Lower Eyelid Blepharoplasty- Techniques and challenges

*Chief Instructor: Vanessa **MANSURALI***
*Instructor(s): Richard **ALLEN**, Chaiteck **CHOO**, Milind **NAIK**, Siow Wei **TAN**, Stephanie **YOUNG***

Objective: The aim of this course is to describe the various surgical techniques for lower eyelid rejuvenation. The course also describes the various challenges and complications faced and describes their management.

Synopsis: Lower eyelid blepharoplasty is a common yet challenging surgery for lower eyelid rejuvenation. Hence, an instructional course on this subject will be extremely useful for surgeons who wish to learn and improve their surgical skills. There are various techniques and approaches for surgical rejuvenation of the lower eyelid. The approach and technique depend on the patient's age, the patient's lower eyelid condition (skin excess, lid laxity, presence of tear trough deformity, midface droop, excessive fat pads), and surgeon preference. The course describes various techniques, approaches, and challenges for surgical rejuvenation of the lower eyelid by experts in the field with video displays.

Course Outline: The course starts with describing the applied anatomy and pathophysiology of the lower eyelid. Various techniques of lower eyelid rejuvenation, such as transconjunctival lower eyelid blepharoplasty and Transcutaneous Lower eyelid Blepharoplasty with orbicularis suspension, will be covered. The presenter will give video displays of their techniques. Further presentations will be made on Lower eyelid blepharoplasty complications and their management. Postoperative care and patient satisfaction will also be discussed. The course will end with some practical tips and pearls on surgical rejuvenation of the lower eyelid. This is a skills transfer course made by experts in the field. The course will help novice and experienced surgeons with various aspects of lower eyelid blepharoplasty. Apart from the discussion of technique, emphasis will be placed on the prevention and management of surgical complications. Tips and tricks on how to improve patient outcomes will be discussed.

Feb 23, 2024 (Fri)
14:30 – 16:00
Venue: Uluwatu 7 (BNDCC1–GF)

Oculofacial Aesthetics: Non-Surgical Periocular Rejuvenation

*Chief Instructor: Stephanie **YOUNG***
*Instructor(s): Kasturi **BHATTACHARJEE**, Shubhra **GOEL**, Alice Siew Ching **GOH**, Akshay **NAIR**, Sunny **SHEN***

Objective: To enhance the knowledge and skills of ophthalmologists interested in oculofacial aesthetics in non-surgical periocular rejuvenation techniques, including botulinum toxin, dermal fillers, lasers, PRP therapy and combination treatment approaches.

Synopsis: Our course on "Oculofacial Aesthetics: Non-Surgical Periocular Rejuvenation" aims to expand the expertise of ophthalmologists, particularly oculoplastic surgeons, in the latest techniques for enhancing the periocular region without surgery. This course covers a range of topics, including the application of botulinum toxin for wrinkle reduction and brow elevation, utilizing dermal fillers for volume restoration and tear trough correction, lasers and energy-based devices for skin rejuvenation, and harnessing the regenerative potential of platelet-rich plasma therapy. We will also delve into the art of combining these techniques to achieve optimal results tailored to each patient's unique needs.

Course Outline: The course will be a comprehensive overview of the various non-surgical techniques and treatments available for enhancing the periocular region. (1) Botulinum toxin for periocular rejuvenation: Explore the use of neuromodulators for correcting wrinkles, reducing crow's feet, brow elevation, and other aesthetic enhancements around the eyes. (2) Dermal fillers for periocular rejuvenation: Understand the application of fillers for restoring volume loss, improving tear trough deformities, and rejuvenating the periocular area effectively. (3) Filler complications – Prevention, Identification and Management (4) Energy-based devices (lasers/radiofrequency etc.) for periocular rejuvenation: Discuss the benefits, considerations and techniques of machines to achieve smoother, tighter and more youthful skin around the eyes. (5) Platelet-Rich Plasma (PRP) therapy for periocular rejuvenation: Explore the use of PRP therapy, a regenerative treatment derived from the patient's own blood, to stimulate collagen production. (6) Non-surgical combination treatment approaches to periocular rejuvenation: Emphasize the importance of personalized treatment plans.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1–GF)

Anomalies of the Anophthalmic Socket - A Logarithmic Approach to Management

*Chief Instructor: Golam **HAIDER***
*Instructor(s): Sachin **GUPTA**, Ashok **GROVER**, Mukti **MITRA**, Rohit **SAIJU***

Objective: (1) To present a logical, logarithmic, approach to the management of socket abnormalities. (2) To describe different methods for reconstruction.

Synopsis: Socket abnormalities such as volume deficiency, surface anomalies including contraction, and implant displacement/ exposure or extrusion present a surgical conundrum. It is vital to assess these cases well, identify the abnormalities, and have a logical approach to management. This course presents the appropriate approach to these cases in a logarithmic manner and details the final points of surgical technique to ensure successful outcomes with the help of clinical examples and video films. The role of an ocularist in the rehabilitation of a patient with anophthalmic socket will be brought out.

Course Outline: (1) Dr. Mukti Rani Mitra: Etiopathogenesis and assessment of socket anomalies. (2) Prof A.K Grover: A logarithmic approach to management. (3) Dr. Rohit Saiju: Tackling volume loss and implant-related problems. (4) Prof. Golam Haider: Management of surface anomalies including contracted socket. (5) Mr Sachin Gupta: Role of ocularist - non-conventional methods.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Kintamani 5 (BNDCC1–MF)

Oops in Ophthalmic Plastic Surgery: Managing Complications of Common Surgeries in Ophthalmic Plastics

*Chief Instructor: Tarjani **DAVE***
*Instructor(s): Raghuraj **HEGDE**, Santosh **HONAVAR**, Ho-seok **SA**, Michael **YOON**, Hunter **YUEN***

Objective: To familiarise the budding as well as experienced ophthalmic plastic surgeons with the latest in techniques for managing complications of common surgeries in the field.

Synopsis: With an evolving landscape in terms of surgical techniques in ophthalmic plastic surgery, there has been a change in the plethora of surgical complications. Thus, it is imperative for a surgeon to be familiar with complications arising from the common procedures in the field. This course offers a case-based and video-assisted skill transfer in the management of complications arising from Ophthalmic Plastic Surgery.

Course Outline: The theme of this unique curated course will be an in-depth discussion on complications of common ophthalmic plastic surgery cases. Presenters will be prominent faculty hailing from practice and institutes alike and known for their astute surgical acumen and fantastic orations. This course will have sessions dealing with managing complications of ptosis repair, blepharoplasty, eye socket surgery, orbital fracture repair, dacryocystorhinostomy and managing recurrent surface, eyelid and orbital tumors. This course will benefit the accomplished oculoplasty surgeons to further their skills, so also the budding and fresher surgeons to get a taste of managing complications of common ophthalmic plastic surgery procedures.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Kintamani 7 (BNDCC1–MF)

Uncommon Solutions for Common Problems in Oculofacial Surgery

*Chief Instructor: Kenneth **MORGENSTERN***
*Instructor(s): Cat **BURKAT, MD FACS**, Andrew **RONG**, Pete **SETABUTR**, Jeremiah **TAO**, Ann **TRAN***

Objective: This course focuses on uncommon solutions for common problems in oculofacial surgery.

Synopsis: Oculofacial surgeons have a wide surgical armamentarium available to fix a variety of conditions. Some of these common techniques can be applied in unconventional ways. For example, a ptosis clamp can be used in the correction of tarsal ectropion. An adjustable Fasanella-Servat can be used to revise under corrected external levator advancements. The purpose of this course is to build upon the oculofacial surgeons' skillset with uncommon solutions for common problems an oculofacial surgeon may encounter.

Course Outline: The course will begin with a case-based presentation followed by lectures from various instructors. Instructors will show a surgical technique with the use of intraoperative photos or videos and how this can be applied to common problems in oculofacial surgery. Each instructor will be given 8-10 minutes to describe their case. Additional commentary from junior and senior faculty will be provided for additional insight into this technique.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

Sculpting Elegance: An Ophthalmologist's Approach to Periocular Aesthetic Surgery

*Chief Instructor: Kasturi **BHATTACHARJEE***
*Instructor(s): Dongmei **LI**, Audrey **LOOI**, Deepak **SONI**, Yuette **SANTIAGO**, Komal **SAWARKAR***

Objective: This course projects an ophthalmologist's viewpoint on aesthetic eyelid surgeries, delving into the profound connection between ocular anatomy and overall eyelid ageing changes.

Synopsis: Ageing is a progressive physiological process causing both functional and aesthetic changes. The impact of eyelid structure, eyebrow positioning, and their influence on expressions and visual impairment are often being explored thereby highlighting their role in aesthetic appeal and functional requisite. Providing ophthalmic insights with aesthetic practices, such as blepharoplasty, browplasty, fat graft and flaps, unveiling a balanced surgical approach that improves both visual function and aesthetic appearance. By illuminating the intersection of eye health and aesthetics, this video-based instruction course provides a comprehensive understanding of peri-ocular aesthetic lid surgeries from the unique vantage point of an ophthalmologist.

Course Outline: This instruction course will highlight the common eyelid surgeries having both aesthetic indications and functional requirements. The instructors are internationally acclaimed oculoplasty preceptors with years of experience in aesthetic eyelid surgeries. The course outline includes the following topics (1) Upper Lid Blepharoplasty for Aesthetic Indication – 10 mins (2) Upper Lid Blepharoplasty for functional Indication - 10 mins (3) Surgical correction of Brow ptosis- 10 mins (4) Current technique and nuances in aesthetic lower blepharoplasty- 10 mins (5) Lower lid Blepharoplasty for Functional indication- 10 mins (6) Fat grafts and flaps in peri-ocular aesthetic surgery- 15 mins (7) Discussion -15 mins.

Pediatric Ophthalmology and Strabismus

Feb 22, 2024 (Thu)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

Practical Management of Thyroid Eye Disease (TED)

*Chief Instructor: Manjushree **BHATE***
*Instructor(s): Yvonne **CHUNG**, Shuan **DAI**, Milind **NAIK**, Morgan **YANG***

Objective: This is a focused theme-based instruction course providing a systemic approach to the practical management of patients with thyroid eye disease (TED) and new modalities in its management.

Synopsis: This is a theme-based instruction course that covers all practical aspects of the management of patients with thyroid eye disease (TED). Starting with a brief overview, the course will cover the management of the orbit, strabismus & diplopia, eyelid, and newer modalities in TED management and will top up with some interesting cases. The instruction course aims to provide a great learning experience to all the delegates in the comprehensive management of thyroid eye disease from expert speakers across the Asia-Pacific region with a wealth of experience in this focus area of interest.

Course Outline: (1) Introduction and Brief Overview – Manju Bhate – 5 min (2) Management of the Orbit – Morgan Yang – 12 min (3) Managing Thyroid strabismus – Craig Donaldson – 12 min (4) Eyelid management in TED – Milind Naik -12 min (5) New modalities in TED management – Yvonne Chung -12 min (6) Interesting cases – Manju Bhate – 12 min (7) Discussion Q-A – All instructors -15 min.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Simplifying Strabismus: Managing Basic to Complex Cases

*Chief Instructor: Rohit **SAXENA***
*Instructor(s): Rebika **DHIMAN**, Asmita **MAHAJAN**, Digvijay **SINGH**, Himani **THAKUR***

Objective: To discuss the management of various types of strabismus using a case-based approach and videos for explaining conventional and new surgical procedures.

Synopsis: Deciding strabismus management can be a challenge particularly as recently numerous innovative surgical techniques have been described for different conditions. The result of surgery depends upon the

meticulous clinical examination, accurate diagnosis, and appropriate surgical planning. While the basic approach to surgical planning is known for different conditions, each case needs to be dealt with individually and requires a customized plan after understanding the different outcomes of various procedures. This course aims to provide a comprehensive approach to the management of strabismus as well as to discuss the tailored approach to individual cases of strabismus along with highlighting fine nuances of surgery.

Course Outline: The course will deal with the surgical approach to various common and difficult cases of strabismus. The approach to esotropia will include the role of non-surgical interventions in diagnosing and managing accommodative esotropias and surgical plans in infantile esotropia. Intermittent divergent squint can be a challenge and it is essential to know non-surgical treatments, when to operate and decide a reasonable surgical plan. The course will also provide a case-based approach to complicated paralytic cases like III nerve palsy and VI nerve palsy. (NTSLR and medial wall anchor for III nerve palsy and transposition procedures and muscle belly transfer for VI nerve palsy). Duane syndrome is one of the most complex conditions in strabismus and needs an individualized management plan. A broad overview of planning will be discussed using a variety of cases. Finally, some common and not-so-frequently done surgeries will be demonstrated using videos of the procedures.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Kintamani 7 (BNDCC1–MF)

Strabismus Problems: Lessons Learned From Difficult Cases

*Chief Instructor: Andrea **MOLINARI***
*Instructor(s): Victoria **BALASANYAN**, Giovanni **MARCON**, Donny **SUH**, Chong-bin **TSAI***

Objective: At the conclusion of this workshop, the attendees will have been taught new skills and refine previous skills in the diagnosis of complex and diverse strabismus conditions.

Synopsis: Difficult cases in Strabismus will be discussed by internationally recognized members of the International Strabismological Association.

Course Outline: Patients who present with straight-forward unoperated strabismus do not present a challenge to most pediatric ophthalmologists. However, patients may also present with very complex strabismus that pose diagnostic and therapeutic challenges. In this workshop, internationally recognized members of the International Strabismological Association (ISA) from different continents, will present a difficult case that will be discussed by the other panelists. Audience participation will also be encouraged.

Refractive Surgery

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Kintamani 7 (BNDCC1–MF)

Path to Consistent Results in Phakic IOLs

*Chief Instructor: Swapna **NAIR***
*Instructor(s): Anand **PARTHASARATHY**, Rajesh **SINHA***

Objective: The course aims to familiarise surgeons with the best pre and intra-operative practices for optimal visual outcomes and long-term stability with phakic IOLs along with tips to negotiate complicated situations.

Synopsis: Starting with how to whet patients unsuitable for phakic IOLs on seeing warning signs during pre-op workup, then dealing with complex situations with the right kind of preparation, and finally the tools required to manage complications that may arise in the course of the procedure are dealt with in this course.

Course Outline: (1) Decisive factors in long-term stable outcomes - Dr. Swapna Nair (2) Perfecting the post-operative vault - Dr Rajesh Sinha (3) Phakic IOLs: a Panache for keratoconus - Dr. Anand Parthasarathy (4) Management of phakic IOl complications - Dr. Swapna Nair.

Retina (Medical)

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Kintamani 7 (BNDCC1–MF)

An Introduction to Inherited Retina Diseases, Genetic Testing and Current Gene-based Treatment Strategies

*Chief Instructor: Daniel **CHUNG***
*Instructor(s): Choi Mun **CHAN**, John **GRIGG**, Robyn **JAMIESON***

Objective: To provide an overview of IRDs, diagnosis and management. To understand genetic testing basics, methodology, access and results. To understand current therapies, clinical trials and future strategies for IRDs.

Synopsis: Inherited retinal disease (IRDs) is one of the leading causes of blindness in the world. This instructional course aims to provide an overview of the diagnosis and management of IRDs, a primer in genetic testing, and an update on approved therapies, current clinical trials, and future potential treatment strategies. Recently, several advances using gene-based strategies have shown promising results, with the first

FDA- approved gene therapy, and many gene therapy targets for the eye in clinical development. Other genetic approaches include CRISPR gene editing, RNA-based antisense oligonucleotide and gene-independent approaches to reverse, stop or slow blinding diseases.

Course Outline: The course will encompass 4 speakers and then a moderated panel plus Q/A from attendees. Topics to be covered by the speakers will be: -Overview of IRDs, diagnosis and management: A high-level overview of the most common forms of IRDs, clinical presentation, diagnosis, and clinical testing. -Genetic testing in Asia, overview, access and interpretation: A review of the availability of genetic testing in Asia, the types of testing, how the clinical workup can assist in the guidance of which test, and the basics of test interpretation. -Experiences with Clinical trials in Asia: What is currently planned in Asia in terms of clinical development for treatments -Update on Gene therapy, Breakthrough, Challenges, and Future Direction: Review approved products and what is ongoing in clinical trials around the world. Agenda will be: 5 mins- Greetings and Introductions 55 minutes, presentations 20 minutes, Moderated panel and attendee Q and A 80 minutes total.

FREE PAPERS

AI, Digital Innovation and Virtual Health

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

A Large-Language-Model Based on ChatGPT Trained With Peer-Reviewed Literature

*First Author: Tiffany **HU***
*Co-Author(s): Justin **KARLIN**, Fahim **MAHMUD***

Purpose: Within ophthalmology, ChatGPT demonstrated the ability to answer disease-related questions and take board examinations. However, previous studies revealed limitations in accuracy and reliability, specifically, ChatGPT's "hallucination effect," the variable of output quality in prompt wording, and non-transparent training data. In this study, we aim to circumvent these limitations by developing "AEBot", a chatbot pre-trained on peer-reviewed material.

Methods: AEBot was created by training ChatGPT on three articles: Orbital Cellulitis, Acne Rosacea, and Infantile Hemangioma, from asoprseducation.org. We compared baseline ChatGPT (GPT), AEBot (AE), and AEBot with "prompt engineering" (AEP), a technique of designing input to optimize output. We asked each chatbot (GPT, AE, AEP) for a disease summary, diagnosis, and optimal treatment. Answers were reviewed by oculoplastic physicians or fellows-in-training. Answer sets were ranked from 1 to 3, best to worst response.

Results: In total, nine sets of answers (3 chatbots x 3 oculofacial diseases) were generated. Six oculoplastic specialists responded to the survey. Across all domains, the average ranking was 2.30 for AE, 1.74 for AEP, and 1.96 for GPT. In the 'General Overview' domain, the average ranking was 2.17 for AE, 1.72 for AEP, and 2.11 for GPT. In the 'Diagnosis' domain, the average ranking was 2.56 for AE, 1.72 for AEP, and 1.72 for GPT. In the 'Treatment' domain, the average ranking was 2.17 for AE, 1.78 for AEP, and 2.05 for GPT.

Conclusions: AEP performed best overall and, in every subdomain, while AE performed worst. This study confirms that ChatGPT has value as a stand-alone educational, research, and clinical tool.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Comparative Study of Visual Fields Obtained From Virtual Reality Perimeter and Humphrey's Field Analyzer

*First Author: Vinita **RAMNANI***
*Co-Author(s): Sakshi **RAMNANI**, Nupur **SHARMA***

Purpose: To compare the accuracy and reliability of the visual fields of Humphrey's field analyser (HFA) and virtual reality perimeter in diagnosing and assessing the severity of glaucoma.

Methods: A cross-sectional, observational study comparing visual fields of PalmScan VF2000 virtual reality (VR) Field analyzer and HFA and visual field were compared for Mean Deviation (MD), Pattern Standard Deviation (PSD), and Visual field index (VFI) to calculate sensitivity and specificity.

Results: A total of 332 eyes of 170 patients aged 20 - 70 years, including 172 glaucomatous and 160 nonglaucomatous eyes. When compared by kappa statistics, glaucomatous and nonglaucomatous showed perfect agreement with 100% sensitivity and 98.8% specificity. Out of 172 eyes mild glaucoma (MD of less than 6) in 46, moderate glaucoma (MD less than 12) in 58 and severe glaucoma (MD more than 12 DB) in 68 eyes. Comparison with mild glaucoma verses moderate and severe glaucoma showed a sensitivity of 97.8% and a specificity of 96.8%. When mild and moderate were compared with severe glaucoma, a sensitivity of 90.3% and a specificity of 94.1% were seen. The average test time was shorter by 5.8 ± 0.9 minutes, with 12 ± 2.9 minutes for HFA and 9.4 ± 2.1 minutes for VR perimeter.

Conclusions: PalmScan VF2000 VR visual field analyzer is a good tool for screening glaucoma suspects. It gives comparable results, easy, comfortable, economical and user-friendly for both patients and doctors. For day-to-day practice, portable devices with technological advancements are not meant to replace but will be complementary to existing perimeters.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Development of Artificial Intelligence to Determine Corneal Diameter Using Anterior Segment Images

*First Author: Eisuke **SHIMIZU***
*Co-Author(s): Tadashi **HATTORI**, Rohan **KHEMLANI**, Yuya **KUBO**, Shintaro **NAKAYAMA**, Hiroki **NISHIMURA***

Purpose: Measuring corneal diameter is crucial not only for understanding corneal diseases but also for various other applications, such as newborn screening and determining lens diameter for refractive surgery. However, precise measurements typically need specialized, stationary medical equipment, making simple diagnostic procedures like screening challenging. In this research, we introduce an AI-driven algorithm designed to estimate corneal diameter from handheld slit-lamp microscope (SEC) images. This algorithm learns from corneal diameter values measured on the same day under identical conditions using existing anterior segment images. We then verified its efficacy.

Methods: With approval from the Minami Aoyama Eye Clinic Ethical Review Committee, we retrospectively trained our model using corneal diameter values from anterior segment images captured with an SEC at a designated institution. During preprocessing, unsuitable images, such as those with closed eyelids or out-of-focus, were identified, grouped, and subsequently eliminated. Corneal diameters were measured using CASIA2 (Tomey), dividing a total of 19,187 anterior segment images into a 13,618:5,569 training-to-evaluation ratio. EfficientNetV2 facilitated the machine learning process.

Results: The developed algorithm demonstrated an MSE (mean squared error) of 0.08 ± 0.23 mm, an MAE (mean absolute error) of 0.19 ± 0.21 mm, and a correlation r-value of 0.91 between the actual and predicted values.

Conclusions: Our results indicate that the algorithm can estimate corneal diameter with significant accuracy. We are committed to refining its general applicability and will undertake further training to enhance its precision for real-world applications.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Efficacy of a Tablet-Based Write-On Examination System for Metamorphopsia Quantification

*First Author: Toshitaka **MURASAWA***
*Co-Author(s): Hisashi **FUKUYAMA**, Fumi **GOMI**, Masataka **IMURA**, Kazuma **MIKAMI**, Youichi **OOKITA***

Purpose: We have developed an original tablet-based write-on examination system called IDAM (Implementing digitization in assessment for metamorphopsia) for quantifying metamorphopsia. The purpose of this study was to evaluate the efficacy of IDAM.

Methods: This study included 11 eyes diagnosed of ERM (epiretinal membrane) and 22 eyes of CSC (central serous chorioretinopathy). We had the patient look at the center point, present grid lines on a tablet (2736 x 1824 pixels) that were within a 20°by 20° area of the central visual field, and then write the metamorphopsia they saw onto the tablet. The sum of the distances (pixels) between the baseline and the written lines was quantified as the amount of metamorphopsia in the IDAM. The M-CHART test was also performed for all patients on the same day IDAM was.

Results: Thirty of the 33 eyes (ERM: 11, CSC: 19) had metamorphopsia on the IDAM. We divided the test area into 9 sections. ERM group had an average of 7.3 areas of metamorphopsia and 6.9 in the CSC group. Only 10 eyes (90.1%) in the ERM group and 13 eyes (68.4%) in the CSC group were aware of metamorphopsia in the central area. The average amount of metamorphopsia quantified by IDAM was 144,256 pixels (ERM: 196,598 pixels, CSC: 113,953 pixels). The amount of metamorphopsia in IDAM had a significant interaction with the additive mean of the M-chart (ρ=0.38, p=0.03).

Conclusions: This study suggests that IDAM is useful for quantifying and detecting the localization of metamorphopsia.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Enhancing Vitrectomy Procedural Coding Accuracy with Artificial Intelligence

*First Author: Yong Min **LEE***
*Co-Author(s): Stephen **BACCHI**, Robert **CASSON**, Wengonn **CHAN**, David **SIA***

Purpose: The accurate encoding of operation notes is essential for activity-based funding and workforce planning. The aim of this project was to evaluate the procedural coding accuracy of vitrectomy and

to develop machine learning and natural language processing (NLP) models that may assist with this task.

Methods: This retrospective cohort study involved vitrectomy operation notes during a 21-month period at the Royal Adelaide Hospital. The coding of procedures was based on the Medicare Benefits Schedule (MBS) - the Australian equivalent to the Current Procedural Terminology (CPTÒ) codes used in the United States. Manual encoding was conducted for all procedures and reviewed by two vitreoretinal consultants. XGBoost, random forest and logistic regression models were developed for classification experiments. A cost-based analysis was subsequently conducted.

Results: There were a total of 1724 procedures with individual codes performed within 617 vitrectomy operation notes totaling $1,528,086.60 after manual review. A total of 1147 (66.5%) codes were missed in the original coding that amounted to $736,539.20 (48.2%). Our XGBoost model had the highest classification accuracy (96.4%) in the multi-label classification for the five most common procedures. The XGBoost model was successful in identifying operation notes with 2 or more missing codes with an AUC of 0.87 (95%CI 0.80-0.92).

Conclusions: Machine learning has been successful in the classification of vitrectomy operation note encoding. We recommend a combined human and machine learning approach to clinical coding as automation may facilitate more accurate reimbursement and enable surgeons to prioritise higher quality clinical care.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Evaluating Popular Large Language Model Chatbots for Common Ocular Symptom Queries: Accuracy, Comprehensiveness, and Self-awareness in ChatGPTs and Google Bard

*First Author: Krithi **PUSHPANATHAN***
*Co-Author(s): David **CHEN**, Zhi Wei **LIM**, Hazel **LIN**, Marcus Chun Jin **TAN**, Yih-chung **THAM***

Purpose: With increasing interest in using large language models (LLMs) for self-diagnosis, we evaluated the performances of ChatGPT-3.5, ChatGPT-4.0, and Google Bard in delivering accurate responses to common patient questions about ocular symptoms.

Methods: We curated 37 questions about ocular symptoms and posed them to the LLM-Chatbots. Three consultant-level ophthalmologists independently graded responses on a 3-point accuracy scale (poor, borderline, good). A majority consensus approach determined the final rating. 'Good' responses underwent further assessment for comprehensiveness on a five-point scale. All responses underwent self-checking prompts to evaluate self-awareness. Original 'poor' responses were prompted for self-correction and then re-evaluated for accuracy. Any erroneous parts in 'poor' responses were noted for qualitative assessment.

Results: ChatGPT-4.0 achieved 'good' responses in 89.2% of cases, outperforming ChatGPT-3.5 (59.5%) and Google Bard (40.5%) significantly (Pearson's chi-squared test, all $p<0.001$). All three LLM-Chatbots showed high mean comprehensiveness scores (ChatGPT-3.5: 4.6 out of 5; ChatGPT-4.0: 4.6; Google Bard: 4.7). However, their self-checking capabilities were suboptimal, with ChatGPT-3.5 having produced ambivalent responses, while ChatGPT-4.0 and Google Bard consistently endorsed all original responses, including those rated 'poor'. Conversely, the LLM-Chatbots demonstrated better self-correcting abilities, with 100% (2 out of 2) of ChatGPT-3.5's and 80% (4 out of 5) of Google Bard's responses showing improved accuracy, albeit marginally. ChatGPT-4.0's lack of original 'poor' responses excluded it from the self-correction assessment.

Conclusions: Our study highlights the potential of LLM-Chatbots, especially ChatGPT-4.0, in delivering accurate and comprehensive responses to queries about ocular symptoms. Nonetheless, ongoing refinement and rigorous validation are essential to ensure their reliability and suitability for clinical use.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

High-Precision Diagnosis of Mild Non-proliferative Diabetic Retinopathy Combining Morphological and Functional Retinal Vascular Characteristics

*First Author: Peng **XIAO***
*Co-Author(s): Ke **MA**, Jin **YUAN**, Jinze **ZHANG***

Purpose: To explore the functional and morphological variations of retinal vessels in diabetes with no clinically detectable retinopathy (NDR) and mild non-proliferative diabetic retinopathy (NPDR) and to establish a high-performance mild NPDR diagnostic model.

Methods: Normal subjects and patients with NDR and mild NPDR were recruited. Oxygen-saturation-related functional parameter (optical density ratio ODR) and morphological parameters (fractal dimension Df, vessel area rate VAR, mean vascular diameter Dm, vessel tortuosity τ) of different vascular areas were extracted with single fundus photography and comprehensively analyzed among groups. An interpretable model combining a marine predator algorithm (MPA) and

support vector machine (SVM) based on characteristic selection was proposed for mild NPDR diagnosis.

Results: A total of 111 normal, 91 NDR, and 75 mild NPDR subjects were analyzed. Increased main vessels ODR, while lower VAR of all areas except outer ring macula, all vessels Dm and τ of all areas were associated with NDR (e.g. main vessels ODR: OR [95%CI] 1.42 [1.07-1.89], full macula τ: 0.53 [0.38-0.74]). Increased ODR of all areas, Dm of all areas except inner ring macula, inner ring macula τ, while decreased Df of full and inner ring macula, VAR of all areas were associated with mild NPDR (e.g. main vessels ODR: 5.68 [3.03-10.65], inner ring macula VAR: 0.48 [0.33-0.69]). The MPA-SVM model with selected characteristics obtained the best diagnosis performance (AUC: 0.940±0.014; Accuracy: 90.4±3.9%; Sensitivity: 89.2±6.4%; Specificity: 91.3±6.4%).

Conclusions: More significant retinal vascular variations are associated with the incidence of mild NPDR than NDR. High-precision mild NPDR diagnosis is achieved by combining the morphological and functional vascular parameters based on characteristic selection.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Mapping the Burden of Visual Impairment Due to Onchocerciasis Infection in Middle Africa From 1990 to 2019

*First Author: Xiaoe **FAN***

Purpose: Human onchocerciasis is prevalent throughout Africa. There is no evidence on the prevalence and burden of onchocerciasis-associated blindness and vision loss (BVI) as well as its severity throughout this region in detail. In order to fill these gaps, the global burden of disease 2019 (GBD 2019) dataset, which provided cause-specific BVI data in the Global Health Data Exchange, was used to map the regional and national burden of BVI from 1990 to 2019.

Methods: The present study used the data on the number (thousand), and age-standardized rate (ASR, per 100,000) of BVI prevalence and YLDs estimates to assess the burden. The estimates were all reported as counts, and age-standardised rates, along with their corresponding 95% uncertainty intervals. Also, the average annual percentage changes (AAPC) with its 95% confidence interval were used to represent the trends of ASR.

Results: In 2019, the highest number of BVI attributable to onchocerciasis was observed in the Western Sub-Saharan Africa region, with an estimated 446.7 thousand BVI (95% UI: 392.3 to 508.7) and 35.3 thousand YLDs (95%UI: 24.6 to 49.5), which were decreased by 36% and 43% compared with 1990, respectively. The highest ASR of prevalence and YLDs of BVI were 588.2 (95%UI: 518 to 670.1) and 41.1 (95%UI: 28.2 to 57) in Central Sub-Saharan Africa in 2019, respectively.

Conclusions: The ASR of prevalence and YLD of onchocerciasis-related BVI in the African region have decreased over the past three decades. Closer prenatal monitoring is recommended for countries and territories, particularly those countries with higher disease burden.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Multi Fundus Disease Identifying and Report Generating System Using Temporal Information

*First Author: Wenjia **CAI***
*Co-Author(s): Xiaojun **CHANG**, Mingjie **LI**, Xiaodan **LIANG**, Yingfeng **ZHENG***

Purpose: To build an interpretable retinal and choroidal multi-disease report generation system based on a deep learning algorithm.

Methods: The proposed system incorporated clinical data, text reports, temporal information, and image features to provide a comprehensive analysis of retinal conditions. The Clinical-Temporal Transformer architecture enabled effective modeling of temporal dependencies in sequential retinal imaging data, allowing for the detection of ocular fundus diseases and prediction of lesion progressions. Our system employed attention mechanisms to identify and highlight important regions within the retinal or choroidal angiography images, facilitating accurate lesion detection.

Results: Our dataset consisted of 10,790 patients' multi-modal data, including 1,048,584 DICOMs and corresponding reports. For disease classification, our model demonstrated remarkable performance for several diseases. For example, an AUROC of 0.972 (95% CI: 0.970, 0.975) for retinal pigmentosa, 0.890 (95% CI: 0.888, 0.893) for proliferative diabetic retinopathy, 0.856 (95% CI: 0.853, 0.858) for polypoidal choroidal vasculopathy (PCV), etc. For symptom diagnoses, the AUROC values ranged from 0.732 to 0.861. Compared with human experts, our model can achieve senior ophthalmologists' grade on most diseases and symptoms diagnosis. Furthermore, we presented attention visualization results, and reports were accurately predicted.

Conclusions: Our system has the potential to provide early detection and differential diagnosis of various ocular fundus diseases. The interpretability aspects of the system enhance its clinical utility by enabling clinicians to understand and trust the automated

diagnoses, ultimately leading to improved patient care and management of ocular fundus diseases.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Prediction Models for Glaucoma in a Multicenter Electronic Health Records Consortium: The Sight Outcomes Research Collaborative

*First Author: Sophia **WANG***
*Co-Author(s): Rohith **RAVINDRANATH**, Joshua **STEIN***

Purpose: Advances in artificial intelligence have enabled the development of predictive models for glaucoma. However, most work is single-center and uncertainty exists regarding the generalizability of such models. The purpose of this study was to build and evaluate machine learning (ML) approaches to predict glaucoma progression requiring surgery using data from a large multicenter consortium of electronic health records (EHR).

Methods: Structured EHR data from 5 centers were used to predict whether glaucoma patients would progress to glaucoma surgery in the coming year. Modeling approaches included penalized logistic regressions, random forest, XGBoost, and neural networks. One site was reserved as an external test set (N=1550); of the patients from the remaining sites, 10% each were randomly selected to be in development and test sets, with 27999 reserved for model training. Evaluation metrics included the area under the receiver operating characteristic curve (AUROC).

Results: A total of 6019 (16.5%) of 36,548 patients underwent glaucoma surgery. The AUROC ranged from 0.735-0.771 on the random test set and from 0.706-0.754 on the external test site, with the XGBoost and random forest model performing best, respectively. There was a greater performance decrease from the random test set to the external test site for the penalized regression models.

Conclusions: ML models developed using structured EHR data can reasonably predict whether glaucoma patients will need surgery, with reasonable generalizability. Additional research is needed to investigate the impact of protected class characteristics such as race or gender on model performance and fairness.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Retinal Age Gap as a Novel Biomarker of Ageing

*First Author: Lisa **ZHU***

Purpose: To develop a deep learning (DL) model that predicts age from fundus images (retinal age) and to investigate the association between the retinal age gap (retinal age predicted by the DL model minus chronological age) and mortality risk.

Methods: A total of 80 169 fundus images taken from 46 969 participants in the UK Biobank with reasonable quality were included in this study. Of these, 19 200 fundus images from 11 052 participants without prior medical history at the baseline examination were used to train and validate the DL model for age prediction using fivefold cross-validation. A total of 35 913 of the remaining 35 917 participants had available mortality data and were used to investigate the association between the retinal age gap and mortality.

Results: The DL model achieved a strong correlation of 0.81 (p<0·001) between retinal age and chronological age, and an overall mean absolute error of 3.55 years. Cox regression models showed that each 1 year increase in the retinal age gap was associated with a 2% increase in risk of all-cause mortality (hazard ratio (HR)=1.02,95%CI:1.00-1.03,p=0.020) and a 3% increase in risk of cause-specific mortality attributable to non-cardiovascular and non-cancer disease (HR=1.03,95% CI:1.00-1.05,p=0.041) after multivariable adjustments. No significant association was identified between the retinal age gap and cardiovascular- or cancer-related mortality.

Conclusions: Our findings indicate that the retinal age gap might be a potential biomarker of ageing that is closely related to the risk of mortality, implying the potential of the retinal image as a screening tool for risk stratification and delivery of tailored interventions.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Retinal Photo-Based Deep Imbalanced Regression Model for Prediction of Refractive Error

*First Author: Samantha **YEW***
*Co-Author(s): Ching-yu **CHENG**, Jocelyn **GOH**, Xiaofeng **LEI**, Yih-chung **THAM**, Xinxing **XU***

Purpose: Uncorrected refractive error is the leading cause of vision impairment. Retinal photo-based deep learning (DL) can predict refractive error, but performance is fraught with imbalanced datasets. To address this, we developed a Deep Imbalanced

Regression (DIR) model and aimed to assess its performance at refractive error prediction.

Methods: Using retinal photos as inputs, we trained a ResNet34+DIR model for prediction of refractive error, and a Swin-V2 classification model for detection of significant refractive error. A total of 15,580 images from Singapore Epidemiology of Eye Diseases (SEED) and 94,827 images from UK Biobank (UKBB) were used for training, tuning, and internal testing (split in 7:1:2 ratio). For external validations, we used 7,043 images from the Singapore Prospective Study Program (SP2), and 5,539 images from the Beijing Eye Study (BES). Significant refractive error was defined as sphere power of ≤-1.00D or ≥+1.50D and/or cylinder power of ≤-1.50D.

Results: Internally, the model achieved a mean absolute error (MAE) of 0.72 and coefficient of determinant (R^2) of 0.95 for sphere power prediction; MAE of 0.67 and R^2 of 0.95 for spherical equivalent (SE) prediction. Across external test sets, the model achieved MAE of 0.54-0.83 and a consistent R^2 of 0.79 for sphere power prediction; and MAE of 0.61-0.74, R^2 of 0.76-0.83 for SE prediction. For detection of significant refractive error, the area under the receiver operating characteristic curve (AUC) was 0.90 (95%CI:0.89-0.90) in internal validation, and ranged between AUC of 0.82 (95%CI:0.81-0.83)-0.86 (95%CI:0.85-0.87) in external validations.

Conclusions: Overall, our DL model exhibits optimal performance in refractive error prediction, highlighting the potential of integrating retinal imagery and DL for efficient eye screenings.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

The Development and Clinical Evaluation of Virtual Reality-Based Online Optical Clinic

*First Author: Jing **ZHONG***
*Co-Author(s): Ziting **HUANG**, Yu **LIU**, Jin **YUAN**, Jijing **LI***

Purpose: To build an online optical clinic based on Virtual reality (VR), and evaluate its accuracy, repeatability, and correlation with traditional methods.

Methods: The VR optical clinic included visual function tests like visual acuity, contrast sensitivity function, and stereopsis test. Then, we conducted an observational, cross-sectional study with 36 subjects (aged 24.43±2.97, including 12 males and 24 females), each of whom was asked to use the virtual reality optometry clinic and the clinical traditional test simultaneously. We evaluated the accuracy, repeatability, acceptance, and correlation with traditional methods.

Results: In the VR optical clinic visual acuity test, the VA was 0.02±0.04 for the first time, and 0.01±0.04 for the second time (P=0.34). The visual acuity was 0.01±0.03 measured by the EDTRS eye chart, and was 0.00±0.00 in the VR optical clinic; the range of 5% agreement is (-0.075, 0.075 LogMar) (P=1.00). In the VR stereopsis test, the far stereoscopic vision was 60.00±0.00, and the second time was 60.00±0.00. The stereo vision of the Randot random point stereogram was 60.00±0.00, and the 95% consistency range of stereo vision was (0.00, 0.00"). In the contrast sensitivity function test, the VR-based test had good repeatability, and accuracy, as well as good consistency with the traditional test.

Conclusions: In this study, we built a VR optical clinic and proved it was accurate, convenient and fast, which is a brand-new medical mode to use the virtual clinic paradigm equipped with VR equipment to test visual function.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Validation of the Self-vision (SELFVIS) Check Mobile Apps as an Independent Visual Acuity Measurement Tool

*First Author: Felicia **WIDYAPUTRI***
*Co-Author(s): Indra **MAHAYANA**, Datu **RESPATIKA**, Muhammad **SASONGKO***

Purpose: Two-thirds of patients first presenting in major public eye clinics in Indonesia are blind, and more than half of them are irreversible owing to the delayed awareness of visual problems. This study aimed to develop a mobile application for self-vision (SELFVIS) checks to allow for independent remote screening and triaging of patients.

Methods: This prospective study aimed to recruit 14- to 39-year-old participants with varying visual acuities (VA). Participants with ocular diseases other than refractive errors were excluded. All participants were tested for their VA using the SELFVIS apps and the Snellen chart at distances of 40 cm and 6 meters, respectively. The agreement between the two methods was assessed using the Bland-Altman test.

Results: Overall, 200 eyes from 100 patients were included in this study. The majority were female (75%) with a mean age of 21.4 (SD±3.1) years old. The mean VA difference between the Snellen chart and SELFVIS was 0.03 logMAR (95%CI 0.02-0.05) or approximately 1 letter of VA. Of these eyes, 94% demonstrated agreement between the two methods within 0.3 logMAR of the mean difference, and 88% had agreement within 0.1 logMAR of the mean difference.

Conclusions: There was a good agreement of VA from the SELFVIS apps compared to the Snellen chart. Using SELFVIS, patients can examine their vision independently under remote observation of their doctors without the need to attend eye clinics. This will benefit people living in rural areas who have limited

access to eyecare and ultimately will support the accelerated future of teleophthalmology in Indonesia.

Feb 23, 2024 (Fri)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Predicting Outcomes for Patients Undergoing Corneal Transplants Using AI Machine Learning-Based Methods

*First Author: Kavya **CHANDRAN***

Purpose: To develop predictive machine learning-based algorithms that can forecast the Best-Corrected Visual Acuity (BCVA) outcomes following a corneal transplant surgery at various post-operative observational periods.

Methods: A dataset consisting of 20,434 patients who underwent 24,153 keratoplasties between the years 1987 and 2022, sourced from paper and electronic medical records in a multi-tier hospital network, was included. Patient demographics,pre-operative surgical and post-operative clinical observations were considered. All keratoplasties were included. Outcomes across different post-operative months were included. 18 datasets with cohort and post-operative duration combinations were made for two problem statements – predicting BCVA outcomes and patient compliance and graft survival. The data for the final selected features from the feature selection stage are split into 80% training and 20% testing. Parameters from 5 different methods (Random Forests, Decision Trees, SVM, Naïve Bayes, and Neural Nets) were trained and tuned using the training dataset and were tested for accuracy on the test dataset. The values that gave the highest accuracy were used as final parameter values.

Results: In the validation data set, the prediction of visual acuity into 4 BCVA classes (very good > 20/60, good 20/60-20/200, poor 20/200-20/400, and very poor > 20/400) had an accuracy of 75.8%. The predictive accuracy of patient compliance to follow-up was 80.2%.

Conclusions: The machine learning model exhibits a relatively higher accuracy in predicting whether the BCVA class of a patient will be very good or very poor. This model, coupled with the assessment of graft survival probability, is a valuable tool to strategically plan the patient's course of treatment.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

A Comparative Analysis of Vision Transformers and Convolutional Neural Network for Diabetic Retinopathy

*First Author: Jocelyn **GOH***
*Co-Author(s): Elroy **ANG**, Xiaofeng **LEI**, Ten Cheer **QUEK**, Yih-chung **THAM***

Purpose: To evaluate the comparative performance of Vision Transformers (ViT) and Convolutional Neural Networks (CNN) models in detecting referable Diabetic Retinopathy (DR) from retinal photographs.

Methods: Using 41,614 retinal photographs from the Kaggle dataset, five CNN and four ViT models were developed to detect referable DR. The five CNN models were visual geometry group-19 (VGG19), ResNet50, InceptionV3, DenseNet201 and EfficientNetV2S, while the four ViT models were visual attention network (VAN_small), CrossViT_small, ViT_small and Swin_tiny. The presence of referable DR was defined as eyes with moderate or worse DR. We evaluated the performance of all models in an internal test set of 1,045 photographs, and two external test sets, Singapore Epidemiology of Eye Diseases (SEED) and Messidor-1 of 5,455 and 1,200 photographs respectively.

Results: In the internal test, the Swin_tiny model achieved the highest area under the operator characteristics curve (AUC) of 95.7%, performing significantly better than all five CNN models. In the external tests, the Swin_tiny model achieved an AUC of 97.3% in SEED and 96.3% in Messidor-1. With a specificity level fixed at 80%, the Swin_tiny model achieved a sensitivity of 94.4%, performing significantly better than CNN models where the sensitivity levels ranged from 76.3% to 83.8% in the internal test. In the external tests, the Swin_tiny model obtained a sensitivity of 96.9% in SEED and 94.8% in Messidor-1.

Conclusions: In this evaluation, the Swin_tiny model showed promising performance in detecting referable DR from retinal photographs, compared to CNN models. Future integration of ViT techniques could potentially improve the performance of automatic DR detection tools.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Comparison of Diagnostic Performance of a Novel Smartphone Photography Based Screening With Remote Ophthalmologist Review Versus In-Person Ophthalmologist Eye Camp Examination

*First Author: Prabhu Krishna **RAVILLA SRIRAM***
*Co-Author(s): Kunal **PARIKH**, Kamini **REDDY**, Jordan **SCHUFF**, Nakul **SHEKAWAT**, Dayakar **YADALLA***

Purpose: To assess the diagnostic performance of community health worker (CHW)-led smartphone photography of the anterior segment combined with remote ophthalmologist assessment, in comparison to the conventional in-person ophthalmologist examinations conducted during eye camps (ECs), within a rural population in South India.

Methods: Conventional in-person eye camp ophthalmologist assessment encompasses Snellen visual acuity (VA) measurements, pen light examinations, and anterior segment evaluations for both eyes. Smartphone screening involved measuring Snellen VA, CHW-led smartphone photography, questionnaire, image transfer, and remote ophthalmologist (RO) review. Images were diagnosed by three ROs. Conflicting diagnoses were resolved by consensus RO diagnosis via a Delphi panel of all ROs. Sensitivity, specificity, and kappa statistics were measured for each diagnosis type comparing smartphone screenings to EC exam.

Results: Between August 2022 and June 2023, 19 EC screenings were held in five South Indian regions, involving 2067 eyes from 1065 participants who met the eligibility criteria. Median age stood at 60 years (IQR: 54-67 years), with 57.84% being female. Lens categories evaluated were mature cataract (N=146; sensitivity 71.9%, specificity 97.5%, kappa statistic 67.9%), immature cataract (N=1068; sensitivity 78.8%, specificity 93.0%, kappa 71.4%), clear crystalline lens (N=329; sensitivity 88.1%, specificity 89.1%, kappa 65.2%), pseudophakia (N=487; sensitivity 96.5%, specificity 97.5%, kappa 92.5%), and aphakia (N=5).

Conclusions: In contrast to traditional eye camps, the novel smartphone-based screening system paired with an asynchronous ophthalmologist review demonstrated good diagnostic concordance for cataract and lens status. This screening platform promises to significantly expand anterior segment eye disease screening in resource-limited environments.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

DeepFundus: A Flow Cytometry-Like Image Quality Classifier for Boosting the Whole Lifecycle of Medical Artificial Intelligence

*First Author: Lixue **LIU***
*Co-Author(s): Mingyuan **LI**, Duoru **LIN**, Haotian **LIN**, Xiaohang **WU***

Purpose: To develop DeepFundus, a deep-learning-based, flow-cytometry-like image quality classifier that enables automated, high-throughput, and multidimensional classification of fundus image quality.

Methods: We formed the development and internal test datasets using fundus images collected from 4 different cohorts. All retinal images were labeled according to three-level annotation criteria: overall quality, clinical quality factors, and structural quality analysis. DeepFundus was therefore developed using the InceptionResNetV2 technique. Then, fundus images from another 22 nationwide cohorts and the Kaggle dataset featuring different geographical and ethnic compositions were used to further test its performance. After that, we integrated DeepFundus into a certified AI (artificial intelligence) retinal diagnostic system as a preprocessing function in clinical applications to investigate its effects on diagnostic performance.

Results: A total of 65,851 fundus images were collected from 27 distinct cohorts to develop and evaluate DeepFundus, which involved 13 quality classification models. In both the internal test and nationwide datasets, DeepFundus achieved AUCs (area under the curve) >0.9 for all quality aspects. Moreover, in clinical application, our results demonstrated the positive effects of DeepFundus in removing unqualified fundus images and enhancing the real-world performance of established AI diagnostics for the detection of multiple retinopathies.

Conclusions: DeepFundus exhibited robust performance in the systematic quality classification of fundus images, constituting a practical data management system for medical AI. Based on its model framework, DeepFundus can provide specific instructions for operators and patients on site, contributing to more accurate detection of both ophthalmic and systemic disorders, and improved real-world application of AI diagnostics.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Detection of Disease-Related Visual Impairment in Diabetic Patients Using Retinal Photograph-Based Deep Learning

*First Author: Can Can **XUE***
*Co-Author(s): Ching-yu **CHENG**, Jocelyn **GOH**, Xiaofeng **LEI***

Purpose: To evaluate a new deep learning algorithm's effectiveness in detecting disease-related visual impairment (VI) in diabetic patients, particularly those without diabetic retinopathy (DR) or with non-referable DR, due to diabetes being linked to various serious vision-threatening conditions beyond DR.

Methods: A deep learning algorithm using macula-centered retinal images was developed to identify disease-related VI (eyes with major eye diseases and best-corrected visual acuity < 20/40). Training (15,175 eyes) and internal testing (1,100 eyes) used retinal images from the Singapore Epidemiology of Eye Diseases Study. External validation encompassed the Beijing Eye Study (715 eyes), Central India Eye and Medical Study (222 eyes) and Chinese University of Hong Kong's Sight Threatening Diabetic Retinopathy Study (971 eyes).

Results: Among diabetic patients, the algorithm achieved an area under the receiver operating characteristic curve (AUC) of 93.2% (95% CI:91.2-95.2; sensitivity:90.2%; specificity:83.2%) in internal testing and AUCs between 86.6% (95% CI: 83.4-89.7; sensitivity: 87.5%; specificity: 70.0%) and 91.5% (95% CI: 88.4 to 94.5; sensitivity: 92.6%; specificity: 76.7%) across external datasets. Improved performance was seen in diabetic eyes without DR or with non-referable DR, with AUCs of 93.2% (95% CI:91.2 to 95.1; sensitivity:90.2%; specificity:83.2%) internally and 89.9% (95% CI:85.0 to 94.8; sensitivity:84.2%; specificity:81.0%) to 92.2% (95% CI:85.4 to 98.9; sensitivity:88.6%; specificity:92.7%) externally.

Conclusions: This study highlights the potential of a single-modality tool in identifying VI linked to major eye diseases in diabetic patients. Integrating this tool with existing DR screening methods could enhance the process, providing more comprehensive care for diabetic patients.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Detection of Morphological Patterns in Diabetic Macular Edema Using a Deep Learning Approach Based on Optical Coherence Tomography Images

*First Author: Qiaowei **WU***
*Co-Author(s): Hongmin **CAI**, Hongmin **CAI**, Yijun **HU**, Honghua **YU***

Purpose: To develop a deep learning (DL) model to detect morphologic patterns of diabetic macular edema (DME) based on optical coherence tomography (OCT) images.

Methods: In the training set, 12,365 OCT images were extracted from a public dataset and an ophthalmic center. A total of 656 OCT images were extracted from another ophthalmic center for external validation. The presence or absence of three OCT patterns of DME, including diffused retinal thickening (DRT), cystoid macular edema (CME), and serous retinal detachment (SRD) were labeled with 1 or 0, respectively. A DL model was trained to detect three OCT patterns of DME. An occlusion test was applied for the visualization of the DL model.

Results: Applying five-fold cross-validation method in internal validation, the area under the receiver operating characteristic curve (AUC) for detection of three OCT patterns (i.e., DRT, CME, and SRD) were 0.971, 0.974, and 0.994, respectively, with accuracy of 93.0%, 95.1%, and 98.8%, respectively, sensitivity of 93.5%, 94.5%, and 96.7%, respectively, and specificity of 92.3%, 95.6%, and 99.3%, respectively. In external validation, the AUC were 0.970, 0.997, and 0.997, respectively, with accuracy of 90.2%, 95.4%, and 95.9%, respectively, and sensitivity of 80.1%, 93.4%, and 94.9%, respectively, and specificity of 97.6%, 97.2%, and 96.5%, respectively. The occlusion test showed that the DL model could successfully identify the pathologic regions most critical for detection.

Conclusions: Our DL model demonstrated high accuracy and transparency in the detection of OCT patterns of DME. These results emphasized the potential of artificial intelligence in assisting clinical decision-making processes in DME patients.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Development and Validation of a Deep Learning Model to Predict the Occurrence and Severity of Retinopathy of Prematurity

*First Author: Qiaowei **WU***
*Co-Author(s): Ying **FANG**, Yijun **HU**, Wing W.Y. **NG**, Honghua **YU***

Purpose: To develop and validate a deep learning (DL) system to predict the occurrence and severity of retinopathy of prematurity (ROP) before 45 weeks' postmenstrual age.

Methods: This retrospective prognostic study included 7033 retinal photographs of 725 infants in the training set and 763 retinal photographs of 90 infants in the external validation set. The DL system was developed using retinal photographs from the first ROP screening and clinical characteristics before or at the first screening in infants born between June 3, 2017, and August 28, 2019. Two models were specifically designed for predictions of the occurrence (occurrence network [OC-Net]) and severity (severity network [SE-Net]) of ROP. Five-fold cross-validation was applied for internal validation.

Results: In internal validation, mean area under the receiver operating characteristic curve (AUC), accuracy, sensitivity, and specificity were 0.90 (95% CI, 0.88-0.92), 52.8% (95% CI, 49.2%-56.4%), 100% (95% CI, 97.4%-100%), and 37.8% (95% CI, 33.7%-42.1%), respectively, for OC-Net to predict ROP occurrence and 0.87 (95% CI, 0.82-0.91), 68.0% (95% CI, 61.2%-74.8%), 100% (95% CI, 93.2%-100%), and 46.6% (95% CI, 37.3%-56.0%), respectively, for SE-Net to predict severe ROP. In external validation, the AUC, accuracy, sensitivity, and specificity were 0.94, 33.3%, 100%, and 7.5%, respectively, for OC-Net, and 0.88, 56.0%, 100%, and 35.3%, respectively, for SE-Net.

Conclusions: In this study, the DL system achieved promising accuracy in ROP prediction. This DL system is potentially useful in identifying infants with a high risk of developing ROP.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Evaluation of a Deep Learning Artificial Intelligence Model in Detecting Referable Diabetic Retinopathy in Children With Type 1 Diabetes

*First Author: Feihui **ZHENG***
*Co-Author(s): Haslina **HAMZAH**, Gilbert **LIM**, Lek **NGEE**, Daniel **TING***

Purpose: To evaluate the use of SELENA+ (Singapore Eye Lesion Analyser Plus), a deep learning artificial intelligence (AI) model using fundus photo in detecting diabetic retinopathy (DR) in pediatric patients with type 1 diabetes (T1D).

Methods: SELENA+ was trained on 76370 retinal fundus images from 13099 adult patients with diabetes, which has been published and implemented in the Singapore Integrated Diabetic Retinopathy Program (SiDRP) available at all polyclinics. This study included 526 children with T1D who regularly attended the DR screening at the KK Women's and Children's Hospital (KKH) from 2014-2023. Referable DR was defined as moderate non-proliferative diabetic retinopathy or worse. We calculated the area under the curve (AUC), sensitivity, and specificity for the detection of referable DR using SELENA+.

Results: A total of 8126 retinal fundus photos from 3396 visits of 526 subjects were used to evaluate the performance of SELENA+ in detecting referable DR in children. DR was found in 279 (8.2%) eyes on visit instances, and referable DR in 31 (0.9%) eyes on visit instances. The AUC of SELENA+ for referable DR was 0.874 (95% CI, 0.795-0.947), with a sensitivity of 80.65% (62.53%-92.55%) at a specificity of 82.08% (80.74% -83.36%).

Conclusions: An AI system shows clinically acceptable performance in detecting referable DR in children. This shows the potential application and adoption of such AI technology in screening children with T1D, even when the model is trained in the adult population.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Improving Non-Mydriatic Retinal Photo Quality using Generative Adversarial Network

*First Author: Yih-chung **THAM***
*Co-Author(s): Ching-yu **CHENG**, Jocelyn **GOH**, Ming Rui **TAN**, Xinxing **XU**, Liu **YONG***

Purpose: Optimal retinal photo quality is essential for effective retinal disease detection and retinal photo-based AI analysis. While mydriasis significantly

enhances image quality, it necessitates pupil dilation drops, making it impractical in community screening settings, which involve high volume and are often constrained by time and manpower resources. Using a generative adversarial network (GAN), we developed a generative model which can enhance the image quality of non-mydriatic retinal photos. In this study, we evaluated the performance of this newly developed GAN model.

Methods: We utilized 313 paired retinal images (pre- and post-dilation) and the COFE-net neural network to train and develop the GAN model, synthesizing quasi-post-dilation images from pre-dilation ones. An independent set of 120 pre- and post-dilated paired images, along with the corresponding set of GAN-synthesized images, was used for testing. Metrics including peak signal-to-noise ratio (PSNR), structural similarity index (SSIM), and gradability (assessed by professional graders) were evaluated and compared across the pre-dilated photos, post-dilated photos and GAN-synthesized photos.

Results: When comparing the quality of pre-dilated vs post-dilated images, the PSNR was 23.2, and the SSIM value was 0.823. Building on this, the comparative values between GAN-synthesized and post-dilated images were higher, with PSNR of 28.7 and SSIM of 0.923 (all P<0.01). Gradability assessment revealed that GAN-synthesized images had a 76% gradability rate (increased from 41% based on original pre-dilated photos), and ungradable images decreased from 37% to 11%.

Conclusions: The GAN approach shows promising potential in enhancing the quality of non-mydriatic retinal images, presenting a potential substitute for mydriasis in community screening environments.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

PhacoTrainer: Automatic Artificial Intelligence-Generated Performance Ratings for Cataract Surgery

*First Author: Sophia **WANG***
*Co-Author(s): Jonathan **CHOU**, Karen **CHRISTOPHER**, Simmi **SEN**, Hsu-hang **YEH***

Purpose: To investigate whether cataract surgical skill performance metrics automatically generated by artificial intelligence (AI) models can judge a surgeon's proficiency, and to evaluate the correlation between surgical skill ratings generated by AI and expert human judges.

Methods: Routine cataract surgical videos from 28 residents and 29 attendings were anonymously collected. For each video, 6 surgical skill metrics were generated by deep learning models: total path length, maximum velocity, area, phacoemulsification centration, eye centration, and zoom level change. The former 3 metrics were individually calculated for the limbus, pupil, and various surgical instruments while the others were obtained at the video level. A masked independent panel of expert human judges assessed the surgical videos using the Objective Structured Assessment of Cataract Surgical Skill (OSACSS). Statistical differences between AI and human-rated scores between attending surgeons and trainees were assessed using t-tests, and the correlations between them were examined by Pearson correlation coefficients.

Results: The phacoemulsification probe and irrigation/aspiration probe had significantly lower total path lengths, maximum velocities, and area metrics in attending videos compared to trainee videos. Attending surgeons demonstrated significantly better phacoemulsification centration and eye centration. Most AI metrics were correlated with total OSACSS scores, including tool-specific metrics and metrics related to microscope control (eye centration: -0.396, zoom level change: -0.319). AI-generated metrics also exhibited significant negative correlations with specific OSACSS subitems (eye centration: -0.65, phacoemulsification probe area metric: -0.67).

Conclusions: Automatically generated AI metrics can differentiate between attending and trainee surgeries and correlate with the human expert evaluations of surgical performance.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Rural Screening for Multiple Retinal Diseases Using a Deep Learning System and Ultra-Widefield Images

*First Author: Tingxin **CUI***
*Co-Author(s): Duoru **LIN**, Haotian **LIN**, Zhenzhe **LIN**, Xinyu **ZHAO**, Shanshan **YU***

Purpose: To explore the performance of a deep learning system (DLS) for multiple retinal disease screening using ultra-widefield (UWF) fundus images in rural areas.

Methods: In this prospective study, a previously developed DLS based on UWF fundus images was applied to screen for five retinal diseases (retinal hemorrhage, lattice degeneration or retinal breaks, retinal detachment, glaucomatous optic neuropathy, and retinal drusen or exudates) in 24 villages of Yangxi County, China, between November 2020 and March 2021. The model performance was evaluated and compared with the previously reported performance of the same model in the development stage.

Results: A total of 6222 eyes of 3149 participants were screened. The DLS had an average area under the curve (AUC) of 0.918 (95% confidence interval [CI] 0.892-0.944) for the five retinal diseases in rural areas, which was lower than the average AUC reported at the model development stage (0.998, 95% CI 0.995-1.000). Compared with the data used in the model development stage, the fundus images in this rural screening study presented an increased frequency of poor-quality fundus images (13.82% vs. 0%), increased variation in disease proportions (0.10%-36.50% vs. 14.04% -21.27%), and increased complexity of disease composition.

Conclusions: The DLS exhibited good robustness as a screening tool for multiple retinal diseases in rural areas. Furthermore, poor image quality, diverse disease proportions, and a complex set of diseases may have reduced the performance of the DLS; these factors in targeted screening scenarios should be considered at the model development stage to ensure good performance.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Smartphone-Based AMD Screening: A Prospective Validation of an Offline AI-Integrated Fundus Camera System

*First Author: Divya **RAO***
*Co-Author(s): Prabu **BASKARAN**, Aditya **MAITRAY**, Florian **SAVOY**, Shruti **SURESH**, Kalpa **NEGILONI***

Purpose: We evaluated the performance of a novel AI system deployed on a portable fundus camera for screening referable AMD in a South Asian population.

Methods: The prospective study was conducted at a tertiary eye hospital. Macula-centered images were captured in both eyes on a standard fundus camera (Zeiss Clarus 700) and the study device (smartphone-based fundus camera). Additionally, a line scan across the macula was captured using Spectralis SD-OCT. Three retina specialists provided majority grading for AMD diagnosis (Reference standard) using SD-OCT and standard camera images (Pre-defined criteria). The AI indicated the presence (intermediate and advanced AMD) or absence (early or No AMD) of referable AMD.

Results: We included 225 patients for interim analysis. The mean age was 65 years, and 74% had referable AMD. On 414 gradable eyes, sensitivity for any AMD was 84.55% (80.19-88.27%), specificity 84.52% (74.99-91.49%), accuracy 85.61%. Specificity was 90.91% when excluding cases with other pathologies. Sensitivity for referable AMD (intermediate/ advanced) was 87.84% and advanced AMD was 90.91%. Intergrader agreement (Cohen's kappa) was 0.68-0.77

Conclusions: Early analysis shows promising results for screening referable AMD. However, the final results would demonstrate the AI's true diagnostic accuracy. It has the potential to make AMD screening accessible, affordable, and effective.

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Using AI to Understand Role of Vitamin D and IgE and Its Association With Tear Cytokines in Viral Conjunctivitis

*First Author: Durgalaxmi **MODAK***
*Co-Author(s): Gairik **KUNDU**, Harsha **NAGARAJA***

Purpose: To use artificial intelligence (AI) and study the association between systemic vitamin D and IgE levels with severity and ocular surface inflammatory profile in patients with epidemic keratoconjunctivitis (EKC).

Methods: A total of 224 eyes of 112 patients with clinically diagnosed EKC were included in the study. Patients were clinically classified as mild, moderate, or severe conjunctivitis. Levels of serum vitamin D (VD) and serum immunoglobulin-E (IgE) were measured. An artificial intelligence (AI) model was built to assess these factors. Schirmer's strip-based tear fluid (TF) was used to determine levels of IL-1β, IL-6, IL-10, IL-17A, TNFα, MMP9, sICAM1, and VEGF-A in a subset of patients.

Results: Levels of VD were significantly ($P<0.05$) lower, and levels of IgE were significantly higher in patients with severe forms as compared to those with non-severe forms. The majority of patients with severe form exhibited VD deficiency and/or abnormally high IgE. A negative correlation ($r = –0.682$; $P<0.0001$) was observed between VD and IgE levels. TF levels of IL-1β, IL-6, TNFα, and sICAM1 were significantly higher in eyes with severe form as compared to those with non-severe forms and controls. These factors showed a positive correlation ($P<0.05$) with IgE levels and a negative correlation ($P<0.05$) with VD levels. AI model classified 88.6% & 86.2% of cases as mild/moderate/severe based on these risk factors. AI model achieved AUC of 0.970.

Conclusions: Severe forms of EKC exhibited VD deficiency and higher IgE levels. Increased TF inflammatory factors demonstrated a disease-causal relationship with VD and IgE. Restoring altered levels of VD and IgE would be pivotal in the prevention and management of conjunctivitis.

Academia, Research, Teaching and Education in Ophthalmology

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1-GF)

A Keen Eye on Ophthalmology: Impact of Social Media Among Ophthalmologists

*First Author: Saloni **JOSHI***
*Co-Author(s): Apurva **NAGTODE**, Rengaraj **VENKATESH***

Purpose: 1. To analyze the influence of social media amongst ophthalmologists 2. To analyze how social media is used academically and professionally, from a learning point of view 3. To aim for holistic growth and development of trainees and empower residency.

Methods: This study was a descriptive cross-sectional study based on a self-administered validated questionnaire containing a total of 23 questions. The validated questionnaire was then circulated via Google Forms amongst trainees (residents, fellows) in ophthalmology and practising ophthalmologists all over India. The study took place from August 2022 to April 2023. We analyzed its impact on residency, fellowship and how it affects practicing ophthalmologists.

Results: A total of 289 responses were studied, the maximum being in the age group of 25-40 years (73.3%), out of which 69.6% use social media for entertainment, 52.6% use it for academic purposes; with WhatsApp and YouTube topping the list as the most go-to platforms. 45% found image-based learning via social media, an important asset. Maximum responders found video-based learning as the best tool (48.4%), though the availability of too much information was a major concern amongst the majority. Interestingly, cataract (48.1%) and retina/uvea (41.5%) were the most popular subspecialties for social media usage, probably because they are based on visual memory. Even though 52.3% agreed to be moderately addicted, 67.5% believed social media is a boon for learning, if used responsibly.

Conclusions: Social media has a multifaceted impact on ophthalmology. It empowers trainees during residency, revolutionising ways of learning, and inculcating a holistic development and approach to the field.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1-GF)

Bringing Innovation Into Focus: Solving Ophthalmic Challenges Through Hackathons

*First Author: Akshay **WAGH***
*Co-Author(s): Kunal **MANDLIK**, Rengaraj **VENKATESH***

Purpose: The purpose of this initiative was to harness the collaborative potential of hackathons to tackle routine challenges encountered in the field of ophthalmology by bringing together individuals with diverse backgrounds, including ophthalmologists and technical experts, within a concentrated 24-48-hour timeframe.

Methods: Prior to the hackathon, a collection of problem statements relevant to everyday ophthalmology practice was gathered. These problem statements served as the focal points for the hackathon participants. During the event, interdisciplinary teams, including ophthalmologists and technical experts, were formed. Each team was assigned a specific problem statement to address. To support the teams, technical assistance was readily accessible throughout the hackathon.

Results: To date, four ophthalmology hackathons have been organized, engaging in the exploration of over 200 problem statements. The collaborative efforts have successfully addressed and formulated solutions for more than 62 challenges. These endeavours have produced over 30 prototypes, with 10+ of them being recognized through publication in esteemed peer-reviewed journals. Additionally, this initiative has earned recognition, including two CII Innovation Contest Awards and Incubation Inductions.

Conclusions: The ophthalmology hackathon initiative stands as a valuable and promising strategy for addressing prevalent issues encountered in the field of ophthalmology. This approach cultivates novel ideas and solutions by uniting ophthalmologists with technical experts in a time-constrained collaborative environment. The successful creation and dissemination of 30+ prototypes resulting from 4 hackathons emphasize the positive impact of this approach on promoting innovation and addressing ophthalmic challenges.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Effect of Black Cumin Oil Supplementation in Improving Ocular Tissue Histology Damage in Ethambutol-Induced Mice: An Experimental Study

*First Author: Itzar **ISLAM***
*Co-Author(s): Batari **UMAR***

Purpose: This study aims to determine the protective effect of black cumin oil extract on the improvement of the histological structure of three layers of ocular tissue damage.

Methods: This study is an experimental study with a post-test only group design involving 30 albino mice aged 2-3 weeks with 50-60 gr weight. The treatment group was divided into 3 groups consisting of a group without any treatment (normal), a group that was only given an induction of 30mg/kgBB ethambutol for 60 days and a group that was given an induction of 30mg/kgBB ethambutol with 0.15ml/day black cumin oil extract for 60 days. All experimental animals were sacrificed and then identified based on a histopathological analysis of the fibrous, vasculose, and nervosa layers.

Results: The results showed that there was no significant difference in corneal thickness, iris and corpus ciliary length, choroidal thickness, and retinal tissue thickness between the control group and the treatment group that was given black cumin oil supplementation per oral ($p>0.05$). However, there was a significant difference in the comparison of optic nerve tissue thickness where the normal group showed 302.18 ± 26.80 µm, the induction group 201.85 ± 9.27 µm while the supplemented group was 232.18 ± 20.11 µm ($p<0.001$).

Conclusions: It can be concluded that the administration of black cumin oil shows potential as a protective and curative supplementation in preventing ethambutol-induced damage to the nerve layer of the eye but not the fibrous and vascular layers.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Farra Eye Model as a Surgical Simulator for Capsulorhexis Training: A Validation Study

*First Author: Hanifah **NURSANTI***
*Co-Author(s): Levina Chandra **KHOE**, Faraby **MARTHA**, Julie Dewi Barliana **WINARTO**, Syska **WIDYAWATI***

Purpose: Farra Eye Model was developed to provide an affordable education tool in cataract surgery training. This study aims to evaluate the face, content, and construct validity of the Farra Eye Model as a surgical simulator to train capsulorhexis, a crucial step in cataract surgery.

Methods: This is a validation study of a newly developed 3D-printed eye model, involving ophthalmology residents and consultants. Subjects were categorized into novice, intermediate, and expert groups based on their level of expertise. A validated questionnaire with a 5-point Likert scale response was used to assess the face and content validity. Construct validity was done by comparing capsulorhexis performance between the three groups. Performance parameters, including the score of capsulorhexis indices in ICO-OSCAR: Phaco assessment tool, number of forceps grabs, and duration of capsulorhexis, were assessed by two raters.

Results: A total of 33 subjects were recruited and distributed equally into the three groups. The overall face validity score was favorable (3.67 ± 0.67). However, intermediate surgeons considered capsule elasticity poor (2.73 ± 1.1). The content validity had a favorable score in the overall assessment (4.15 ± 0.58) and each assessment component. In the construct validity test, novice surgeons showed lower capsulorhexis performance than the intermediate and expert surgeons on all parameters ($p<0.001$), with good inter-rater reliability (ICC>0.7).

Conclusions: Despite the challenge of replicating human lens capsule elasticity, theFarra Eye Model demonstrated initial evidence supporting its use for capsulorhexis training. It has good face and content validity and the ability to differentiate novice surgeons from intermediate and expert surgeons.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

First Study: Frugal Innovative ROP (Retinopathy of Prematurity) Screening and Teaching Technique

*First Author: Prithvi **CHANDRAKANTH***

Purpose: To describe step-by-step making and teaching of two frugal do-it-yourself smartphone-based anterior and posterior imaging instruments for Retinopathy Of Prematurity (ROP) screening.

Methods: Prospective study - 4 vitreoretinal (VR) fellows were trained to make and screen ROP babies using 2 frugal smartphone-based do-it-yourself devices, ASPI (anterior segment photography with intraocular lens - made using chart paper and intraocular lens of 15dioptre placed with a double-sided tape and then by attaching it to the smartphone to modify it as a macro lens) and Trash To Treasure Retcam (made using recycled hand sanitizer bottle modified to house a 20d/28d condensing lens in the base and a smartphone

at the top) for anterior and Posterior segment imaging respectively; collectively costing approx. 800INR/10USD. They were then taken to screening visits over a period of one year to record, train, document, counsel & for teleophthalmic consultation.

Results: Four VR fellows examined 783 premature babies in 52 visits who were screened for ROP, with an average gestational age of 30.92 weeks and a mean birth weight of 1.350kg. Out of the 1566 eyes examined, 1324 eyes had vessels in Zone 2, with 30 eyes plus–AROP stages, treatment requiring babies (15 premature babies) were then referred to the base hospital for appropriate treatment (prp, injection anti VEGF) which regressed with no complications on follow up.

Conclusions: ASPI and Trash To Treasure Retcam are the two most frugal innovative do-it-yourself imaging instruments. It is the most cost-effective screening method for ROP described in literature & helps in the easy training of VR fellows/ophthalmologists for prompt diagnosis, treatment & referral to save ROP baby eyesight.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

High Concentrations of BAC and IL-6 Reduce Corneal Perception in Mice

*First Author: Yukako **TAKETANI***
*Co-Author(s): Makoto **AIHARA**, Takashi **MIYAI**, Takashi **ONO**, Tetsuya **TOYONO***

Purpose: Chronic pain in the anterior chamber of the eye is a complex and multifaceted issue. While benzalkonium chloride (BAC) is known to induce bullous keratopathy (BK) in mice by injecting it into anterior chambers, its effect on the corneal trigeminal nerve remains unexplored. Although IL-6 levels are elevated in BK patients, the exact cause of pain experienced by these patients is still not fully understood. This study aims to investigate the effects of BAC 0.1% and IL-6 1500pg/ml, on pain perception in mice and any accompanying corneal changes.

Methods: The right eyes of 8 weeks B6/C male mice were injected with BAC 0.1% injection or IL-6 1500pg/ml into anterior chambers. The vehicle (PBS) was injected into their left eye as a control. Two weeks later, an eye wiping test was performed to gauge the levels of ocular discomfort experienced by the subjects. The corneal thickness was measured by anterior segment OCT (CASIA, Tomey, Japan) before treatment and one week after treatment.

Results: Both the BAC and IL-6 injected eyes displayed significantly reduced eye wiping times compared to the control group, indicative of less pain (P=0.003 and 0.008 respectively; eye wiping test was 4.74±2.3 times in BAC group, 4±3.3 times in the IL-6 group, and 12.5±2.1 times in the control group). The BAC group's cornea showed significant edematous change compared to the IL-6 group and control group (P= 0.001 and P< 0.001, respectively).

Conclusions: Corneal perception is reduced after treatment with either BAC or IL-6. Unlike BAC, IL-6 reduces perception without inducing corneal edema.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Ophthalmology Residents' Perception of the Learning Environment: An Evaluation Using DREEM

*First Author: Muhammad **IRFAN***
*Co-Author(s): Muhammad Abrar **ISMAIL**, Asty Amalia **NURHADI**, Andi Alfian **ZAINUDDIN***

Purpose: The aim of this study was to analyze perceptions of the educational environment among ophthalmology residents at an ophthalmology specialist program at Hasanuddin University, Makassar, Indonesia, using the Dundee Ready Education Environment Measure (DREEM).

Methods: This was a cross-sectional study conducted at the Ophthalmology Specialist Program, Hasanuddin University. An online survey which included demographics and the DREEM questionnaire was administered to all the students, maintaining anonymity. The differences between variables were tested using parametric and non-parametric analyses.

Results: A total of 72 residents, mostly female (70.8%), were included in this study. The mean age of participants was 31.28±2.79 years old. Most of the participants were married (66.7%) and living with their family (70.8%). Almost all (95.8%) of them choose ophthalmology as their first preference in continuing their postgraduate medical education. Cronbach's alpha reliability coefficient for all the items in this study was 0.903, which indicates good internal consistency. The average overall DREEM score was 145,18±15,84 (72.59%). The 'Perception of teacher' (76.46%) domain showed a higher score, whereas the 'perception of atmosphere' (69.35%) was ranked the lowest. Question number 2 was a strong area (3.51), and question number 25 was an area that needed particular attention (1,69). There were differences in DREEM scores in the domain 'perception of teacher' among the five stages of the clinical year (P=0.01).

Conclusions: Overall, residents' perceptions about their learning environment were more positive than negative. However, there were several areas which could be improved to reach an excellent learning environment. Other evaluations using other tools specific to postgraduate learning environments may be

useful to get an accurate description of the residents' learning environment.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Ophthalmology Resident's Satisfaction Towards Cataract Surgical Learning, Mixed Study Research

*First Author: Syska **WIDYAWATI***
*Co-Author(s): Rio **RHENDY**, Rosa **SYAHRUZAD**, Jessica **ZARWAN**, Rasyad **KHALIFAH***

Purpose: This study explores ophthalmology residents' satisfaction with their cataract surgery learning experiences, particularly during the COVID-19 pandemic, through the combination of a questionnaire and focus group discussions (FGD). Ensuring learning effectiveness is critical in cataract surgery training for producing competent surgeons, even in adverse times.

Methods: A structured questionnaire was administered to residents assessing various aspects of their cataract surgery training, including the adequacy of didactic and wet lab sessions, hands-on surgical experience, mentorship, and confidence in performing cataract surgery. Additionally, FGD was conducted to delve deeper into their experiences, allowing for nuanced qualitative data collection.

Results: Residents (72%) express overall satisfaction with their cataract surgery training, mostly undergoing during the COVID-19 pandemic. There was a significant association between the number of surgeries performed by residents and their confidence in performing surgeries ($p < 0.05$). There was no significant association ($p = >0.05$) between the number of surgeries performed and residents' satisfaction towards the learning process. Factors affecting residents' satisfaction and confidence in cataract surgery include constructive feedback from supervisors, intraoperative presence of supervisors, number and variation of cases, and proper learning facilities and infrastructure.

Conclusions: Most residents give positive responses towards their learning process, even with the COVID-19 pandemic altering their learning experience. However, residents' cataract surgery skill, reflected by their confidence in performing said surgery, is affected by the number of surgeries performed, the role of supervisors, and learning facilities. A sufficient number of surgeries is still an important issue in achieving competence and strategies needed in certain challenges like the pandemic.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Revolutionising Surgical Training: Integrating GoPro Video Recording and Facebook Live Streaming As Catalysts for Novice Resident Skill Enhancement

*First Author: Megha **NAIR***
*Co-Author(s): Shivraj **TAGARE***

Purpose: To investigate the effectiveness of integrating GoPro video recording and Facebook Live into surgical training, with a focus on their potential for tele-mentoring and real-time guidance, in order to enhance skill development and mitigate procedural complications.

Methods: Recording daily surgeries of resident trainees using GoPro cameras and streaming them within a private Facebook group. This facilitates remote mentors to offer real-time guidance through comments on the live videos. Residents' experience was gathered through a survey-based questionnaire. This comprehensive approach creates a dynamic platform for surgical training and mentorship, effectively boosting learning outcomes and preventing complications.

Results: The findings reveal the positive impact of incorporating surgical videos, with all ophthalmologists (100%) acknowledging their contribution to improved learning and skills. A significant portion (80%) derived benefits from expert commentary during live surgeries. Additionally, 88.6% reported skill enhancement through live surgeries streamed on Facebook alongside commentary. In terms of complications, 65.7% attributed their prevention to expert comments on Facebook, while 34.3% found these comments less helpful. A notable 82.9% perceived Facebook Live as a tool for monitoring training progress.

Conclusions: This article highlights the value of integrating a modified GoPro HERO7 camera with Facebook Live to advance surgical training for new surgeons. The approach is not only cost-effective but also synergistic with existing training methods. The incorporation of live streaming and interactive communication within a Facebook group provides a platform for trainees to learn and refine surgical skills, ultimately positively impacting patient care, particularly in regions lacking access to expert surgeons.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1-GF)

Utilizing Neuro-Ophthalmology Outpatient Cases as a Pathway for Fostering Interprofessional Learning Among Residents in Teaching Hospitals

*First Author: Doni **WIDYANDANA***
*Co-Author(s): Hartono **HARTONO**, Indra **MAHAYANA***

Purpose: This study aims to examine the distribution of outpatient cases at the NO clinic and the extent of interprofessional involvement in their management within a teaching hospital setting.

Methods: Over a four-month period spanning from March to August 2023, a cohort of 38 patients was systematically selected from the NO outpatient clinic at Dr. Sardjito General Hospital in Yogyakarta, Indonesia. The selection criteria encompassed age, gender, disease diagnosis, and interprofessional management strategies. A quantitative descriptive approach was employed for data analysis.

Results: The total patient cohort numbered 38 individuals, with ages ranging from 17 to 62 years and an average age of 39 years. The gender distribution exhibited 52.63% males and 47.37% females. Diagnoses encompassed optic neuritis (47.37%), compressive optic neuropathy (15.78%), optic nerve atrophy (10.53%), AION (7.89%), NAION (7.89%), neuropathy optic due to stroke (7.89%), and toxic optic neuropathy (2.63%). The engagement in interprofessional management reached 78.95%, involving; neurologists/ neurosurgeons (44.74%), internists (34.21%), cardiologists (28.95%), otolaryngologists (23.64%), pulmonologists (13.16%), immunologists (15.79%), oncology surgeons (13.16%), and radiotherapists (2.63%).

Conclusions: Neuro-ophthalmology outpatient cases exhibit considerable potential as pedagogical instruments for nurturing interprofessional care competencies among ophthalmology residents. Particularly noteworthy is the elevated occurrence of optic neuritis cases, frequently necessitating collaborative efforts between neurologists and internists.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1-GF)

What Do Retina Fellows-in-Training Think About the Vitreoretinal Surgical Simulator: A Multicenter Survey

*First Author: Aditya **KELKAR***
*Co-Author(s): Chaitra **JAYADEV**, Sukanya **MONDAL**, Veerappan **SARAVANAN**, Ramandeep **SINGH***

Purpose: To profile vitreoretinal (VR) fellows-in-training from India exposed to the Eyesi surgical simulator, to identify potential barriers to voluntary use, and to enumerate the most preferred tools and tasks before incorporating them into a formal skill-transfer curriculum.

Methods: A questionnaire consisting of 22 questions was designed and circulated through an online portal (surveymonkey.com) to four different institutes in India that had a VR surgical fellowship program and used a functional Eyesi (Haag–Streit) simulator. All trainees who were exposed to the simulator were eligible to participate. The responses collected were private and anonymous.

Results: Of the 37 respondents, most (n = 25) considered surgical simulators to be the best training tool before operating on the human eye. A majority (n = 35) of participants spent less than 3 hours per week on the simulator and reasons for this underutilization were work-hour limitations (54.8%), lack of a structured training program (19.3%), or a dedicated supervisor (16.1%). The majority (n = 33) of participants responded that VR surgical skills acquired during simulator training were transferrable to the operating room, which was reflected by their response (n = 31) that simulator-based training should be made mandatory before operating room exposure.

Conclusions: This study gives an insight into the overall practice patterns and preferences in simulation training of surgical VR fellows-in-training across India. It indicates that the simulator is extremely helpful to fellows and if adopted, VR surgical simulators with organized, directed, and supervised sessions will considerably improve the surgical training experience.

Big Data, Artificial Intelligence and Telemedicine in Ophthalmology

Feb 24, 2024 (Sat)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Stratification of Risk Factors Using Artificial Intelligence (AI) in Predicting Outcomes of Deep Anterior Lamellar Keratoplasty (DALK) in Advanced Keratoconus

*First Author: Durgalaxmi **MODAK***
*Co-Author(s): Sharon **DSOUZA**, Gairik **KUNDU***

Purpose: To study demographic, imaging & ocular surface risk factors affecting outcomes of Deep anterior lamellar keratoplasty (DALK) in advanced keratoconus (KC).

Methods: A total of 250 eyes that underwent DALK with 5-year follow-up for advanced KC were clinically classified into favorable or unfavorable outcomes based on graft clarity, early suture loosening, vascularisation, and vision change. Factors including eye rubbing, allergy status, immunoglobulin E (IgE), vitamins D, and B12 were assessed. Pre-operative Pentacam HR (OculusOptikgeräte GmbH) data was exported. An artificial intelligence (AI) model was built to assess these factors predicting outcomes of DALK.

Results: The AI model classified 94.5% & 85% of cases as favorable or unfavorable, respectively, based on these risk factors. Systemic allergy, IgE, eye rubbing, and vitamin D had the highest information gain, followed by posterior corneal data from Pentacam HR. AI model achieved an AUC of 0.936.

Conclusions: This demonstrates the importance of preoperative risk stratification, which can affect surgical outcomes using AI. Thus, better control of these factors would enable better management & outcomes of DALK for advanced KC.

Cataract

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1–GF)

Antibiotic Prophylaxis for Cataract Surgery – Practice Patterns Amongst Indian Ophthalmologists

*First Author: Aditya **KELKAR***
*Co-Author(s): Shraddha **CHANDORKAR**, Jai **KELKAR**, Namrata **SHARMA**, Lalit **VERMA***

Purpose: To assess the current trends in the use of perioperative antibiotic prophylaxis, especially intracameral antibiotics (ICAB), for cataract surgery in India.

Methods: This was an e-survey using a previously validated questionnaire carried out by the All India Ophthalmological Society (AIOS) in August 2022. An E-mail invitation to complete an online 40-point survey was sent to all members of the AIOS using a digital E-mail service (Survey Monkey) and social media platforms.

Results: Out of 1804 total respondents, 58% (n=1022) reported using routine ICAB prophylaxis. Of those using ICAB, 89% (n=909) reported using it for all cases, while the rest used it for specific indications such as post PC rent (n=43), one-eyed patient (n=19) and high-risk cases (n=50). Commercially available moxifloxacin was by far the most common agent used for ICAB (n=686, 67%). Eighty respondents (8%) reported noticing occasional toxic reactions and nontoxic corneal edema (n=64, 6%) with ICAB. Surgeons with >10 years' experience, especially practicing in medical colleges, used fewer ICAB (OR=0.52, 95%CI=0.38 – 0.72, p<0,001) compared to younger surgeons (<5-year experience) in solo clinics. The commonest reason for non-adoption of IC antibiotics was "unconvinced of the need to use it in my setting" (n=296, 52% of those who answered this question).

Conclusions: IC antibiotic prophylaxis for cataract surgery has significantly increased in India from 40% in 2017 to 58% in 2022. Commercially available moxifloxacin was preferred by the majority of users. Intraocular inflammation may occur occasionally and needs safer formulations to avoid this.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1-GF)

Comparison Between Two-Hole-Assisted-Phaco-Chop and Stop-and-Chop Techniques for Nuclear Disassembly in Residents' Cataract Surgery

First Author: Rehan ***NAQAISH***
Co-Author(s): Hamzeh Mohammad ***ALRAWASHDEH***

Purpose: To evaluate the safety of the novel Two-Hole-Assisted-Chop technique as a transitional technique between Stop-and-Chop and Direct-Chop and to compare phacoemulsification parameters, including UST, volume of BSS, and total surgical time between Two-Hole-Assisted-Chop and Stop-and-Chop techniques.

Methods: One hundred and three patients (103 eyes) were involved in this study. The mean age of participants was 65.12 ± 8.85 years. Patients presented with cataracts aged 18 years and above and those with Nuclear sclerosis (NS)+2, NS+3, +4, cortical, and Posterior subcapsular cataracts were involved in the study. Patients with uveitis, glaucoma, traumatic cataract, small pupils, zonular weakness, lens subluxation, small palpebral fissures, NS+1, and posterior polar cataracts were excluded. Ultrasound time, total surgical time, and volume of balanced salt solution (BSS) delivered were recorded.

Results: Out of 103 phacoemulsification surgeries, 58 (56.3%) were done using the Stop-and-Chop technique, while the Two-Hole-Assisted-Chop technique was used in the rest. Comparing the two techniques in Ultrasound time, the independent sample t-test did not show significant differences ($p=0.723$). The Mann-Whitney U test did not show significant differences in the volume of BSS used ($p=0.102$) and the total surgery time ($p=0.517$). There was a significant positive correlation between the cataract grade and ultrasound time ($p<0.001$), BSS volume used ($p<0.001$), and surgery time ($p<0.001$).

Conclusions: Two-Hole-Assisted-Chop is a safe and efficient transitional technique between the Stop-and-Chop technique and Direct-Chop technique for nuclear disassembly in cataract surgery performed by resident surgeons. No notable difference in phacoemulsification parameters was observed, confirming Two-Hole-Assisted-Phaco-Chop's non-inferiority to Stop-and-Chop technique.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1-GF)

Comparison of Central Foveal Thickness (CFT), Best Corrected Visual Acuity (BCVA) and Cystoid Macular Edema (CME) After Uneventful Cataract Surgery Among Normal and Diabetic Patients Without Retinopathy Using SD OCT

First Author: Aakanksha ***RAGHUVANSHI***

Purpose: To find out and compare Central Foveal Thickness (CFT), best corrected visual acuity (BCVA) and cystoid macular edema (CME)after uneventful cataract surgery among normal and diabetic patients without retinopathy using SD OCT.

Methods: Patients were divided into 2 groups- group 1:Diabetic patients without retinopathy without macular changes and group 2: Non-diabetic patients without macular involvement. There were 60 patients (30 in each group) who completed a follow-up period of 3 months in which CFT, BCVA and CME after cataract surgery were compared from pre-op values in both groups.

Results: BCVA had a significant improvement after cataract surgery in both groups as expected, but when it was compared among post-op patients in both groups, it was found to be statistically insignificant. CFT showed a significant increment when compared to pre-op levels in both groups. Also, at the end of the follow-up period i.e. at 3 months, there was an insignificant decline in CFT in the diabetic group and a significant decline in the non-diabetic group. The incidence of CME in our study was 46.67% in diabetic and 16.67% in non-diabetic patients.

Conclusions: Diabetic patients are more prone to an increase in central foveal thickness post cataract surgery as compared to non-diabetic patients without hampering BCVA, which may be because changes in CFT were at the subclinical level, which did not affect BCVA. So OCT is a non-invasive tool to detect subclinical CME and may be used to prevent its progression to clinical CME.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1–GF)

Correlation of Angle Kappa on Visual Outcomes of EDOF IOLs

*First Author: Suzie **NEMMERS***
*Co-Author(s): Ahmed **ASSAF**, Elvioza **ELVIOZA**, Gabor Arthur **NEMETH**, George **NEMETH***

Purpose: To assess the effect of angle kappa on distance and intermediate vision after implantation of EDOF IQ.

Methods: Patients implanted with bilateral implantation of Vivity IOL, irrespective of angle kappa measurements, were included in this study. Eyes with regular corneal astigmatism of more than 1D, irregular corneas, comorbidities, intraoperative complications, or postoperative absolute spherical equivalent beyond 0.5D were excluded. Study parameters included UDVA & CDVA at 20 ft, UIVA & CIVA at 60 cm, postoperative angle kappa, postoperative total HOAs, coma, trefoil and spherical aberrations. Objective postoperative visual quality in the form of PSF and MTF were also assessed.

Results: Included in this study were 156 eyes (78 patients). Four patients were excluded due to postoperative spherical equivalent being more than 0.5D. The mean spherical equivalent was 0.34D (0.19). UDVA, and CDVA were 0.02 (0.09) and 0.01 (0.06), respectively. UIVA and DC-IVA at 60 cm were 0.05 (0.12) and 0.01 (0.05), respectively. The mean postoperative angle Kappa was significantly less than the preoperative value, P =0.04. Total mean postoperative HOAs, coma, trefoil, and spherical aberrations were 0.32 (0.30), 0.26 (0.29), 0.22 (0.20), and 0.04 (0.07), respectively. Postoperative mean MTF was 0.39 (0.32).

Conclusions: (1) Small angle Kappa-Alpha has no significance on the visual outcomes of EDOF IOLs (2) Preoperative-postoperative large angle Kappa values became less, small ones are variable. Preoperative angle Kappa is not a predictive factor for visual outcomes with EDOF Vivity IOLs (3) There was no correlation between angle Kappa and HOAs visual quality in the form of MTF and PSF.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1–GF)

Design and Validation of Endophthalmitis Infectivity Measurement Algorithm for Post-cataract Endophthalmitis

*First Author: Taraprasad **DAS***
*Co-Author(s): Akash **BELENJE**, Vivek **DAVE**, Joveeta **JOSEPH**, Jyotiranjan **SAHOO***

Purpose: Design and validate endophthalmitis infectivity measurement algorithm (EIMA) for post-cataract endophthalmitis.

Methods: EIMA was designed from retrospective data of quantified presenting inflammation score (IS, calculated from the status of the cornea, anterior chamber, iris, and vitreous) and letter score (LS, calculated from the letters read on a Snellen vision chart) of 1444 consecutive patients using CHAID (chi-squared automated interaction detection) model. It was validated with prospectively collected microbiology data from 175 consecutive patients. Moderate endophthalmitis (IS 12.5 and LS 7.5) were used to measure EIMA sensitivity, specificity, likelihood ratio (LR), and predictive values against culture-positive, culture-negative-polymerase chain reaction (PCR)-positive, and micro-positive (culture + PCR) events.

Results: In the prospectively collected data, culture-positive was 36.0% (n= 63/175), culture- negative-PCR positive was 22.8% (n= 40/175), and culture- negative-PCR negative was 41.2% (n=72/175). EIMA was positive in eyes with greater corneal edema, corneal abscess, anterior chamber hypopyon, and poor vision. The EIMA sensitivity, specificity, positive LR, and positive and negative predictive (PPV, NPV) values in culture-positive events were 82.5%, 81.9%, 4.57, 80.0%, and 84.28%, respectively; in culture-negative-PCR positive events, these were 60.0%, 81.9%, 3.31, 74.1%, and 78.66% respectively, and in micro-positive events, these were 73.8%, 81.9%, 4.08, 77.1%, and 68.60% respectively. False positivity was 18% (n= 13/72). EIMA incorrectly identified infectivity when presenting vision was >20/400 (LS >20), and there was none/trace hypopyon.

Conclusions: EIMA, built on presenting inflammation and letter score, could differentiate infective from non-infective post-cataract endophthalmitis clinically earlier than the microbiology reports three-quarters of the time.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1-GF)

Improvement in Quality of Sleep and Life After Phacoemulsification Surgery on Senile Cataract Patients

*First Author: Muhammad **SYAUQIE***

Purpose: Crystalline lens opacification in progressive cataracts reduces light transmission to the retina, which can cause disturbances of internal circadian rhythms such as the sleep-wake cycle. Impaired vision due to cataracts also significantly impacts the quality of life of patients with increased difficulty in carrying out daily activities. This study aims to see changes in the quality of sleep and life of cataract patients after undergoing cataract surgery using the phacoemulsification technique.

Methods: The study design is a quasi-experimental, one-group pretest-posttest design. The study sample consisted of 48 patients aged over 50 years who had been diagnosed with senile cataracts. Sleep and quality of life were measured with the PSQI and NEI-VFQ-25 questionnaires, respectively, before and one month after surgery.

Results: There was a significant reduction in the PSQI score and an increase in the NEI-VFQ-25 score postoperatively ($p=0.009$ and <0.001, respectively). Gender has more influence on sleep quality, whereas female cataract patients have worse sleep quality than men ($p=0.047$). However, decreased preoperative quality of life correlated significantly with decreased visual acuity ($p=0.005$).

Conclusions: Cataract surgery using the phacoemulsification technique has been proven effective in improving sleep quality and quality of life in senile cataract patients. Surgery can be performed earlier, especially in patients with subcapsular posterior cataract morphology.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1-GF)

Influence of Pupil Dilation on Ocular Parameters and Its Impact on Various Intraocular Lens Power Calculation Formulae

*First Author: Ankur **SHRIVASTAVA***
*Co-Author(s): Rakhi **KURUP***

Purpose: To assess the change in biometric parameters after pupil dilation and its impact on various intraocular lens power calculation formulae.

Methods: This prospective study was conducted at a tertiary care hospital in Central India. Parameters such as axial length (AL), keratometry (K), central corneal thickness (CCT), lens thickness (LT), white-to-white ratio (WTW), and anterior chamber depth (ACD) were measured before and after dilation. All measurements were performed using IOL Master 500, except for LT and CCT, which were measured using a USG A-scan. Intraocular lens (IOL) power was calculated using Barrett Universal II, Haigis, Hill-RBF, Holladay 2, Kane, and SRK/T formulae. Kane was used in two settings, one with and the other without LT, as a parameter for IOL power calculation. Changes in the biometric parameters and their impact on the above-mentioned formulae were measured before and after dilation.

Results: A total of 219 eyes of 219 patients with age-related cataracts were included. A statistically significant change was observed in the ACD ($t = -14.0$, $p<0.001$), WTW ($V = 2,189.5$, $p<0.001$), CCT ($V = 8,279.0$, $p=0.003$), and LT ($V = 23,060.5$, $p<0.001$) after dilation, and its impact was observed in the Haigis ($V = 1,653.5$, $p<0.001$), Hill-RBF ($V = 659.0$, $p<0.001$), and Kane formulas without considering LT ($V = 794.5$, $p=0.003$). The AL and K levels were not altered by pupil dilation.

Conclusions: Pupil dilation alters various ocular biometric parameters, and its impact was seen on IOL power calculation formulae, especially the newer generation ones. Hence, the biometric parameters of the two situations cannot be used interchangeably.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1-GF)

Injectable PEGDA-HAMA Hydrogel As In-Situ Curable Accommodating Intraocular Lens

*First Author: Shuo **JIA***

Purpose: To apply injectable PEGDA-HAMA hydrogel as an in-situ curable accommodating intraocular lens.

Methods: Mechanical characterization, ex-vivo testing, in-vitro evaluation, and in-vivo assessment were conducted.

Results: Herein, synthetically cross-linked poly (ethylene glycol) diacrylate (PEGDA)-hyaluronic acid methacryloyl (HAMA) (PEH) hydrogel is developed for application as an injectable, in-situ curable accommodating intraocular lens (A-IOL). PEH-A-IOL has high water content, and meets the targeted optical and mechanical properties of a natural lens. Ex-vivo assessment illustrated the surgical feasibility of in-situ capsular implantation of PEH-A-IOL via micro-capsularhexis. In-vitro evaluation indicated cytocompatibility of PEH hydrogel when coculturing, but inhibited cell proliferation, migration of HLE-B3 cells and suppressed adhesion, viability of RAW-264.7 cells when seeded on-top. In-vivo study using rabbit lensectomy models demonstrated the safety and function of PEH-A-IOL, without remarkable inflammation and posterior capsular opacification

(PCO) performance. Histology revealed that the globe and vital organs were not affected 1-month post-implantation.

Conclusions: Overall, PEH has great potential as biosafe and biofunctional A-IOL in treating cataract, enabling accommodation, and preventing surgery-related complications including local inflammation and PCO.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1–GF)

Innovative Custom-made AC-IOL for Aphakia – Case Study

*First Author: Omid **KERMANI***

Purpose: Anterior chamber lenses (AC-IOL) have lacked significant innovation since the 1980s, with the primary option being a rigid PMMA lens (Kelman Multiflex 2, Alcon Fort Worth, USA) implantable through a 5.0mm access. This report introduces a novel custom-made AC-IOL for addressing aphakia cases, offering improved options.

Methods: The foldable AC-IOL, made from hydrophilic acrylate by Morcher GmbH Germany (Design Kermani), features a total haptic diameter of 13.0mm and a 5.0mm spherical optic. Haptics are angled at 100 to facilitate aqueous humor flow. Iridectomy is unnecessary. Three cases are discussed: congenital cataract surgery-related aphakia, complicated cataract surgery-induced aphakia with inadequate capsular support, and aphakia due to late dislocated IOL-capsular-bag-complex removal. All surgeries were under topical anesthesia using a 2.5mm self-sealing perilimbal incision, Monarch B shooter, and Provisc dispersive Viscoelasticum (Alcon Fort Worth, USA). Post-surgery, prednisolone and gentamicin were administered for 7 days.

Results: Follow-ups at 1 day, 1 week, 3 months, and 12 months indicated stable or improved conditions. Case 1 had unchanged endothelial cell count (ECC). Cases 2 and 3 showed moderate ECC decline up to 6 months, stabilizing thereafter. All cases achieved 20/40 or a better best corrected visual acuity at 12 months. No inflammation was observed, and intraocular pressure remained within normal limits (<22mmHg) throughout.

Conclusions: The innovative custom AC-IOL offers a promising option for addressing aphakia cases. The procedure is straightforward, efficient, and safe. If needed, the AC-IOL can be replaced with a sulcus fixated IOL.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1–GF)

Outcomes of Cataract Surgery in Colobomatous Eyes – Safety, Outcomes and Role of Pupilloplasty

*First Author: Dr Isha **AGARWALLA***
*Co-Author(s): Mohit **GARG**, Ramesh **KUMAR AGARWALLA***

Purpose: The aim of this study was to report the outcome of cataract surgery in eyes with pre-existing coloboma by different surgical techniques, to evaluate the safety of each technique and to study the role of pupilloplasty.

Methods: A retrospective analysis of patients presenting between January 2021 and January 2023 who underwent cataract surgery in eyes with coexisting coloboma was done.

Results: Of 53,067 eyes operated between January 2021 and January 2023, 71 eyes with colobomatous cataract was operated. The prevalence of coloboma in eyes undergoing cataract surgery was 0.075%. The mean age of the patients was 56 (range 19 -88 years). Phacoemulsification (PE) was performed in 30 eyes (46.4%), small incision cataract surgery (SICS) was done in 41 eyes (41.1%). Incidence of intra-operative and post-operative complications was comparable between PE and SICS groups. BCVA improved from logMAR 1.71 ± 0.62 to 0.87 ± 0.61. Microcornea, types 1 and 2 coloboma, and intraoperative complications were associated with poor visual outcomes when linked with multi-variate analysis.

Conclusions: Good visual and functional outcomes were achieved with phacoemulsification in eyes with softer cataracts and corneal diameter >8 mm and with SICS in eyes with hard cataracts and corneal diameter of 6–8 mm. PE should be done as the primary procedure wherever possible by the corneal diameter and severity of nuclear sclerosis. Low functional outcomes were seen in eyes with smaller corneal diameter (< 6mm), type 1,2 coloboma. In few favorable cases, pupilloplasty was performed to ensure further stability of the implanted IOL.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1–GF)

PCO Ring – A Novel Device to Prevent Posterior Capsule Opacification and Enhance Toric IOL Stability

*First Author: Prabhakar **G V***

Purpose: To design and evaluate, a ring made up of hydrophobic material which has to be inserted after

IOL implantation, eliminates the gap between the optic and posterior capsule, thus eliminating posterior capsular opacity. This study is to evaluate the safety and efficacy of the same.

Methods: Fifty patients with bilateral grade 2 nuclear cataracts were included in the study. Both eyes' phacoemulsification was done 1 week apart by the same surgeon. One eye was implanted with PCO RING after IOL (hydrophobic) implantation and the other was implanted with the same IOL without PCO RING. At 3 years post-op, patients were evaluated for PCO. 30 eyes with toric IOL implantation with PCO RING compared with 30 eyes without PCO RING for rotational stability.

Results: At 3 years, 11 (22%) eyes without PCO RING developed PCO, whereas only 1 eye (0.5%) developed PCO in which PCO RING was implanted. The mean rotation of toric IOL at 3 m postoperatively was 2.85 ± 1.54° in eyes with PCO RING and 5.02 ± 1.06° in eyes without PCO RING. statistically significant in both studies.

Conclusions: Insertion of PCO ring along with IOL is effective in both controlling the PCO occurrence thus ensuring long-term visual quality and enhancing the rotational stability of TORIC IOL, enhancing refractive outcomes.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1-GF)

Patients' Characteristics on Influencing Cataract Referral Status

*First Author: Kah **AW***
*Co-Author(s): Ashraf **KHAN**, Sirindhra **SUEPIANTHAM***

Purpose: Patients with cataract experience various symptoms which reduces quality of life. The only available treatment is cataract surgery, the demand for which is increasing. This study aims to investigate the characteristics of patients who are referred for urgent versus routine cataract surgery.

Methods: A 3-month retrospective was performed on 120 patients undergoing cataract surgery. We gathered basic demographic information, including the Scottish Index of Multiple Deprivation (SIMD), number of symptoms (nVFQ), visual acuity (VA), the urgency of referral by an optometrist, and triage status by a doctor (urgent versus routine). Sub-group analysis of differences between routine versus urgent using a two-sample t-test or Chi-squared tests. Logistic regression was used to examine factors that are associated with increased odds of urgent presentation. Parameters found to be significant in univariate regression analyses were further investigated using multivariable regression analyses. A p-value of <0.05 was statistically significant.

Results: Sub-group analysis shows that nVFQ was associated with referral triage status by the doctor (p=0.01) and referral priority from the optician (p<0.0001). VA was not associated with referral status. Univariate logistic regression demonstrates that the nVFQ is associated with referral triage status by doctor (OR=1.70, CI=1.11-2.60, p=0.014) and referral priority from optician (OR=2.22, CI=1.44-3.41, p=0.0003). These associations remained significant when examined using multivariate logistic regression. ANOVA test showed a significant association between the SIMD quintile and nVFQ. (p=0.036).

Conclusions: Our study demonstrates an association between less socioeconomic deprivation and higher cataract symptom reporting. further research should explore the nuanced factors which contribute to the relationship between socioeconomic background and symptom reporting.

Feb 23, 2024 (Fri)
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Venue: Uluwatu 7 (BNDCC1-GF)

Retropupillary Iris Claw Lens Implantation as a Primary Procedure: A Prospective Study

*First Author: Ruchi **SAMUEL***

Purpose: Retropupillary iris claw lens implantation as a primary procedure: A prospective study of visual outcomes and complications following posterior chamber iris claw lens at the time of primary surgery.

Methods: A prospective study of 88 eyes in which primary implantation of posterior chamber iris claw lens was done in patients devoid of capsular support between the time period 2016 to 2019.

Results: A total of 88 eyes were studied, in which posterior chamber iris claw lenses were inserted during primary lens surgery in all eyes devoid of capsular support. Follow-up was done on the 1st and the 30th post-operative days. Pre-operatively, out of 88 eyes, a majority (50%) had BCVA with logMAR 0.77 and lower (Snellen V/A worse than 1/60). On the 1st post-operative day, the V/A was seen to have improved to logMAR 0.48 to 0.78 (6/18 to 6/36) in 33 (37.5%) eyes, whereas on the 30th post-operative day, visual acuity was found to be in this range in 41 (46.59%)eyes. Among the 88 eyes, 13 (14.77%) had ovalisation of the pupil temporarily. The most common complication was post-operative rise in IOP seen in 7 (8%) eyes, followed by hyphema in 2 (2.27%) eyes, and toxic anterior segment syndrome in 1 (1.13%) eye.

Conclusions: Retropupillary iris claw lens implantation as a primary procedure provided improvement in visual acuity with easily manageable and minimum vision-threatening complications. This technique is easy to master, generally safe, and effective as seen in short-term follow-up.

Feb 23, 2024 (Fri)
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Venue: Uluwatu 7 (BNDCC1–GF)

Rotational Stability, Visual Functional and Refractive Outcomes of Toric Intraocular Lens Implantation Following Phacoemulsification Without Ophthalmic Viscosurgical Devices – A Comparative Study

*First Author: Sandip **SARKAR***
*Co-Author(s): Narayan **BARDOLOI**, Amit **DEB***

Purpose: To evaluate the rotational stability, and visual and refractive outcomes of toric intraocular lens (IOL) implantation following phacoemulsification without ophthalmic viscosurgical devices (OVD).

Methods: A prospective, randomized, clinical interventional study. Patients with age-related cataract with corneal astigmatism from 1-3 D planned for phacoemulsification with toric IOL implantation were enrolled. One group underwent conventional OVD-assisted phacoemulsification, and another group underwent OVD-free phacoemulsification. Uncorrected visual acuity, residual astigmatism, IOL rotation, and endothelial cell density (ECD) were evaluated at 1 and 3 months postoperatively. IOP measurement was done 4 hours after the surgery and every visit.

Results: A total of 120 patients were enrolled in the study- the OVD group had 60 participants and the hydroimplantation group had 60 participants. The mean age in the OVD group was 61.1 + 7.84 years, and that in the hydroimplantation group was 63.72 + 7.51 years (p=0.661). All the patients had successful phacoemulsification with toric IOL implantation at the planned axis, and no complications were noted. There were no statistically significant differences in UCVA, BCVA, residual astigmatism, IOP, ECD at 1 month and 3 months postoperatively between the groups. The mean IOL rotation at 3 months postoperatively, in the OVD group was 3.42 + 2.09 degrees, and in the hydroimplantation group was 3.14+2.2 degrees; the difference was not statistically significant.

Conclusions: Phacoemulsification without OVD for toric IOL produces comparable results with the conventional OVD-assisted technique in terms of rotational stability, visual and refractive outcomes with advantage of reduced cost, less surgical time and no OVD related complications.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 7 (BNDCC1–GF)

Safety and Efficacy of Intraocular Lens Implantation on Inadequate Capsular Support Cases at a Tertiary Referral Center in Indonesia

*First Author: Gladys **KUSUMOWIDAGDO***

Purpose: Intraocular lens (IOL) placement in inadequate capsular support cases remains challenging to ophthalmologists. The most commonly used techniques are sulcus placement, pre-pupillary and retro-pupillary iris-claw, trans-scleral sutured fixation (TSF), and Yamane intra-scleral fixation. We aim to evaluate the safety and efficacy of IOL placement techniques in patients with inadequate capsular support at a tertiary referral center in Indonesia.

Methods: We performed a retrospective study from medical records of all patients with inadequate capsular support cases who underwent surgery from January 2018 – 2022 and were followed up for a minimum of three weeks until six months. Data obtained included uncorrected and best-corrected visual acuity (UCVA and BCVA) before and after surgery, surgery techniques, IOL position, and complications during the follow-up period.

Results: There were 385 cases with inadequate capsular support, mostly males (70.6%) with a median age of 59 years old (18.5-71.5). The most performed technique for IOL placement was pre-pupillary iris-claw (32.5%), sulcus (24.2%), retro-pupillary iris-claw (23.6%), TSF (13%), and Yamane (6.7%). ANOVA and Bonferroni post-hoc analysis revealed that there was no significant difference between UCVA and BCVA pre-operatively and post-operatively between techniques (p>0.05). Each technique had significant UCVA change after post-operative follow-up. IOL position was satisfactory on all techniques, with two cases requiring IOL repositioning. The most common three-week post-operative complication was surgical-induced astigmatism (SIA), especially on the iris-claw technique.

Conclusions: IOL placement techniques in inadequate capsular support in our study were relatively safe and efficacious in improving VA.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 7 (BNDCC1-GF)

Capsule Opacification Following Phacoemulsification on Cataract Patient: A Systematic Review

*First Author: Chandra **PRABASWARA***
*Co-Author(s): Senyum **INDRAKILA**, Yusuf Ari **MASHURI**, Stepvia **STEPVIA**, Indriaswari Kirana **SURI***

Purpose: We investigate the prevalence, incidence, and risk factors of capsule opacification in cataract patients after phacoemulsification.

Methods: A literature search was performed in PubMed, Scopus, and Epistemonikos databases to retrieve studies. Patients with capsule opacification following phacoemulsification were included in this study. Relevant studies meeting defined eligibility criteria were selected and reviewed systematically according to the PRISMA flowchart. Long-term incidences and risk factors of capsule opacification, which developed at least one year after phacoemulsification, were considered and discussed as clinical outcomes.

Results: There were 693 articles throughout 2013-2023 in all databases. Twenty-four articles were included for review after screening for duplication with inclusion and exclusion criteria. We discovered that hydrophobic IOLs are preferable than hydrophilic. The square-edged are better than the round-edged. The use of a 360-degree continuous enhanced square-edge posterior barrier with reference to IOL positioning and anterior capsulorhexis. Other surgical factors, such as capsulorhexis size, irrigated or aspirated capsule, sealed up or fixed IOL in the bag, and other issues are patient-related, such as the patient's age and the kind of ocular disease, all contributed to the development of capsule opacification. All analyses revealed unusually high levels of data heterogeneity, which may indicate that incidence varied significantly among the various populations under study. Patients who had uveitis diseases, used hydrophilic IOLs, and males were commonly reported.

Conclusions: After phacoemulsification for cataract patients, capsule opacification is a typical side effect. Futhermore, the materials and design used in IOLs, surgical technique, and a person's related condition should be modified to prevent or delay capsule opacification.

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Comparative Evaluation of Visual Acuity, Quality of Vision and Patient Satisfaction After Implantation of Extended Macular Intraocular Lens vs Monofocal Intraocular Lens in Cases of Age Related Macular Degeneration With Senile Cataract

*First Author: Akshaya **BALAJI***
*Co-Author(s): Shorya **AZAD**, Manpreet **KAUR**, Jeewan **TITIYAL***

Purpose: To compare the visual acuity, quality of vision and patient satisfaction after implantation of extended macular intraocular lens Vs standard monofocal intraocular lens in stable age-related macular degeneration patients with senile cataract.

Methods: Prospective comparative study of 20 eyes with stable age-related macular degeneration with central macular scar <1disc diameter undergoing phacoemulsification with implantation of extended macular vision IOL (Group I, n=10) vs standard monofocal intraocular lens (Group II, n=10). Primary outcomes measured were visual acuity, quality of vision (using aberrometry) and patient satisfaction (using NEI VFQ25 questionnaire). Secondary outcomes were the size of the scotoma and the occurrence of complications. Follow-up was done at postoperative 1 and 6 months.

Results: At 6 months, corrected and uncorrected visual acuity (near and distance) was comparable in both groups ($p>0.05$). Total higher order aberrations were significantly less in extended macular vision lens implanted cases (Group I- 0.186 ± 0.11µ, Group II-0.822 ± 1.13 µ; $p=0.015$). A significant reduction in the area of scotoma was observed in group I from the preop value of 86.978 ± 19.37 mm^2 to the postop 84.718 ± 19.33 mm^2 ($p=0.004$). Patient satisfaction was significantly better in Group I ($p<0.05$). No significant intraoperative or postoperative complications occurred.

Conclusions: Visual acuity in both groups was comparable. Visual quality and patient satisfaction were found to be better in patients implanted with extended macular vision intraocular lenses as compared with standard monofocal intraocular lenses.

Feb 24, 2024 (Sat)
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Venue: Uluwatu 7 (BNDCC1–GF)

Comparison of IOL Formulas Using a New Sum-of-Segments Axial Length Optical Biometer

*First Author: Tun Kuan **YEO***
*Co-Author(s): Stephen **STEWART**, John **WONG***

Purpose: The Argos is a new swept-source optical coherence tomography (OCT) biometer that utilizes sum-of-segments (SOS) axial length. This study aimed to compare biometric measurements of Argos and IOLMaster 700, and evaluate the accuracy of intraocular lens (IOL) formulas using the Argos in Asian eyes.

Methods: This was a prospective study of 171 eyes. Pre-operative measurements were performed with both biometers. All eyes were implanted with a SA60WF IOL. Manifest refraction was performed at 1 month post-surgery. Measurements between the two biometers were compared. A comparison of IOL formulas (Barrett Universal II, Barrett True Axial Length, EVO 2.0, Kane, Haigis, Hoffer Q, Holladay I and SRK/T) was performed after lens constant optimization.

Results: All parameters (axial length, keratometry, anterior chamber depth and white-to-white), apart from lens thickness, were statistically different between Argos and IOLMaster 700. Centroid difference of corneal astigmatism was low at 0.10D. The Barrett True Axial Length formula had the lowest standard deviation (0.362) and root mean square error (RMSE) (0.361), followed by the EVO 2.0 with a standard deviation of 0.376 and RMSE of 0.375. In short eyes, the Hoffer Q formula had the lowest RMSE followed by Holladay I and EVO 2.0. In long eyes, EVO 2.0 had the lowest RMSE followed by Kane and Barrett Universal II.

Conclusions: The Barrett True Axial Length and EVO 2.0 formulas performed the best overall. SOS axial length improved the accuracy of Hoffer Q and Holladay I in short eyes, while EVO 2.0, Kane and Barrett Universal II performed the best in long eyes.

Feb 24, 2024 (Sat)
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Venue: Uluwatu 7 (BNDCC1–GF)

Comparison of Time Efficiency Advantage Between Femtosecond Laser-Assisted Cataract Surgery and Conventional Phacoemulsification by Classification of Cases Based on Lens Density and Anterior Chamber Depth

*First Author: Takeshi **TESHIGAWARA***
*Co-Author(s): Miki **AKAISHI**, Akira **MEGURO**, Nobuhisa **MIZUKI**, Yuki **MIZUKI**, Masaki **TAKEUCHI***

Purpose: To compare the time efficiency advantage between femtosecond laser-assisted cataract surgery (FLACS) and conventional phacoemulsification (CP) by classification of cases based on lens density (LD) and anterior chamber depth (ACD).

Methods: Patients, 152 cases in FLACS and 159 cases in CP, were classified into two groups based on LD or ACD (threshold were Grade 3 with Emery-little classification and 2.4mm respectively). Patients were also classified into four groups based on the combination of LD and ACD with the same thresholds. Mean total operation time (TOT) and deviation of TOT were compared among groups to compare the time efficiency advantage between FLACS and CP. $P<0.05$ was considered statistically significant.

Results: Without classification of patients, there was no significant difference in mean TOT between FLACS and CP. In the dense cataract group, the mean TOT in FLACS was significantly shorter. However, in the mild cataract group, it was significantly shorter in CP. In the shallow ACD group, the mean TOT in FLACS was significantly shorter. However, in deep ACD group, it was significantly shorter in CP. In the dense cataract and shallow ACD combination group, mean TOT was most significantly reduced by FLACS. Regardless of LD and ACD, the deviation of total operation time in FLACS was significantly shorter.

Conclusions: Without the classification of patients, there were no time efficiency advantages in FLACS. However, classification based on LD or ACD indicated time efficiency advantages in FLACS. It was even more remarkable with dense cataract and shallow ACD combination. Regardless of LD and ACD, the predictability of total operation time in FLACS was significantly higher.

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Venue: Uluwatu 7 (BNDCC1-GF)

Financial Analysis of Femtosecond Laser-Assisted Cataract Surgery at the Largest Private Ophthalmology Practice in China

*First Author: Jing **WANG***
*Co-Author(s): Xin **GAO**, Liwei **MA**, Xiaocong L **MARSTON**, Zhaoli **TANG**, Jinsong **ZHANG***

Purpose: To assess the economic viability of femtosecond laser-assisted cataract surgery (FLACS), we assessed return-on-investment (ROI) and break-even timepoint to offset the investment in adopting FLACS in a private ophthalmology practice located in northeast China.

Methods: An economic analysis was conducted using real-world, retrospectively collected data over a 12-month period from a private eye clinic's perspective. A questionnaire was developed to collect data on cataract surgery type, surgery volume before and after FLACS adoption, fixed and variable costs, and revenues. ROI analysis was conducted using a previously developed Excel model. The incremental returns of FLACS and ROI were assessed based on an estimated procedure volume (total and FLACS-related) growth rate over a 5-year horizon.

Results: After FLACS adoption, annual surgery volume increased by 44 (642 vs. 598), with 36% of patients converted to FLACS. The annual growth rate of surgery volume and FLACS proportion were 8% and 10% respectively. Cumulative femtosecond laser device-related cost was ￥8,182,022 at year 5, consisting of device costs and surgery-related costs; and cumulative IOLs/AT-IOLs cost was ￥20,170,313. Cumulative surgery-related return was ￥12,992,943 at year 5, consisting of imaging fees mainly. Cumulative incremental returns were ￥4,810,921 and cumulative return-on-investment was ￥53,675,551. Overall, our results suggest that FLACS was profitable, with a positive net return being achieved in year 1.

Conclusions: FLACS resulted in a positive net return on investment in year 1. On the 5-year horizon, FLACS was economically viable.

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14:30 – 16:00
Venue: Uluwatu 7 (BNDCC1-GF)

Identification of the miRNA Biomarkers in Human Age-Related Cataracts by Meta-analysis and Bioinformatics Analysis

*First Author: Kaiyun **ZHANG***
*Co-Author(s): Li **CHEN**, Laiqiang **QU**, Hong **YAN***

Purpose: Age-related cataract (ARC) is one of the most prevalent ocular diseases worldwide. Although its pathogenesis has yet to be elucidated, emerging evidence suggested that microRNAs (miRNAs) have the potential to be biomarkers of ARC, whereas the miRNAs' expression was inconsistently reported across studies. Hence, this study aimed to identify the miRNAs' levels and potential roles in ARC through meta-analysis and bioinformatics analysis.

Methods: We conducted a meta-analysis following the PRISMA guideline. From inception to December 31, 2022, a literature search was conducted via three databases. The article quality was evaluated by the NOS. Next, six databases were utilized to predict the target of miRNAs identified by meta-analysis. We then analyzed the GO function and KEGG pathway enrichment information for targets through DAVID.

Results: From the initial search of 225 publications, 22 miRNAs from 37 papers were included in our meta-analysis. We identified eight differentially expressed miRNAs (DEmiRNAs) in ARC, including two up-regulated miRNAs (miR-124 and miR-125a) and six down-regulated miRNAs (miR-15a, miR-23b, miR-34a, miR-221, miR-222, and miR-378a). The confirmation of 972 targets for these miRNAs followed. The bioinformatics analysis uncovered their potential functions and pathways in numerous ARC-related aspects.

Conclusions: Our study identified eight DEmiRNAs (miR-15a, miR-23b, miR-34a, miR-124, miR-125a, miR-221, miR-222, and miR-378a) in ARC. Their unique bioinformatics results could serve as a foundation for future research on cataractogenesis. As a systematic evaluation, it is the first report to provide an initial view of the miRNA-biomarker map in ARC.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 7 (BNDCC1–GF)

Is Femtosecond Laser-Assisted Cataract Surgery Effective in Reducing IOL Tilt and Decentering?

*First Author: Hungwon **TCHAH***
*Co-Author(s): Ho Seok **CHUNG**, Jae Yong **KIM**, Kyung Min **KOH**, Hun **LEE***

Purpose: To evaluate the effect of femtosecond laser-assisted cataract surgery (FLACS) on IOL tilt and decentration compared to conventional cataract surgery.

Methods: A retrospective study was conducted on patients who underwent conventional cataract surgery or FLACS implanted with a hydrophobic one-piece monofocal IOL. IOL tilt and decentration (measured by SS-OCT, Casia2, and TOMEY), internal cylinder (measured by a wavefront aberration meter, OPD-Scan III, and NIDEK), visual acuity, spherical equivalence, and axial length were measured preoperatively, 1 month and 1 year after surgery. In addition, the correlation coefficient between each measured parameter and IOL tilt or decentration before and after cataract surgery was analyzed.

Results: A total of 110 eyes for the FLACS group and 78 eyes for the conventional cataract surgery group were enrolled. Mean IOL tilt and decentration were 4.37±1.47' in the FLACS group and 3.69±1.34' in the conventional surgery group (p=0.58), and 0.16±0.10mm in the FLACS group and 0.24±0.15mm in the conventional surgery group (p=0.02), respectively, at postoperative I year. FLACS group showed better IOL centration compared to the conventional cataract surgery group, and there was no difference in IOL tilt between the 2 groups. At short-term follow-up (postoperative 1 month), type of surgery (p=.004) and postoperative internal cylinder (p=.003) had significant correlation with decentration, and there was, also, better centration of IOL in the FLACS group (decentration, 0.23±0.10mm) compared to conventional surgery group (decentration, 0.32±0.15mm) (p=.002).

Conclusions: FLACS was effective in reducing the IOL decentration compared to conventional cataract surgery in the short-term follow-up (1 month after surgery) and long-term follow-up (1 year after surgery).

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 7 (BNDCC1–GF)

Laboratory Evaluation of Halos and Through-Focus Performance of Three Different Multifocal Intraocular Lenses

*First Author: Xiaomin **LIU***
*Co-Author(s): Yusen **HUANG***

Purpose: To compare the halo features and through-focus performance of three different multifocal intraocular lenses (MIOLs) that provide distance, intermediate, and near vision in a clinical trial.

Methods: A diffractive MIOL (AT LISA tri 839MP, Carl Zeiss Meditec, Jena, Germany), an extended depth-of-focus MIOL (TECNIS Symfony ZXR00, Abbott Laboratories, Abbott Park, IL), and a rotational asymmetric MIOL (SBL-3, Lenstec, Inc., Christ Church, Barbados) were assessed in a modified International Organization for Standardization eye model. The modulation transfer function (MTF) at the IOLs' foci was obtained using aperture sizes of 3.0 and 4.5 mm. Through-focus MTF curves were compared among all IOLs. Images of the slit pattern were used to assess halo formation and characteristics.

Results: AT LISA tri and Symfony showed symmetric halos. The halos of AT LISA tri were larger but weaker in distance and near foci, while the halos of Symfony were smaller and fainter in intermediate focus. The halos of SBL-3 were asymmetric and appeared as tangentially downward weaker halos. The optical performance of diffractive MIOLs gradually deteriorated as the aperture increased. The distance foci of AT LISA tri and SBL-3 were of similar superior optical quality, the intermediate focus of Symfony showed the best optical quality, and the near focus of SBL-3 outperformed the near foci of the remaining IOLs.

Conclusions: The differences in the design of the MIOLs translate to differences in optical performance at their foci, through-focus expressions, and halo features, which can provide further information to surgeons when selecting what IOL to implant.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 7 (BNDCC1–GF)

Longitudinal Changes of the Macular Structure After Pediatric Cataract Surgery

*First Author: Zhenzhen **LIU***
*Co-Author(s): Yizhi **LIU**, Yingshi **ZOU***

Purpose: To evaluate the longitudinal changes of the macular structure after pediatric cataract surgery.

Methods: Prospective case-series study. Pediatric cataract eyes which underwent lens removal and

primary intraocular lens implantation were included. Analysis of macular using a spectral-domain optical coherence tomography was performed. Measurements of affected (unilateral and bilateral) and contralateral eyes were compared at 1, 3, 6 and 12 months postoperatively.

Results: Three hundred and seventy-eight eyes of 226 children were included. The central macular thickness (CMT) increased logarithmically between 1 and 12 months postoperatively. The foveal ganglion cell (GCL), inner plexiform, inner nuclear (INL), and outer plexiform layers decreased in thickness exponentially until 3 months postoperatively. The parafoveal and perifoveal GCL, INL and outer retinal layer thicknesses increased from 6 months postoperatively. The thickness of CMT, parafoveal and perifoveal inner retinal layers were strongly correlated with visual acuity, with r = 0.58 (P < 0.0001), r = 0.54 (P < 0.0001) and r = 0.53 (P < 0.0001), respectively.

Conclusions: Early visual deprivation may influence macular development, especially parafoveal and perifoveal inner retinal layers. And early treatment of pediatric cataract can achieve better long-term visual outcomes.

Feb 24, 2024 (Sat)
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Venue: Uluwatu 7 (BNDCC1–GF)

Mix and Match Implantation of Pseudo-Nondiffracting Beam EDOF IOLs With Near Enhancement and Without Near Enhancement

*First Author: Hungwon **TCHAH***
*Co-Author(s): Ho Seok **CHUNG**, Jae Yong **KIM**, Kyung Min **KOH***

Purpose: To evaluate the clinical outcomes after mix-and-match cataract surgery using two different pseudo-nondiffracting beam (PNB) near-to-intermediate Extended Depth of Focus (EDOF) IOL.

Methods: PNB EDOF IOLs were designed to provide both EDOF from near to intermediate range and distance focus. A PNB EDOF IOL with near enhancement (Eden EDOF IOL, SAV Inc.) was implanted in one eye and a PNB EDOF IOL without near enhancement (Lucidis EDOF IOL, SAV Inc.) was implanted in the other eye, prospectively. Uncorrected distance visual acuity (UDVA), uncorrected intermediate visual acuity (UIVA), uncorrected near visual acuity (UNVA), corrected distance visual acuity (CDVA), defocus curve, contrast sensitivity, and satisfaction questionnaire were evaluated up to 3 months after surgery.

Results: Twenty-two patients were enrolled. Mean UCDA was 0.06±0.11 logMAR in Lucidis IOL-implanted eyes, 0.09±0.11 logMAR in Eden IOL-implanted eyes and 0.00±0.01 logMAR in both eyes. Mean UIVA was 0.08±0.08 logMAR in Lucidis IOL-implanted eyes, 0.12±0.13 logMAR in Eden IOL-implanted eyes, and 0.04±0.05 logMAR in both eyes. Mean UNVA was 0.45±0.22 logMAR in Lucidis IOL-implanted eyes, 0.25±0.20 logMAR in Eden IOL-implanted eyes, and 0.21±0.17 logMAR in both eyes. 75% of patients were satisfied, 25% was neutral and none of them was dissatisfied. 8 patients showed better satisfaction score over the time. Photic phenomenon was not severe.

Conclusions: Mix-and-match cataract surgery with two different PNB EDOF IOLs shows a good visual outcome for distance, intermediate, and near vision over 3 months. Most patients were satisfied with their visual quality, but it seemed that patients' visual quality more affected neuroadaptation.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 7 (BNDCC1–GF)

Novel Exploration of Ions and Fatty Acids in Hydrophilic Acrylic Intraocular Lens Calcification

*First Author: Xiaomin **LIU***

Purpose: To conduct a novel exploration and analysis of the ion and fatty acid levels of a medium in which calcified hydrophilic intraocular lenses (IOLs) are present.

Methods: Eleven patients (11 eyes) who had implantation of foldable hydrogel posterior IOLs were found to have opacification of the IOLs. In vivo and in vitro analyses included the evaluation of patients' clinical characteristics, microscopy, histological staining, energy dispersive X-ray spectroscopy (EDS), the ion level of the aqueous humor (AH) and preserving fluid (PF), and the fatty acid content of AH.

Results: Ten of 11 cases were female with unilateral opacification, and seven cases had both-eye cataract surgery, including 1 first eye and 6 second eyes with IOL opacification. Four types of similar serial numbers were counted. The analysis of AH showed that the concentrations of phosphorus and silicon were elevated but that of calcium decreased, and an increased level of silicon was detected in three random PFs. The palmitic (C16:0) and stearic (C18:0) fatty acids were higher than the others in the AH. The EDS confirmed that the IOL surface deposits were composed of calcium, phosphate, and a small amount of silicon.

Conclusions: More silicon and higher C16:0 and C18:0 were found in the AH of patients with IOL opacification. New ideas and avenues have been proposed in the study of IOL opacification.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 7 (BNDCC1-GF)

Refractive and Visual Outcomes Following the Use of the Rayner RayONE EMV Extended Depth of Focus Lens in Western Australia

*First Author: Lourens **VAN ZYL***

Purpose: To report refractive and binocular Visual outcomes following the use of the new Rayner RayONE EMV intraocular lenses in lens replacement and cataract patients.

Methods: A total of 240 eyes of 120 Patients underwent standard phaco-emulsification surgery with the binocular implantation of the Rayner RayONE EMV lens. For analysis, patients were divided into 3 groups; bilateral anisometropia of up to 1 diopter was induced in the non-dominant eye and those where anisometropia greater than 1 diopter was induced in the non-dominant eye. All patients were seen at 6-8 weeks for follow-up, Binocular UDVA, UIVA (66cm), and UNVA (40cm) were recorded and a manifest refraction was completed.

Results: At the 6-8 week follow-up, 37% of eyes were within +/- 0.25 of Target SEQ, 68% within +/- 0.5D, and 92% within +/- 1.0D. In the bilateral emmetropia group, UDVA for all patients was 6/4.8 or better, and UNVA ranged from N6 to N12. In the mini-monovision group, UDVA was 6/6 in 63% of patients and 6/9 or better in 100%. UNVA was N8 or better in 88% of patients. In the monovision group, UDVA was 6/6 or better in 88% of patients, and 100% were 6/9 or better. 75% had UNVA of N6 or better, and 100% N8 or better.

Conclusions: The use of the Rayner RayONE EMV intraocular lens provides excellent visual outcomes, but anisometropia in the non-dominant eye needs to be induced to provide consistent spectacle independence. No photopic phenomena were reported in any of the 3 groups.

Feb 24, 2024 (Sat)
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Venue: Uluwatu 7 (BNDCC1-GF)

Role of Nepafenac on Changes in Central Macular Thickness in Diabetic Eyes Undergoing Cataract Study- a Prospective Comparative Study

*First Author: Anoop **LINGARAJU***

Purpose: To evaluate the role of prophylactic topical non-steroidal anti-inflammatory drugs (NSAIDSNepafenac) eyedrops on the central macular thickness (CMT) and total macular volume (TMV) in diabetic eyes undergoing manual SICS.

Methods: The study was conducted in a tertiary care center from February 2021 to June 2022. It included 80 diabetic eyes undergoing manual SICS. Pre-operatively CMT and TMV were measured using optical coherence tomography (OCT) along with best corrected visual acuity (BCVA). Then, all eyes underwent manual SICS. Post-operatively divided into 2 groups. Both the groups received conventional topical antibiotic steroid eyedrops, Along with this, only Group A received topical Nepafenac eyedrops. Post-operatively CMT, TMV and BCVA were measured on post-operative day 7, 38 and 90. Statistical analysis done.

Results: Comparative assessment of change in BCVA, CMT and TMV amongst the two groups showed no significant difference statistically showing BCVA, CMT and TMV attained at all stages were comparable in amongst 2 groups. The P values of change in BCVA, CMT and TMV when compared amongst the two groups showed 0.410, 0.5691 and 0.7548 (p value <0.05 was taken as significant) suggesting no significant difference statistically amongst the two groups.

Conclusions: There is no role of topical NSAIDs given post cataract surgery for the prevention of pseudophakic CME. Change in BCVA and TMV is not affected by the topical NSAIDS when given in the post-operative period.

Feb 24, 2024 (Sat)
14:30 – 16:00
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Slit Lamp Imaging Versus Anterior Segment Imaging With Intraocular Lens (ASPI) for Diagnosis of Pseudoexfoliation

*First Author: Aiman **KHAN***
*Co-Author(s): Tasneem **NEEMUCHWALA***

Purpose: To compare anterior segment photography with an intraocular lens (ASPI) of 20D vs gold standard of slit lamp photography to diagnose pseudoexfoliation (Pxf) in patients undergoing cataract surgery.

Methods: Among 1352 patients attending the OPD of a tertiary eye care centre who were screened, 213 patients diagnosed with Pxf during slit lamp examination were selected. After informed consent, dilated and undilated images of the anterior segment were taken with ASPI and slit lamp photography by the same examiner. The images obtained were randomized and transferred to an Ipad and an independent examiner was asked to diagnose and grade the quality of each image.

Results: Image quality and diagnosis of Pxf were comparable between the two photographic devices and were statistically significant.

Conclusions: ASPI is non-inferior to the slit lamp imaging system for diagnosis of pseudoexfoliation and

can be used as a screening tool for pseudoexfoliation in screening camps and primary health care settings.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1-GF)

A Modified Surgical Technique to Reopen the Capsular Bag in Pediatric Aphakic Eyes

*First Author: Wan **CHEN***
*Co-Author(s): Hui **CHEN**, Weirong **CHEN**, Qiwei **WANG***

Purpose: To present a modified surgical technique to reopen the capsular bag in pediatric aphakia.

Methods: Consecutive bilateral aphakic cases which needed secondary intraocular lens (IOL) implantation from July 2021 to June 2022 were included. A simply modified surgical technique to reopen the capsular bag of the pediatric aphakia was explored. The diameter of the capsular proliferative membranous ring (PMR) and the position of IOL implantation were documented. Varied parameters of capsular opening during primary cataract removal and this secondary surgery were also analyzed.

Results: Forty-eight eyes of 48 patients (aged 57.5±20.1 months) were included with mean follow-ups of 8.1±3.0 months. With this surgical technique, the capsular bag of all cases was successfully reopened with in-the-bag (ITB) implantation in 43 eyes (89.6%). ITB implantation was accomplished in all eyes with an outer diameter of the PMR ≤ 5.5 mm, and 3 eyes (37.5%) in those with an outer diameter > 5.5 mm. A positive correlation between the primary and secondary anterior capsular opening diameter (ACOD) was observed (r=0.422, P=0.007), so as the primary and secondary posterior capsular opening diameter (PCOD) (r=0.619, P<0.001). The inner diameter of PMR was found positively correlated with the secondary PCOD (r=0.728, P<0.001), so as the outer diameter with the secondary ACOD (r=0.669, P<0.001).

Conclusions: This is a safe, effective surgical technique for pediatric secondary IOL implantation with the maximum preservation of the peripheral capsule. Aphakic eyes with an outer diameter of PMR ≤ 5.5 mm are preferred for secondary ITB implantation.

Feb 25, 2024 (Sun)
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Analysis of Intraoperative Oct of the Anterior Chamber of Rabbits' Eyes During Phacoemulsification With a New Method of Adaptive Infusion Control

*First Author: Bulat **AZNABAEV***
*Co-Author(s): Tagir **DIBAEV**, Timur **ISMAGILOV**, Timur **MUKHAMADEEV***

Purpose: Comparative evaluation of the AC (anterior chamber) fluctuations in rabbits with a new method of adaptive infusion control using iOCT (intraoperative OCT-tomography).

Methods: A new method of infusion control during phacoemulsification (PE) based on real-time assessment of aspiration and infusion flow rate has been developed and implemented on the Optimed Profi surgical system (Optimedservis, Russia). PE was performed on 10 chinchilla rabbits using the Optimed Profi system (n=5, main group) and the Centurion Vision System (n=5, control group). AC imaging was performed using the Rescan 700 iOCT system. The AC fluctuation was estimated as the difference between the depth of the AC before and after the postocclusion surge, which was modeled by aspiration line clamping. The depth of the AC was considered as the distance from the posterior surface of the cornea to the anterior lens capsule. The measurements were performed using the Image J program based on the scale of the iOCT machine software.

Results: The amplitude of AC depth in the main group was 0.131±0.031 mm, in the control group – 0.157±0.037 mm (p<0.05).

Conclusions: Analyzing the results, it is necessary to consider the strict experimental conditions, as well as the features of the eyes of rabbits – the smaller depth of the anterior chamber and the greater thickness of the anterior capsule of the lens compared with these parameters in humans. However, the results obtained using the new method demonstrated lower AC depth fluctuations, which, presumably, can provide better AC stability and increase the safety of PE in clinical conditions.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Aqueous Metabolonomics: Decoding Amino Acid Disparities in Pseudoexfoliation Syndrome

*First Author: Narayanan **BALAKRISHNAN***
*Co-Author(s): Nila **CHENTHIL***

Purpose: To compare the composition of aqueous humour in pseudoexfoliation and non-pseudoexfoliation patients undergoing cataract surgery.

Methods: Prospective case-control study wherein 44 patients with cataracts were divided into 2 groups (with and without XFS) that were age-matched by a single trained ophthalmologist and aqueous tap done during cataract surgery. Metabolites were isolated from AH using high-performance liquid chromatography and compared between the groups. We analysed cysteine, methionine, arginine and serine.

Results: Patients with pseudoexfoliation showed lower levels of 7 metabolic derivatives of S adenosyl methionine, arginine, and serine with p-value < 0.05. However, homocysteine levels were the most significant p<0.001.

Conclusions: Reduced levels of key amino acid metabolites in AH play a key role in the pathogenesis of XFS, which is linked to accelerated cataract formation and secondary open-angle glaucoma.

Feb 25, 2024 (Sun)
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Venue: Uluwatu 7 (BNDCC1–GF)

Can Epithelial Mapping Be a Surrogate Marker to Predict Cataract Surgery Outcomes?

*First Author: Amulya **PUNATI***
*Co-Author(s): Anushree **BHATKAL***

Purpose: To establish the use of epithelial imaging to assess the ocular surface health prior to cataract surgery and its effect on post-operative outcomes.

Methods: A total of 100 patients undergoing cataract surgery were recruited. Preoperative Refraction, cataract evaluation, I-trace, and epithelial imaging were done. 73 patients (Group1) had normal epithelium. 27 patients (Group 2) had irregular epithelium. The same tests were done at 1,3 and 6 months post cataract surgery. The subjective quality of vision (QOV) was assessed using VFQ-25 questionnaire.

Results: There was logMAR UCVA improvement in both groups (p<0.05). The Corneal RMS Coma and trefoil had improved (p < 0.001) in Group 1 and worsened in Group 2 (p < 0.001). Group1 had a regular epithelium and Group 2 had highly irregular epithelium post cataract surgery. VFQ-25 Score of Group 1 was <87 and Group 2 had >120. In Group 2, cylinder increased from +/-0.75DC preoperatively to +/-0.9DC postoperatively (p < 0.05).

Conclusions: Epithelial imaging can be a surrogate marker of ocular surface health before cataract surgery.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Can We Improve the Performance of Extended Depth of Focus IOLs?

*First Author: Naren **SHETTY***
*Co-Author(s): Abhijit **SINHA ROY***

Purpose: To determine if intermediate and near vision can be improved in pseudophakic eyes implanted with extended depth of focus IOLs and enhanced monofocal without compromising distant vision after inducing negative SA and cylindrical defocus.

Methods: A total of 80 eyes of 40 patients having undergone uncomplicated cataract surgery with AcrySof Vivity IOL (Alcon Laboratories, Inc) and Tecnis Eyhance IOL (Johnson & Johnson Vision) underwent subjective refraction by a single optometrist. In Study 1, after wavefront aberration measurement, the patient underwent visual acuity (VA) assessment for all distances with baseline spherical aberration (SA) on a visual adaptive optics simulator (VAO, Voptica Inc). SA was modulated in steps of -0.01 µm and VA was tested at different targets and defocus curves were plotted. In Study 2, these patients were induced with plus cylindrical defocus in steps of 0.25 D and vision was recorded at all distances. The optimal induced cylinder to obtain an improvement in near visual acuity was identified, and defocus curves were plotted.

Results: On inducing negative spherical aberration of -0.05 µm, near and intermediate vision improved in most eyes, with Vivity IOLs performing better than Eyhance IOLs which was statistically significant (p<0.05). An optimal cylinder of +1.5D and +1D was found to be ideal in the Vivity and Eyhance groups respectively. With induced cylindrical defocus, there was a significant improvement in intermediate & near vision (p<0.0001) in both groups without a drop in distant vision.

Conclusions: Inducing negative SA and cylindrical defocus may improve near and intermediate visual acuity in patients implanted with EDoF and enhanced monofocal IOLs.

Feb 25, 2024 (Sun)
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Venue: Uluwatu 7 (BNDCC1-GF)

Evaluation of Change in Contact of Intraocular Lens With Posterior Capsule With Respect to the Orientation of Haptics and After Implantation of a Capsular Tension Ring Using Spectral-Domain Intraoperative Optical Coherence Tomography

*First Author: Akash **JAIN***
*Co-Author(s): Naren **SHETTY***

Purpose: To study change in contact of IOL with the posterior capsule with respect to change in vertical versus horizontal orientation of haptics of the IOL, before and after implantation of CTR.

Methods: The study comprised of 2 arms, including patients who underwent routine clear corneal phacoemulsification procedure with implantation of an extended depth of focus intraocular lens performed by a single experienced surgeon. 50 eyes of 50 patients in arm 1 were imaged using Rescan 700 SD-OCT intraoperatively after implantation of IOL with haptics oriented horizontally and then vertically. 51 eyes of 51 patients in arm 2 were imaged before and after implantation with a CTR, post placement of IOL in the bag. The vertical height between the posterior surface of the lens capsule and the posterior surface of IOL was measured and compared.

Results: In arm 1, the vertical height between the posterior surface of the lens capsule and IOL reduced significantly when haptics were oriented vertically as compared to horizontally. In arm 2, a significant reduction in vertical height between the IOL and the capsule was found post-CTR implantation (p-value < 0.001) across all 3 sizes (11,12,13mm) of CTR used, which was highest with the CTR size 13 mm and lowest with CTR size 11 mm.

Conclusions: We found a greater contact between the posterior capsule and the IOL with the haptics of the IOL oriented vertically and also after implantation of CTR. An improved contact between the posterior capsule and the IOL could positively impact refractive stability and capsular biocompatibility.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1-GF)

FLACS V/S Phacoemulsification in a Developing Nation

*First Author: Saloni **GUPTA***
*Co-Author(s): Shailender **CHAUDHARY**, Tanvi **JOSHI***

Purpose: To compare corneal endothelial cell density (ECD) loss using a specular microscope following FLACS and conventional phacoemulsification (CPS) in grade III cataracts.

Methods: It was a prospective observational study done on 84 eyes (42 in each group) over 18 months. Patients between 40-80 years having ECD 2000-3000 cells/mm^2 and central corneal thickness (CCT) 520-540µ were included. The patients were followed up on postoperative day 1, day 7, day 30 & day 60 for ECD, CCT & uncorrected visual acuity (UCVA).

Results: The baseline parameters were comparable between both groups. We found a significant decrease in endothelial cell density (cells/mm^2) postoperatively on days 1,7,30 and 60 in the CPS group ($p<0.05$) as compared to the FLACS group. A statistically significant difference between FLACS and CPS groups was also noted in patients with preoperatively lower ECD (2000-2500 cells/mm²) ($p<0.05$) compared to patients with ECD (>2500 cells/mm²) on postoperative day 1 ($p=0.924$), day 7 ($p=0.75$), day 30 ($p=0.75$) and day 60 ($p=0.578$). The FLACS groups had a lesser decrease in ECD. UCVA ($p=0.012$) & CCT ($p=0.046$) also showed a significant improvement on day 1 in FLACS as compared to CPS. However, on the remaining follow-up visits, the values were comparable.

Conclusions: FLACS is one of the most debatable technological advancements in the field of cataract surgery owing to its high cost, especially in a developing nation. However, it comes into play in situations when implanting premium IOLs, with poor corneal endothelium or in high-grade cataracts.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1-GF)

Influence of Residual Astigmatism After Cataract Surgery on the Visual Quality of Patients With Different Designed Multifocal Intraocular Lens Implantation

*First Author: Meixin **LI***
*Co-Author(s): Dong **HAN**, Xiang **LI**, Kaili **TANG**, Jing **WANG**, Jingsong **ZHANG***

Purpose: To investigate the influence of residual astigmatism after cataract surgery on the visual quality of patients with differently designed multifocal intraocular lens (IOL) implantation.

Methods: Retrospective cohort study. Medical records were collected from 70 patients undergoing cataract surgery combined with trifocal (AcrySof IQ PanOptix, Alcon) IOL or bifocal (AcrySof IQ ReSTOR + 3.0D, Alcon) IOL implantation. According to postoperative residual astigmatism, they were divided into <0.75 D groups (36 trifocal and 24 bifocal IOL) and 0.75-1.50D groups (20 trifocal and 22 bifocal IOL). After 3 months, recording UDVA (5m), UIVA (60 cm), UNVA (40 cm), BCVA, defocus curve, the partial under the defocus

curve (AUC) above 0.3 logMAR at distance (+0.5~-0.5D), intermediate (-0.5D~-2.0D) and near (-2.0D~-3.0D) range (Sf, Sm, Sn), wavefront aberration and MTF.The independent sample t-test and the Mann Whitney U test were used for data analysis, P<0.05 was considered statistically significant.

Results: The subgroup analysis showed that when residual astigmatism was <0.75D, the UIVA and UNVA in the trifocal group were better than the bifocal group (P<0.05).When residual astigmatism was 0.75-1.5D, the UDVA, UIVA, UNVA in the trifocal group were better than the bifocal group (P<0.05). The defocus curve showed when residual astigmatism was <0.75D, the trifocal group were better at+1.0D,-1.5D,-2.0D, Sm and Sn than bifocal group (P<0.05). When residual astigmatism was 0.75-1.5D,the trifocal group were better at-1.00D,-1.5D,-2.0D,-3.0D,-3.5D,-4.0D and Sm than bifocal group (P<0.05).For each wave front aberration and MTF, two subgroups were not statistically significant.

Conclusions: The residual astigmatism affects the visual acuity and defocus curve of patients with different designed multifocal IOL implantation,so it should be planned during preoperative design.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Long-Term Visual Performance of the Extended Depth of Focus WELL Fusion® Optical System: MiniWELL® on the Dominant Eye and MiniWELL PROXA® on the Non-dominant Eye After Cataract Surgery

*First Author: Keshia Lourdes **DUYONGCO***
*Co-Author(s): Victor **CAPARAS**, Maria Isabela **DE GUIA**, Cristina **TAN***

Purpose: To evaluate the long-term visual outcomes of the extended depth of focus WELL Fusion® Optical System: MiniWELL intraocular lens (IOL) on the dominant eye and MiniWELL PROXA IOL on the non-dominant eye (SIFI, Italy).

Methods: Nineteen patients (38 eyes) who underwent phacoemulsification for cataract were implanted with WELL Fusion®. At 1 week, 1 month, and 3 months post-surgery, monocular/binocular uncorrected and distance-corrected visual acuity was tested at distance 4m (UDVA/CDVA), intermediate 63cm (UIVA/DCIVA), near 40cm (UNVA/DCNVA 40cm), and near 33cm (UNVA/DCNVA 33cm). Defocus, contrast sensitivity (CS), glare/haloes, light/spectacle independence, and quality of vision (QOV) were tested. Long-term data was collected up to a mean of 22 months post-surgery.

Results: Mean spherical refraction (±SD) was -0.18 (±0.35) diopters (D) at 3 months and -0.30D (±0.55) at 22 months. Mean binocular UDVA, UIVA, UNVA 40cm, UNVA 33cm were -0.16 (±0.09), 0.11 (±0.08), -0.07 (±0.04), and -0.11 (±0.09) logMAR at 3 months and -0.09 (±0.10), 0.18 (±0.08), 0.03 (±0.09), and -0.05 (±0.10) logMAR at 22 months. At 3 and 22 months, the binocular defocus curve showed a mean CDVA of at least 0.10 logMAR from +1.5D to −4.0D. Mean binocular glare size/intensity were 24/100 and 27/100 at 3 months and 18/100 and 18/100 at 22 months. Mean halo size/intensity were 19/100 and 21/100 at 3 months and 16/100 and 17/100 at 22 months. Mean far (1m) and near (40cm) binocular CS was 1.65 and 1.75 log CS at 3 and 22 months. Mean QOV were 82.4 and 89.8 at 3 and 22 months.

Conclusions: This study demonstrates the long-term stability of visual outcomes achieved with the WELL Fusion® Optical System. Currently, it is the only non-diffractive presbyopia-correcting platform that provides a clear range of vision up to 33cm without monovision. With good contrast sensitivity and low glare/haloes, over-all light/spectacle independence and quality of vision are very high.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Retinal Thickness Analysis in Uncomplicated Phacoemulsification in Different Age Groups

*First Author: Ferdian **RAMADHAN***
*Co-Author(s): Balgis **DESY***

Purpose: To compare and determine the effect of phacoemulsification on macular volume and thickness using spectral domain optical coherence tomography examinations in different age groups.

Methods: Forty-five of 45 subjects who underwent uncomplicated phacoemulsification were divided by age group and studied. All nine areas of the macula were examined by spectral domain optical coherence tomography preoperatively, 1 month and 2 months postoperatively. Effective phacoemulsification time and absolute phacoemulsification time were also recorded.

Results: There were statistically significant differences in macular thickness between preoperative and postoperative spectral domain optical coherence tomography examinations in nine areas (P<0.001). The changes in macular thickness are more visible in the age groups over 80 years and 70-80 years, compared to those aged 50-60 years (P<0.001). In the paracentral macular area, the thickness of three quadrants significantly increased (superior P=0.015; temporal P=0.001; and nasal P=0.023). The macular volume increased significantly after phacoemulsification (P<0.001). There was a significant correlation (P=0.011) was found between absolute phacoemulsification time and change in macular volume.

Conclusions: The effects of intraocular pressure fluctuations and phaco time are suspected to be

closely related to the change in macular thickness after cataract surgery. With increasing age, changes in macular thickness are more significant. this can be a parameter to be considered by the phacosurgeon in determining the visual prognosis.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1-GF)

Visual Outcome of Phacoemulsification Surgery With Intraocular Lens Implantation Among Patients With Pseudoexfoliation Syndrome

*First Author: Tikambari **ETTHIRAJAN***
*Co-Author(s): Fazliana **ISMAIL**, Mohammad Aziz **SALOWI***

Purpose: This study aimed to investigate the prevalence of pseudoexfoliation (PXF) syndrome among patients who have undergone phacoemulsification surgery, the percentage of intra-operative complications, the type of intra-operative complications, and postoperative visual outcome among the Malaysian population from the year 2007 till 2019.

Methods: This was a registry review of the Cataract Surgery Registry, involving all patients aged 50 and above who have undergone phacoemulsification surgery from January 2007 till December 2019 in the Malaysian Ministry of Health Government hospitals.

Results: The total number of patients included in the study was 299064, of which 1. 2% were with PXF syndrome, while the total number of eyes included after exclusion criteria was 245381, including 2476 eyes with PXF. The mean age of patients with PXF was 71.4 years (SD), which explained that the incidence of PXF was higher in the older age group. Surprisingly, the commonly associated intraoperative complication, the posterior capsular rupture, was found to show no significance when compared to the non-PXF group (p= 0.114). However, zonular dehiscence and vitreous loss in the PXF group were statistically significant compared to the non-PXF group. Postoperative best corrected vision was better than 6/12 in 76.2% of PXF eyes compared to the control group (81.0%).

Conclusions: Post-operative visual outcomes following phacoemulsification with IOL implantation among patients with PXF syndrome were poorer compared to those without PXF syndrome. Posterior capsular rupture was not statistically significant in PXF.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1-GF)

Visual Outcomes Following Implantation of a Novel Non-diffractive Wavefront-Linking Extended Depth of Focus Intraocular Lens

*First Author: Mun Wai **LEE***

Purpose: To evaluate the clinical outcomes following bilateral implantation of the Bi-Flex ELON intraocular lens (IOL) which utilises a series of central concentric refractive zones with varying curvatures to extend the depth of focus.

Methods: Prospective interventional case series of patients with bilateral significant cataracts undergoing cataract surgery and implantation of ELON. Dominant eyes were targeted at emmetropia and non-dominant eyes at -0.75D. Primary endpoints were binocular uncorrected distance (UDVA), intermediate (UIVA at 66cm) and near (UNVA at 40cm) acuities at 3 months. Secondary outcomes were best corrected distance (CDVA), distance corrected intermediate (DCIVA) and distance corrected near (DCNVA) acuities as well as refractive predictability, binocular defocus curve, contrast sensitivity, Patient Reported Spectacle Independence (PRSIQ), Dysphotopsia and VF-14 questionnaire scores.

Results: Eleven patients underwent uneventful phacoemulsification and the outcomes at 1 month are reported. The mean binocular logMAR UDVA, UIVA and UNVA were 0.09+0.09, 0.14+0.16 and 0.27+0.17 respectively. The mean binocular logMAR CDVA, DCIVA and DCNVA were 0.05+0.07, 0.20+0.19 and 0.25+0.14 respectively. The mean refractive spherical equivalent (MRSE) was -0.08+0.55 with all eyes within 1D of target refraction. None of the patients needed glasses for distant and intermediate vision and 2 patients required spectacles for reading some of the time. The mean VF-14 score was 94.8 and 2 patients were mildly bothered by dysphotopias.

Conclusions: Patients with bilateral implantation of the ELON IOL showed excellent binocular distant and intermediate vision with good near vision. There was very high spectacle independence and the majority of patients were not bothered by dysphotopias.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Visual Outcomes of a Novel Spherical Aberration-Based Extended Monofocal Intraocular Lens (EVOLUX) After Cataract Surgery

*First Author: Cristina **TAN***
*Co-Author(s): Victor **CAPARAS**, Maria Isabela **DE GUIA**, Keshia Lourdes **DUYONGCO***

Purpose: To evaluate the visual outcomes of a novel extended, non-diffractive, hydrophobic monofocal intraocular lens based on spherical aberration technology: EVOLUX (SIFI, Catania, Italy).

Methods: Twenty patients (40 eyes) who underwent phacoemulsification and bilateral implantation of EVOLUX (SIFI) were tested. At 2-8 days (T1), 30-45 days (T2), and 90-105 days (T3) after surgery, the following parameters for monocular and binocular visual acuity (VA) were measured: uncorrected VA for distance (UDVA), intermediate at 80cm (UIVA 80cm) and 63cm (UIVA 63cm), and near at 40 cm (UNVA 40cm); and best-corrected VA for distance (CDVA), intermediate (DCIVA 80cm and 63cm) and near (DCNVA 40cm). In addition, contrast sensitivity (CS) and photic phenomena (glare and haloes) were assessed.

Results: The mean spherical refraction (±SD) is -0.15 (±0.35) diopters. Mean (±SD) binocular UDVA, UIVA 80cm, UIVA 63cm, and UNVA 40cm are -0.20 (±0.07), 0.29 (±0.07), 0.23 (±0.08), and 0.19 (±0.10) logMAR respectively; while mean (±SD) binocular CDVA, DCIVA 80cm, DCIVA 63cm, and DCNVA 40cm are -0.26 (±0.04), 0.28 (±0.07), 0.22 (±0.07), and 0.20 (±0.07) logMAR respectively. Far (1m) and near (40cm) mean binocular CS are 1.63 (±0.08) and 1.67 (±0.13) logCS, respectively. Mean binocular halo size and intensity are 16/100 and 15/100. Mean binocular glare size and intensity are 14/100 and 16/100. Binocular defocus curve sustained 0.2 logMAR or better mean VA through +2.0 to -2.5D, respectively.

Conclusions: Bilateral intraocular implantation with the novel spherical aberration-based extended monofocal EVOLUX IOL (SIFI) provided excellent distance and intermediate vision in addition to high contrast sensitivity and low occurrence of photic phenomena.

Cornea, Dry Eyes, External Eye Diseases and Eye Banking

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Activation of α2B/2C Adrenergic Receptor Ameliorates Ocular Surface Inflammation Through Enhancing Regulatory T Cell Function

*First Author: Nai-wen **FAN***
*Co-Author(s): Yihe **CHEN**, Reza **DANA**, Katherine **HELD**, Shudan **WANG**, Man **YU***

Purpose: To investigate the therapeutic effect of a specific alpha 2 adrenergic receptor agonist on chronic dry eye disease (DED).

Methods: Chronic DED was induced in 6-8 week-old female C57BL/6 mice by placing them in environmental desiccating stress for 14 days. 100 µl of the α2B/2C agonist (AGN-762, 1mg/kg) was administrated 3 times a day by oral gavage from day 21 to 28. Clinical disease severity was evaluated by corneal fluorescein staining. The expression levels of IL-17A and IL-17F in conjunctiva and the frequencies of Foxp3+ regulatory T cells (Treg) in draining lymph nodes were analyzed. Treg isolated from DED mice were cultured in the presence of AGN-762 (1 µM) for 24 hours. The frequencies and functions of recovered Treg and the IL-10 levels in the supernatants were analyzed. AGN-762 pretreated DED-Treg along with DED-Teff were adoptively transferred to B6.Rag1-/- mice.

Results: AGN-762 ameliorated disease severity, and reduced IL-1β, IL-6, IL-17A, IL-17F, and IFN-γ cytokines in ocular surface tissues, corneal MHC-II+CD11b+ cells and lymphoid Th17 cells, and recovered function of Treg. In vitro culture of DED-derived effector T helper cells (Teff) with AGN-762 failed to suppress Th17 response, while the culture of DED-Treg with AGN-762 led to enhanced suppressive function of Treg and their IL-10 production. Adoptive transfer of AGN-762-pretreated DED-Treg in syngeneic B6.Rag1-/- mice effectively suppressed DED Teff-mediated disease and Th17 response, and the effect was abolished by the neutralization of IL-10.

Conclusions: α2B/2C adrenergic receptor agonist effectively ameliorates DED by enhancing IL-10 production from Treg and thus restoring their immunoregulatory function.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Allo-Primed Effector T Cells Promote Fibrosis in Corneal Transplantation Failure

*First Author: Shudan **WANG***

Purpose: To evaluate whether fibrosis contributes to corneal transplant failure and to determine whether effector CD4+ T cells, the key immune cell in corneal transplant rejection, play a direct role in fibrosis formation.

Methods: Allogeneic corneal transplantation was performed in BALB/c mice. Graft opacity was evaluated by slit-lamp biomicroscopy and fibrosis score was assessed by in vivo confocal microscopy every 2 weeks. Expression of α-smooth muscle actin (α-SMA) in both accepted and failed grafts was quantified by real-time PCR and immunohistochemistry. Frequencies of macrophages, neutrophils and CD4+ T cells were assessed using flow cytometry. MK/T-1 corneal fibroblasts were co-cultured with CD4+CD25- effector T cells and IFN-γ was neutralized. The expression of α-SMA in MK/T-1 cells was measured by real-time PCR and ELISA.

Results: The majority of failed grafts demonstrated clinical signs of fibrosis which became most evident at week 6 post corneal transplantation. Failed grafts showed high expression of α-SMA as compared to accepted grafts. Flow cytometry analysis showed that CD4+ T cells are the predominant graft-infiltrating immune cell at the time of fibrosis development. Co-culture of allo-primed CD4+CD25- effector T cells with corneal fibroblasts led to an increase in α-SMA expression by fibroblasts and neutralization of IFN-γ suppressed this increase.

Conclusions: Fibrosis contributes to graft opacity in corneal transplant failure and allo-primed effector CD4+ T cells directly contribute to fibrosis via IFN-γ.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Case Series Study of Intractable Corneal Epithelial Disorders After Micro Pulse Cyclophotocoagulation (MP-CPC)

*First Author: Miki **HARIYA***
*Co-Author(s): Makoto **AIHARA**, Kosei **BABAGUCHI**, Takashi **MIYAI**, Yukako **TAKETANI***

Purpose: To examine the effects on intractable corneal epithelial disorders following MP-CPC.

Methods: A retrospective chart review was conducted on patients with intractable corneal epithelial disorder (superficial punctate keratopathy lasting more than a month or persistent corneal epithelial defect) after MP-CPC treatment from January 1st, 2021, to February 28th, 2023. The time of onset, symptoms, treatments, and course were investigated.

Results: The corneal epithelial disorder was found in 7 eyes of 6 patients (76.4±7.1 years, male 5 eyes, female 2 eyes) among a total of 559 eyes of 369 patients treated with MP-CPC during the survey period. The mean glaucoma medication score at MP-CPC was 4.1 and the mean intraocular pressure was 28 mmHg. The mean time until the epitheliopathy occurred after MP-CPC was 18.0±14.5 days. Diffuse superficial keratopathy was observed in all 7 eyes, and corneal epithelial defect was observed in 2 eyes. Eye drops and ointment for dry eye (Sodium Hyaluronate, Diquafosol Sodium, Rebamipide and Ofloxacin) were started. An eye with persistent corneal epithelial defect required a therapeutic soft contact lens. Glaucoma eye drops were continued in 2 eyes, discontinued in an eye, and changed to preservative-free eye drops in 4 eyes. The corneal epithelial condition was improved in all 7 eyes. The average treatment period until the corneal condition was considered as sufficiently improved was 174.5±54.0 days.

Conclusions: The intractable corneal epithelial disorder might occur after MP-CPC. This case series indicates that careful monitoring is necessary after MP-CPC.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Clinical Profile and Outcomes of Central Microbial Keratitis in the Philippines

*First Author: George Michael **SOSUAN***
*Co-Author(s): Ruben **LIM BON SIONG**, Ma. Dominga **PADILLA***

Purpose: Despite being a preventable and treatable condition, cental microbial keratitis (CMK) and its complications remain to be a significant cause of vision loss in our country. This study aimed to present a more recent picture of the demographic profile and risk factors for central microbial keratitis in the Philippines, and to describe its practice patterns and outcomes.

Methods: The study was a two-center, prospective, non-randomized clinical study involving the patients of the External Disease and Cornea Clinics of two tertiary eye referral centers. Patients with a presumed clinical diagnosis of CMK by an external disease and cornea specialist were recruited into the study. All patients were followed up for 6 months.

Results: The study showed that bacterial keratitis was still the most common cause of CMK. Fungal microorganism, Aspergillus species in particular, was the most common microbial isolate. This might be due to the widespread use of prophylactic topical moxifloxacin after traumatic eye injury. Pseudomonas

species were the most common bacterial isolate. Trauma among the male population was the most significant risk factor for the development of CMK, followed by contact lens wear. Medical treatment was enough to treat the infection in 34.8%. Surgical intervention was necessitated in 22.6% with evisceration/enucleation done in 1 out of 3 patients.

Conclusions: Bacterial keratitis remains the most common cause of CMK. Trauma and contact lens usage were significant risk factors for the development of CMK. Despite early and aggressive medical treatment, a large number still required surgical intervention.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Clinical and Patient Reported Outcomes of AirOptix Bandage Contact Lenses on Post-cataract Surgery Patients Who Have Preoperative Mild-to-Moderate Dry Eye Disease

*First Author: Guangbin **ZHANG***
*Co-Author(s): Qingzhong **CHEN***

Purpose: To investigate the clinical outcomes of AIR OPTIX Night & Day Aqua bandage contact lenses (BCLs) wearing among Chinese patients with preoperative dry eye disease (DED) after cataract surgery.

Methods: A total of 100 subjects with preoperative mild-to-moderate DED who underwent cataract surgery were assigned to the control group (50 eyes) and BCLs group (50 eyes) according to whether BCLs were worn during 0 - 7 days after surgery. Noninvasive tear film breakup time (NIBUT), tear meniscus height (TMH), corneal fluorescein staining (CFS), Schirmer test, ocular surface disease index (OSDI), and best-corrected visual acuity were evaluated preoperatively, 1 week and 1 month after surgery.

Results: No significant difference in age, sexual, and all the dry eye indexes were found between groups (all $P > 0.05$). One week after surgery, the NIBUT and TMH were significantly higher in the BCLs group (5.37±1.18 vs 4.47±2.14, $P = 0.012$; 0.16±0.03 vs 0.18±0.03, $P = 0.010$), the CFS and OSDI of BCLs group were significantly lower than the control group (0.26±0.48 vs 0.52±0.57, $P = 0.017$; 15.29±3.92 vs 17.46±3.36, $P = 0.004$). One month after surgery, the NIBUT and TMH were significantly higher in the BCLs group (5.50±1.24 vs 4.66±1.01, $P < 0.001$; 0.16±0.02 vs 0.17±0.02, $P < 0.001$), the OSDI scores of BCLs group were significantly lower than the control group (15.08±3.19 vs 18.42±3.98, $P < 0.001$).

Conclusions: AIR OPTIX Night & Day Aqua BCLs wearing after cataract surgery could improve the tear film stability and alleviate subjective symptoms of dry eyes of patients with preoperative DED.

Feb 23, 2024 (Fri)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Comparing Bulbar Conjunctival Microvascular Features Between Sjogren and Non-sjogren Dry Eye Patients, Using Deep Learning-Based Stabilization Algorithm

*First Author: Jiyoung **LEE***
*Co-Author(s): Kyung Sun **NA**, Young Chae **YOON***

Purpose: To evaluate and explore the difference in the morphologic and hemodynamic features of bulbar conjunctival vessels in Sjogren's syndrome dry eye (SSDE) and non-Sjogren dry eye (NSDE) patients with similar symptom based on Ocular Surface Disease Index (OSDI) score, and the correlations with the meibomian gland dropout score (meiboscore).

Methods: A total of 51 dry eye patients, 17 with Sjogren and 34 without Sjogren, were recruited and underwent a complete ophthalmic examination for the initial baseline, including a custom-built optical imaging system for human bulbar conjunctiva and meiboscore using the LipiView® II, Ocular Surface Interferometer. Vascular variables, including the blood flow rate (BFR), blood flow velocity (BFV), vessel density (VD), and average diameter (D) in microvascular networks, were measured and analyzed using a deep learning-based stabilization algorithm. The correlations between microvascular parameters and the meiboscore were analyzed.

Results: The D of conjunctival microvessels in SSDE was 12.99±2.48μm, which was significantly higher than that in NNSE (9.43±3.98μm, $p<0.05$). And D was positively correlated with BFR in NSDE ($r=0.608$), whereas no significant correlation was shown in SSDE. Other parameters of conjunctival microvessels (BFR, BFV, and VD) were not significantly different between groups. BFR in NSDE was positively correlated with upper and lower meiboscore ($r=0.399$, $r=0.419$, respectively), which showed no significant correlation in SSDE.

Conclusions: This study identified conjunctival microvascular alterations in SSDE and NSDE with a similar symptom: the diameter of microvessels can be a key distinguishing SSDE and NSDE. Unlike NSDE, a mechanism other than MGD is thought to be involved with this alteration in SSDE.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Dry Eye Disease After Pars Plana Vitrectomy and/or Scleral Buckling in a Philippine Tertiary Government Hospital: A Pilot Study

*First Author: Patricia Abigail **LIM***
*Co-Author(s): Eleonore **IGUBAN***

Purpose: Dry eye disease (DED) may occur after retinal surgery. Studies are lacking regarding the etiology of DED, and its correlated characteristics were explored to characterize the effects of retina surgery on ocular surface dryness.

Methods: A single-center, prospective, non-randomized observational study investigated retinal surgery patients. All underwent screening (ocular surface disease index (OSDI) questionnaire; baseline dry eye and tear film tests) preoperatively, then at one week-, one month-, and three months postoperatively. DED diagnosis was based on an OSDI score of >13 AND: abnormal tear breakup time (TBUT) score; positive Schirmer test; fluorescein breakup pattern. T-test, one-way ANOVA, and Fisher test were used for categorical analyses. Continuous variables were assessed using Pearson's correlation.

Results: Eleven participants (12 eyes) enrolled. None were diagnosed with DED (highest OSDI score = 6.00). DED symptoms were more frequent in females, diabetics, and seniors. OSDI scores were nonsignificant between groups. TBUT and Schirmer tests were normal overall, but decreased postoperatively versus baseline, particularly among females, seniors, and after extensive peritomy. Vitrectomy, extended scleral depression, and extensive peritomy significantly decreased reflex and basal aqueous tear secretion postoperatively statistically, but not clinically. A random tear film break was the most common staining type postoperatively.

Conclusions: No correlation was established between DED and retinal surgery. Age, gender, and diabetic status influenced symptoms, which are more frequent in females, diabetics, and seniors. Older age, extensive peritomy, and extended scleral depression negatively, but insignificantly, affected tear quality. Postoperative DED may be evaporative etiologically.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Endophthalmitis After Keratoprosthesis - the Chinese People's Liberation Army General Hospital Experience

*First Author: Yu-qi **WANG***
*Co-Author(s): Yifei **HUANG**, Liqiang **WANG***

Purpose: To evaluate the long-term incidence, onset pattern, risk factors, treatment, and outcomes of endophthalmitis after Keratoprosthesis (KPro) and to explore potential alteration in microbiota in eyes receiving KPro.

Methods: A retrospective series review was performed of eyes with KPro at the Chinese PLA General Hospital from 2004 through 2022 with a mean 110.28±50.91 months follow-up. Those patients identified as having been treated for endophthalmitis were reviewed for demographic data, indication for KPro, clinical features, microbiological profile, treatment details, and outcomes. Swab samples from the inferior fornix of the conjunctiva were obtained from patients with KPro (n = 7) and fellow eyes (n = 3). Isolated bacterial DNA from swabs was analyzed with 16S rRNA gene amplicon sequencing.

Results: The incidence of endophthalmitis was 12.62% for Boston type I and 24.24% for MICOF. Visual impairment caused a decrease in the mean logMAR of 0.59 to 2.32. The onset time and visual impairment of endophthalmitis varied by keratoprosthesis type. Corneal melt was identified as a risk factor for severe visual impairment (OR, 6.241; 95% CI, 1.471-26.48). Treatment was statistically significant for improvement in visual acuity ($p<0.001$). Decreased microbiota abundance was observed in eyes with KPro ($p < 0.05$) which also showed a difference in microbiota composition compared with healthy eyes.

Conclusions: As a not-rare but devastating complication after KPro surgery, endophthalmitis causes severe damage to vision. Device type and other ocular diseases are associated with the development of endophthalmitis. Prophylactic antibiotics may be effective in targeting the altered ocular microbiota after KPro.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Immunization and Corneal Transplantation Rejection: What We Learned From COVID-19

*First Author: Natalie **ALLEN***
*Co-Author(s): Rachael **NIEDERER**, Jie **ZHANG***

Purpose: To provide a comprehensive narrative review on the perceived correlation between COVID-19

vaccination and corneal graft rejection, and to characterize risk factors, graft outcomes, and proposed immunological aetiology.

Methods: A narrative literature review was conducted in July 2023 using 4 electronic databases: PubMed, EMBASE, MEDLINE and Scopus. Articles were sourced using key words associated with COVID-19 vaccination and corneal graft. All articles were screened for relevance by abstract review.

Results: 152 articles were identified from the literature search. 36 papers were included in the analysis based on defined inclusion criteria. This consisted of systematic reviews (n=6), review articles (n=4), retrospective studies (n=3) and case reports (n= 23). The majority of reported graft rejections were in penetrating keratoplasties. Risk factors for COVID-19 vaccination-associated rejection were previous graft rejection episodes and repeat grafts. Most reported rejection episodes were mild and resolved with treatment. Several studies reported nil increase in corneal graft rejection episodes over the COVID-19 vaccination period. The complete pathophysiology is undetermined.

Conclusions: Corneal graft rejection appears to be a rare complication of COVID-19 vaccination, most frequently observed in high-risk grafts. The true extent of this correlation remains controversial. Patient counseling around symptom monitoring following vaccination and discussion around topical steroid prophylaxis may be prudent.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Journey of 113 Eyes With Modified Osteo-Odonto Keratoprosthesis (MOOKP) Over 19 Years at a Tertiary Eye Care Centre

*First Author: Shweta **AGARWAL***
*Co-Author(s): Geetha **IYER**, Bhaskar **SRINIVASAN***

Purpose: To report outcomes of MOOKP and interventions done to maintain vision in eyes with primary MOOKP over 19 years at a tertiary eye care centre.

Methods: Retrospective interventional case series of patients who underwent MOOKP from 2003-2022 at our tertiary eye care centre.

Results: A total of 113 eyes of 113 patients (Stevens Johnson syndrome (SJS)-71, chemical injury 38, CP-2, Others-2) underwent MOOKP with anatomical retention of 65.5% with the primary MOOKP over a mean follow-up of 101 +/- 59.26 months (1-211 months). 28/40 eyes where the lamina was removed underwent a re-keratoprosthesis with 16/28 (57%) retaining it till the last follow-up. 6/12 eyes where secondary keratoprosthesis was not retained underwent a third keratoprosthesis of which 6 were anatomically successful. In all 147 keratoprosthesis were done in 113 eyes with an anatomical retention of 63.6%. In addition, measures like Bone morphogenic protein (BMP) done in 17 eyes with laminar resorption helped increase the longevity of the keratoprosthesis by 24.4+/- 10.2 months. BCVA >20/200 was maintained in 50% of the eyes, irrespective of the keratoprosthesis till the last follow-up. The most common ocular complications were sterile vitritis in SJS (33.5% eyes) and glaucoma in chemical injuries (26.3%). Endophthalmitis occurred in 10 eyes.

Conclusions: Our long-term outcome of MOOKP is comparable to the other published series and with interventions like BMP and newer keratoprosthesis, functional and anatomical success can be maintained over a longer duration.

Feb 23, 2024 (Fri)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Ocular Manifestations and Outcomes in Children With Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis

*First Author: Yueh-ling **CHEN***
*Co-Author(s): Shin-yi **CHEN**, David **MA**, Li-yen **PAN**, Tsung-ying **TSAI**, Yueh-ju **TSAI***

Purpose: To compare the clinical features and visual outcomes in children and adults with Stevens-Johnson syndrome (SJS) and toxic epidermal necrolysis (TEN).

Methods: This retrospective study included 280 eyes of 140 patients (35 children and 105 adults) with SJS/TEN treated between 2010 and 2020. The primary outcome measures were the final best corrected visual acuity (BCVA) and severity of dry eye. The secondary outcome measure was medical and surgical therapies used.

Results: Among 64 eyes of children recruited in the study, acute ocular involvement was found in 58 eyes (90.6%). The chronic score in pediatric patients was significantly higher than that in adult patients ($p = 0.004$). The use of antibiotics/nonsteroidal anti-inflammatory drugs (NSAIDs) and Mycoplasma infection were the more common etiologies in children. Seventy-five percent of eyes in children maintained a visual acuity of 20/40 or better at a mean follow-up time of 4.3 years. The severity of dryness was comparable between the child and adult groups. The proportion of eyes undergoing amniotic membrane and oral mucosa transplantation was significantly higher in children than in adults in the chronic stage, reflecting that children exhibit much more severe complications.

Conclusions: Although pediatric SJS/TEN patients have more severe ocular complications than adults, most children maintain long-term good vision. Early

intervention and aggressive treatment help to preserve vision.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Ring Infiltrates and Their Outcomes in Pythium Keratitis

*First Author: Amanjot **KAUR***

Purpose: To describe ring infiltrates and their outcomes in patients with Pythium keratitis.

Methods: Seven patients with culture-proven Pythium keratitis from January 2019 to June 2022. Patients of Pythium keratitis who presented with or developed Ring Infiltrate, and patients with sufficient photographic evidence (>3) and follow-up of at least three months were included in this retrospective study. Demography, clinical profile, management, histopathology, and subsequent outcomes were studied in these seven cases. On presentation, all patients underwent smear examination and plating on culture media. Anti-pythium Therapy (APT) in our cases consisted of topical Linezolid (2%, hourly, till resolution of infection), topical Azithromycin ointment (1%, twice daily, till resolution of infection), and systemic Azithromycin (500 mg, twice daily for 2 weeks). APT was instituted if there was a high index of suspicion on smear examination and was continued if the culture plates revealed zoospore formation. In cases of global instability, surgical intervention was performed. Surgical intervention was either the application of a tissue adhesive or Therapeutic Keratoplasty.

Results: The mean age of the patients was 49±15.59 years, with a mean duration of symptoms of 11.71±3.84 days. Ring Infiltrate was usually identified around 2 weeks after the development of symptoms (13.28±4.89 days). All patients (100%) needed surgical intervention for globe stabilization within 18.85±17.50 days of presentation.

Conclusions: Ring Infiltrate is a prominent clinical sign of pythium keratitis and is followed by corneal perforation despite the maximum medical therapy. Therefore, patients with Pythium keratitis who develop Ring Infiltrate should be monitored closely.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Structural and Functional Correlation of Meibomian Gland Dysfunction in South Indian Population

*First Author: Vaishnavi R **IYYAPPAN***
*Co-Author(s): Jai Mercy **MERCY***

Purpose: Meibomian gland dysfunction (MGD) is an underdiagnosed condition. It is one of the common etiologies for redness and discomfort associated with dry eye disease. The aim of the study is to retrospectively analyze the structure and function correlation by comparing the dry eye indices with Lipiscan results.

Methods: A total of 186 patients with dry eye disease who came to the outpatient department were taken to compare their dry eye indices and Lipiscan results based on the declaration of Helinski. All patients underwent detailed slit lamp examination with Tear break up time testing (TBUT), Schirmer's test and meibography.

Results: Compared to Schirmer's, TBUT showed 100% specificity. The average sensitivity for TBUT compared to Schirmer's was 69.5. For Lipiscan, the average sensitivity compared to TBUT was near 100%

Conclusions: Lipiscan has been a good screening and diagnostic tool to identify Meibomian gland dysfunction (MGD)at an early stage and structural abnormalities precede the functional loss. Meibomian gland imaging has a better sensitivity to diagnose dry eye disease at an early stage.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Study on Assessment of Dry Eye Disease Amongst Health Professionals

*First Author: Atul **KAMATH***
*Co-Author(s): Anupama **BAPPAL**, Vidya **HEGDE**, Rashmi **JAIN**, Haji **PATEL***

Purpose: Dry eye is a disorder of the tear film which occurs due to tear deficiency or excessive tear evaporation. Medical students are spending more time staring at the screen for studying and for research work. Hence this study is planned to assess the magnitude of dry eye syndrome in this population.

Methods: The health professionals, selected underwent an ophthalmic evaluation & administered the study questionnaire. This questionnaire evaluates the frequency & intensity with which the symptoms are perceived with the visual display terminal. This generated a severity score for each symptom & a final

score was obtained. A score of 6 or more was defined as having dry eye syndrome.

Results: A total of 501 participants enrolled in the study. The mean age of participants was 23 years. Headache was the most common symptom, followed by burning of the eyes & tearing. The average usage of digital gadgets is 3-5 hours. Among the participants, 121 have taken the consultation for the ocular symptoms & only (7.8%) were aware of digital eye strain syndrome.

Conclusions: Dry eye disease is no longer restricted to the traditional population like IT professionals. With the pandemic effect, a drastic shift of the educational media from the classroom to the digital platform has increased the use of mobile, laptops or other digital pads for learning. This increased dependency on digital devices has led to an increase in symptoms associated with dry eye disease. This has increased the risk for health care professionals as well as the exposure to longer screen time, which is showing up in health issues.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

The Impact of Reduced Daily Step Counts Due to the COVID-19 Pandemic on Dry Eye Disease: A Crowdsourced Cross-sectional Study

First Author: Ken ***NAGINO***
Co-Author(s): Atsuko ***EGUCHI****, Takenori* ***INOMATA****, Akie* ***MIDORIKAWA-INOMATA****, Shintaro* ***NAKAO****, Alan* ***YEE***

Purpose: To evaluate the relationship between changes in daily step counts due to the COVID-19 pandemic and dry eye disease.

Methods: This crowdsourced, retrospective, cross-sectional study included Japanese users of the DryEyeRhythm smartphone application. May 31, 2017, to April 30, 2019, was defined as the pre-COVID-19 period, and May 1, 2020, to April 30, 2022, was defined as the during-COVID-19 period. Participant characteristics, lifestyle habits, including daily step counts, dry eye symptoms (based on the Japanese version of the Ocular Surface Disease Index [J-OSDI]), and maximum blink interval were compared between periods. The J-OSDI total score ≥ 13 and maximum blink interval ≤ 12.4 seconds were defined as app-based dry eye.

Results: The 367 individuals in the pre-COVID-19 period ([mean ± standard deviation] age: 38.2 ± 14.2 years, 50.7% [186/367] female) and 299 individuals in the during-COVID-19 period (mean age: 42.3 ± 16.1 years, 60.5% [181/299] female) were included. During the COVID-19 period, daily steps were significantly decreased (steps/day: pre-COVID-19, 6327.9 ± 8040.6; during-COVID-19, 3975.6 ± 3817.5, P < 0.001). J-OSDI total scores (pre-COVID-19, 22.7 ± 17.9; during-COVID-19, 28.1 ± 18.1, P < 0.001) and app-based dry eye (pre-COVID-19, 47.1% [173/367]; during-COVID-19, 59.9% [179/299], P < 0.001) were significantly increased compared to the pre-COVID-19 period. Adjusted logistic regression showed that during-COVID-19 period, ≤ 4000 daily steps were significantly associated with a decrease in app-based dry eye (odds ratio: 0.603, 95% confidence interval: 0.368–0.987).

Conclusions: Reduced daily steps due to the COVID-19 pandemic may be associated with increased dry eye disease.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

The True Costs of Keratoconus: an Economic Impact Study

First Author: Lize ***ANGELO***
Co-Author(s): Akilesh ***GOKUL****, Charles* ***MCGHEE****, Isaac* ***SAMUELS****, Mo* ***ZIAEI***

Purpose: To assess direct and indirect expenditure of keratoconus subjects, to estimate the lifetime per capita cost and the total cost of keratoconus per year.

Methods: A prospective cross-sectional study where keratoconus subjects were recruited from public and private clinics in Auckland, New Zealand, to complete an anonymous questionnaire. A keratoconus health expenditure questionnaire, previously validated in Australia, was used to assess direct and indirect expenditures for keratoconus subjects. Estimated lifetime per capita costs and total direct and indirect costs associated with keratoconus were calculated.

Results: Responses from 110 subjects were recorded. Most subjects (55.5%) were between the ages of 21 and 30, 59.1% were male, and Pacific People were over-represented. Visual rehabilitation was limited with 74.5% of subjects never having worn contact lenses, and 32.7% of subjects owned spectacles that were purchased over 24 months prior. Few subjects (26.5%) had subsidized care, including a contact lens subsidy and, or private health insurance with optical benefits. Total direct and indirect costs are estimated to be NZD 30.9 million per year with an estimated lifetime per capita cost of NZD 79,254.

Conclusions: Subjects with keratoconus experience significant direct and indirect costs with limited subsidization from the government and private health insurance. The significant out-of-pocket costs required for the management of keratoconus, are likely a significant barrier to accessing appropriate visual rehabilitation in the New Zealand population.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Therapeutic Efficacy and Safety of Intense Pulsed Light for Treatment of Meibomian Gland Dysfunction in Glaucoma Patients: A Randomized, Double-Masked Controlled Trial

*First Author: Simaporn **SETTHAWONG***
*Co-Author(s): Sathiya **KENGPUNPANICH**, Panotsom **NGOWYUTAGON**, Sakaorat **PETCHYIM**, Pinnita **TANTHUVANIT***

Purpose: To evaluate the efficacy of intense pulse light (IPL) for treating Meibomian gland dysfunction (MGD) in medically treated glaucoma patients.

Methods: This pilot prospective randomized double-masked controlled trial included 32 eyes of 32 patients diagnosed with moderate to severe MGD receiving an antiglaucoma medication. The patients were randomly assigned to either the IPL or sham procedure group. Each eye underwent a three-week interval of four treatment sessions. The ocular surface symptom questionnaire (OSSQ) and clinical assessments including meibomian gland quality, expressibility, morphology score, grading score, meibography, corneal staining, and tear break up time (TBUT) were evaluated before treatment and at the 3rd and 6th-week after the last treatment. Tear osmolarity and Schrimer's I test were performed at the initial visit and 6th week after the last treatment.

Results: IPL group exhibited reductions in redness and swelling of the upper lid, with improvements of 25.0% observed at 3 weeks and 43.8% at 6 weeks after the last session, which were significantly higher than those in the sham group (p=0.024, p=0.028). At 3 weeks after the last session, the IPL group demonstrated a significant enhancement in the meibomian gland expressibility score of the upper lid compared to the sham group (p=0.012). Additionally, symptoms score improved in both groups, but the improvement was significant in the sham group at 3 weeks (p=0.033), and 6 weeks (p=0.034) after the last session.

Conclusions: IPL therapy appears to be a safe and effective option for treating MGD in glaucoma patients, offering notable improvements in both symptoms and clinical signs.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2-GF)

17-Year Outcome of Osteo-Odonto Keratoprosthesis in Hong Kong: A Retrospective Study

*First Author: Julia Y.Y. **CHAN***
*Co-Author(s): Vanissa **CHOW**, Nai Man **LAM**, Alvin **YOUNG***

Purpose: Osteo-odonto keratoprosthesis (OOKP) is the synthetic corneal replacement in the treatment of patients with severe corneal injury not treatable with an allogenic corneal graft alone. The retrospective study aims to determine the prosthesis retention rate and visual outcome of all the OOKP cases in Hong Kong, all performed in 2006-2007.

Methods: Eleven patients who had OOKP performed in Hong Kong were included in the study. Demographics, preoperative visual acuity, early and late postoperative complications, visual acuities at 1 year and at the latest follow-up, and retention rate were analysed. Survival analysis was performed. The primary outcome was retention rate and visual acuity at 5 years, and the secondary outcome was those at the latest follow-up of 17 years.

Results: The retention rate and visual acuity of 20/60 or better at 5 years is 100% and 70% respectively. At 17 years, the results drop to 90% and 29% respectively. Results demonstrate a higher retention rate in our cohort compared with international figures, while the percentage of patients achieving visual acuity of 20/60 is worse than that quoted internationally.

Conclusions: This is the first published data on the long-term OOKP retention rate and visual acuity in Hong Kong. OOKP remains a safe surgical option for patients not amiable to simple allogenic corneal transplantation.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2-GF)

A Community-Based Approach to Addressing Inequity in Access to Post-Crosslinking Care and Visual Rehabilitation for Patients with Keratoconus in Auckland - One Year Results

*First Author: Akilesh **GOKUL***
*Co-Author(s): Simone **FREUNDLICH***

Purpose: To determine if ophthalmic care following corneal crosslinking (CXL), to monitor treatment efficacy and provide visual correction, can be provided more equitably in a community optometry setting with ophthalmologist oversight for patients with keratoconus in Auckland, NZ.

Methods: Standard post-CXL model; first specialist assessment, CXL procedure, 1-month follow-up, 3-month follow-up including referral to separate service for visual correction. Community clinic, patients that reside <10Km from the optometry practice transferred to a clinic; 3-month follow-up (including assessment of visual needs and correction). Data compared between services; age, gender, ethnicity, proportion of appointments attended, type of visula correction, worse-eye; habitual VA (WHVA) and best-potential VA (WBPVA) at 3-12-month follow-up.

Results: Demographics were similar standard (n=69) and community (n=27); age, 24.4±7.2years and 24.4±5.9years, ethnicity, Pacific Peoples (47%|56%), Māori (16%|19%), European (20.7%|11%), Asian (15%|15%), gender, female (38%|52%). Attendance was significantly higher in the community clinic (81%|60%)(p<0.001) and was sustained at 12 months. WHVA was similar between the standard and community clinic 0.71±0.41 (6/31) vs. LogMAR0.74±0.41 (6/33). WBPVA (LogMAR0.4±0.3 (6/14)) was significantly better than WHVA in the community clinic group (p<0.001). Assessment of WBPVA still did not occur in the ADHB group at 12-month follow-up in 53% of cases. Significantly more patients were fitted with contact lenses in the community (12%|26%).

Conclusions: Māori and Pacific Peoples are over-represented in both settings; however, appointment attendance was significantly higher in the community clinic and patients attending had their visual potential and rehabilitation addressed promptly and maintained at 12-month follow-up. Thus, a community optometry-based service has the potential to provide more equitable post-crosslinking care.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

A Comparison of Five-Year Outcomes Following High Intensity and High Energy Continuous Versus Pulsed Epithelium-Off Cornea Crosslinking

*First Author: Tiwini **HEMI***
*Co-Author(s): Jay **MEYER**, Mohammed **ZIAEI***

Purpose: This study aims to compare five-year outcomes of epithelium-off (30mW/cm2,7.2J/cm2) pulsed (p-ACXL) and epithelium-off continuous (c-ACXL) accelerated corneal crosslinking in progressive keratoconus.

Methods: Prospective study of 80 eyes from 80 patients with progressive keratoconus who underwent either p-ACXL or c-ACXL. Visual and refractive data, including uncorrected visual acuity (UCVA), best corrected visual acuity (BCVA), and manifest refraction spherical equivalent (MRSE) as well as topographic indices, including Kmax and TCT, were collected at the time of procedure and five-year follow-up. Comparisons between the two crosslinking protocols were performed.

Results: Preliminary results of 28 eyes from 28 patients five years following p-ACXL (n=15) and c-ACXL (n=17). The mean patient age was 23.3±8.12 years and 20.7±15.28 years in the p-ACXL and c-ACXL groups, respectively. In the c-ACXL group, there were significant improvements in the mean UCVA (0.69 (6/29) ±0.5 to 0.51 (6/19) ±0.7, p<.001), MRSE (+0.625±0.69 D, p=0.048) and Kmax (-1.81±1.86 D, P<0.001). There was no significant change in Visual, refractive, or tomographic for the p-CXL group. There were no significant differences in the change in visual, refractive, or tomographic data over the five-year period between the two groups (p>0.27 for all). No complications were encountered for all patients.

Conclusions: The preliminary findings indicate both c-ACXL and p-ACXL treatments are safe and effective approaches for arresting the progression of keratoconus over a 5-year timeframe. Amongst the c-ACXL group, there were significant improvements in UCVA, MRSE, and Kmax, which may indicate this is a more effective treatment for keratoconus.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

A Novel Genetic Panel for Keratoconus in South Indian Population

*First Author: Anushree **BHATKAL***
*Co-Author(s): Arkasubhra **GHOSH***

Purpose: Keratoconus is an inflammatory corneal degenerative disorder which causes progressive loss of visual acuity. The current treatment modalities are collagen crosslinking and corneal transplantation. The limited disease management causes a huge economic burden. Identifying genetic factors could be useful in understanding the disease mechanism and also serve as an early diagnosis marker.

Methods: The current study recruited 9 families with multiple affected individuals (24 KC subjects and 17 healthy first-degree relatives), to elucidate the genetic involvement in the KC progression. Blood samples were collected from 41 individuals at Narayana Nethralaya Hospital post IEC approval and written consent. Genomic DNA was extracted and Whole Exome Sequencing (WES) was performed.

Results: Variant prioritization was carried out to find the SNPs and INDELs.485 variants in 57 genes were identified with diverse inheritance patterns. The variants present in 2 or more families with the allelic frequency 1X10-5 were shortlisted. Further, a systemic review was carried out to find other genes which are reported for other ethnic populations. Several genes

have been put together to test the coverage and validity of such a panel in KC risk assessment.

Conclusions: Based on the knowledge gained from the South Indian cohort and the systemic review, a genetic panel with 12 genes was developed for KC. The developed panel could be useful in earlier diagnosis of KC and pave the way for better disease management.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

A Single Case of Ocular Graft-Versus-Host Disease Who Recovered Her Vision by Piggyback Contact Lens

*First Author: Hiroki **NISHIMURA***
*Co-Author(s): Tadashi **HATTORI**, Rohan **KHEMLANI**, Shintaro **NAKAYAMA**, Shinri **SATO**, Eisuke **SHIMIZU***

Purpose: Ocular graft-versus-host disease (oGVHD) is a severe complication following allogeneic hematopoietic stem cell transplantation. Herein, we describe a unique case where vision in a patient with oGVHD was successfully restored using a piggyback contact lens system.

Methods: A 48-year-old Japanese female presented with chronic ocular discomfort, photophobia, and decreasing vision three months post-allogeneic hematopoietic stem cell transplantation (Post 8 years). On examination, her best-corrected visual acuity (BCVA) was 20/40 in the right eye and 20/25 in the left eye. Intraocular pressure was 11.0/12.0 mmHg. Slit-lamp examination shows a conjunctiva injection, epithelial erosions, and conjunctival hyperemia. The International Chronic Ocular GVHD score was 9/11, definite oGVHD. Considering her progressive corneal irregularity and worsening vision (BCVA: 20/200 right eye, 20/160 left eye), we proposed a trial of the piggyback contact lens system – a combination of a rigid gas permeable (RGP) lens atop a soft contact lens.

Results: Following one week of piggyback lens usage, the patient reported substantial improvement in comfort and vision. At the one-month follow-up, her BCVA improved to 20/25 in both eyes. The patient has been on this system for a year with a stable vision, improved ocular surface stability, and no further deterioration of her oGVHD.

Conclusions: This case highlights the potential benefits of the piggyback contact lens system in managing refractive issues and ocular discomfort in patients with oGVHD. It offers a novel therapeutic approach in cases refractory to conventional treatment, facilitating improved vision and quality of life.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

An Innovative Low Cost Dry Eye Treatment

*First Author: Ankit **AGRAWAL***
*Co-Author(s): Krishna Kumar **AGRAWAL***

Purpose: To describe an innovative low-cost dry eye therapy system as compared to much costlier alternatives available in the market.

Methods: The study was performed at a tertiary care eye hospital in India. A therapy protocol was designed wherein a low-cost eye heater cum massager, costing about $80, which was purchased online, is used to treat dry eye disease caused due to Meibomian Gland Dysfunction (MGD). Data from 29 patients was collected over 2 months of therapy, and the results obtained were compared with commercially available devices such as Lipiflow.

Results: The low-cost device reduced the incidence of MGD, as confirmed by the Schirmers Test, Tear film break-up time, and meibography. The patients were also symptomatically much better, as confirmed by the SPEED Questionnaire.

Conclusions: This innovative solution is a very low cost MGD treatment alternative to approved devices which are available commercially and thus makes the therapy accessible to a majority of doctors and patients who otherwise would not be ale to afford them, especially in developing and third world countries.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Anterior Segment Optical Coherence Tomography Imaging of the Lacrimal Gland in Patients With Chronic Ocular Graft-Versus-Host Disease

*First Author: Lingyi **LIANG***
*Co-Author(s): Boyu **YANG***

Purpose: To explore the image characteristics of the palpebral lobe of the lacrimal gland in patients with chronic ocular graft-versus-host disease (coGVHD) using anterior segment optical coherence tomography (AS-OCT).

Methods: This prospective case-control study included 32 patients with coGVHD, 21 patients with severe aqueous tear deficiency dry eye (ATD), and 20 healthy control subjects. All subjects underwent an AS-OCT examination on the palpebral lobe of the lacrimal gland. The main outcomes are the proportions of visible gland lobules, ducts, blood vessels, layer-cake-like structures, and the signal depth in the AS-OCT images.

Results: The visible ducts in the coGVHD group (28.13%) were significantly less common than those in the ATD group (71.43%) and healthy control group (70%, both P = 0.004). The layer-cake-like structures were observed only in the coGVHD group (typical: 46.88%, atypical: 43.75%). The signal depth of the lacrimal gland was significantly deeper in the coGVHD group (773.47 ± 121.17 µm) than those in the severe ATD group (502.43 ± 40.39 µm) and healthy control group (504.20 ± 25.96 µm, both P < 0.001). The visible ducts were negatively correlated with coGVHD severity (OR: 0.14, 95%CI: 0.03-0.76). The layer-cake-like structure was positively correlated with coGVHD severity (OR: 18.50, 95%CI: 2.34-146.64) and signal depth (OR: 1.01, 95%CI: 1.00-1.02).

Conclusions: For the first time, we revealed the AS-OCT characteristics of the lacrimal gland in coGVHD and found a lower proportion of visible ducts, an increased signal depth, and layer-cake-like structures. AS-OCT might discover fibrosis changes in the lacrimal gland in vivo.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Antimicrobial Susceptibility Testing of Dematiaceous Fungi Isolated From Keratitis in India

*First Author: Joveeta **JOSEPH***
*Co-Author(s): Bagga **BHUPESH**, Esther **SHEBA***

Purpose: The infection rate for dematiaceous fungi has increased rapidly over the most recent decades. The purpose of the study was to investigate the minimal inhibitory concentration (MICs) of these fungi isolated from patients with keratitis.

Methods: The susceptibility profile of amphotericin B, natamycin, caspofungin, posaconazole, itraconazole, ketoconazole and voriconazole against dematiaceous fungi isolated from corneal ulcers, seen at our institute from September 2022 - August 2023 was evaluated in RPMI 1640 media. MICs were determined following the NCCLS M38-P broth microdilution method and read after 48-72h incubation.

Results: A total of 74 dematiaceous fungi were isolated, which included mainly Curvularia (12), Lasiodiplodia (8), Collectotrichum (8), Bipolaris (7), Scedosporium (5), Phoma (5), Exserohilum rostratum 3), Alternaria (2), Macrophomina phaseolina (2) and one each of Cladophialophora spp, Cylindrocarpon spp, Papulospora spp, Pleosporales spp, and Pithomyces spp along with unidentified dematiaceous fungus (n=17). Natamycin inhibited 80% of the fungal isolates with MIC 50 and MIC 90 of 4µg/ml and 32µg/ml, respectively. Amphotericin B showed susceptibility to 65% of isolates (MIC50/90, 1/4µg/ml) followed by posaconazole and itraconazole which showed 41% (MIC50/90, 0.25/16 µg/ml) and 36% (MIC50/90, 0.5/8 µg/ml) respectively. Whereas voriconazole, ketoconazole and caspofungin inhibited 27% (MIC50/90, 0.5/4 µg/ml), 16% (MIC50/90, 0.5/16 µg/ml) and 15% (MIC50/90, 2/8 µg/ml) of the fungal isolates.

Conclusions: Natamycin proved to be the most effective drug against the pigmented filamentous fungi. The role of antifungal susceptibility to indicate the ideal therapy and as a predictor of clinical outcome needs to be established in clinical trials.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Cancer or Septic Donor: Propitious for Corneal Transplant? A 5 Year Study at a Tertiary Center

*First Author: Mahima **KANSAL***
*Co-Author(s): Sudesh **ARYA**, Tanu **SINGH***

Purpose: To assess if the retrieved cornea from the deceased with septicaemia or malignancy can be considered fit for transplant.

Methods: A retrospective histopathological and microbiological analysis of donor corneas received over the last 5 years in tertiary care was done to look for the dissemination of disease within corneal tissue. Detailed histopathological workup included gross and microscopic evaluation to rule out any signs of metastasis. Microbiology workup included Grams stain, KOH with calcofluor mount, culture in blood agar, chocolate agar, Sabaurauds dextrose agar and McConkeys broth. A total of 98 donor corneas from 49 patients were considered redundant due to the deceased suffering from septicemia (29 patients, 58 donor corneas) or malignancy (20 patients, 40 donor corneas) and run for detailed workup.

Results: There was no evidence of tumour cells in the tissue retrieved from the patient suffering from malignancy. However, Septicemic patients showed culture-positive infection.

Conclusions: Corneal tissue harvested from septic donors showed culture-positive infection, confirming their contraindication for usage as a rare yet significant consequence of corneal transplant is infection; most infected eyes lose their vision. In eye banking, the prevention and control of communicable diseases are top priorities. However, malignancy donors revealed no evidence of tumour cells in the tissue, suggesting its usability in future and a boon for many visually handicapped patients.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Challenge in Pediatric Penetrating Keratoplasty

*First Author: Al Farizi **SUNJAYA***
*Co-Author(s): Elfa Ali **IDRUS***

Purpose: To report a case of penetrating keratoplasty in a pediatric patient with leukoma after a corneal ulcer.

Methods: A four-year-old patient presented with a whitish plaque in her left cornea three years ago. She had a history of corneal ulcers when she was 1 month old. After completing treatment for three months, there was a scar on her left cornea. Ophthalmological examination of the left eye revealed visual acuity (VA) close to face finger counting, exotropia with a 15-degree deviation, and a cicatricial cornea. The patient was diagnosed with left eye leukoma and underwent penetrating keratoplasty surgery. Topical eye drops of prednisolone eight times a day, moxifloxacin six times a day, sodium chloride 5% four times a day, and timolol maleate 0.5% two times a day for the left eye, ibuprofen 120mg four times a day, and cefixime 70mg two times a day were given.

Results: Examination on the first, seventh, fourteenth, and twenty-first days after surgery found VA 0.1, 0.1, 0.13, 0.13, and graft clarity grade 3, 3, 2, and 1, respectively. The anterior chamber was formed, and the suture was impermeable. There were no signs of graft rejection.

Conclusions: Keratoplasty remains the gold standard for the treatment of corneal opacity. This procedure in children is challenging and many factors are considered preoperatively, perioperatively, and postoperatively. Strict compliance and control are needed to get maximum visual results.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Comparison of Cornea Biomechanical Properties Among Keratoconus, First Degree Relatives and Normal

*First Author: Norsyariza **RAZAK***

Purpose: To study the corneal biomechanical parameters comparison between Keratoconus (KCN) patients with their First-Degree Relatives (FDR) and normal (NL).

Methods: This is a cross-sectional comparative study. Dynamic corneal response parameters of CorvisST were compared in 107 eyes with KCN with 87 eyes of FDR and 128 eyes of NL healthy subjects. The clinical diagnosis of KCN was based on slit-lamp findings and abnormal corneal topographic patterns. The discriminative ability for each parameter was tested using the Kruskall-Wallis test. The receiver operating characteristic curve (ROC) was used to analyze the ability of the biomechanical parameters to identify Keratoconus among FDR.

Results: From a total of 49 FDR, five were screened with mild KC and another five with preclinical KC with an Odd Ratio of 5.55. All biomechanical parameters significantly differed between the three groups ($P < 0.05$). Only CBI ($P = 0.086$), Arth ($P = 0.09$), and A2L ($P = 0.077$) showed no significant difference between FDR and NL using post-hoc Dunn's method. CBI, TBI, and BAD values showed outstanding predictable Area Under Curve (AUC) >0.9 to detect Keratoconus.

Conclusions: Without topographic/tomographic evidence of Keratoconus, an independently abnormal biomechanical parameter can detect an increased risk of ectasia among FDR. FDR is at high risk of having corneal abnormalities, especially Keratoconus, and should be screened before refractive surgery.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Comparison of Ocular Surface Parameters Changes After Small Incision Lenticule Extraction and Femtosecond Laser-Assisted in Situ Keratomileusis Procedure

*First Author: Faris **MADYAPUTRA***
*Co-Author(s): Angga **FAJRIANSYAH**, Mayang **RINI***

Purpose: To determine the comparison of changes in ocular surface parameters, including blink rate (BR), lipid layer thickness (LLT), tear meniscus height (TMH), and non-invasive break-up time (NIBUT) after small incision lenticule extraction (SMILE) and femtosecond laser-assisted in situ keratomileusis (FS-LASIK).

Methods: This study is an analytical observational study using a prospective cohort design to compare changes in ocular surface parameters, including BR, LLT, TMH, and NIBUT following SMILE and FS-LASIK procedures. The research sample was obtained using a consecutive method at a tertiary eye hospital in Indonesia. Ocular surface parameters measurements were evaluated using non-invasive tools and performed preoperatively and 1 week after SMILE and FS-LASIK.

Results: Sixty-four eyes from 32 subjects were divided into the SMILE group and the FS-LASIK group, consisting of 16 patients in each group. In the SMILE group, the mean delta of BR, LLT, TMH, and NIBUT was 6.69±14.942, 6.56±7.754, 0.04±0.034, 0.72±0.925 respectively. In the FS-LASIK group, the mean delta of BR, LLT, TMH, NIBUT were 14.47±22.622, 13.16±14.328, 0.05±0.034, and 1.21±1.037 respectively. The mean

delta of BR (P=0.027), LLT (P=0.046), and NIBUT (P=0.042) in the SMILE group was significantly lower than the FS-LASIK group. On the contrary, no significant differences were found in the mean delta of TMH (P=0.422) from both groups.

Conclusions: Ocular surface parameter changes of BR, LLT, and NIBUT following the SMILE procedure were smaller compared to the FS-LASIK group, while there was no difference in TMH parameter changes after the SMILE and FS-LASIK procedure.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Comparison of the Effects of Different Hyaluronic Acid-Containing Lubricating Eye Drops on Post-cataract Surgery Dry Eye Disease

*First Author: Chi Chin **SUN***
*Co-Author(s): Yuan Hsi **CHAN**, Nan Ni **CHEN**, Pei Wei **HUANG***

Purpose: To compare the effects of hyaluronic acid (HA)-containing lubricating eye drops, Hydroxypropyl Guar-Hyaluronic Acid (HPG-HA) and Carboxymethylcellulose-Hyaluronic Acid (CMC-HA) in patients developing post-cataract surgery dry eye disease (DED).

Methods: In this prospective, two-arm randomised control study, participants diagnosed with DED one week after cataract surgery were randomly assigned to receive either HPG-HA or CMC-HA lubricating eye drops four times a day. The primary endpoint was to measure the change in the Corneal Fluorescein Staining (CFS) score at post-treatment weeks 1 and 3 between the two groups. Other factors included the Ocular Surface Disease Index (OSDI), Schirmer's test, tear break-up time (TBUT) and central corneal sensitivity were also evaluated.

Results: Of 70 subjects, HPG-HA and CMC-HA groups achieved the primary endpoint of a significant reduction in CFS score from baseline to post-treatment week 3 (P< 0.001). The HPG-HA group showed a rapid decrease in CFS score at post-treatment week 1 (P=0.002), while the CMC-HA group did not (P=0.6). The HPG-HA group showed a significantly improved CFS score than the CMC-HA group (P=0.021) in post-treatment week 1. There was no significant difference between the two groups in OSDI, Schirmer's test, TBUT, and central corneal sensitivity in post-treatment week 1 and week 3. Overall, both lubricating eye drops were well-tolerated.

Conclusions: HA-containing lubricating eye drops reduce dry eye signs in CFS score after cataract surgery. The HPG-HA dual polymer lubricating eye drops showed a rapid and sustained reduction in CFS score at post-treatment weeks 1 and 3 in this study population.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2-GF)

Compressive Suture for Early Resolution of Acute Hydrops in Advanced Keratoconus Patients

*First Author: Sujit **BISWAS***

Purpose: To show the effectiveness of full-thickness corneal compressive sutures in cases of acute hydrops in advanced keratoconus.

Methods: Three keratoconus patients of 16 years, 18 years and 15 years were presented with unilateral severe acute hydrops and surgically treated with full-thickness compressive corneal sutures with 10/0 prolene for early resolution of hydrops and to prevent corneal vascularization, which is an adverse event for future keratoplasty. All patients were postoperatively treated with topical cycloplegic, topical antibiotic and hypertonic saline. One patient underwent full-thickness penetrating (PK) keratoplasty due to extensive scar, one month after suture removal and the other two are waiting for PK.

Results: The preoperative presenting vision of three patients was counting fingers close to face, hand movement, and 3/60, which improved to 6/60, 3/60, and 6/60, respectively, in the 48th, 74th, and 32nd post-operative days after removal of sutures. The vision became 6/18 after one month in the keratoplasty patient.

Conclusions: Full-thickness corneal compressive suture shown to be effective in quick resolution of acute corneal hydrops.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Corneal Densitometry as an Objective Index for Assessing Keratoconus Severity

*First Author: Parichart **TAWEEKITIKUL***
*Co-Author(s): Vannarut **SATITPITAKUL***

Purpose: To compare and evaluate cut-off values of corneal densitometry in patients with keratoconus (KC), preclinical KC (subclinical keratoconus (SKC) and forme fruste keratoconus (FFKC)) and normal cornea.

Methods: This retrospective review included 18,18,48,32,47,27,28,48 eyes with KC stage 0-4 according to ABCD classification, SKC, FFKC and normal cornea, respectively. Patients' demographic data and corneal densitometry using Scheimpflug tomography (OCULUS Pentacam®) were recorded.

Corneal densitometry was divided into 12 areas by radial zone (0-2, 2-6, 6-10, 10-12 mm) and by corneal depth (anterior 120 µm, central, posterior 60 µm). The corneal densitometry values were compared using mixed model analysis with Scheffe adjustment. Cut-off values to differentiate between each group were evaluated.

Results: The mean corneal densitometry in the central layer, annulus 0-2 mm zone was most useful in detecting KC, preclinical KC and normal corneas. The mean corneal densitometry in the central layer of 0-2 mm zone were 16.51±0.19, 16.50±0.20, 16.36±0.17, 15.99±0.26, 15.67±0.26, 15.99±0.22, 16.30±0.23, 14.85±0.25 grayscale units (GSU) in KC stage 0-4, SKC, FFKC and normal corneas, respectively. There were significant differences in the mean corneal densitometry in the central layer of 0-2 mm zone between normal corneas and KC stage 2, 3, 4, FFKC (All P values < 0.01). The sensitivity and specificity were 58.15% and 95.83% in detecting preclinical KC with a cut-off value of 15.95 GSU.

Conclusions: Corneal densitometry values tend to be higher with a more advanced stage of keratoconus. Corneal densitometry in the central layer, annulus 0-2 mm zone was the most valuable for determining preclinical keratoconus.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Corneal Myofibroblasts Suppress Corneal Allograft-Primed T cells

*First Author: Shudan **WANG***

Purpose: To evaluate the immunosuppressive effect of corneal myofibroblasts on effector T cells in corneal transplantation.

Methods: Allogeneic penetrating keratoplasty (PK) was performed in eight to ten-week-old male BALB/c mice. Corneal fibroblasts were cultured with TGF-β for 48 hours to induce differentiation into myofibroblasts. Allo-primed effector T cells (Teff) were isolated from the cervical draining lymph nodes of PK mice 14 days post-operatively. Teff was co-cultured with either corneal myofibroblasts or corneal fibroblasts for 24 hours. Teff cell activation was evaluated by assessing the expression level of CD69 using flow cytometry. The functional phenotype of Teff cells was assessed by measuring the level of IFN-γ by flow cytometry. To evaluate the effect of corneal myofibroblasts on T cell proliferation, naïve T cells were co-cultured with either corneal myofibroblasts or corneal fibroblasts for 72 hours and proliferation was assessed by CFSE staining.

Results: We confirmed the differentiation of corneal fibroblasts to myofibroblasts by cell morphology and increased expression of α-smooth muscle actin (α-SMA). When Teff were co-cultured with corneal myofibroblasts, the frequency of CD69+ Teff cells was 0.16±0.05% as compared to 2.50±0.3% when Teff were co-cultured with corneal fibroblasts. In addition, the frequency of IFN-γ+ Teff was 2.34±0.8% in the corneal fibroblast co-culture group and 0.80±0.4% in the corneal myofibroblast co-culture group. Finally, corneal myofibroblasts significantly suppressed T cell proliferation as compared to fibroblasts.

Conclusions: In addition to their well-established role in fibrosis and extracellular matrix production, corneal myofibroblasts may also serve as immunoregulatory cells capable of suppressing T cell activation, function and proliferation.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Correlation Between Severity of Dry Eye Disease With Fluorescein Break-Up Patterns

*First Author: Putri **KARTINI***

Purpose: To determine the correlation between the severity of dry eye disease based on Dry Eye Workshop (DEWS) with fluorescein break-up patterns.

Methods: This research used a cross-sectional study with correlative analysis. There were 60 eye samples with dry eye disease of 32 subjects (5 males, 27 females; mean age 47,1 years); FBUPs were categorized into 1 of the following 5 break types: area break, spot break, line break, dimple break, and random break. The severity of dry eye disease was based on DEWS. Other methods of dry eye examination were also performed, including the Schirmer I test, measurement of tear film breakup time, and scoring of the Ocular Surface Disease Index (OSDI).

Results: Dry eyes were classified into grades 1, 2, and 3 (13, 32, and 15 eyes, respectively). The most frequent FBUP in patients with dry eye disease is dimple break (38.3%), followed by random break (33.3%), line break (20.0%), spot break (5%) and area break (3,3%). In this study, a moderate and significant correlation was found between the severity of dry eye disease and FBUP features (r = 0.478; p = 0.000).

Conclusions: Fluorescein break-up pattern features are significantly correlated with dry eye severity based on DEWS.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Curcumin and Fibrin Glue As Potential Adjuvant Therapies to Prevent Pterygium Recurrency Through Modulation of Matrix Metalloproteinase-3, Vascular Endothelial Growth Factor and Transforming Growth Factor-β

*First Author: Ferdian **RAMADHAN***
*Co-Author(s): Luki **INDRIASWATI**, Evelyn **KOMARATIH***

Purpose: This study aims to use curcumin and fibrin glue (FG) in comparison with mitomycin-c which has the ability to suppress the expression of matrix metalloproteinase-3 (MMP-3), vascular endothelial growth factor (VEGF) and Transforming Growth Factor-β (TGF-β) as keys to the inflammatory process in pterygium, which is expected to be an adjuvant therapy to reduce pterygium recurrence.

Methods: Human pterygium fibroblasts (HPF) were used in this study, obtained from primary cultured of pterygium in-vitro then exposed with curcumin (200umol/L), mitomycin-c (0.4 mg/mL) and FG. MMP-3, TGF- β and VEGF expression was analyzed using immunocytochemistry and intensity measurement using ImageJ software. Cell migration was measured by scratching and stratification of fibroblast culture, cell proliferation was measured by MTT-Assay. Results between groups were analyzed using One-Way ANOVA tests and post hoc tests.

Results: The experiment revealed that mitomycin-c, curcumin, and fibrin glue were significantly able to inhibit the expression of MMP3, VEGF, and TGF-β in comparison with the control group ($P<0.05$). They are also able to inhibit cell proliferation and migration, suggesting their potency as anti-fibrotic.

Conclusions: Mitomycin-c is still the most potent adjuvant agent to reduce pterygium recurrence, but curcumin and fibrin glue also have good potential to reduce fibrotic potential in HPF. In the future, there will be adjuvant therapies to reduce pterygium recurrence after surgery in a safer manner.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Does Sleep Mediate the Association Between Dry Eye and Quality of Life in the Singapore Malay and Indian Populations?

*First Author: Elizabeth **LIM***
*Co-Author(s): Ching-yu **CHENG**, Crystal **CHONG**, Eva **FENWICK**, Simon **NUSINOVICI**, Louis **TONG***

Purpose: (1) To determine the independent association of dry eye symptoms with health-related quality of life (HRQoL) in the Singapore Malay and Indian populations and (2) to determine if sleep duration and quality mediate this association.

Methods: In this cross-sectional study consisting of 3014 participants, the presence of dry eye symptoms was defined as experiencing at least one out of the six symptoms either 'often' or 'all the time'. The EuroQoL-5 dimensions (EQ-5D) utility instrument (raw scores converted to UK time trade-off (TTO) values) was used to assess generic HRQoL and the overall score from the Visual Functioning Questionnaire for visual functioning. Participants were asked to record their average sleep duration in hours. Sleep questionnaires included the Epworth Sleepiness Scale (ESS), Berlin Questionnaire, STOP-bang questionnaire and Insomnia Severity Index (ISI). The association between dry eye symptoms and EQ-5D was investigated using multivariable linear regression, adjusting for demographic and socioeconomic information, comorbidities, and systemic and ocular examination results. Mediation analysis was used to determine whether sleep duration and quality mediated this association.

Results: After adjusting for relevant factors, those with dry eye symptoms had significantly lower HRQoL (difference in EQ-5D TTO: −0.031 (95% CI −0.054 to –0.008). For mediation analysis, ISI accounted for 20.78% (7.50%–128.19%) of the indirect relationship between dry eye and HRQoL, whereas ESS, Berlin and STOP-bang questionnaires were not significant.

Conclusions: Dry eye symptoms were independently associated with poor HRQoL. Moreover, this was partly mediated by insomnia. Our results suggest that efforts to treat insomnia may help to improve HRQoL associated with dry eye symptoms.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Dry Eye Syndrome after Phacoemulsification in Diabetic Patients: A Systematic Review

*First Author: Reni **RATNAWATI***
*Co-Author(s): Clarissa **DJARIZAL**, Rosa **SYAHRUZAD**, Jessica **ZARWAN**, Rasyad **KHALIFAH***

Purpose: Dry eye syndrome (DES) is prevalent among patients undergoing phacoemulsification. Furthermore, the incidence of DES is higher in diabetic patients. Given the rising rates of cataracts and diabetes, understanding the interplay between both is essential for optimizing post-surgery care. This systematic review explores the occurrence of DES following phacoemulsification in diabetic patients.

Methods: A comprehensive search was conducted through PubMed, Scopus, Cochrane, and Proquest. Publications were manually reviewed according to inclusion and exclusion criteria.

Results: This systematic review included three studies involving 255 diabetic and 562 non-diabetic phacoemulsification patients. One study found the incidence of DES seven days post-surgery was 17.1% and 8.1% in diabetics and non-diabetics, respectively. The second study found the Schirmer's Index Test (SIT) and tear break-up test (TBUT) values in diabetics were significantly lower than non-diabetic post-surgery ($p < 0.001$). Ocular surface disease index (OSDI) scores reached peak levels seven days post-surgery in both groups, but were higher in diabetics ($p < 0.001$). Another study found that one month post-surgery, lipid layer thickness (LLT) of diabetics was significantly thinner than at baseline ($p = 0.002$), while there was no significant difference before and after surgery in non-diabetics ($p = 0.078$). Several risk factors, such as diabetes duration and glycemic control were identified as contributors to the worsening of DES.

Conclusions: DES occurs in both diabetics and non-diabetic patients after phacoemulsification but was worse in diabetics and recovered faster in non-diabetics. Further research is warranted to develop preventive strategies for DES in diabetic patients undergoing phacoemulsification.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Evaluation of Clinical Profile and Risk Factors Necessitating Repeat Collagen Cross Linking in Keratoconus

*First Author: Aniruddh **HEROOR***
*Co-Author(s): Rashmi **DESHMUKH***

Purpose: Repeat cross-linking (CXL) is a relatively rare occurrence with sparse literature on the same. We aim to elucidate the clinical characteristics, risk factors and treatment outcomes of patients undergoing repeat CXL.

Methods: Data from 20 eyes of 19 patients who underwent repeat CXL from 2016-2022 was collected retrospectively from the electronic medical records system. Progression was noted as an increase in Kmax of 1 dioptre (D) in 1 year/0.5 D in 6 months. Demographic details, risk factors, duration between primary and repeat CXL, topographic data and CXL protocols were noted and analysed.

Results: The mean age of patients was 17.4±.5.4 years with 14 males and 6 females. Of the risk factors, young age was seen in 14 eyes, allergic eye disease in 8 eyes, habitual eye rubbing in 7 eyes and 2 were contact lens users. The mean best corrected visual acuity with spectacles before primary CXL was 0.42±0.27 logMAR and after repeat CXL was 0.43±0.25 logMAR. Mean Kmax value before first CXL was 62.6±7.5D with thinnest mean pachymetry of 436±56 microns while the mean Kmax before repeat CXL was 67±5.5D with the thinnest mean pachymetry being 405.3±45.7microns. The mean duration between the primary and repeat CXL was 45.8±31.26 months. Over a mean follow-up of 28.88±30.2 months,16 eyes were stable, while 4 eyes are still under follow-up.

Conclusions: Young age appears to be the most common risk factor in patients requiring secondary CXL. There is a paucity of literature reporting clinical characteristics, progression and outcomes in patients undergoing repeat CXL.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Evaluation of Corneal Biopsy as a Primary Diagnostic Tool in Patients With Microbial Keratitis on Poly- Antimicrobials – A Randomised Control Trial

First Author: Gandepalli ***LAVANYA***
Co-Author(s): Prafulla ***MAHARANA***

Purpose: To identify the role of corneal biopsy as a primary diagnostic tool in keratitis patients on multiple antimicrobials.

Methods: A prospective interventional study of 44 cases of non-resolving microbial keratitis was done after randomizing into 2 groups of 22 each for biopsy and scraping using block randomization in the time period between January 2022 to October 2023

Results: The culture positivity rate for bacterial keratitis was found to be higher with scraping (40.9%) compared to biopsy (27.3%), but was found to be statistically insignificant with a P-value of 0.340 and culture positivity rate for fungal keratitis was found to be significantly higher with biopsy (54.55%) compared to scraping (18.18%), with a P-value of 0.012. In the scraping group, the sensitivity and specificity of Gram stain were found to be 33.3% and 92.3% respectively, and the sensitivity and specificity of KOH stain were found to be 50% and 94.4% respectively. In the biopsy group, the sensitivity and specificity of histopathology in fungal keratitis were found to be 66.6% and 80% respectively. No corneal perforations were found in either group.

Conclusions: In cases of nonhealing keratitis on poly antimicrobials, corneal biopsy can be used as a primary diagnostic modality as it can detect both bacterial and fungal organisms with high culture positivity rates.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Knowledge, Attitudes, and Behavior of Patients and Families Regarding Corneal Donors in Outpatient Clinics of Tertiary Healthcare Center in Indonesia

First Author: Agung ***FUJIYONO***
Co-Author(s): Rina ***LA DISTIA NORA****, Yeni* ***LESTARI****, Rio* ***RHENDY****, Agus* ***SUGIHARTO***

Purpose: To determine the relationship between sociodemographic factors, knowledge, and attitudes toward people's behavior regarding corneal donors.

Methods: This is a cross-sectional study designed to assess the relationship between sociodemographic factors, knowledge, and attitudes toward corneal donor behavior using a validated questionnaire from patients and their families.

Results: The level of knowledge, attitudes, and behavior regarding corneal donors is relatively low in the subjects studied. Sociodemographic components related to behavior ($P < 0.05$) are respondent categories, gender, religion, ethnicity, education level, and occupation. Knowledge and attitudes are also related to behavior ($P < 0,05$). In multivariate analysis, gender, respondent category, religion, knowledge, and attitudes are related to the behavior of corneal donors, while the largest OR value obtained is 7.305 on the knowledge variable.

Conclusions: Knowledge and attitudes have a strong relationship to behavior. Knowledge is the variable that most influences the behavior of corneal donors. Strategies to improve knowledge are needed to improve attitude and behavior toward future corneal donors.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Knowledge, Attitudes, and Practice of Health Workers in Indonesia Toward Corneal Donor Procurement in Hospital

First Author: Eko ***PARULIAN***
Co-Author(s): Rina ***LA DISTIA NORA****, Yeni* ***LESTARI****, Rio* ***RHENDY****, Made* ***SUSIYANTI****, Syougie* ***SYOUGIE***

Purpose: Determine the knowledge, attitude, and practice of nurses in one government hospital in Indonesia toward corneal donor procurement in the hospital.

Methods: Nurses were chosen with quota sampling and surveyed with a questionnaire that had been tested for validity and reliability.

Results: In this study, 422 nurses were surveyed from emergency ward, intensive care, non-intensive care, outpatient clinics. Most of the respondents lacked knowledge (55,4%), had positive attitudes (50,2%), and had good practices (59,5%). There was a significant correlation between knowledge and attitude towards practice of the respondents in this survey. There was no significant correlation found between the demographic factors of the respondents to practice. Based on logistic regression analysis, age ≤ 36 years old, good knowledge, and positive attitudes are predicting factors for good practice in respondents.

Conclusions: There was a correlation between the knowledge and attitude of nurses in our hospital towards the practice of corneal donor procurement in the hospital.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Lichen Planus Presenting As Cicatrising Conjunctivitis

First Author: Anjali ***ANJALI***
Co-Author(s): Jitender ***JITENDER***

Purpose: To report a rare case of lichen planus presenting initially to an ophthalmologist with chronic cicatrising conjunctivitis.

Methods: Lichen planus is known to present with dermatological complaints. We hereby present a rare case of lichen planus presenting primarily with ocular complaints. A 75-year-old female presented with complaints of eye-watering, redness, and ocular discomfort for 5 years. She was previously treated as presumed Steven Johnson syndrome sequelae with topical steroids and lubricants; however, symptoms were not relieved. On examination, she had inferior fornix shortening, lower lid symblepharon, and meibomian gland dysfunction. Schirmer's score was 1 and zero in the right eye and left eye respectively and tear film breakup time was zero in both eyes. Cicatrising conjunctivitis score was 1 hence, Steven Johnson syndrome was unlikely. Systemic workup for rheumatological and dermatological disorders was sought. Oral mucosal biopsy on histopathological examination had features suggestive of Lichen Planus. A histopathological examination of conjunctival biopsy was performed to confirm the etiology, which showed epithelial hyperplasia, significant interface activity with basal cell vacuolisation, and lymphoid infiltrate. A working diagnosis of chronic cicatrising conjunctivitis secondary to Lichen Planus was made, and systemic immunosuppression was advised.

Results: Following immunosuppression, the patient reported marked improvement in ocular discomfort. Schirmer's score also had modest improvement to 3mm and 4 mm in the right and left eye, respectively.

Conclusions: Lichen planus should also be considered as a possible etiology in cases presenting with chronic cicatrising conjunctivitis.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Metamorphosis of Meibomian Gland Dysfunction: Unveiling Age-Dependent Clinical Presentations

First Author: Jin-yu ***CHANG***
Co-Author(s): Nai-wen ***FAN****, De-kuang* ***HWANG***

Purpose: Investigate age-related variations in clinical manifestations of meibomian gland dysfunction (MGD).

Methods: This cross-sectional study included 200 eyes of 100 Asian MGD individuals, aged 25 to 88. Assessments included Standard Patient Evaluation of Eye Dryness questionnaire score (SPEED), tear film break-up time (TFBUT), cornea staining, Schirmer I test, eyelid changes, meibum expressibility, and meibum quality. Utilizing interferometry, lipid layer thickness (LLT), blinking numbers, and meibography images were acquired. The meibography image analysis was accomplished using ImageJ.

Results: In MGD, age displayed no significant association with corneal staining, SPEED, or TFBUT. An escalation in age exhibited an affirmative correlation with meibomian plugging ($p=0.002$), anterior displacement of mucocutaneous junction ($p<0.001$), and telangiectasia ($p<0.001$). Conversely, younger age correlated with partial blinking ($p=0.046$), and reduction in LLT ($p<0.001$). As for MG morphology, advancing age was linked to the number of shortened and dropout glands ($p<0.001$, $p=0.001$), along with thinner glands in both nasal and central regions ($p=0.001$, $p=0.005$). Reduced age-related to more gland distortion. However, LLT exhibited no correlations with blinking, MG atrophy, meibum expressibility, or quality, but correlated with age and MG plugging in multivariate analysis. Both high- and low-delivery types of MGD presented across all age groups, although low-delivery was more prevalent in patients older than 60 years old.

Conclusions: The clinical presentations of MGD exhibit variability with age. Younger MGD individuals manifested tendencies towards partial blinking, increased MG tortuosity, and diminished LLT. Older MGD patients presented more alterations in lid margins, gland dropout, and shortening.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Microbial Keratitis and Its Management at a Rural Centre: Achieving Success With Limited Resources

First Author: Raksheeth ***RAJAGOPAL***
Co-Author(s): Rathi Varsha ***MADANLAL****, Somasheila* ***MURTHY***

Purpose: Microbial keratitis is a sight-threatening condition with a higher incidence in agrarian populations. In countries with a high indigent population, due to financial and other constraints, patients prefer to seek therapy locally rather than travel to advanced centres. The aim of this study is to describe the epidemiology, clinical characteristics, and outcomes of 60 consecutive patients with microbial keratitis managed at a rural centre.

Methods: Descriptive case series. All patients clinically diagnosed with infectious keratitis were included.

Corneal scrapings were obtained and microbiological identification was done by Gram stain. Anti-microbial therapy was commenced based on smear findings and the patients were followed up till disease resolution.

Results: The mean age was 47.43 ± 18.69 years. Male: female ratio was 47:53. Risk factors included ocular trauma in the majority of patients (46/60; 76.7%). Microorganisms were identified on 75.6% of smears, with fungal filaments (65.4%) being the most common. Ulcers were central in over half (32/60; 53.3%), and >3mm diameter in over three-fourths (81.6%) patients. Forty-four patients (73.3%) achieved treatment success, whereas 16/60 (26.6%) required referral to our tertiary-eye care facility for management. The mean time to resolution was 18.82 ± 12.15 days. The mean pre-treatment visual acuity was logMAR 0.689 which improved to logMAR 0.452 ($p<0.05$).

Conclusions: Our series demonstrates the feasibility of microbiology-guided therapy in microbial keratitis by ophthalmologists at the secondary eye-care level. Two-thirds of the patients could be successfully managed at the rural centre and only severe cases needed a referral to tertiary centres.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Microscope Integrated Optical Coherence Tomography Assisted Graft Sizing in Pediatric Penetrating Keratoplasty

First Author: Priyadarshini ***KAMALAKANNAN***
Co-Author(s): Prafulla ***MAHARANA***

Purpose: To describe the use of Microscope Integrated Optical Coherence Tomography (MIOCT) as an additional tool in assessing anterior chamber and modifying graft size in pediatric penetrating keratoplasty.

Methods: A total of 45 pediatric eyes <16 years of age with indications for penetrating keratoplasty were included. The anterior chamber assessment was done using MIOCT, and the anterior chamber angle, peripheral synechiae, and lens status were assessed before the surgery as well as intraoperatively after lamellar dissection. The host sizing was done as per anterior segment anatomy, with a disparity of 1.00mm if the angle was crowded and peripherally shallow with the presence of extensive synechiae, while in cases of localised synechiae, a graft-host disparity of 0.75mm was taken. In cases of sclerocornea, a 1.00mm disparity was taken, and if extensive synechia were noted along with it, a 1.25mm was taken. In cases with normal anterior segment, a 0.50mm graft host disparity was taken. In cases with aphakia/ aniridia, additional lens removal was done, and a 0.25mm was subtracted in graft size.

Results: The average horizontal and vertical corneal diameters were 11.3±1.60 and 11.03±1.17 respectively. 62.2% had iridocorneal adhesions, 15.5% aniridia, and 66.6% a shallow peripheral anterior chamber as seen on MIOCT. The average host trephination, donor trephination, and graft-host disparity were 7.10±0.62mm, 7.96±0.54mm, and 0.86±0.24mm, respectively. In 27/45 eyes, a graft-host disparity of 1.00mm was used. The overall graft survival rate at 1 year was found to be 77.7%.

Conclusions: The decision-making in graft sizing can be improvised, after assessing the anterior segment anatomy and angles using MIOCT.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Neuropathic Corneal Pain Following Refractive Surgery: Risk Factors, Clinical Manifestations, Imaging, and Proteomic Characteristics

First Author: Yu-chi ***LIU***
Co-Author(s): Chang ***LIU****, Jodhbir* ***MEHTA****, Calesta Hui Yi* ***TEO****, Louis* ***TONG***

Purpose: To identify the risk factors for neuropathic corneal pain (NCP) following refractive surgery, and to report its clinical manifestations, imaging and proteomic characteristics.

Methods: This prospective cohort study included 100 eyes that underwent small incision lenticule extraction (SMILE) or laser-assisted in situ keratomileuses (LASIK). Ocular surface assessments, in-vivo confocal microscopy scans, tear neuromediators and proteomics analysis were performed. NCP was assessed using the Ocular Pain Assessment Survey. Univariate and multivariate analyses were conducted to identify the risk factors associated with postoperative NCP.

Results: The incidence of NCP was 13.3% and 10.5% after SMILE and LASIK, respectively (p=0.70). In SMILE, preoperative manifest refractive spherical equivalent (MRSE) and spherical power (both p=0.02) were significantly higher in the NCP compared to the non-NCP group. In LASIK, NCP eyes had a significantly lower corneal nerve fiber length (CNFL), lower nerve fractal dimension, higher nerve fiber width, and larger neuroma area than non-NCP eyes (all $p<0.05$). In SMILE, higher preoperative MRSE was a significant risk factor for postoperative NCP (95% CI:0.48—1.96, p=0.04). An MRSE greater than −8.0 diopter was 9.57 times more likely to develop postoperative NCP (OR=9.57, p=0.002). In LASIK, lower preoperative corneal nerve fiber density (95% CI:0.13—1.11, p=0.05) and CNFL (95% CI:0.09—1.25, p=0.05) were significant risk factors for postoperative NCP. A significant increase in tear nerve growth factor, calcitonin gene-related peptide, Frizzled class receptor 7, and nucleoside-

diphosphate kinase 3 were observed in postoperative NCP.

Conclusions: The characteristics and risk factors reported would identify patients susceptible to NCP after refractive surgery.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

New Grading of Vernal Keratoconjunctivitis Based on Clinical Profile of 1049 Vernal Keratoconjunctivitis Patients

*First Author: Gaurav **CHAUHAN***
*Co-Author(s): Geetha **IYER**, Bhaskar **SRINIVASAN**, Shweta **AGARWAL***

Purpose: To analyze the clinical profile of vernal keratoconjunctivitis (VKC) patients and propose a grading based on corneal status and symptom periodicity rather than disease activity.

Methods: Retrospective observational study - January 2015 to 2020. VKC grading was based on present/past clinical signs and frequency of symptoms rather than disease activity.

Results: A total of 1049 VKC patients with a mean age of onset of 7.05±5.39 years, with 8.39% having adult onset, were analysed. The M:F ratio was 4.6:1. Symptoms included: itching (50.55%) and decreased vision (15.44%). Mixed VKC (52.04 %) was the most common presentation with 49.1% having active disease. Complications included: keratoconus (18.43 %), steroid-induced cataract (11.41 %), glaucoma (10.95 %), and limbal stem cell deficiency (5.29 %). Dual-acting antiallergics (69.39%) were most commonly used, followed by topical immunomodulators. Based on the above, patients were graded as, Grade I: occasional symptoms/signs with occasional use of antiallergic. Grade II: persistent symptoms /signs without corneal involvement with constant use of antiallergics. Grade III: persistent symptoms/asymptomatic with current/telltale signs of corneal involvement, with constant use of antiallergics with/without topical immunomodulators. Grade IV: persistent symptoms & signs or asymptomatic with current/ telltale signs of complications with constant use of antiallergics and topical immunosuppressives.

Conclusions: The current classifications are based primarily on the active stage of the disease and the grading changes with each activity/ visit without taking into account the complications already present. The new grading system based on the corneal status and symptom periodicity rather than disease activity thus might help plan the management better.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Ocular Surface Disease: Validating Complex Solutions

*First Author: Radhika **TANDON***
*Co-Author(s): Noopur **GUPTA**, Yogita **GUPTA**, Mani **KALAIVANI**, Neiwete **LOMI**, Murugesan **VANATHI***

Purpose: To compare the efficacy of different techniques of limbal stem cell transplantation for cases of limbal stem cell deficiency (LSCD).

Methods: Randomized controlled clinical trial study. Unilateral cases were randomized into: direct limbal transplantation (DLT), simple limbal epithelial transplantation (SLET), and cultivated limbal epithelial transplantation (CLET) groups. Bilateral cases were randomized into: cultivated oral mucosal epithelial transplantation (COMET) and conjunctival cultivated epithelial transplantation (CoCET) groups. Patients were assessed at day 1, first & second weeks, first, second, third, and sixth month after the surgical procedures. Main outcome measures: Stability of ocular surface, visual acuity and corneal clarity.

Results: A total of 100 patients were enrolled: 14 in DLT, 21 in SLET, 15 in CLET, 25 in COMET and 25 in CoCET groups (Mean age: 24.8±12.9 years, 69 males). At the end of 6 months, the improvement in BCVA in the SLET group was similar to the DLT group ($p>0.05$) but significantly better than the CLET group at 6 months follow-up ($p<0.05$). The anatomical success rate in terms of corneal clarity was found to be statistically significant ($p<0.05$) in all three groups post-operatively. The SLET and CLET groups were found to be significantly better than the DLT group in terms of anatomical success ($p<0.05$). The COMET group was found to be significantly better than the COCET group in terms of anatomical success ($p<0.05$) for bilateral cases.

Conclusions: In terms of anatomical success, SLET and CLET were significantly better than DLT for unilateral cases and the COMET group was significantly better than the COCET group for bilateral cases.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Ocular Surface and Meibomian Gland Evaluation in Euthyroid Graves' Ophthalmopathy

*First Author: Kenneth Ka Hei **LAI***
*Co-Author(s): Fatema **ALJUFAIRI**, Kelvin Kam-lung **CHONG**, Xu Lin **LIAO**, Jake Uy **SEBASTIAN***

Purpose: Euthyroid Graves' Ophthalmology (EGO) refers to the subgroup of thyroid eye disease (TED)

patients with distinct clinical presentations. This study evaluated the ocular surface and meibomian gland changes in EGO patients.

Methods: A case-controlled study was conducted at The Chinese University of Hong Kong. Outcome measures include slit-lamp examination, keratographic and meibographic imaging.

Results: Between 34 EGO patients and 34 age and sex-matched healthy controls, EGO was associated with a higher ocular surface disease index (P<0.01), higher severity of meibomian gland dropout (upper lid: P<0.001, lower lid: P<0.00001) and a higher percentage of partial blinking (P=0.0036). The worse affected eyes of the EGO patients were associated with worse corneal staining (P=0.0019), eyelid telangiectasia (P=0.0009), eyelid thickening (P=0.0013), eyelid irregularity (P=0.0054), meibomian gland plugging (P<0.00001), expressibility (P<0.00001) and meibum quality (P<0.00001). When the 2 eyes of the same EGO patient were compared, the degree of meibomian gland dropout was higher among the worse affected eyes (upper: P<0.00001, and lower: P<0.00001). Tear meniscus height, lipid layer thickness, and non-invasive break-up time were comparable between the 2 eyes of EGO patients and also between EGO patients and healthy controls.

Conclusions: EGO patients have more ocular surface complications and severe meibomian gland dropouts than healthy controls. Almost 60% of them suffer from dry eye disease mainly due to meibomian gland dysfunction. Further studies should study the course of MGD after immunosuppressive and surgical treatments for EGO.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Outcomes of Accelerated Corneal Crosslinking in Keratoconus Eyes With and Without Associated Vernal Keratoconjunctivitis - a Comparative Study

*First Author: Priyadarshini **KAMALAKANNAN***
*Co-Author(s): Namrata **SHARMA***

Purpose: The purpose of this study is to compare the outcomes of accelerated corneal cross-linking in eyes with and without vernal keratoconjunctivitis (VKC) in keratoconus patients.

Methods: The epithelium-off-accelerated protocol (15mW/cm2 for 6 minutes) was used in all 45 eyes which were diagnosed with progressive keratoconus. Of the total 45 eyes treated, 15 eyes were associated with VKC (Group 1), while the other 30 eyes did not have VKC (Group 2). The outcomes measured were changes in visual acuity, thinnest pachymetry, keratometry, progression, complications, and depth of demarcation line on Anterior segment optical coherence tomography at 1 year postoperatively.

Results: Both groups showed no significant change in the BCDVA, thinnest pachymetry, Kmax or Ksteep from the preoperative to postoperative values. The demarcation line was formed at 241.66±16.37µm depth in Group 1 and 266.33±37.2µm in Group 2 (p-value: 0.04) respectively. No patient in Group 1 could tolerate the use of contact lenses despite suboptimal visual acuity with glasses in Group 1, whereas 12 eyes in Group 2 showed improved BCDVA with the use of RGP Contact lenses. Post-operative haze was noted in 3/15 and 6/30 eyes in Group 1 and Group 2 respectively. Complications noted were progression at 1-year post-CXL in one eye and early-onset bacterial keratitis caused by S. epidermidis and S. aureus in 2 eyes in the VKC group.

Conclusions: Visual and tomographic outcomes were comparable between eyes with and without VKC undergoing A-CXL for keratoconus. There is a higher chance of progression and complications in VKC eyes.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Outcomes of Low-Level Light Therapy Before and After Cataract Surgery for the Prophylaxis of Postoperative Dry Eye: A Prospective Randomized Double-Masked Controlled Clinical Trial

*First Author: Giuseppe **GIANNACCARE***
*Co-Author(s): Massimiliano **BORSELLI**, Giovanna **CARNOVALE SCALZO**, Costanza **ROSSI**, Giovanni **SCALIA**, Vincenzo **SCORCIA***

Purpose: To investigate the effect of two sessions of Low-Level Light Therapy (LLLT) performed before and after cataract surgery as a prophylactic treatment for preventing iatrogenic dry eye disease.

Methods: This was a prospective, interventional, randomized, controlled, double-masked clinical trial. Patients were randomly assigned 1:1 to receive either LLLT or sham treatment (LLLT with a power output < 30%). Patients underwent two treatment sessions: 7±2 days before cataract surgery (T0) and 7±2 days after (T1). Outcome measures evaluated 30±4 days after surgery (T2) included Ocular Surface Disease Index (OSDI) questionnaire, non-invasive breakup time (NIBUT), tear meniscus height (TMH), meibomian gland loss (MGL) and redness score.

Results: Out of 153 patients randomized to receive LLLT (n=73) or sham treatment (n=80), 131 (70 males, 61 females, mean age 73.53±7.29 years) completed regularly the study. Patients treated with LLLT had significantly lower OSDI scores compared to controls at T1 and T2 (respectively, 7.2±8.8 vs 14.8±13.0 and

9.0±9.0 vs 18.2±17.9; both P<0.001), higher NIBUT values at T2 (12.5±6.6 vs 9.0±7.8 s; P=0.007), and lower MGL Meiboscore values at T1 (1.28±0.72 vs 1.61±0.60; P=0.008). Unlike controls, patients treated with LLLT had significantly lower OSDI scores and higher NIBUT values at T2 compared to T0 (respectively, 9.0±9.0 vs 21.2±16.1, P<0.001 and 12.5±6.6 vs 9.7±7.2 s, P=0.07).

Conclusions: Two sessions of LLLT performed one week before and after cataract surgery were effective in counteracting the detrimental effects of surgery, ameliorating tear film stability and ocular discomfort symptoms one month postoperatively.

Feb 24, 2024 (Sat)
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Venue: Mengwi 3,5 (BNDCC2–GF)

Protocol Difference in the Preparation of Human Peripheral Blood Serum Eyedrops and Their Effects on Corneal Healing After Alkali Burn: Clinical Evaluation and Corneal Histopathology on Rabbits

*First Author: Theresia **KANIA***
*Co-Author(s): Melva **LOUISA**, Eka **SUSANTO**, Made **SUSIYANTI**, Syska **WIDYAWATI***

Purpose: To compare and assess the effects of administering blood serum eyedrops with different preparation protocols on rabbit test subjects after alkali burn.

Methods: This was a randomized experimental study on rabbits which were subjected to alkali burn on their right eyes with three different treatment groups: placebo, non-diluted serum, and 25% concentration serum (described by Liu et al). The treatment was given on both eyes to assess the potential for rejection and irritation. Clinical assessment of the degree of haziness, degree of neovascularization, defect size, and healing rate were done on days 0, 1, 3, 7, and 14. On day 14, histopathological examination of epithelial, neovascularization, and PMN scores, as well as α-SMA expression.

Results: On day 14, the lowest degree of corneal haziness was found in the 25% concentration serum group (p=0.005) compared to the other two groups. This group also had a significant decrease in epithelial defect size on day 1 (p=0.012) and the quickest healing rate from day 0 to day 1 (p=0.028). No side effects or irritation was observed on the left eyes of the rabbits. Histopathologically, there was no significant difference in epithelial, neovascularization, and PMN scores, as well as α-SMA expression, among the three groups. Through qualitative assessment, there were some rabbits in the placebo and non-diluted groups with epithelial thinning which led to ulceration.

Conclusions: The usage of 25% concentration serum provided better clinical outcomes in terms of degree of haziness, size of epithelial defect, and healing rate.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

RID-Myc Assay – A Novel CRISPR-Based Device to Diagnose, Estimate Fungal Abundance and Predict Treatment Outcomes in Fungal Keratitis

*First Author: Chinmay **MAHATME***
*Co-Author(s): Siddharth **NARENDRAN***

Purpose: RID-Myc assay has been developed for rapid and cost-effective point-of-care diagnosis of fungal keratitis using CRISPR-based identification. This study aims to evaluate the diagnostic and prognostic value of this test.

Methods: A total of 112 patients diagnosed with fungal keratitis based on clinical features, microscopy as well as PCR (in some cases) were simultaneously subjected to RID-Myc assay testing. The relative fluorescence units (RFU) value was used to quantify fungal load in in this assay. Presenting features (visual acuity, size of infiltrate etc.) and treatment outcomes (need for surgery, final visual acuity etc.) were recorded over the period of 1.5 years. Data was divided into quartiles of RFU (Q1, Q2, Q3, Q4) and then analysed to see how RFU values correlated with these parameters.

Results: RID-Myc assay displayed a sensitivity of 93.27%, specificity of 77.78%, PPV of 97.98% and NPV of 50%. In previously untreated patients, we found that higher RFU values implicated higher infiltrate size (Q4>Q1, Q2, Q 3, p<0.05), higher need for surgery (only Q4 needed surgery) and poorer visual outcomes (drop in vision noted only in Q3, Q4). In those who had received previous antimicrobial therapy, these trends were not observed.

Conclusions: RID-Myc is a sensitive and specific test for fungal keratitis that may have prognostic value as well. Previous anti-microbial therapy can reduce fungal load and affect the RFU value obtained, which renders prognostication based on RFU impractical. However, in previously untreated patients, RFU values from this test may correlate with disease severity and treatment outcomes.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Retrospective Study of Demographic Profile, Clinical Characteristics and Risk Factors of DSAEK Graft Rejection

First Author: Shalini ***SINGH***

Purpose: To study the demographic profile and clinical characteristics of DSAEK graft rejection at a tertiary eye care facility.

Methods: The data of all patients with DSAEK graft rejection from May 2012 to February 2019 was retrieved from the medical record database, and only those patients with a minimum of 1-year follow-up were included in the study. Data on demographic details, indication for DSAEK, associated ocular co-morbidities, clinical presentation, and graft recovery was analysed.

Results: A total of 61 patients (61 eyes) with DSAEK graft rejection were included in this study. The mean value of age (years) of study subjects was 52.44 ± 19.8. 68.52% of patients were males and 31.48% of patients were females. 24.59% were treated for bullous keratopathy and 42.62% were treated for failed grafts. 64.81% were associated with ocular co-morbidities, with secondary glaucoma being the most common among them (22.59%). Signs of graft rejection at the initial visit were edema (57.41%), KP (40.74%) and endothelial rejection line (3.7%). In the present study, in 33.33% of patients, time point of 1st Rejection was 0-<6 months followed by >2 years (25.93%) and >1 year to 2 years (22.22%). 55 (74.55%) grafts recovered completely, among which 11 required systemic steroids.

Conclusions: Immunological graft rejection is an important postoperative complication after DSEK. Pre-existing glaucoma was the most common ocular morbidity among patients presenting with graft rejection. Graft rejection in EK was less severe than PK, and most of them recovered completely with topical steroids.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Role of Chloroquine Phosphate Eye Drops in Management of Dry Eye Disease

First Author: Tushar ***GROVER***
Co-Author(s): Ashok ***GROVER****, Rwituja* ***THOMAS***

Purpose: To study the adjuvant role of chloroquine phosphate eye drops to preservative-free artificial tear substitutes in the management of dry eye disease (DED).

Methods: This prospective randomised control study enrolled 126 patients with mild to moderate dry eye disease (DED) presenting to the outpatient department of a tertiary eye care centre in North India. The patients were randomised into 2 groups. Group 1 (n=63) received topical preservative-free chloroquine phosphate for 28 days and topical sodium hyaluronate 0.1% w/v 4 times/day for 90 days. Group 2 (n=63; ATD) received topical preservative-free sodium hyaluronate 0.1% w/v 4 times/day for 90 days. Dry eye parameters, including OSDI score, tear film break-up time, fluorescein staining score, Lissamine staining score, Schirmer's test and higher order aberrations were evaluated on day 7, day 28, and day 90.

Results: Patients in Group 1 showed greater improvement in OSDI scores ($p < 0.01$ on day 28), tear film break-up time ($p<0.05$ on day 28 & day 90), Lissamine Green staining score ($p<0.01$ on day 28 & day 90) and higher order aberrations ($p<0.01$ on day 28) as compared to group 2. Subsequent to the discontinuation of topical chloroquine in group 1, when evaluated on day 90, there was no statistically significant difference between the 2 groups in OSDI scores ($p=0.110$) and higher order aberrations ($p=0.270$).

Conclusions: The study shows a significant adjuvant role of chloroquine phosphate eye drops in the management of DED, and can be a novel therapeutic approach for the restoration of tear film homeostasis of dry eye. Efficacy and safety with long-term use need to be investigated further.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Role of Corneal Endothelium in the Development and Recurrence of Macular Corneal Dystrophy

First Author: Bi Ning ***ZHANG***

Purpose: Macular corneal dystrophy (MCD) is an autosomal recessive disorder caused by CHST6 mutations. While the clinical features of MCD primarily manifest in the corneal stroma, there is evidence of concurrent endothelial involvement. This study aims to investigate the role of corneal endothelium in MCD pathogenesis.

Methods: CHST6 and its homologous gene Chst5 expression were quantified in different human and mouse cornea layers using qPCR and immunohistochemistry. Selective knockdown of Chst5 in murine corneal endothelium and stroma was achieved through intracameral or intrastromal injection of AAV-carrying shRNA. Corneal phenotypic changes were assessed using slit lamp, OCT, and staining. Additionally, a point-mutation murine model was generated using the CRISPR/Cas9 system and its

corneal phenotypes were evaluated. Lastly, a rescue experiment involving intracameral overexpression of wild-type Chst5 was conducted in these two murine models.

Results: CHST6 was enriched in human corneal endothelium, and murine corneal Chst5 was prominent in the endothelial layer as well. Specific knockdown of Chst5 in murine corneal endothelium resulted in corneal opacity, absence of sulfated keratan sulfate in the cornea, and deposition of Alcian blue-positive substances, consistent with clinical MCD features. However, the knockdown of Chst5 in the corneal stroma did not produce similar symptoms. Our generated CHST5 R50H point-mutant mice exhibited phenotypes resembling clinical MCD. Intracameral overexpression of Chst5 antagonized the corneal pathology in the knockdown mice and mitigated the progression of MCD in point-mutant mice.

Conclusions: Corneal endothelium plays a crucial role in the pathogenesis of MCD. This study provides experimental evidence for the selection of surgical strategies for MCD.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Successful Management of Partial Limbal Stem Cell Deficiency With Unilateral Conjunctival Limbal Autograft

*First Author: Annisa **RAHAYU***
*Co-Author(s): Angga **FAJRIANSYAH***

Purpose: To elaborate the Conjunctival Limbal Autograft (CLAU) technique as one of the operative management methods that can be chosen for patients with partial unilateral Limbal Stem Cell Deficiency (LSCD).

Methods: A case report of a 68-year-old woman was presented to the Emergency Department with chief complaints of pain and blurry vision in the right eye after accidentally dropping an alkaline solution to the right eye; visual acuity was hand movement. The patient was diagnosed with Alkaline Chemical Injury Ropper Hall grade III and treated with saline solution irrigation as emergency management, then underwent Amnion Membrane Grafting on the tenth day. On the fourth month's follow-up, the patient developed an LSCD condition with symblepharon. The patient was diagnosed with Partial Unilateral LSCD and was managed surgically by the CLAU method in order to graft the limbal stem cell to the damaged area.

Results: One week after undergoing CLAU, the visual acuity measured 0.125 on the Snellen chart with minimal blepharospasm and conjunctival injection. The patient continued the treatment with prednisolone acetate eye drop, antibiotic eye drop, artificial tears, and autologous serum eyedrop.

Conclusions: Patients with LSCD need an immediate and comprehensive evaluation. Surgical management, such as stem cell transplantation with Conjunctival Limbal Autograft (CLAU) technique, are required when there is no improvement. The purpose of treatment is to restore the functioning and surface of normal cornea, as well as prevent conjunctival cell invasion to the cornea.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Synthetic Corneal Endothelial Substitute: Results of a Phase-2 Safety Evaluation Study

*First Author: Lional Raj **DANIEL RAJ PONNIAH***

Purpose: Evaluation of safety & efficacy of novel synthetic endothelial substitute (SES) in cases of chronic endothelial dysfunction.

Methods: A prospective open-label safety & efficacy evaluation. Cases of endothelial dysfunction due to FECD or PBK which were not associated with Herpes or prior corneal surgeries were subjected to a central 6 mm Synthetic Endothelial Substitute (SES) implantation after 7mm descemetorhexis, attached with gas. Pre, post-op pachymetry (mic), vision (ETDRS characters), and pain scores (1 -100) were analyzed in addition to re-bubbling rates & toxicities.

Results: Twelve subjects were enrolled. Min. follow-up was 12 months. Baseline V/A was 9.75+/-1.7, which improved to 41.75+/ 8.7 by M-1, and retained after M-12 at 55.59+/-7.1. Central pachymetry reduced from 715mic, to 504 by M-1 & 492.5mic by M-12. Baseline pain was 90.5+/- 2.3, at M-1 was 68.25+/-4.03, further reduced by M-4 (p=0.0001). No immunologic or adverse reactions were noticed, and no explantation. Three cases were re-bubbled (D7, D7, D12 & 21). Post-mortem pathological observations in a subject after M-6, had fibrosis of SES edges to the cornea, favoring long-term retention.

Conclusions: Endothelial keratoprosthesis improved vision, and reduced chronic edema due to endothelial dysfunctions & was not associated with adverse events or toxicities until month 12, & has been monitored continuously. Synthetic Endothelial Substitute could be an alternative to endothelial keratoplasty with no associated rejection risks. "From Transplant to Implant Science" could benefit surgeons with limited or no access to eye banks.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Ten-Year Graft Survival of Repeat Optical Keratoplasties

*First Author: Victoria Grace **DIMACALI***
*Co-Author(s): Howard **CAJUCOM UY**, Hla Myint **HTOON**, Stephanie **LANG**, Jodhbir **MEHTA**, Hon Shing **ONG***

Purpose: To analyze the clinical outcomes of repeat optical keratoplasties following a failed primary optical keratoplasty.

Methods: This prospective cohort study analyzed the data of patients who had a second optical corneal transplant from 2007 to 2020. The main outcome measure was regraft survival.

Results: A total of 284 first regrafts (181 Descemet stripping automated endothelial keratoplasty (DSAEK), 63 penetrating keratoplasty (PK), 21 Descemet membrane endothelial keratoplasty (DMEK), and 19 deep anterior lamellar keratoplasty (DALK)) were analyzed. The most frequently performed regraft was endothelial keratoplasty (EK) for failed EK (46.5%) and failed PK (22.9%). PK/EK and EK/EK had better one-year postoperative BCVA compared to PK/PK (p=0.006 and p<0.001 respectively). Kaplan-Meier analysis showed ten-year cumulative regraft survival probabilities of 69.2% for PK/EK, 52.8% for EK/EK, and 43.1% for PK/PK. Regraft survival was 100% for DALK/PK and DALK/DALK at five years, and 100% for DALK/EK at three years. Log-rank test showed higher survival of PK/EK compared to PK/PK (p=0.002) and EK/PK (p=0.009), and of EK/EK compared to PK/PK (p=0.003) and EK/PK (p=0.005). There were significantly more episodes of regraft rejection (p=0.001) and glaucoma or increased intraocular pressure (p=0.005) among PK regrafts compared to EK and DALK regrafts. Cox multiple regression analysis showed male gender (p=0.023), PK regraft (p=0.003), shorter time to regraft (p=0.013), and regraft rejection (p=0.003) to be risk factors for graft failure.

Conclusions: Performing EK for a failed optical PK or EK significantly improved regraft survival compared to repeat PK. Regrafts performed for failed initial DALK grafts did well regardless of type.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

The Efficacy and Safety of Descemet's Membrane Endothelial Keratoplasty (DMEK) Versus Descemet's Stripping Automated Endothelial Keratoplasty (DSAEK) for Corneal Endothelial Decompensation: A Meta-analysis

*First Author: Mefina **MUFIDAH***
*Co-Author(s): Syska **WIDYAWATI***

Purpose: Corneal transplantation is the gold standard treatment for corneal endothelial decompensation cases. Descemet's membrane endothelial keratoplasty (DMEK) and Descemet's stripping automated endothelial keratoplasty (DSAEK) are two techniques used nowadays. DMEK had been reported to achieve better BCVA due to thinner graft. However, several studies showed no significant difference in BCVA achieved in long-term evaluation between DMEK and DSAEK. Moreover, the application of DMEK is hindered because of the challenges in donor preparation and performing the surgeries. This meta-analysis compares efficacy and safety in DMEK vs. DSAEK.

Methods: Literature searches were conducted in PubMed, Embase, and Cochrane databases from 2017-2022. Retrospective studies comparing DSAEK and DMEK were included. The primary outcome measure is postoperative BCVA. Secondary outcome measures are safety parameters including endothelial cell count (ECC) and corneal graft complication; graft detachment, graft rejection, and primary graft failure. The outcomes were pooled using random-effects models using Revman 5.

Results: A total of 11 retrospective studies were included (n = 1385 eyes, 573 DMEK). Most of the studies included Fuchs endothelial corneal dystrophy. BCVA was better with DMEK at all evaluated time points compared to DSAEK. There was no significant difference in postoperative ECC between the two procedures (p=0.46). DMEK had a higher detachment rate (OR 5.21; p<0.00001). No significant difference between DMEK and DSAEK for graft rejection and graft failure was observed.

Conclusions: This review demonstrates the superiority of DMEK in achieving better BCVA compared to DSAEK. Safety profiles come in similar results; however, DMEK possessed a higher graft detachment rate compared to DSAEK.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

The Prevalence of Fuchs Endothelial Corneal Dystrophy in the Kyoto Glaucoma Cohort Study

*First Author: Yasufumi **TOMIOKA***
*Co-Author(s): Hideki **FUKUOKA**, Yoko **IKEDA**, Shigeru **KINOSHITA**, Koji **KITAZAWA**, Chie **SOTOZONO***

Purpose: The prevalence of Fuchs endothelial corneal dystrophy (FECD) in Europe and the United States is reportedly approximately 4%, yet there are few reports of its prevalence in Japan. In 2005, we initiated the Kyoto Glaucoma Cohort Study (KGCS) to examine the genomic aspects in Japanese glaucoma patients, while simultaneously collecting data on Japanese non-glaucomatous normal volunteer control subjects. In this study, we investigated the frequency of corneal endothelial cell (CEC) abnormalities in those control subjects to assess the prevalence of FECD.

Methods: This study involved 1250 of 2480 Japanese KGCS control subjects [364 males, 886 females; mean age: 65.8±8.3 years (mean ± SD)] who underwent specular microscopy (TOMEY EM-3000TM) examination between March 2005 and March 2020. CECs in the central corneal region of the right eye were imaged, and eyes with corneal guttae and/or abnormal manifestations were selected for the primary screening. In the secondary screening performed by three cornea specialists, the eyes were classified as abnormal CECs, corneal guttae, or confluent corneal guttae, with the corneal guttae and confluent corneal guttae eyes diagnosed as FECD.

Results: Primary screening identified 55 (4.4%) non-healthy eyes, of which 11 (0.9%) were classified as abnormal CECs, 32 (2.5%) were classified as corneal guttae, and 12 (1.0%) were classified as confluent corneal guttae. There were no cases of corneal edema, posterior polymorphous corneal dystrophy, or posterior corneal vesicle.

Conclusions: The prevalence of FECD in the KGCS control cases was found to be 3.5%.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

The Relationship Between Ana Titer and Anti-dsDNA Levels With the Incidence of Dry Eye Disease in Systemic Lupus Erythematousus Patients

*First Author: Mohammad **MOLID OGEST PUTRA CALISANIE***
*Co-Author(s): Anang **TRIWIBOWO***

Purpose: Systemic Lupus Erythematosus (SLE) is an evolutionary systemic disease that attacks one or several organs, such as the kidneys, skin, blood cells, and nervous system, characterized by widespread inflammation of the blood vessels and connective tissue, is episodic in nature, interspersed with periods of remission, and is characterized by the presence of autoantibodies. Dry eye disease is often found in patients with autoimmune disorders, such as in patients with systemic lupus erythematosus, eye manifestations are common in SLE, and the presence of eye symptoms correlated with systemic disease activity (SLEDAI) and anti-dsDNA levels are believed to be involved in the incidence of dry eye disease in infiltration of lacrimal gland lymphocytes.

Methods: This study was an observational study with a cross-sectional design to examine the relationship between ANA and anti-dsDNA titers in Systemic Lupus Erythematosus patients and the incidence and severity of Dry Eye Disease.

Results: The most common type of DED in SLE patients is aqueous tear deficiency. Most FMD events occurred in severe SLE disease activity of 46.4%. Most DED events occur in positive ANA titers of 75%. Most DED events occurred at levels of anti-dsDNA ≥100 IU/mL of 89.3%.

Conclusions: We found a relationship between dry eye disease incidence and SLE activity, ANA titer levels, and anti-dsDNA levels.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Trehalose in Stabilization of Disease Progression in Keratoconus via Autophagy Modulation

*First Author: Anisha **R***
*Co-Author(s): Swaminathan **SETHU***

Purpose: To describe the utility of trehalose, a cellular autophagy activator with a protective effect on stress-induced inflammatory response in the management of keratoconus (KC).

Methods: The study included 25 patients (50 eyes) with mild to moderate KC. Patients underwent detailed examination and imaging, including corneal topography, biomechanical assessment, epithelial mapping, and polarization-sensitive optical coherence tomography (PS-OCT). Patients with low risks of progression were started on topical artificial tear supplements containing trehalose 3% four times/day. During the treatment, serial corneal topography and phase retardation (PR) maps of PS-OCT were assessed to look for a halt in disease progression.

Results: The patients were treated for a median duration of 8 months (range 5-23 months) with topical trehalose 3%. Pre-therapy maximum keratometry (Kmax) was 50.7D (range 46.2D-61D), mean keratometry (Kmean) was 46.2 (range 41.2D-48.5D) and median TCT was 470µ (455µ – 512µ). The median post-therapy Kmax was 49.6 D (range 45.2D-60.2D), the median Kmean was 45.5D (42D-47.9D), and the median TCT was 465µ (range 440µ -512µ). The reduction in Kmax was statistically significant with a P-value of 0.0013 (<0.05). The serial PR maps of eyes treated with topical trehalose showed improved collagen fibril orientation compared to baseline.

Conclusions: Medical management with topical trehalose 3% helps in stabilizing keratoconus disease with a low risk of progression. Trehalose modulates autophagy and controls inflammation in ocular tissues. PS-OCT in patients treated with topical 3% trehalose showed better collagen fibril orientation, demonstrating its positive impact on extracellular matrix metabolism.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 1,2 (BNDCC2–GF)

Understanding Ethnic Disparities in the Delivery of Crosslinking Procedures in Auckland, New Zealand (Preliminary Data)

*First Author: Tiwini **HEMI***
*Co-Author(s): Jay **MEYER**, Mohammed **ZIAEI***

Purpose: To investigate ethnic differences in the progression of keratoconus while waiting for crosslinking (CXL) and to distinguish associated risk factors.

Methods: Retrospective cohort study of patients with keratoconus who underwent CXL in Auckland between 2013-2023. Wait time, demographic, clinical and tomographic data were collected to determine risk factors for keratoconus progression. Topographic indices, including Kmax, TCT, TKC, and VA, were analyzed at the time of waitlisting, and at the time of the procedure, in order to identify the progression of the disease over this period.

Results: Preliminary results of 200 patients who have received crosslinking from 2013 to 2022. Ethnicity: Pasifika 48%, Māori 23%, Asian 12.5%, European 16.5%. Pasifika experienced the greatest progression of disease (ΔKmax+0.95±2.48 D, ΔTCT-6.24±16.64 µm) compared with Māori (ΔKmax0.52±1.97 D, ΔTCT-3.41±15.35 µm), Europeans (ΔKmax-0.21±1.21 D, ΔTCT+0.55+/-9.66 µm) and Asians (ΔKmax+.38±1.19 D, ΔTCT-1.72±10.82 µm). There was no significant difference in the amount of progression in Kmax (p=0.118) or TCT (p=0.115) between ethnicities. However, Māori (20/46, 43.5%) and Pasifika (45/96, 46.9%) were more likely to progress than Europeans (7/33, 21.2%) and Asians (8/25, 32%), p<0.045. There was no significant difference in disease severity, age at waitlisting, or waiting times between ethnicities (p>0.087 in all cases).

Conclusions: Māori and Pacifica with Keratoconus may be more likely to progress while waiting for cornea crosslinking. This may indicate an ethnic association with the likelihood of progression in patients with keratoconus and could suggest prioritising patients for crosslinking based on ethnicity in order to support health equity in crosslinking outcomes.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Unraveling Mitochondrial Ultrastructure Changes and DNA Variations in Keratoconus

*First Author: Shivam **SHARMA***
*Co-Author(s): Seema **KASHYAP**, Seema **SEN**, Lata **SINGH**, Namrata **SHARMA**, Tapas **NAG***

Purpose: Keratoconus (KC) is the thinning of corneal stroma and irregular astigmatism, resulting in a diminution of vision. The etiology is not known yet. There is evidence of an imbalance in oxidative balance and mitochondrial function in KC corneas. Therefore, our study conducted the whole mitochondrial DNA (mtDNA) sequencing to study the mtDNA variations and analyze the mitochondrial morphology in KC patients.

Methods: Ten KC patients were recruited in this prospective study. Blood and cornea from the same patients were collected for mtDNA genome sequencing. Tissue was collected to perform transmission electron microscopy (TEM). DNA was isolated from blood and corneal tissues, followed by agarose gel electrophoresis and library preparation. Whole mtDNA sequencing was done on the libraries by illumina HISeqX sequencer. 1*1mm corneal tissue was processed for TEM.

Results: In our study, mutations were found in both the D-loop region and the coding region. The most common mutations were T to C and C to T, followed by A to G in the D-loop region. A total of 189 mutations at the different positions were found in the coding region.

There were 137 mutations reported as pathogenic in the HmtVar database. Numerous degraded mitochondria with dissolved cristae were present in all the corneal tissues of KC patients.

Conclusions: This is the first of its kind of study providing information on mtDNA mutations & structural changes in the Indian population of keratoconus. This pilot study demonstrates how mtDNA damage contributes to KC. A larger cohort of patients needed to evaluate mtDNA mutations as a genetic risk factor indirectly contributing to the development and/or progression of KC.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 1,2 (BNDCC2-GF)

Visibility of Cellular Aggregates and Change in Central Corneal Thickness as Predictors of Successful Corneal Endothelial Cell Injection Therapy

*First Author: Evan **WONG***
*Co-Author(s): Valencia **FOO**, Jodhbir **MEHTA**, Hon Shing **ONG**, Gary **PEH***

Purpose: Cell injection therapy is an emerging treatment for bullous keratopathy (BK). AS-OCT imaging allows high-resolution assessment of the anterior chamber. We aimed to investigate the predictive value of the visibility of cellular aggregates for corneal deturgescence in an animal model of BK.

Methods: Injections of corneal endothelial cells were performed in 45 eyes in a rabbit model of BK. AS-OCT imaging and central corneal thickness (CCT) measurement were performed at baseline and on days 1, 4, 7, and 14 following cell injection. A logistic regression was modelled to predict successful corneal deturgescence and its failure with cell aggregate visibility and CCT. ROC curves were plotted, and AUC was calculated for each time point in these models.

Results: Cellular aggregates were identified on days 1, 4, 7 and 14 in 86.7%, 39.5%, 20.0% and 4.4% of eyes, and PPV for successful corneal deturgescence was 71.8%, 64.7%, 66.7% and 100.0% respectively. Using logistic regression modelling, an increase in pachymetry resulted in a small but statistically significant decreased likelihood of success, with an odds ratio of 0.996 for days 1 (95% CI 0.993–1.000), 2 (95% CI 0.993–0.999) and 14 (95% CI 0.994–0.998) and an odds ratio of 0.994 (95% CI 0.991–0.998) for day 7.

Conclusions: Logistic regression modelling of cell aggregate visibility and CCT was predictive of successful corneal endothelial cell injection therapy.

Glaucoma

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2-GF)

24-Month Prospective Randomized Comparison of Penetrating Canaloplasty Versus Trabeculectomy in Primary Angle-Closure Glaucoma

*First Author: Yuanbo **LIANG***
*Co-Author(s): Wenqing **YE***

Purpose: To report the 24-month efficacy and safety of penetrating canaloplasty compared with trabeculectomy in the treatment of primary angle-closure glaucoma (PACG).

Methods: This is a prospective, randomized, controlled trial. Patients with PACG and inadequately controlled intraocular pressure (IOP) were recruited. Patients enrolled were assigned randomly to either penetrating canaloplasty (PCP group) or trabeculectomy with Mitomycin C (TRAB group). The main outcome measures were the ocular surface disease index (OSDI) questionnaire, IOP, number of glaucoma medications, and success rate. Surgical success was defined as three levels of IOP (6mmHg≤IOP≤21mmHg with at least 20% reduction from baseline, 6mmHg≤IOP≤18mmHg and 6mmHg≤IOP≤15mmHg).

Results: A total of 52 eyes (44 patients) were finally enrolled, with 25 eyes in the PCP group and 27 eyes in the TRAB group. The mean OSDI score was lower in the PCP group (11.5±8.4) than in the TRAB group (16.2±13.6) without a significant difference (P=0.123). PCP group (85.0%) had a similar qualified success rate (6mmHg≤IOP≤21mmHg with at least 20% reduction from baseline) compared with the TRAB group (83.3%) at 24 months (P=1.000). PCP group had more hyphema (24.0% vs 0.0%, P=0.009) and less hypotony (24.0% vs 33.3%, P=0.458) than TRAB group, especially shallow anterior chamber (4.0% vs 29.6%, P=0.025). The PCP group had less frequent bleb interventions than the TRAB group (45.2% vs 10.0%, P=0.008), especially bleb needling with 5-Fluorouracil (8.0% vs 35.5%, P=0.041).

Conclusions: Compared with trabeculectomy, penetrating canaloplasty had a similar qualified success rate and comparable complications at 24 months. Patients with penetrating canaloplasty required fewer postoperative bleb interventions than trabeculectomy.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Clinical Characteristics and Potential Correlations of Posner-Schlossman Syndrome Patients in China

*First Author: Chun **ZHANG***
*Co-Author(s): Tingting **GAO**, Ying **HONG**, Xianghan **KE**, Weijia **ZHANG***

Purpose: This study aims to examine the clinical characteristics of patients with Posner-Schlossman syndrome (PSS) in China and explore potential correlations among these characteristics.

Methods: For this retrospective cohort study, consecutive PSS patients were enrolled. Demographic and ocular characteristics of all patients were recorded. Comprehensive ophthalmology assessments were conducted, including measurement of intraocular pressure (IOP), best-corrected visual acuity (BCVA), slit-lamp examination, corneal endothelial cell (CEC) density, optical coherence tomography (OCT) for retinal nerve fiber layer (RNFL) thickness, and optical coherence tomography angiography (OCTA) to assess vessel density (VD) in eight quadrants. Unaffected eyes were used as controls.

Results: The study included 121 patients (125 eyes) with PSS. Patients fell within the 20 to 50 years age group (80.2%). The highest IOP in affected eyes was 47.67 ± 13.31 mmHg. The frequency of PSS attacks was 2.7±3.7 times per year, and the average disease duration was 9.5±10.4 years. In affected eyes, CEC density (P<0.001) and RNFL thickness in four quadrants (all P < 0.05) were significantly lower compared to fellow eyes. Significant correlations were observed between CEC density and disease duration (P<0.001), as well as recurrent frequency (P = 0.029). RNFL thickness also correlated significantly with disease duration. Statistical analysis of OCTA data for the affected eye revealed a robust correlation between RNFL thickness and VD in all quadrants (all P<0.05).

Conclusions: The study found that CEC loss and RNFL thinning were evident in eyes affected by PSS. RNFL thinning could potentially be linked to vascular dysfunction during the progression of PSS.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Comparative Study on the Performance of a Smarter, User-friendly, Portable and Reliable Automated (SUPRA) Perimetry Device to the Humphrey Visual Field Perimetry

*First Author: Dayna **YONG***
*Co-Author(s): Muhammad Azri **BIN RAZALI**, Lyana **SHAFFIEE**, Rubin **YONG***

Purpose: Glaucoma is a silent disease often detected in its moderate to severe stage due to a lack of screening in the primary care setting. Perimetry is an important diagnostic tool to identify and measure the extent of glaucoma but is only available at the tertiary care level. We aim to clinically verify a novel portable visual field perimetry device (Smarter, User-friendly, Portable and Reliable Automated perimetry device (SUPRA)), comparing its outcomes with the Humphrey Visual Field (HVF) test.

Methods: A prospective pilot study was done in a tertiary institute. Patients aged 21 - 90 years, with best-corrected visual acuity of at least 6/12 were recruited, with or without glaucoma. The device contained a pupil tracker and gaze calibration was done prior to testing. The SUPRA-H algorithm was used, employing the “4 dB/2 dB staircase” method. Testing was done on both SUPRA and HVF SITA Standard.

Results: One hundred and twenty eyes (46 healthy, 74 with glaucoma) were analysed. The mean difference (95% limits of agreement) in pattern standard deviation (PSD) between SUPRA and HVF was 0.60±5.22dB. The mean difference (95% limits of agreement) in mean deviation (MD) between SUPRA and HVF was -1.41±7.72dB. There was a strong correlation between the MD (r = 0.884, P< 0.001) and PSD (r = 0.829, P=0.01) results derived from SUPRA and HVF. The mean time taken for SUPRA was 281± 38 seconds and for HVF was 320 ± 57 seconds.

Conclusions: Based on our preliminary data, SUPRA is correlated to HVF in identifying glaucomatous field loss.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2-GF)

Efficacy and Safety of the PRESERFLO MicroShunt in High and Normal Pressure Open-Angle Glaucoma After 1 Year

*First Author: Karin **PILLUNAT***
*Co-Author(s): Maike **HAASE**, Robert **HERBER**, Melanie **JAMKE**, Lutz **PILLUNAT***

Purpose: To assess the 1-year efficacy and safety of the PRESERFLO MicroShunt in patients with primary high (HPG) and normal (NPG) pressure open-angle glaucoma.

Methods: Single center prospective interventional cohort study consecutively including eyes with HPG and NPG not achieving adequate intraocular pressure (IOP) control on maximally tolerated IOP-lowering medication and receiving a primary stand-alone MMC-augmented PRESERFLO MicroShunt implantation for further reduction of IOP. Patients in both groups were of White/European ethnicity. In the case of both eyes being eligible, one was randomly selected. Outcome measures: mean diurnal IOP (mdIOP, mean of 6 measurements including one at night in the supine position), peak IOP, and IOP fluctuations, use of glaucoma medical therapy, visual acuity, visual fields, surgical interventions necessary and adverse events one year after surgery. Statistical analyses were performed using SPSS 25, Mann-Whitney U test and Wilcoxon test.

Results: Twenty-nine HPG and 13 NPG eyes were analyzed and compared. Median [Q25, Q75] mdIOP (mmHg) dropped from 16.5 [13.7-27.3] to 12.8 [10.2-14.5] in the HPG and from 14.3 [13.3-16.0] to 9.5 [8.3-11.1] in the NPG group 1 year after surgery. The reduction of mdIOP (P=1.0), peak IOP (P=0.93), and fluctuations (P=0.14) were not statistically significantly different between the two groups. None of the patients experienced severe adverse events.

Conclusions: The PRESERFLO MicroShunt is also effective and safe in NPG patients with rather low baseline IOPs.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2-GF)

Five-Year Cost Comparison of iStent inject® W Versus Trabeculectomy: An Analysis From the Filipino Open-Angle Glaucoma Patients' Perspective

*First Author: Alice **CHU***
*Co-Author(s): David **CHAMPION**, Jose Maria **MARTINEZ**, Sheena **SUTHEN***

Purpose: Five-year total costs of having iStent inject W, a micro-invasive glaucoma surgical implant, vs. trabeculectomy, an invasive surgical gold standard, for open-angle glaucoma (OAG) were estimated from the Filipino patients' perspective to understand the potential financial burden. Currently, iStent inject W is not reimbursed by PhilHealth and private insurance; however, trabeculectomy is covered.

Methods: Unit cost and frequency data for consultation with basic eye exams, primary glaucoma surgery, and post-operative interventions were obtained from primary research. Glaucoma medication cost and frequency were obtained from published data. Unit cost and frequency for secondary glaucoma surgery, if primary surgery fails within 5 years, were obtained from primary and secondary data. Scenario analysis included patients paying 100% out of pocket, eligible for government subsidy, and those with private insurance.

Results: Over 5 years, for an average patient who pays 100% out-of-pocket, iStent inject® W costs US$ 132 less than trabeculectomy (US$ 3,427 versus US$ 3,559). For patients eligible for government subsidy, iStent inject® W costs US$ 458 more than trabeculectomy (US$ 3,403 versus US$ 2,944). For patients with private insurance, iStent inject® W costs US$ 1,391 more than trabeculectomy (US$ 3,113 versus US$1,722).

Conclusions: Both patients paying out-of-pocket and those eligible for government subsidy experience comparable 5-year costs between iStent inject® W and trabeculectomy. Patients with private insurance experience a cost difference lower than the average iStent inject® W device cost. Surgeon-patient decisions should factor in long-term costs, along with risks, benefits, and quality of life, and not just initial surgical expenses.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2-GF)

Flow Characteristics Measurement of Ahmed Glaucoma Valve With Infusion Pump System

*First Author: Masaki **TANITO***
*Co-Author(s): Sachiko **KAIDZU**, Andi **MASDIPA***

Purpose: The Ahmed glaucoma valve (AGV) has gained popularity among surgeons for glaucoma treatment. A detailed analysis of valve pressure characteristics after the initial priming has been lacking. This study aimed to investigate the pressure characteristics of the AGV and the potential impact of trapped air within the experimental infusion system.

Methods: Seventeen AGVs were exposed to normal saline flow using a syringe infusion pump. Pressure transducers were utilized to measure the pressure of the normal saline entering the AGV tube. Pressure measurements were taken twice for each AGV under a tube infusion rate of 2µL/minute. This was done to determine the re-priming pressures both with and without the presence of air (1µL) in the tube.

Results: Following the initial priming, a pressure surge was observed, which then gradually increased, abruptly dropped upon valve opening, and subsequently stabilized. The re-priming pressure, identified as the peak pressure before valve opening, was significantly higher in the presence of air (+) (26.5±6.8 mmHg) compared to conditions without air (-) (12.1±3.8 mmHg) ($P<0.0001$, paired t-test). Conversely, the constant pressures for both air (+) (10.6±3.7 mmHg) and air (-) (10.4±2.9 mmHg) conditions were comparable ($P=0.89$).

Conclusions: The flow-pressure characteristics of the AGV were comprehensively evaluated in this experimental context. The presence of air within the AGV tube resulted in a two-fold increase in re-priming pressure when compared to scenarios without air. This elevation in pressure, attributed to the capillary pressure, viscosity, and air pressure effects on the capillary-sized tube material, highlights the significance of air entrapment.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2-GF)

High Myopia Normative Database of Peripapillary Retinal Nerve Fiber Layer Thickness to Detect Myopic Glaucoma in Chinese Population

*First Author: Yunhe **SONG***
*Co-Author(s): Carol **CHEUNG**, Rachel **CHONG**, Anran Emma **RAN***

Purpose: To develop and validate the performance of a high myopia (HM)-specific normative database of peripapillary retinal nerve fiber layer thickness (pRNFLT) in differentiating HM from highly myopic glaucoma (HMG).

Methods: A total of 1367 Chinese participants (2325 eyes) with non-pathologic HM or HMG were included from four centers. After quality control, 1108 eyes from 694 participants were included; 459 eyes from 408 participants (323 eyes with HM and 136 eyes with HMG) and 322 eyes from 197 participants (131 eyes with HM and 191 eyes with HMG) were included in the internal and external validation sets, respectively. The pRNFLT was measured with swept-source optical coherence tomography (SS-OCT). Four strategies derived from the normative database were examined, including global and quadrantic pRNFLT below the lowest 5th or the lowest 1st percentile of the normative database. The accuracy (ACC), sensitivity, and specificity of the HM-specific normative database for detecting HMG.

Results: Setting the 5th percentile of the global pRNFLT as the threshold, we achieved an ACC of 0.93 (0.90, 0.95) and 0.85 (0.81, 0.89) and using the 1st percentile with an ACC of 0.85 and 0.70 in detecting HMG among HM eyes, in the internal and external validation sets, respectively. Compared with the built-in database of the OCT device, the HM-specific normative database had a higher sensitivity and specificity than the corresponding pRNFLT-related strategies (all Ps <0.001).

Conclusions: HM-specific normative database is more capable of detecting HMG eyes than the SS-OCT built-in database, which may be an effective tool for differential diagnosis of HMG.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2-GF)

Myopic Shift Induced by Omidenepag Isopropyl 0.002% in Patients With Primary Open-Angle Glaucoma

*First Author: Jin-soo **KIM***
*Co-Author(s): Ki Yup **NAM**, Jae-yun **SUNG***

Purpose: To evaluate the incidence, pathophysiology, and risk factors of the myopic shift in primary open-angle glaucoma (POAG) patients using omidenepag isopropyl 0.002% eyedrop.

Methods: A prospective observational study was conducted for 50 subjects who visited Chungnam National University Sejong Hospital glaucoma clinic. All of the subjects were diagnosed with POAG and prescribed with omidenepag isopropyl 0.002% eyedrop. Comprehensive ophthalmic examinations were done, including slit-lamp examination, intraocular pressure, visual acuity, and refractive error measurement, keratometry, corneal topography, and optical biometry before and 1 month after the instillation of the eyedrop.

Results: A total of 45 subjects completed 1-month follow-up visits and were included in the final analyses. There were 0.22 diopter (D) of statistically significant myopic shift, and a total of 6 subjects (13%) showed myopic shift of 0.75 D or more. Axial length showed no significant change between the visits. Corneal curvature measured with optical biometry was increased, and corneal thickness measured at the center of the pupil was slightly thickened by 4.5 µm. Anterior chamber depth (ACD) was significantly decreased by 0.05 mm to 0.06 mm, and lens thickness was thickened by 0.02 mm. In the correlation analysis, changes in corneal curvature and ACD were associated with the myopic shift. In the risk factor analysis, there was no identifiable risk factor, including previous history of refractive surgery.

Conclusions: The incidence of clinically significant myopic shift was 13% in POAG subjects using OMDI 0.002%. Ciliary muscle spasm might be the possible mechanism for the myopic shift in POAG subjects using OMDI 0.002% eyedrop.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2-GF)

Natural History and Risk Factors for Glaucoma Progression in Chinese Patients With Normal Tension Glaucoma

*First Author: Yuanbo **LIANG***
*Co-Author(s): De-fu **CHEN***

Purpose: To characterize the inherent progression of normal tension glaucoma and investigate the risk factors for progression in untreated patients.

Methods: Functional progression was defined as visual field deterioration, while structural progression entailed thinning of the retinal nerve fiber layer or ganglion cell plexiform layer. Rapid visual field progression was characterized by visual field index decline >1%/year.

Results: A total of 84 participants (45 women, mean age 60.5 years) with untreated normal tension glaucoma were included, with a mean follow-up period of 5.81 years. Among the 84 eyes with untreated normal tension glaucoma, 57.1% exhibited glaucomatous progression after 5 years of follow-up. Specifically, 19.4% exhibited visual field progression only, while 48.5% exhibited ganglion cell plexiform layer/retinal nerve fiber layer progression only. In Cox proportional hazards analysis, the presence of disc hemorrhage (HR 2.84, 95% CI 1.48 ~ 5.45), female gender (HR 1.92, 95% CI 1.04 ~ 3.54) and mean intraocular pressure (HR 1.18 per mmHg, 95% CI 1.02 ~ 1.35) during the follow-up period were significant predictors of glaucomatous progression. Notably, female gender (HR 4.20, 95% CI 1.48 ~ 11.90) and smoking (HR 4.31, 95% CI 1.35 ~ 13.70) were significant predictors of fast visual field progression.

Conclusions: In Chinese patients with untreated normal tension glaucoma, a significant proportion of eyes demonstrated glaucomatous progression over an average follow-up of 5.81 years. Disc hemorrhage, female gender, smoking, and higher mean intraocular pressure were significant predictors for disease progression, with increased risk of rapid visual field progression.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

One-Year Post-market Surveillance of iStent Inject® W Combined With Phacoemulsification in Japanese Eyes With Open-Angle Glaucoma

*First Author: Masaru **INATANI***
*Co-Author(s): Alice **CHU**, Ichiro **KOHAMA***

Purpose: We report the first-year safety, clinical outcomes, and success of 2-year prospective surveillance in adult eyes with mild to moderate open-angle glaucoma (OAG) implanted with iStent inject W combined with phacoemulsification.

Methods: In addition to patient baseline characteristics, adverse events, intraocular pressure (IOP), and number of glaucoma medications at postoperative day 1, week 1, and months (POM) 1,3, 6, and 12 were assessed. Success, evaluated from POM3 and on, was defined as achieving lower IOP on the same or fewer medications as preoperative or the same IOP on fewer medications as preoperative. Statistical analysis on differences between POM12 and preoperative values included a one-sample t-test for continuous variables and Wilcoxon signed-rank test for count variables. $P < 0.05$ indicated statistical significance.

Results: Among 211 eyes (age: 71±9 years) implanted with iStent inject W with phacoemulsification (efficacy population), 49% were primary OAG and 46% were normal-tension glaucoma with mean IOP of 15.9±3.4 mmHg on average 2.4±3.4 medications. In eyes with POM12 data (n=189), mean IOP reduced by 2.4±1.3 mmHg ($P<0.001$) to 13.2±3.3 mm Hg. POM12 mean medications were 0.9±1.3 — a decrease of mean 1.4±1.2 ($P<0.001$). Success was 97%. The incidence of adverse events was 5.6% in the safety population (n=214), with "IOP increase" being the most common at 2.3%. Stent-related issues occurred in 5.6% of eyes, with stent occlusion being the most frequently observed (3.7%).

Conclusions: One-year outcomes after iStent inject W implantation with phacoemulsification showed good safety results and excellent success and treatment responses.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Optic Nerve Subarachnoid Space Appearance on Myopic and Glaucomatous Optic Discs

*First Author: Arya **PRADIPTA***
*Co-Author(s): William **MORGAN***

Purpose: The purpose of this study is to image and describe the presence of the optic nerve subarachnoid space (ONSAS) and its surrounding features in glaucoma patients with myopia using optical coherence tomography (OCT) scanning.

Methods: In this descriptive study, 111 eyes were evaluated using optic nerve head (ONH) OCT, and the ONSAS was identified and examined. The OCT scan was performed along the peripapillary atrophy zone for a higher chance of ONSAS exposure. Any changes to the nearby structures were also noted.

Results: Sixty (54.1%) out of 111 eyes demonstrated a clear ONSAS appearance, while the rest did not. Among those 60 eyes, 90% (54 eyes) were identified with accompanying scleral splitting. This study detected 31 eyes with scleral splitting directly connected to the area of ONSAS. On top of the scleral splitting, this study also found 1 eye with additional retinal splitting, 1 eye with choroidal splitting, and 1 eye with optic nerve head splitting.

Conclusions: Optic nerve subarachnoid space can be detected in myopic and glaucomatous eyes using ONH OCT and may present with scleral, retinal, or optic nerve head splitting.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Rates of Change of Visual Field Sensitivity in Patients With Glaucoma in Asia – A Pilot Report From the Asian Glaucoma Registry

*First Author: Robert **ANG***

Purpose: The Asian Glaucoma Registry aims to understand glaucoma progression and management patterns in Asia. The rate of change of visual field (VF) sensitivity and the prevalence of fast progressors are investigated.

Methods: Clinical data of 260 patients (392 eyes) from 13 sites (11 countries: Hong Kong China, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand, Vietnam); who had VF testing at least once a year over 5 years were analyzed. A linear mixed model was applied to evaluate the rates of change of VF mean deviation (MD). Fast progressors had a rate of VF MD loss of greater than 1 dB/year with $P<0.05$.

Results: 29.3% of patients had normal tension glaucoma (NTG), 58.0% primary open-angle glaucoma (POAG), and 12.7% primary angle closure glaucoma (PACG). The mean (SD) age, intraocular pressure (IOP), central corneal thickness, axial length, and VF MD at the baseline visit was 51.7 (14.8) years, 18.8 (6.4) mmHg, 530 (60) µm, 25.1 (3.0)mm, and -6.63 (6.45) dB, respectively. The rate of change of VF MD was -0.27 dB/year (95% CI: -0.46 to -0.09) in eyes with NTG, -0.14 dB/year (95% CI: -0.23 to -0.05) in eyes with POAG, and 0.79 dB/year (95% CI: -0.31 to 0.47) in eyes with PACG. The prevalence of fast progressors was 3.7% and 5.7% in POAG and NTG, respectively.

Conclusions: A significant proportion of glaucoma patients in Asia had normal levels of IOP and the rate of VF sensitivity worsening was faster in patients with NTG compared to POAG or PACG.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Safety and Efficacy of Netarsudil Solution in Primary Open-Angle Glaucoma or Ocular Hypertension

*First Author: Makoto **AIHARA***
*Co-Author(s): Raymund **ANGELES**, Akihiro **IWATA***

Purpose: This phase 3, multicenter, double-masked study evaluated the intraocular pressure (IOP)-lowering efficacy and safety of combination netarsudil 0.02% and latanoprost 0.005% in Japanese patients with primary open-angle glaucoma or ocular hypertension.

Methods: Patients (mean age, 62.6 years; 56.5% female; open-angle glaucoma, 67.1%; ocular hypertension, 32.9%) received 1 drop of latanoprost once a day bilaterally for 6 weeks (followed by an additional qualification period of 2–7 days to ensure eligibility) and were then randomized 1:1 to netarsudil/latanoprost (N=122) or placebo/latanoprost (N=124) for 4 weeks. The primary endpoint was netarsudil superiority in mean diurnal (MD) IOP reduction at week 4 versus placebo. Adverse events (AEs) were recorded throughout the study.

Results: At week 4, MD standard error (SE) IOP was 15.29 (0.172) mmHg with netarsudil versus 17.65 (0.170) mmHg with placebo (mean difference −2.36 mmHg; 95% CI: −2.83, −1.88; P<0.0001). MD IOP was significantly lower with netarsudil versus placebo at weeks 1 and 2; mean IOP was significantly lower with netarsudil versus placebo at every timepoint measured during the treatment period. AE incidence was 64.8% with netarsudil and 21.0% with placebo. The most frequent AE was conjunctival hyperemia (53.3% with netarsudil vs 6.5% with placebo); no serious AEs were reported.

Conclusions: Netarsudil/latanoprost was superior to placebo/latanoprost in lowering MD IOP at week 4, with a continued, stable, IOP-lowering effect and no safety concerns observed in the patient population in this study.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Transcriptomic Analysis of TGFβ1-Mediated Fibrosis in Primary Human Tenon's Fibroblasts

*First Author: Antony **BOYNES***
*Co-Author(s): Elsa **CHAN**, Jennifer **FAN GASKIN**, Roy **KONG**, Zoe **PASVANIS**, Raymond **WONG***

Purpose: To further understand the molecular mechanisms and causal pathways of ocular fibrosis following glaucoma filtration surgery (GFS) by identifying genes involved in myofibroblast differentiation in human Tenon's fibroblasts (HTFs).

Methods: HTFs were isolated and propagated from explanted subconjunctival Tenon's capsules collected during GFS performed in 3 patients. HTFs were assigned to either the control or the TGFβ1 treatment group. RNA extraction was performed after 5 days post-treatment, and RNA sequencing was performed at a depth of 38-50 million reads per sample using Novaseq. Bioinformatic analysis was performed using DESeq2 to analyse differential gene expression in the two sample groups. We carried out detailed gene ontology, gene set enrichment analysis, and KEGG pathway analysis.

Results: Following quality control, 3,362 differentially expressed genes were identified, of which 1,532 were upregulated and 1,820 were downregulated following TGFβ1 treatment. We detected significant enrichment in genes associated with the gene ontology terms TGF-beta-signaling, Wnt signaling pathway, extracellular matrix organization, and regulation of cell cycle process. There was significant upregulation of 14 genes associated with myofibroblast activation including ACTA2, CTGF, TGFB1, EDN1, FN1, ITGA11, NOX4, NREP, SERPINE1, SERPINE2, DACT1, SCUBE3, TNC, and TXNDC5. There were 6 significantly downregulated genes related to myofibroblast regulation/inhibition FGF16, LGALS3, PPARG, LTBP4, SOD3, and TNXB.

Conclusions: This work provides an important reference with unprecedented insights into the transcriptional landscape of HTFs myofibroblast differentiation. This is fundamental to advance our understanding of ocular fibrosis and identify novel therapeutic targets to limit the formation of scar tissue following GFS.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Wenzhou Glaucoma Progression Study (WGPS): Association Between Longitudinal Change of Peripapillary Capillary Vessel Density and Glaucoma Progression

*First Author: De-fu **CHEN***
*Co-Author(s): Yuanbo **LIANG***

Purpose: To explore the association between progressive peripapillary capillary vessel density (pcVD) loss and visual field (VF) progression in normal tension glaucoma (NTG).

Methods: Rates of changes in pcVD loss and VF MD decline over time were analyzed using a linear mixed-effects model. Univariable and multivariable regression analyses were performed to identify risk factors associated with VF progression and determine the association between different pcVD metrics and rates of VF loss in NTG.

Results: A total of 110 eyes of 110 participants with NTG were finally included for analyses. There were 58 (52.7%) men and 52 (47.3%) women with a mean follow-up time of 5.6 ± 1.8 years (range: 2.0, 8.1 years), and the mean age was 56.8 ± 13.4 years at baseline. Lower pcVD in the peripapillary region, inferior hemisphere and superior quadrant at initial assessment was significantly associated with faster rates of decline in MD over time (all P values below 0.05). And subsequent multivariable models also revealed faster rates of pcVD reduction in the peripapillary region, superior and inferior hemispheres, and superior and inferior quadrants were associated with faster rates of VF loss in NTG (all P values below 0.02).

Conclusions: The findings from this cohort study suggest that lower pcVD at baseline and rapid pcVD loss during the follow-up period are significantly related to concurrent or future risks of faster VF decline in patients with NTG. This implies that pcVD metrics may be a promising biomarker for glaucoma management in NTG.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

"Intraocular Pressure Control, Bleb Morphology and Adverse Effects After Trabeculectomy With Adjunctive Use of Mitomycin - C and Bevacizumab"

*First Author: Pir Salim **MAHAR***

Purpose: To compare the control of intraocular pressure (IOP) with bleb morphology and adverse effects after trabeculectomy with the adjunctive use of mitomycin – C (MMC) and bevacizumab.

Methods: One hundred and six patients of either gender with a diagnosis of primary open-angle glaucoma (POAG) fulfilling the inclusion criteria were planned for trabeculectomy with adjunctive use of MMC or bevacizumab. Each group consisted of 53 patients (53 eyes) with an IOP of more than 21 mmHg not controlled pharmacologically.

Results: The mean age of patients was 56.67 years, with higher preoperative IOP in MMC (31.51 mmHg) vs. Bevacizumab (29.21 mmHg) group. Postoperatively, both groups showed significant IOP reduction, persisting at one year: MMC (11.26 mmHg) and Bevacizumab (11.73 mmHg). Bleb morphology indicated comparable elevated blebs, and vascularized blebs decreased over a year. Hyphema occurred in 3.77% MMC cases, none in Bevacizumab. MMC had higher flat anterior chamber incidence (18.8% vs. 7.54% Bevacizumab). Managed conservatively. All complications were resolved without additional procedures.

Conclusions: There was a reduction in IOP in both MMC and Bevacizumab groups which was statistically not significant at the end of one year. Bleb morphology was also found to be almost similar at one year follow-up while a significant difference was found between the adverse effects of both drugs.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Ab Interno vs. Ab Externo Microcatheter-Assisted Circumferential Trabeculotomy in Treating Patients With Juvenile Open-Angle Glaucoma

*First Author: Huaizhou **WANG***
*Co-Author(s): Haohao **DI**, Weijia **ZHANG***

Purpose: To systematically compare the long-term postoperative efficacy and safety data of Gonioscopy-assisted transluminal trabeculotomy (GATT) and Microcatheter-assisted circumferential trabeculotomy (MAT) and to provide a reference for the treatment of juvenile open-angle glaucoma (JOAG).

Methods: The JOAG patients were divided into the GATT and MAT groups according to the surgical procedure. The two groups' intraocular pressure (IOP) was recorded before and after the surgery. The number of anti-glaucoma drugs used in the 1-year follow-up after surgery was also recorded. The complete success of the surgery and qualified success were evaluated. The IOP levels, drug use, and success rates at different time points were compared.

Results: A total of 30 eyes (22 subjects) in the GATT group and 24 eyes (19 subjects) in the MAT group were

included. The IOP in both groups was significantly lower than before surgery. The IOP reduction rate of the MAT group was significantly higher than that of the GATT group 1 day after surgery (P=0.040). One year after surgery, the complete success rate was 60.0% in the GATT group and 70.8% in the MAT group, while the qualified success rate was 90.0% in the GATT group and 95.8% in the MAT group, with no significant difference between the two groups (P>0.05).

Conclusions: For the JOAG population, MAT has a stronger IOP lowering effect in the early stage, while GATT and MAT have the same long-term IOP lowering effect and success rate, and there is no difference in the abnormal IOP events between both surgeries.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Assessing the Difference and Correlation Between RNFL Parameters in OCT for Progression in Primary Open-Angle Glaucoma

*First Author: Arif **WARDHANA***
*Co-Author(s): Retno **EKANTINI**, Tatang **TALKA GANI**, Krisna **PURNOMO JATI***

Purpose: To determine the reproducibility of optical coherence tomography (OCT) in primary open-angle glaucoma (POAG) by using a comparison between two separated measurements of average retinal nerve fiber layer (RNFL) thickness. Also, between the width of rim area, vertical cup disc ratio, and four quadrants RNFL thickness. And the correlation between two periods of average RNFL thickness and four quadrants of RNFL thickness.

Methods: Thirty-nine right eyes of both sexes and various ages were examined by using optical coherence tomography (OCT) for measuring RNFL thickness and another parameter around the optic nerve head, such as rim area and vertical cup disc ratio (VCD). The periods of examination were separated by one year.

Results: There was no difference between the two separated average RNFL thicknesses (p=0.166). But, there were significant differences between rim area and vertical cup disc ratio between two separated periods of examination (p=0.046 and p=0.011). The difference between the superior, nasal, and inferior quadrants was not significant (p= 0.211, p=0.175, and p=0.112), but the temporal region showed a significant difference (p=0.039). The correlation between four quadrants of RNFL thickness showed significant correlation in superior, nasal, inferior, temporal (R= 0.487, p= 0.002), (R= 0.915, R= 0.749, R= 0.897, R= 0.702 with p= <0.001). But not show a significant correlation between average RNFL thickness (R= 0.258, p= 0.113).

Conclusions: The average RNFL thickness showed no significant difference but showed a positive correlation in 4 quadrants between two separated periods of study. However, the rim area width and vertical cup disc ratio showed a significant difference in POAG patients in one year.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Causal Effects of Gut Microbiota on Glaucoma: A Mendelian Randomization Study

*First Author: Jiahao **XU***
*Co-Author(s): Xuanchu **DUAN**, Xinyue **ZHANG**, Xiaoyu **ZHOU***

Purpose: Prior studies have indicated a significant connection between the gut microbiota (GM) and glaucoma. However, the precise nature of their causal relationship remains to be fully understood.

Methods: Instrumental variables for 211 GM taxa were extracted through a comprehensive genome-wide association study (GWAS). Subsequently, a Mendelian randomization investigation was conducted to assess their potential impacts on the risk of glaucoma, utilizing data from the most expansive publicly accessible multitrait analysis of glaucoma to date, encompassing 133,492 cases and 90,939 controls. Inverse variance weighted (IVW) was employed primarily for causal inference. Additionally, the MR results are verified by several sensitive analyses.

Results: Regarding the 211 GM taxa, IVW results validated that phylum Euryarchaeota (p = 0.041), genus-Eubacterium rectale (p = 0.023), Odoribacter (p = 0.033), Ruminiclostridium 9 (p = 0.019), Ruminococcaceae UCG009 (p = 0.012) were correlated with the risk of glaucoma. Family-Lachnospiraceae (p = 0.041), Victivallaceae (p = 0.041), genus Alloprevotella (p = 0.027), Faecalibacterium (p = 0.043), Lachnoclostridium (p = 0.002), Oscillospira (p = 0.019), and Ruminococcaceae UCG011 (p=0.012) were protective factors for glaucoma. Sensitivity analysis was performed to confirm the robustness of the MR results.

Conclusions: We validated a potential causal link between specific gut microbiota and glaucoma. This finding underscores the significance of the "gut-eye" axis and introduces novel perspectives into the mechanistic role of gut microbiota in glaucoma. Extensive investigations to delve deeper into this association are imperative, to find new prevention strategies for glaucoma.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Clinical Features of Vision-Related Quality of Life and Mental Health in Patients With Primary Angle-Closure Disease

*First Author: Jiamiao **LIU***
*Co-Author(s): Jingjing **HUANG**, Yehui **TAN***

Purpose: To assess vision-related quality of life (VRQoL) and mental status in patients with primary angle-closure disease (PACD) and the subgroup analysis.

Methods: In this cross-sectional study, 135 patients with PACD in differential classification (PACD group) and 147 patients with cataract (control group) were consecutively included. After collecting basic sociodemographic and ophthalmic characteristics, all patients underwent an assessment of VRQoL and mental status. The VRQoL was evaluated using the 25-item National Eye Institute Visual Function Questionnaire (NEI-VFQ-25). The mental status was measured by the validated Depression Anxiety Stress Scale (DASS-21).

Results: The mean composite NEI-VFQ-25 score in the PACD group was 67.0±15, with the three subgroups scoring 76.9±11 in the primary angle-closure suspect or primary angle closure (PACS/PAC), 64.8±16 in the primary angle-closure glaucoma (PACG), and 67.1±16 in the acute angle-closure crisis (AACC). Compared with the controls, the PACD group reported reduced scores on almost all NEI-VFQ-25 subscales (each P <0.01). Among the PACD groups, PACG and AACC patients had lower scores in general health, general vision, ocular pain, near activities, distance activities, social functioning, mental health, role difficulties, dependency and peripheral than PACS/PAC patients (P<0.05 for all). For mental status, PACS/PAC patients recorded higher scores in the DASS stress subscale, while lower scores in the DASS depression subscale and the DASS anxiety subscale.

Conclusions: VRQoL is significantly impaired in patients with PACD and is remarkably associated with the classification. Monitoring of mental health may lead to more targeted clinical care.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Combination of Videography of Aqueous Vein and Gonioscope Predicts the GATT Results

*First Author: Chen **XIN***

Purpose: To explore the correlation between the characteristics of videography of aqueous vein and gonioscope and gonioscopy-assisted transluminal trabeculotomy (GATT) in eyes with primary open-angle glaucoma (POAG).

Methods: POAG were scheduled to receive GATT as the initial surgical treatment was consecutively recruited. All subjects underwent the videography of the aqueous vein and gonioscope prior to the surgery. The intraocular pressure (IOP) and medication used were recorded before and I-, 2-week, 1-, 3-, 6- and 12-month after GATT. Surgical success was defined as a postoperative IOP ≤ 21 mmHg or 20% IOP reduction from preoperative IOP without additional medical or surgical therapy.

Results: GATT was performed on 45 eyes with POAG (31 male, 14 female). Mean IOP decreased from 26.3±12.2 mmHg preoperatively to 14.3±3.6 mmHg at 12 months postoperatively. The number of medications decreased from 3.3±0.7 to 0.8±1.2 at 12 months postoperatively. The surgical success rate (SR) was 68.9%. Prior to surgery, the aqueous vein could be identified in 44 POAG eyes, including 18 eyes with glass-rod (+). With gonioscopy, Schlemm's canal (SC) was fully filled with blood in 5 eyes, while 23 eyes segmentally blood reflux into SC. One month after GATT, 18 eyes endured IOP spike, including 2 eyes that received trabeculectomy. Pearson correlation coefficient of SR and videography of aqueous vein was 0.578 (p=0.037), of SR and gonioscope examination was 0.298 (p=0.246), of SR and combination of videography of aqueous vein and blood reflux into SC was 0.712 (p=0.018).

Conclusions: A combination of videography of an aqueous vein and a gonioscope could predict GATT results.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

HDAC4 Modulates Trabecular Meshwork Cells PANoptosis Through Deacetylation Modification of Caspases in Primary Open-Angle Glaucoma

*First Author: Xiaoyu **ZHOU***
*Co-Author(s): Xuanchu **DUAN**, Jiahao **XU**, Xinyue **ZHANG***

Purpose: To verify the therapeutic effect of histone deacetylase (HDAC) inhibitor tasquinimod on primary open-angle glaucoma (POAG) and clarify the mechanism of HDAC4 regulating trabecular meshwork cells (TMCs) PANopotosis.

Methods: Microarray data (GSE27276) of trabecular meshwork (TM) tissue in POAG was downloaded from the GEO database. The CMap database was used to screen small molecule inhibitors for POAG. Aqueous humor and TM tissues were collected to assess expression levels of the HDAC family and PANoptosis-

related indicators (HMGB1, IL-1β, caspase-1,3,8, MLKL, NLRP3). The H2O2-induced TMCs injury model was constructed. Injection of hypertonic saline into the episcleral vein was used to construct a chronic ocular hypertension (COH) rat model. HDAC4 inhibitor tasquinimod was applied in vivo and in vitro to verify its therapeutic effects. PCR, Western blots and immunofluorescence were used to assess PANoptosis levels and extracellular matrix (ECM) remodeling. Co-immunoprecipitation (COIP) was performed to identify the deacetylation position.

Results: CMap analysis revealed that HDAC inhibitors possessed the potential to lower IOP. Microarray and immunohistochemistry results showed that HDAC4 was the key gene regulating TMCs injury. PANoptosis-related indicators were up-regulated in AH and TM tissues of POAG patients compared with those of controls. Tasquinimod and HDAC4 siRNA rescued H2O2-induced TMCs PANoptosis and ECM remodeling. CoIP suggested HDAC4 enhanced activity of caspase-1, 3, 8 by deacetylating lysine position 7, 11, 480. Tasquinimod intervention significantly lowered the intraocular pressure of COH rats.

Conclusions: Tasquinimod inhibited TMCs PANoptosis through deacetylation modification of the caspases family to lower IOP in POAG.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Ideal Timing for Cataract Surgery and Clinical Outcomes of Cataract Extraction in Eyes With Acute Angle Closure Attack. A Prospective Cohort Comparative Study

*First Author: Pek Hwi **TAN***
*Co-Author(s): Mun Yee **CHANG**, Kar Yong **CHONG**, Haireen **KAMARUDDIN**, Yap **SIN ROY***

Purpose: To evaluate the ideal timing for cataract surgery by assessing the visual acuity, intraocular pressure and glaucoma medications needed after acute angle closure attacks (AAC).

Methods: This prospective cohort comparative study was conducted in a single center from 1st July 2022 to 30th June 2023. Patients with AAC episodes were treated medically before being randomized into early (within 7 days) and late (beyond 7 days) cataract surgery groups. Visual acuity, intraocular pressure and anterior and posterior segment findings were recorded at initial presentation and postoperative day 1, day 7 and day 30. The number of antiglaucoma medications given at the initial presentation and postoperatively were recorded. Data analysis was done using SPSS 25.

Results: A total of 27 of 35 eligible subjects (77.1%) were examined. There were 17 (63%) females. The age of the subjects was 67.7±9.9 years (ranging from 56-92 years old). Nine (33%) subjects underwent early cataract operation. Visual acuity (VA) was better in the late cataract operation group (mean VA LogMar 1.39 (early) vs 0.77 (late) at 1 week post-op, p=0.067, mean VA LogMar 1.06 (early) vs 0.51 (delayed), p=0.05). However, there were no significant changes in IOP in these 2 groups. At one month, those in the early cataract surgery group had only 1 antiglaucoma medication, whereas the late cataract surgery group needed 2.7 antiglaucoma mediation (p<0.05).

Conclusions: Delayed cataract surgery of at least 1 week after AAC attack resulted in better visual acuity but higher dependence on antiglaucoma medications, with no difference in final IOP from the early surgery group.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Identification of a Chromatin Regulator Signature and Potential Candidate Drugs for Primary Open-Angle Glaucoma

*First Author: Xinyue **ZHANG***
*Co-Author(s): Jiahao **XU**, Xiaoyu **ZHOU***

Purpose: To explore the potential implications of chromatin regulators (CRs) in trabecular meshwork (TM) tissues of primary open-angle glaucoma (POAG).

Methods: Bioinformatic analysis was performed to paint the expression landscape of m6A regulators in TM tissues of POAG patients.

Results: CRs are indispensable upstream regulatory factors of epigenetics. In this study, we focused on investigating the expression profiles of CRs in POAG through bioinformatic analysis. Furthermore, we found the immune microenvironment of the TM was changed in POAG patients and identified 3 differentially expressed CRs that were relevant to immunity. Then, we successfully constructed and proved a predicted signature based on 3 CRs that were most relevant to the immune, which could effectively predict the risk of POAG. The genes co-expressed with these 3 CRs and miRNAs that have a regulatory relationship with them were identified, and a miRNA-hub CR network was successfully constructed. It is worth mentioning that the results of GSEA analysis indicated that these 3 hub CRs were all associated with neurodegenerative diseases. In addition, we also found 10 agents that might be beneficial for the treatment of POAG patients.

Conclusions: Dysregulation of CRs expression in TM tissues may be involved in the occurrence of POAG through multiple mechanisms.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Lamina Cribrosa Defects in Glaucoma and the Relationship With Nonprogressive Optic Nerve Damage

*First Author: Yuan **XIE***
*Co-Author(s): Yunxiao **SUN***

Purpose: To investigate the relationship between the relationship between local lamina cribrosa (LC) defects and and the nonprogressive visual field defect (VFD) in primary open-angle glaucoma (POAG).

Methods: This case-control study included 32 patients (64 eyes) who were diagnosed as POAG with at least 5 visual field defects results. Serial imaging by swept source OCT B-Scan of the optic discs was acquired at the end of the follow-up and reviewed LC defects. Intraocular pressure, mean defects (MD) of the visual field (VF), the central corneal thickness, and axis length were recorded in the follow-up duration. Eyes were classified as having either progressive or nonprogressive VFD, and associating factors were evaluated by mixed linear model analysis and multivariate logistical regression analysis.

Results: There are 32 subjects (64 eyes) enrolled in the study with a mean age of 47.44±14.1 years, 15 females. Forty-five eyes showed nonprogressive VF defects.LC defects were more common in eyes without (28/45), rather than with progressive VF defects (1/19)(p=0.012). Eyes with nonprogressive visual field defects showed longer axis lengths and wider LC defect diameters. Multivariate logistic regression analysis revealed the presence of LC defect was significantly associated with nonprogressive VF defects (odds ratio=0.217, P=0.012). There are 7 subjects with asymmetry VF defects progress and also showed LC defects were more common in nonprogressive eyes (7/7 vs. 7/1). There was only one patient with progressive VF that showed only a single LC defect with a smaller diameter (169µm) than that in the contralateral eyes with stable VF (229µm).

Conclusions: Wider spontaneous penetrating LC defects were associated with nonprogressive glaucomatous defects and could be a protective factor for POAG.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Long-Term Outcomes of Ciliary Sulcus Placed AGV Tube in Refractory Glaucoma's of Indian Eyes

*First Author: Sai Vineeth **MADDU***
*Co-Author(s): Dewang **ANGMO**, Tanuj **DADA***

Purpose: To evaluate the long-term efficacy of ciliary sulcus placed AGV tube and corneal endothelial cell density (CECD) changes in refractory glaucoma's in a tertiary setup in India.

Methods: A prospective interventional study was conducted in 20 eyes of 20 patients with refractory glaucoma treated with AGV tube. The main outcome measure was success at the last follow-up. Success was defined as an IOP >5 and ≤ 21 mmHg and/or 20% reduction from baseline with or without medication; with no loss of light perception or vision-threatening severe complications. Success, using Kaplan-Meier analysis was determined at 6,12 and 24 months. Specular microscopy at baseline and postoperatively at 3, 6 and 12 months (wherever possible) was performed and evaluated for CECD changes.

Results: The mean age of the patients was 29.92 ± 16.6yrs. The mean follow-up after AGV implantation was 23.35 ± 20.64 months (range: 1–144 months). The mean pre-operative IOP was reduced from 33.42±7.58 mmHg to 16.57±4.07 mmHg at the final follow-up (p<0.0001). The number of anti-glaucoma medications was reduced from 5 ±1.17 at baseline to 0.92 ± 0.47 at final follow-up (p=0.0001). The cumulative probability of success was 83.3% at 6 months, 77.8% at 1 year and 71% at 2 years. A total of 28.6% (4/14) of eyes had minor complications and no major complications. A median endothelial cell loss of 10% was noted at the end of 6-9 months post operative period.

Conclusions: Ciliary sulcus placed AGV in refractory glaucoma's seems to have relatively good long-term outcomes.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Mendelian Randomization Implicates Metabolites Effects on Primary Open Angle Glaucoma or Intraocular Pressure

*First Author: Xiaoyu **ZHOU***

Purpose: Previous studies have emphasized the important role of metabolites as biomarkers for primary open-angle glaucoma (POAG). This study aimed to reveal the precise nature of causal relationships between metabolites and POAG.

Methods: POAG-related traits and 575 metabolites-related exposures were extracted from the IEU Open Genome-Wide Association Study (GWAS) project. Two sample Mendelian randomization was conducted to clarify the effects of metabolites on POAG. Multivariable Mendelian randomization (MVMR) was utilized to identify significant mediators for the relationships between metabolites and POAG, using POAG and POAG-related endophenotypes, including intraocular pressure (IOP), retinal nerve fiber layer (RNFL) thickness, vertical cup-to-disc ratio (VCDR). Inverse variance weighted (IVW) was employed primarily for causal inference.

Results: IVW results validated 22 POAG-related metabolites, 30 VCDR-related metabolites, 23 IOP-related metabolites and 17 RNFL thickness-related metabolites. Among 22 POAG-related metabolites, only 2 metabolites, total cholesterol in medium HDL (OR 1.14) and glycoproteins (OR 1.14), were associated with VCDR, but not any of the other glaucoma endophenotypes. MVMR results proved that VCDR showed the most significant mediation effects on total cholesterol in medium HDL, glycoproteins and POAG.

Conclusions: We have validated genetic evidence that metabolites were causal factors for POAG and the effects of HDL and glycoproteins on POAG were mediated by VCDR.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Modulating Transsynaptic Dopamine Signaling Promotes Optic Nerve Regeneration and Preserves Visual Function

*First Author: Qi **ZHANG***
*Co-Author(s): Yiqing **LI**, Yehong **ZHUO***

Purpose: To investigate the changes in retinal dopamine release from presynaptic amacrine cells (ACs) after optic nerve crush (ONC) and develop related therapy to promote optic nerve regeneration and vision recovery.

Methods: High-performance liquid chromatography was used to detect retinal dopamine levels after ONC. Intravitreal injection of levodopa and tetrabenazine was used to verify the neuroprotective effect of presynaptic dopamine. Single-cell sequencing data was analyzed to identify the specific subtype of postsynaptic dopamine receptor. Retinal ganglion cells (RGCs)-specific transgene overexpression was mediated by Adeno-associated virus 2 injection. Retina and optic nerves were dissected 14 days after ONC to quantify surviving RGCs and regenerating axons. The chronic ocular hypertension model was induced by intracameral injection of hydrogel to examine the visual function.

Results: Dopamine concentration reduced by ~50% at 7 days post-crush (dpc) and remained at a lower level even at 14 dpc. Elevated presynaptic dopamine release by levodopa-protected RGCs and moderately increased axon regeneration at 14dpc. The dopamine receptor D1 (DRD1) was identified as a vital postsynaptic mediator of dopamine, and single-cell sequencing analysis revealed decreased Drd1 expression levels in RGCs after ONC. RGC-specific overexpression of Drd1 combined with levodopa overcame the subtype-specific barrier of survival and regeneration, robustly increased the number of surviving RGCs and regenerating axons after ONC, and preserved vision in a chronic ocular hypertension model.

Conclusions: Our study discovered the previously neglected but potent neuroprotective effect of retinal dopamine and revealed a dopamine-related transsynaptic mechanism between ACs and RGCs that regulates optic nerve regeneration.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Order of Magnitude (OM): Virtual Reality-Based Visual Field Examination to Detect Glaucomatous Field Loss

*First Author: Tiruveedhi **YASWANTH***
*Co-Author(s): Sirisha **SENTHIL***

Purpose: To present the development of Order of Magnitude (OM), a virtual reality-based visual field analyser, and its potential application in the detection of glaucomatous visual field loss.

Methods: We included glaucoma or normal subjects between April and October 2019. Study participants underwent a comprehensive eye examination, along with the OM test and Humphrey's Visual Field (HVF) test. OM follows a two-step supra-thresholding algorithm with low and high threshold stimuli of 0.43° diameter (Goldmann size III) each. The diagnostic ability of OM and HVF tests was compared against the clinical diagnosis of glaucoma by the specialists. OM test was called abnormal when all the points in one or more Glaucoma Hemifield Cluster (s) were relatively depressed with a minimum of one absolute depressed point. The main outcome measures were diagnostic sensitivity and specificity of the OM test.

Results: We studied 157 eyes (74 glaucomatous, 83 control) of 152 participants. Ninety-seven (61.7%) OM and 108 (68.7%) HVF tests were reliable as per the defined criteria (P=0.19, Chi-square test). The sensitivity [95% confidence interval (CI)] of OM and HVF tests was 93 (86, 100) % and 98 (93.9, 100) %, respectively. Similarly, the specificity (95% CI) of OM and HVF tests was 83 (72.4, 93) % and 83 (73.9, 92.8) %, respectively.

Conclusions: The visual field defects identified by the new virtual perimeter "OM" are non-inferior to the gold standard HVF test in identifying a glaucomatous visual field loss and can be a cost-effective screening tool in resource-constrained settings.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Prospective Randomized Comparison of Travoprost Intraocular Implant Versus Topical Timolol in Primary Open-Angle Glaucoma and Ocular Hypertension

*First Author: Robert **ANG***

Purpose: Phase 3 clinical trials (GC-010, GC-012) that evaluated the safety and efficacy of travoprost intraocular implants [slow-eluting (iDose TR) or fast-eluting] vs timolol maleate ophthalmic solution, 0.5% in patients with open-angle glaucoma (OAG) or ocular hypertension (OHT).

Methods: The multicenter, randomized, double-masked trials enrolled patients with OAG or OHT, on 0 to 2 IOP-lowering medications at screening. Entry criteria included mean diurnal IOP of ≥ 21 mmHg and IOP ≤ 36 mmHg after washout. A total of 385 fast-eluting implants, 380 iDose TR, and 385 timolol patients were randomized. The primary efficacy endpoint was non-inferiority to timolol based on IOP change from baseline at Day 10, Week 6 and Month 3. Safety was evaluated through Month 12.

Results: Mean IOP reductions over 3 months with iDose TR were 6.6 to 8.5 mmHg and 6.7 to 8.4 mmHg in GC-010 and GC-012; 6.6 to 8.4 mmHg and 6.2 to 8.3 mmHg in fast-eluting implant respectively. For the timolol groups, IOP reductions were 6.5 to 7.7 mmHg and 6.8 to 7.2 mmHg respectively. At Month 12, 93% of iDose TR vs 67% of timolol patients were well-controlled on the same or fewer medications compared to screening. 81% of iDose TR patients were medication free. There were no reports of clinically significant endothelial cell loss, periorbital fat atrophy, or serious corneal adverse events.

Conclusions: iDose TR was non-inferior to topical timolol in IOP lowering efficacy, with a favorable safety profile and a high proportion of patients remaining well-controlled on the same or fewer medications compared to screening.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Surgical Outcomes of Virna Glaucoma Implant (VGI®) in Neovascular Glaucoma in Tertiary Hospital

*First Author: Dinda **DEVONA***
*Co-Author(s): Yulinda **LAKSMITA**, Virna Dwi **OKTARIANA**, Ikke **SUMANTRI**, Astrianda Nadya **SURYONO**, Ardiella **YUNARD***

Purpose: Glaucoma drainage device implantation is currently the main surgical treatment of choice in neovascular glaucoma (NVG) to control IOP. We aimed to evaluate the outcomes of Virna Glaucoma Implants (VGI®), a non-valved glaucoma implant in NVG patients.

Methods: A retrospective study was conducted in the tertiary hospital setting. NVG patients who underwent implantation of VGI® between 2019 and 2020, with at least 3-month follow-up, were included. Cumulative success rate was defined as an IOP between 6 and 21 mmHg and ≥20% IOP reduction at 6 to 12 months follow-up with or without glaucoma medication.

Results: Forty-five eyes were included (54.0 [10.0-71.0] years old; 57.8% males). After a follow-up duration of 6 (3 - 24) months, the final postoperative IOP was significantly lower than the preoperative value ($p<0.001$), 15 (3-60), and 43 (13-77) mmHg, respectively. There was no significant difference in IOP between the follow-up periods (1, 3, 6, 9 and 12 months), and postoperative IOP was lower than preoperative value in all follow-up periods ($p<0.001$). The cumulative success rate was 76.7%. Changes in IOP over time in patients receiving intravitreal bevacizumab (IVB) were comparable to those in patients not receiving IVB. The most common postoperative complications were hyphema (66.7%) followed by shallow/ flat anterior chamber and hypotony (44.4%).

Conclusions: Virna Glaucoma Implant reduces IOP significantly in patients with NVG in a tertiary hospital setting. The cumulative success rate appears to be comparable to results from previous studies with different implants.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2-GF)

The Virna Glaucoma Implant, a Novel Glaucoma Drainage Device, for Silicone Oil-Associated Glaucoma: Good Option?

*First Author: Yulinda **LAKSMITA***
*Co-Author(s): Virna **ASRORY**, Ikke **SUMANTRI**, Astrianda **SURYONO**, Ardiella **YUNARD***

Purpose: This study aims to evaluate the effectiveness and safety of the Virna Glaucoma Implant (VGI) in silicone oil-associated glaucoma management. VGI is a novel and low-cost glaucoma drainage device (GDD).

Methods: Ninety-two eyes with silicone oil-associated glaucoma were included in this retrospective study with a mean follow-up of 15 months. Pre- and post-operative intraocular pressure (IOP), visual acuity, number of glaucoma medications, as well as complications were documented. Success was defined as IOP between 5 - 21 mmHg with 20% minimal reduction of IOP, without loss of light perception and without additional glaucoma surgery or valve removal.

Results: The mean pre-operative IOP was 33.4 mmHg (N=92 eyes). The mean IOP 1-day, 1-week, 1-month, 3-months, 6-months, and 12-months post-operatively were 12.4 mmHg, 15.3 mmHg, 22.6 mmHg, 18.6 mmHg, 16.2 mmHg, 14.3 mmHg, respectively. The mean number of glaucoma medications before surgery was three and reduced to one medication in 1 year of follow-up. Almost half of the subjects did not need glaucoma medication in 1 year of follow-up. The cumulative success rate, including complete and qualified success, was 75 percent. Complications were found in 17.4% (16 eyes) of cases. The most frequent complications include exposed tubes (7.6%) and chronic hypotony (5.4%).

Conclusions: Virna glaucoma implant surgeries succeeded in lowering the IOP and reducing the use of medication in silicone oil-associated glaucoma, with a low complication rate. VGI success rate and complication rate were comparable to other studies with other glaucoma drainage devices.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Acute Primary Angle Closure Concurrent With Coronavirus Disease 2019 Recurrence in China: A Multi-Center Study

*First Author: Ye **ZHANG***
*Co-Author(s): Sujie **FAN**, Mingguang **HE**, Xiaojing **PAN**, Jin **WANG**, Ningli **WANG***

Purpose: To report the concurrence of acute primary angle closure (APAC) and coronavirus disease 2019 (COVID-19) recurrence during the lift of the COVID-19 restriction policy.

Methods: An observational, retrospective, multi-center study. Consecutive patients seeking APAC treatment at two eye centers in China from December 7, 2022 to January 13, 2023 (recurrence period) and from the same period in the previous year (control period) were collected. Electronic medical records were reviewed. Ocular data of the affected eye were analyzed for patients with unilateral APAC and both eyes in cases of bilateral APAC.

Results: A total of 189 (219 APAC eyes) and 51 patients with APAC (54 APAC eyes) were identified during the recurrence and control periods, respectively. The patients identified during the recurrence period tended to be younger (P=0.043), with longer time from symptoms to treatment (P=0.039), had a shorter axial length (P=0.002), larger pupil diameter (P=0.004), larger vertical cup disc ratio (P=0.004), worse mean deviation values (P=0.003), and more glaucomatous optic neuropathy diagnoses (P=0.032) in comparison with the APAC patients identified during the control period.

Conclusions: The number of APAC patients significantly increased and concurred with the COVID-19 pandemic during the recurrence period. The association between APAC and COVID-19 recurrence that might be mediated by COVID symptoms such as coughing and vomiting, and behavioral and psychological changes concurrent with COVID-19 infection requires further investigation.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Apoptosis Inhibitor of Macrophages/CD5L Enhances Phagocytosis in the Trabecular Meshwork Cells and Regulates Ocular Hypertension

*First Author: Hotaka **NEMOTO***
*Co-Author(s): Makoto **AIHARA**, Megumi **HONJO***

Purpose: The apoptosis inhibitor of macrophage (AIM, also known as CD5L) is a crucial protein involved in the

removal of dead cells, damage-associated molecular patterns (DAMPs), and other debris, which can lead to inflammation in the body. Based on this, we hypothesized that AIM might also play a crucial role in enhancing phagocytosis in trabecular meshwork (TM) cells, which also possess phagocytic capabilities, and thereby regulate outflow resistance and intraocular pressure (IOP).

Methods: In this study, we examined the potential enhancement of cellular debris phagocytosis mediated by AIM and its association with the CD36, the main receptor for AIM, utilizing human TM cells. Furthermore, we evaluated the impact on IOP using a mouse model with transient IOP elevation induced by laser iridotomy (LI) and AIM–/– mice.

Results: In vitro experiments revealed that CD36 colocalized with AIM in human TM cells; additionally, phagocytosis was stimulated when AIM was provided. Moreover, in the LI mouse model, AIM–/– mice exhibited delayed removal of accumulated iris pigment epithelial cells and cellular debris in the TM, resulting in a slower recovery of IOP to baseline levels compared to control mice.

Conclusions: AIM prevents IOP elevation by enhancing the cellular debris removal in TM. Our study suggests that AIM is a promising drug target for treating glaucoma by reducing IOP through enhancing phagocytosis in human TM cells.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Association of Foveal Avascular Zone Area With Structural and Functional Progression in Glaucoma Patients

*First Author: Yinhang **ZHANG***
*Co-Author(s): Fei **LI**, Xiulan **ZHANG***

Purpose: To investigate whether quantitative optical coherence tomography angiography (OCTA) metrics of the superficial/deep macular retina and optic disc are associated with glaucoma progression risk.

Methods: A total of 238 eyes of 119 patients with open-angle glaucoma or ocular hypertension were included. All participants underwent OCTA imaging with a swept-source OCT (DRI-OCT 1, Topcon, Japan). OCTA metrics were measured by a customized MATLAB program to obtain foveal avascular zone (FAZ) area, FAZ circularity and capillary density of macular superficial capillary plexus (SCP) and deep capillary plexus (DCP), and radial peripapillary capillary density. Relationships between baseline OCTA metrics, visual field (VF) metrics, intraocular pressure fluctuation, and risk of glaucoma progression were analysed with the Cox proportional hazards model. A frailty model was used to adjust for intereye correlation.

Results: During a mean follow-up duration of 29.39 months, 50, 48 and 16 eyes were determined to have retinal nerve fibre layer (RNFL), ganglion cell-inner plexiform layer (GC-IPL) and VF progression, respectively. FAZ area per standard deviation increase at baseline was significantly associated with both RNFL thinning (HR 1.73; p=0.036) and GC-IPL thinning (HR 2.62; p<0.001), after adjusting for age, axial length and other potential confounding factors. VF progression was associated with age (HR 1.05; p<0.001) and mean deviation value (HR 0.91; p=0.010), not with any OCTA metrics.

Conclusions: Enlarged FAZ area measured by OCTA was associated with a higher risk of RNFL and GC-IPL thinning associated with glaucoma, but not with functional deterioration in glaucoma.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Diagnostic Performance of an Automated Fundus Screening Algorithm: A Prospective Multicenter Trial

*First Author: Fei **LI***

Purpose: To evaluate the effectiveness of automated fundus screening software in detecting eye diseases by comparing the reported results against those labeled by human experts.

Methods: We prospectively enrolled 1743 subjects at seven hospitals throughout China. At each hospital, an operator records the subjects' information, captures fundus images, and submits the images to the Image Reading Center of Zhongshan Ophthalmic Center, Sun Yat-Sen University (IRC). Meanwhile, these images will also be automatically screened by the artificial intelligence algorithm to detect referable diabetic retinopathy (RDR), suspected glaucoma (GS), and referable macular diseases (RMD). Then, the analytic results of the automated screening algorithm are compared against the grading results of IRC.

Results: There were 1585 subjects who completed the procedure and yielded qualified images. The prevalence of RDR, GS, and RMD were 20.4%, 23.2%, and 49.0%, respectively. The overall sensitivity values for RDR, GCS, and RMD diagnosis are 0.948 (95% confidence interval [CI], 0.918–0.967), 0.891 (95% CI, 0.855–0.919), and 0.901 (95% CI–0.878, 0.920), respectively. The overall specificity values for RDR, GS, and RMD diagnosis are 0.954 (95% CI, 0.915–0.965), 0.993 (95% CI–0.986, 0.996), and 0.955 (95% CI–0.939, 0.968), respectively.

Conclusions: Automated fundus screening software demonstrated high sensitivity and specificity in detecting RDR, GS, and RMD from color fundus images captured using various cameras.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Fruit and Vegetable Intake and the Risk of Glaucoma: Insights From the UK Biobank Study

*First Author: Guihua **XU***

Purpose: To investigate the association between fruit and vegetable (F&V) intake and the risk of glaucoma.

Methods: We included 72,160 participants who were free of glaucoma at baseline from the UK Biobank. Frequency and type of F&V intake were assessed using a web-based 24-hour dietary questionnaire from 2009 to 2012. Development of glaucoma during the follow-up was defined by self-report or hospital inpatient records up to 2021. Cox proportional regression models were used to estimate the association between F&V intake and incident glaucoma.

Results: During a mean follow-up of 9.1 years (standard deviation=1.5), 1036 participants developed glaucoma. Higher intake of fruit (Model 3: HR 0.76, P=0.004) was associated with a lower risk of glaucoma development during the follow-up in the trend analysis. Participants in the highest quintile of fruit (HR: 0.76, 95% CI: 0.63 to 0.91) group demonstrated a significantly decreased risk of glaucoma, compared to those in the lowest quintile group. Significant associations between subtypes of fruit, especially citrus fruit intake and glaucoma risk were shown in sensitivity analyses (p=0.020 and p=0.006) which only included participants with at least two dietary surveys and at least three surveys. Moderation analysis showed that the associations between fruit and vegetable intake and glaucoma risk were different for participants with different RGS for glaucoma (P for interaction=0.030 for vegetable intake). No significant interaction was identified for other factors including age, ethnicity, obesity, diabetes or depression.

Conclusions: More F&V intake, especially citrus fruit, was associated with a lower risk of glaucoma in this UK Biobank cohort.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Genetics of Trabeculodysgenesis Under Ultrasound Biomicroscopy and Its Association With Surgical Outcome in Primary Congenital Glaucoma

*First Author: Yan **SHI***
*Co-Author(s): Zhigang **FAN***

Purpose: To explore the genetics of trabeculodysgenesis under UBM and its association with surgical outcomes in primary congenital glaucoma (PCG).

Methods: All participants were prospectively enrolled and underwent UBM and whole-exome sequencing prior to microcatheter-assisted trabeculotomy (MAT) and were classified into two groups with (Group 1) or without (Group 2) abnormal insertion of ciliary processes or iris under UBM. Surgical success was defined as a postoperative intraocular pressure of ≤ 21 mm Hg with at least a 20% reduction from preoperative intraocular pressure without additional medical or surgical therapy.

Results: Twenty-five eyes of 16 patients in Group 1 and 20 eyes of 11 patients in Group 2 were consecutively recruited. Twelve (75%) patients and 1 (9%) patient carried CYP1B1 variants in each group (P<0.001). PCG cases with CYP1B1 variants presented with younger onset age (P < 0.001), more severe trabeculodysgenesis (P < 0.001), and less extent of Schlemm's canal catheterization (P < 0.001) than those with no PCG-related variants. At the 24-month follow-up, the success rate was 36.0% in Group 1 and 80.0% in Group 1 and Group 2, respectively (P=0.002). All eyes of patients with homozygous/compound heterozygous CYP1B1 variants failed after surgery, while patients with heterozygous CYP1B1 variants achieved a 75.0% success rate, and patients with no PCG-related variant achieved 85.0% (P < 0.001).

Conclusions: PCG patients with more severe trabeculodysgenesis under UBM were prone to harbor CYP1B1 variants and show poor surgical outcomes of MAT. UBM grading of trabeculodysgenesis in PCG is helpful for predicting genetic susceptibility screening and guiding surgical management.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Impact of High Myopia on Corneal Biomechanical Parameters in Eyes With Primary Open Angle Glaucoma (POAG) Using Corvis-ST

*First Author: Raghavan **LAVANYA***
*Co-Author(s): Ching-yu **CHENG**, Zhi Da **SOH**, Sahil **THAKUR**, Marco **YU***

Purpose: To investigate the impact of high myopia on corneal biomechanical parameters in eyes with primary open-angle glaucoma (POAG) using Corneal Visualization Scheimpflug technology (Corvis ST).

Methods: In this prospective, cross-sectional study, 91 POAG eyes with high myopia and 161 POAG eyes with non-high myopia were enrolled. Corneal biomechanical parameters obtained using Corvis ST were compared between the two groups. Myopia was categorized

based on axial length (AL) into high myopia (AL >26mm) and non-high myopia (AL ≤26mm).

Results: Baseline characteristics, including gender, biomechanically corrected IOP (bIOP), central corneal thickness (CCT) and severity of glaucoma measured by mean deviation (MD) were similar among the two groups. At the highest concavity (HC), HC time (16.8ms vs 17.1ms,p<0.001), HC radius was significantly lower (6.41mm vs 6.81mm,p<0.001), whereas HC deflection amplitude (1.02mm vs 0.98mm, p=0.002), HC deflection area (3.75mm^2 vs 3.59mm^2,p=0.02), and peak distance (5.16mm vs 5.08mm,p=0.02) were significantly higher in high myopes as compared to non-high myopes. The stiffness parameter at first applanation (SP-A1) was more strongly associated with age in the non-high myopia group (r=0.5, p <0.001) compared to the high myopia group (r=0.2,p=0.02), suggesting that the corneal stiffness with age was lesser in the high myopic group. SP-A1 was found to be statistically associated with bIOP, keratometry and MD values only in the high myopic group, after adjusting for age, gender, CCT, and use of prostaglandin analogues, indicating that POAG eyes with high myopia had softer, more deformable corneas.

Conclusions: POAG eyes with high myopia are softer and more deformable than those without high myopia.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Impact of Postoperative Choroidal Detachment on Trabeculectomy Outcomes: A Four-Year Comparative Study

*First Author: Nader **NASSIRI***
*Co-Author(s): Kavousnezhad **SARA**, Kourosh **SHEIBANI**, Maryam **YADGARI***

Purpose: To compare trabeculectomy outcomes among patients with and without post-operative serous choroidal detachment (CD).

Methods: In this 4-year retrospective cohort study, medical records of glaucoma patients older than 18 who underwent primary trabeculectomy with Mitomycin-C between 2012 and 2020 were reviewed. Phakic eyes without a history of any other intraocular surgery and with at least one year of follow-up were included in the study. Postoperative CD was defined as clinically visible CD developed within the first postoperative week. Cases were categorized into with and without CD and trabeculectomy outcomes were compared. A comparison was carried out using postoperative intraocular pressure (IOP), glaucoma medications and surgery success.

Results: A total of 183 patients, including 153 without CD and 30 with CD, entered the study. Post-trabeculectomy mean IOPs were significantly higher in the CD group at all follow-up visits at years 1 through 4 (14.70, and 14.82 mmHg vs. 11.03, and 12.59 mmHg; p-value < 0.05). Similarly, the mean number of glaucoma medications was higher in the CD group at all follow-up visits (p-value > 0.001). Based on success criteria A, the cumulative probability of success for patients with CD wasn't significantly different compared to those without CD at years 1 through 4. However, based on success criteria B, patients with CD had a significantly lower cumulative probability of success in years 1 through 4 (p-value < 0.001).

Conclusions: Post-trabeculectomy serous choroidal detachment is associated with adverse surgery outcomes. A lower rate of surgery success and higher mean postoperative IOP and glaucoma medications were observed in patients with post-trabeculectomy choroidal detachment.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2–GF)

In Vitro and In Vivo Vitreous Changes Following Transscleral Cyclophotocoagulation

*First Author: Yan **SHI***

Purpose: To describe in vitro and in vivo microstructural changes to the vitreous following transscleral cyclophotocoagulation (TSCP) and better understand the mechanism of post-laser intraocular pressure (IOP) reduction.

Methods: Permeability of the anterior vitreous cortex (AVC) and anterior hyaloid membrane (AHM) were measured in 5 porcine eyes in vitro. TSCP was performed on 10 porcine eyes in vitro and 8 rabbit eyes in vivo. In porcine eyes, permeability rates for the circumlental space were measured and compared based on quadrants: no TSCP, TSCP without audible burst, and TSCP with audible burst. In rabbits, scanning electron microscopy (SEM) was used to evaluate microstructural changes in the vitreous after TSCP.

Results: In porcine eyes, the median (range) permeability rate was 10.3 mm/min (9.8-10.8) for AVC, 4.3 mm/min (3.9-4.9) for AHM, and 0 mm for posterior lens capsule (P=0.002). The median permeability rate at the circumlental space was 4.2 (3.8-4.9) mm/min in quadrants without TSCP, while it was higher in quadrants with non-burst TSCP (6.2 (5.7-6.8) mm/min) and burst TSCP (11.3 (10.9-11.8) mm/min; P=0.002). In rabbit eyes, SEM revealed damage with cellular infiltration of the ciliary body tissues, adjacent AHM, anterior vitreous, and posterior lens zonules immediately following TSCP. 14 days after TSCP, SEM demonstrated vitreous liquefication.

Conclusions: TSCP caused damage to the zonules, AHM and AVC, which was associated with increased

permeability of the circumlental space and liquefying of the vitreous. These findings shed light on the mechanism of action of TSCP and may provide insights into future interventions to lower IOP.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Influence of Goniotomy Size on Treatment Safety and Efficacy for Primary Open-Angle Glaucoma: A Multicenter Study

*First Author: Yu **ZHANG***

Purpose: To compare the efficacy and safety of 120°, 240°, and 360° goniotomy (GT) with or without phacoemulsification with intraocular lens implantation (PEI) for primary open-angle glaucoma (POAG).

Methods: This is a multicenter, retrospective, comparative, non-randomized interventional study. Patients diagnosed with POAG who underwent GT with or without PEI were included, and divided into six groups: (1) standalone 120° GT, (2) standalone 240° GT, (3) standalone 360° GT, (4) PEI+120° GT, (5) PEI+240° GT, and (6) PEI+360° GT. Data on intraocular pressure (IOP), number of ocular hypotensive medications and complications were collected and compared. Success was defined as a postoperative IOP within the range of 6 to 18 mmHg and a 20% reduction from baseline without further glaucoma surgery. Complete success and qualified success were defined as the above without and with ocular hypotensive medications, respectively.

Results: A total of 308 eyes of 231 patients were included with a mean follow-up of 14.4±8.6 months (6.0-48.0 months). There were no significant differences in the reductions in IOP and number of medications, cumulative survival probability for complete and qualified success rates among the three groups of standalone GT and PEI+GT. 360° GT group had the highest proportion of hyphema with or without PEI.

Conclusions: 120°, 240°, and 360° GT with or without PEI showed similar efficacy in reducing IOP and medications used in POAG. 360° GT with or without PEI was more likely to cause hyphema as compared with 120° or 240° GT. 120° GT with or without PEI was sufficient for treating POAG with or without cataract.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Irido-Zonulo-Hyaloid-Vitrectomy Combined With Multiple Surgical Options for Complex Angle-Closure Glaucoma Secondary to Nanophthalmos

*First Author: Zhigang **FAN***
*Co-Author(s): Yan **SHI**, Xiaowei **YU***

Purpose: To explore the outcomes of irido-zonulo-hyaloid-vitrectomy (IZHV) combined with multiple surgical options in angle-closure glaucoma (ACG) secondary to nanophthalmos.

Methods: This was a retrospective case series including 40 eyes in 25 consecutive cases of nanophthalmos with ACG. All patients underwent IZHV combined with phacoemulsification (phaco) lens extraction, and intraocular lens (IOL) implantation. Acute or chronic ACG with angle adhesion ≤ 180° further underwent goniosynechialysis (GSL), and Ahmed glaucoma valve (AGV) was performed in chronic ACG patients with angle adhesion > 180°. Full-thickness drainage sclerotomy was further undergone in patients with axial length less than 16 mm or any suspicion of uveal effusion during preoperative examination. Medical history, best-corrected visual acuity (BCVA), intraocular pressure (IOP), and complications were recorded.

Results: The median baseline IOP was 23 mmHg (range 19-36 mmHg) on a median number of 3 medications. The median follow-up duration was 18 months (range, 12-24 months). At the last visit, IOPs in all patients were < 20 mmHg on no anti-glaucoma medications, and the BCVA had improved in 17 eyes (42.5%) and maintained stable in 21 eyes (52.5%). One eye (2.5%) with choroidal edema preoperatively had ciliary detachment after surgery, which recovered at postoperative 1 month. There was no recurrent IOP spike, anterior chamber shallowing or severe complications postoperatively.

Conclusions: Irido-zonulo-hyaloid-vitrectomy combined with phaco, IOL implantation could be the fundamental procedure in the management of ACG secondary to nanophthalmos, together with GSL/AGV and full-thickness drainage sclerotomy in specific cases, could provide a safe and efficient solution in these complex cases.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Light-Induced Sericin Hydrogel Injected Into the Anterior Chamber of Mice With Chronic Ocular Hypertension Efficacy, Medication Sensitivity, and Material Safety

*First Author: Li **LIAO***

Purpose: To assess the efficacy and safety of a mouse model of light-induced sericin hydrogel injection into the anterior chamber, as well as the animal's pharmacological sensitivity to antihypertensive medications.

Methods: A rise in intraocular pressure (IOP) and decreased retinal ganglion cells are frequent indicators of effective modeling of chronic ocular hypertension in mice. In this study, the sensitivity of the mouse model to pharmaceutical therapy to reduce intraocular tension was assessed, the model's safety was confirmed using a cytotoxicity test, and the success rate of the mouse model of ocular hypertension was assessed by assessing alterations in retinal ganglion cells.

Results: Prior to injection, the experimental group had a baseline intraocular pressure (IOP) of (9.42±1.28) mmHg (1 kPa=7.5mmHg), while the control group had (9.08±1.21) mmHg. Post-injection, complications occurred in five eyes, leading to their exclusion. After 4 weeks, the experimental group had a higher IOP (19.7±4.52) mmHg than the control (9.92±1.55) mmHg, which was statistically significant ($P<0.05$). Different interventions were applied to the experimental group, with timolol and tafluprost showing significant IOP reductions compared to high IOP controls ($P<0.05$). Retinal ganglion cells are damaged in the high IOP group, while light-induced sericin hydrogel had no significant effect on cell viability.

Conclusions: Mice injected with light-induced sericin hydrogel developed optic nerve dysfunction resembling chronic ocular hypertension. Tafluprost and timolol effectively lowered intraocular pressure, with sensitivity to drug withdrawal. The model demonstrated safety with minimal impact on cell proliferation in sericin toxicity tests.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Multimodal Machine Learning Using Visual Fields and Peripapillary Circular OCT Scans in Detection of Glaucomatous Optic Neuropathy

*First Author: Deming **WANG***
*Co-Author(s): Fei **LI**, Xiulan **ZHANG***

Purpose: To develop and validate a multimodal artificial intelligence algorithm, FusionNet, using the pattern deviation probability plots from visual field (VF) reports and circular peripapillary OCT scans to detect glaucomatous optic neuropathy (GON).

Methods: FusionNet based on bimodal input of VF and OCT paired data was developed to detect GON. Visual field data were collected using the Humphrey Field Analyzer (HFA). OCT images were collected from 3 types of devices (DRI-OCT, Cirrus OCT, and Spectralis). Two thousand four hundred sixty-three pairs of VF and OCT images were divided into 4 datasets: 1567 for training, 441 for primary validation, 255 for the internal test, and 200 for the external test set. GON was defined as retinal nerve fiber layer thinning with corresponding VF defects.

Results: FusionNet achieved an area under the receiver operating characteristic curve (AUC) of 0.950 (0.931e0.968) and outperformed VFNet (AUC, 0.868), OCTNet (AUC, 0.809), and 2 glaucoma specialists (glaucoma specialist 1: AUC, 0.882; glaucoma specialist 2: AUC, 0.883) in the primary validation set. In the internal and external test sets, the performances of FusionNet were also superior to VFNet and OCTNet (FusionNet vs VFNet vs OCTNet: internal test set 0.917 vs 0.854 vs 0.811; external test set 0.873 vs 0.772 vs 0.785). No significant difference was found between the 2 glaucoma specialists and FusionNet in the internal and external test sets, except for glaucoma specialist 2 (AUC, 0.858) in the internal test set.

Conclusions: FusionNet, developed using paired VF and OCT data, demonstrated superior performance to both VFNet and OCTNet in detecting GON.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Mutational Analysis of CYP1B1 (rs56010818) Variant in Primary Open-Angle Glaucoma (POAG) Affected Patients of Pakistan

*First Author: Ashok **KUMAR***

Purpose: To reveal the homozygous and heterozygous patterns of CYP1B1 c.1169 G > A variant (rs56010818) in POAG patients of Pakistan.

Methods: It is a descriptive study. A total number of 88 POAG patients underwent standard ophthalmological investigations before their recruitment in this study. The blood samples were utilized for DNA isolation. The genotyping of CYP1B1 c.1169 G > A variant was carried out by Sanger sequencing. The mutational patterns and their association with clinical variables were demonstrated by statistical and bioinformatics tools.

Results: It was evident that the frequencies of heterozygous G/A and homozygous mutants A/A genotypes were higher in males (36.5%, 7.7%) than females (30.6%, 2.8%) of the POAG population. Furthermore, juvenile patients exhibit high manifestations of carrier genotype (66.6%) in comparison to adult patients (31.7%). The results also indicated the significant relationship of intraocular pressure with the homozygous mutant A/A genotype of the CYP1B1 variant in POAG patients ($p < 0.05$).

Conclusions: The outcomes concluded that CYP1B1 c.1169 G > A (rs56010818) is a predominant variant which could be considered as a probable cause of primary open-angle glaucoma (POAG). The heterozygosity of CYP1B1 variant was more abundant in males, and mutant homozygosity was observed to be more prevalent in females. The data will provide a reference line for the correlation analysis of genotypes with distinctive phenotypes of POAG patients in the future. The characterization of homozygosity and heterozygosity in CYP1B1 c.1169 G > A variant will be helpful in comprehension of the genetic underlying causes of origin for the pathogenicity of POAG.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Optic Nerve Head Abnormalities in Non-pathologic High Myopia and the Relationship With Visual Field

*First Author: Jingwen **JIANG***

Purpose: To describe the optic nerve head (ONH) abnormalities in non-pathologic highly myopic eyes based on swept-source optical coherence tomography (OCT) and the relationship with visual field (VF).

Methods: Secondary analysis from a longitudinal cohort study. Highly myopic patients without myopic maculopathy of category 2 or higher were enrolled. All participants underwent a swept-source OCT examination focused on ONH. We differentiated between 3 major types (optic disc morphological abnormality, papillary/peripapillary tissue defect, papillary/peripapillary schisis) and 12 subtypes of ONH abnormalities. The prevalence and characteristics of ONH abnormalities and the relationship with VF were analyzed.

Results: A total of 857 participants (1389 eyes) were included. Among the 1389 eyes, 91.86% (1276), 68.61% (953) and 34.92% (485) of them had at least 1, 2, or 3 ONH abnormalities, respectively, which corresponded to 29.55% (377 of 1276), 31.79% (303 of 953) and 35.67% (173 of 485) of VF defects respectively. Among the 12 subtypes of 3 major types, peripapillary hyperreflective ovoid mass-like structure (PHOMS), visible retrobulbar subarachnoid space and prelaminar schisis were the most common, respectively. Perimetric defects corresponding to OCT abnormalities were more commonly found in eyes with peripapillary retinal detachment, peripapillary retinoschsis and PHOMS. Glaucoma-like VF defects were more common in eyes with deep optic cups (28.17%, 20 of 71) and with optic disc pit/pit-like change (18.92%, 7 of 37).

Conclusions: We observed and clarified the ONH structural abnormalities in eyes with non-pathologic high myopia. These descriptions may be helpful to differentiate changes in pathologic high myopia or glaucoma.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Outcomes of Partial Versus Complete Goniotomy With or Without Phacoemulsification for Primary Open Angle Glaucoma: A Multicenter Study

*First Author: Zhixuan **WANG***
*Co-Author(s): Fengbin **LIN**, Yunhe **SONG***

Purpose: To compare the surgical outcomes and safety profiles of 120 degrees and 360 degrees GT with or without phacoemulsification cataract extraction and intraocular lens implantation (PEI) for primary open-angle glaucoma.

Methods: This multicenter retrospective study consisted of 139 eyes and was divided into 4 groups: (1) 120 degrees GT, (2) 360 degrees GT, (3) PEI + 120 degrees GT, and (4) PEI + 360 degrees GT. IOP, the number of topical hypotensive medications, and complications were recorded and evaluated at baseline and at the final visit. The complete and qualified success rate and their potential associated factors were also investigated. The effectiveness and safety profile of the surgery were compared between different subgroups.

Results: No significant difference was found in IOP, a decline of IOP from baseline, topical hypotensive medication, and complete or qualified success between either standalone 120 degrees versus 360 degrees GT, or PEI + 120 degrees versus PEI + 360 degrees GT (all P s > 0.05). The PEI + 120 degrees GT group had a lower final IOP than the 120 degrees GT group (P = 0.0002). Both 360 degrees GT and PEI + 360 degrees GT groups had a significantly higher incidence of hyphema than

the 120 degrees GT and PEI + 120 degrees GT groups (all P s < 0.0001).

Conclusions: Hyphema was most commonly noted after complete GT. Partial GT alone or in combination with cataract surgery was an effective and safe approach to manage patients with open-angle glaucoma.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Pretreatment With Frequent Topical Betamethasone in Ahmed Glaucoma Valve Implantation

First Author: Nader ***NASSIRI***
Co-Author(s): Kavousnezhad ***SARA****, Kourosh* ***SHEIBANI****, Maryam* ***YADGARI***

Purpose: To evaluate the efficacy of pretreatment with topical betamethasone in Ahmed glaucoma valve (AGV) implantation.

Methods: In this randomized clinical trial, sixty-two eyes from 62 patients undergoing AGV were randomly assigned to 2 arms of the study. The case group received AGV implantation with preoperative betamethasone eye drops, and the control group did not receive preoperative betamethasone. Follow-up examinations were performed on postoperative day 1, at least weekly for 4 weeks, and then every 1 to 3 months. Our main outcome measure was the rate of success, defined as intraocular pressure (IOP) <15 mm Hg and IOP ≤18 mm Hg.

Results: We analyzed 62 eyes divided into case (n = 33) and control (n = 29) groups. The success rate was significantly higher in the intervention group than in the control group at 12 months postoperatively when considering either IOP < 15 or IOP < 18 mm Hg as success (p < 0.001) and also at 6 months when considering IOP < 18 mm Hg as success (p < 0.041). The reduction in the number of anti-glaucoma medications used postoperatively was significantly higher in the betamethasone group at follow-up at 1 and 3 months and 1 year.

Conclusions: Pretreatment with topical betamethasone in AGV implantations increases the success rate and reduces the need for medications.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

1-Year Efficacy and Safety Virna Glaucoma Implant as a Novel Glaucoma Drainage Device in Advanced Glaucoma Patient

First Author: Dyah ***TRIANGGADEWI***
Co-Author(s): Dewi ***ROSARINA***

Purpose: Virna Glaucoma Implant (VGI) is a novel glaucoma drainage device that has not been previously reported in advanced glaucoma. This study aims to determine the 1-year efficacy of VGI in patients with glaucoma refractory to maximum medical therapy or previous failed glaucoma surgery.

Methods: Retrospective review of all patients who had undergone VGI implantation in a single tertiary institution between January 1, 2021, and January 30, 2022. All the participants were followed up for one year after surgery. The primary outcome measure was failure, defined prospectively as intraocular pressure (IOP) > 21 mmHg, or < 6 mmHg, or < 20% reduction from the preoperative baseline on two consecutive visits, 3 months or more after surgery; persistent late hypotony; additional glaucoma surgery; or removal of the implant for any reason.

Results: A total of 28 patients fulfilled inclusion criteria. The mean age ± standard deviation at enrollment was 52.2±13.3 years; 57.1% were men, and 46.4% had secondary glaucoma. The mean IOP at baseline was 41.6±11.4 mmHg (27.2 – 69.3 mmHg). The VGI led to a mean IOP reduction of 70.4%. The mean IOP was 21,8±11.4 mmHg at 1 month (P < 0.001), 16,3±5.4 mmHg at 3 months, 14.0±5.4 mmHg at 6 months, and 12.3 ±2.9 mmHg postoperatively. Two eyes (7%) needed an injection of viscoelastic due to significant hypotony with AC shallowing.

Conclusions: The VGI achieved sustained IOP reduction and appears to be a safe glaucoma drainage implant for treating advanced glaucoma.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Angle Closure Glaucoma in a Nanophthalmic Patient With Mutations in MFRP and BEST1

First Author: Carmelita ***JOCSON***
Co-Author(s): Miriam Louella ***FEMRIN****, Manuel Benjamin* ***IBAÑEZ****, Manolito* ***REYES***

Purpose: Nanophthalmos is a small-eye disorder with a global prevalence below 1/2,000. Bi-allelic mutations in the MFRP gene and homozygous mutations in BEST1 are both implicated in nanophthalmos. Here we describe a case of nanophthalmos with a homozygous mutation in MFRP and a heterozygous mutation in

BEST1. To our knowledge, this is the first genetically confirmed case of nanophthalmos in the Philippines.

Methods: This is a case report of a nanophthalmic patient, born out of a consanguineous marriage, who presented with acute angle closure glaucoma. The patient underwent ophthalmic assessment and ocular parameters were measured. A microphthalmia/anophthalmia panel consisting of 23 genes was done to confirm the diagnosis.

Results: Ocular examination revealed elevated intraocular pressure (40mmHg) and closed angles on the left eye. Both eyes had a high hyperopic refractive error (+13.50 D) and short corneal diameters (10.5mm, 9.5mm). Ancillaries showed steep corneal curvatures (50.12 D, 50.22 D) and short axial lengths (21mm, 20.5mm). The Fundus of the right eye showed a petalloid pattern of abnormal reflex in the central macula. Ocular coherence tomography of the right eye revealed macular edema consistent with the fundus findings. Genetic test results showed a pathogenic homozygous mutation in MFRP c.1150dup (p.His384Profs*8) and a heterozygous variant in BEST1 c.1054G>A (p.Ala352Thr).

Conclusions: Nanophthalmic eyes pose a great challenge to ophthalmologists, but the prognosis may be favorable if correctly identified and promptly treated. This report highlights and hopes to expand the phenotype of a rare case of nanophthalmos presenting with angle closure glaucoma and genetically confirmed to have variants in both MFRP and BEST1.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Association of Gene Polymorphisms With Normal Tension Glaucoma: A Systematic Review and Meta-analysis

*First Author: Simeng **HOU***

Purpose: To uncover the gene polymorphisms with NTG, recognize the disease earlier, and provide a more effective therapy, we carried out the research.

Methods: We searched in the Web of Science, Embase, Pubmed and Cochrane databases for qualified case control studies investigating the association between single nucleotide polymorphisms (SNPs) and NTG risk. Odds ratios (ORs) and 95% confidence intervals (CIs) for each SNP were estimated by fixed- or random-effect models. Sensitivity analysis was also performed to strengthen the reliability of the results.

Results: Fifty-one studies involving 31 candidate SNPs in 13 genetic loci were verified to be eligible for our meta-analysis. Significant associations were found between 11 SNPs (rs166850 of OPA1; rs10451941 of OPA1; rs735860 of ELOVL5; rs678350 of HK2; c.603T>A/Met98Lys of OPTN; c.412G>A/Thr34Thr of OPTN; rs10759930 of TLR4; rs1927914 of TLR4; rs1927911 of TLR4; c.*70C>G of EDNRA and rs1042522/-Arg72Pro of P53) with increased risk of NTG, while 3 others (rs2033008 of NCK2; rs3213787 of SRBD1 and c.231G>A of EDNRA) showed negative correlation with the NTG.

Conclusions: In this study, we confirmed 14 genetic polymorphisms in 9 genes (OPA1, ELOVL5, HK2, OPTN, TLR4, EDNRA, P53, NCK2 and SRBD1) were associated with NTG. The experimental evidence and more large-scale studies are required for a greater understanding of these genes and polymorphisms.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Cell Atlas of Trabecular Meshwork in Glaucomatous Non-human Primates and DEGs Related to Tissue Contract Based on Single-Cell Transcriptomics

*First Author: Simeng **HOU***
*Co-Author(s): Hongyi **LIU***

Purpose: To compare cellular heterogeneity in spontaneous POAG and healthy macaques.

Methods: In this research, single-cell RNA sequencing (scRNAseq) analysis of TM was performed in spontaneous POAG and healthy macaques to compare cellular heterogeneity, thus exploring differentially expressed genes (DEGs) and pathways associated with the dysfunction of TM contraction.

Results: We showed a comprehensive cell atlas of TM upon clustering analysis based on single-cell transcriptomics, in which 14 distinct cell types were identified, and some were associated with tissue contraction. The proportions of each cell type between spontaneous POAG and healthy macaques were different. Multiple genes associated with TM contraction were identified in Beam A, Beam B, Beam C and SMC cell types, with TPM1 and its associated ACTC1 and TNNT1 being first found. TPM1, ACTC1 and TNNT1 were considered important proteins in the regulation of tissue contraction, and their expressions of them were confirmed to be located in the sieve-like region of TM, which expressions in POAG models were lower than that in normal models. Altered levels of TPM1 expression had a significant impact on TNNT1 and ACTC1 expression downstream of it. In addition, the microstructural alterations in TM of POAG non-human primates were observed,

Conclusions: Our study indicated that TPM1 may be a key target for regulating TM structure, contraction function and resistance of aqueous humor outflow.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Comparative Analysis of Implantation of an Intraocular Lens With an Extended Depth of Focus and a Monofocal Intraocular Lens on Retinal Photosensitivity in Patients With Glaucoma

*First Author: Nadezhda **POZDEYEVA***
*Co-Author(s): Nadezhda **GORBUNOVA**, Nikita **MIKHAILOV***

Purpose: To evaluate the effectiveness of implantation of an intraocular lens with an extended depth of focus and a monofocal intraocular lens and compare the indicators of retinal photosensitivity in patients with glaucoma.

Methods: A total of 127 eyes (88 patients) were operated on. The patients were divided into two groups: Group I – Lentis Comfort was implanted, Group II - monofocal IOL RPR-2 (Reper-NN, Russia) was implanted.

Results: After surgery, there was an increase in the indicators of UCVA and BCVA ($p<0.05$) with all patients in both Groups. After 18 months, in Group I, UCVA was 0.90±0.1, BCVA was 0.95±0.03, and in Group II, UCVA was 0.91±0.16, BCVA was 0.94±0.03. Significant high visual acuity rates were observed at intermediate (0.51± 0.08) and near distances (0.45± 0.08). These indicators remained stable throughout the observation period. In the long-term postoperative period in both Groups, the IOP remained within normal values (Group I - 18.7± 2.5 mmHg, Group II - 18.1±1.4 mmHg). According to the results of the evaluation of computer perimetry data in both Groups, there was an improvement in retinal photosensitivity in all patients after surgery (Group I – MD -2.95±2.8 dB, PSD 3.47±0.79 dB, Group II - MD -2.8±1.9 dB, PSD 3.0±0.98 dB).

Conclusions: The implantation of the intraocular lens with an extended depth of focus improves the quality of vision of patients with glaucoma and eliminates the need for additional correction for the intermediate distance, without reducing the retinal photosensitivity according to computer perimetry.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Comparing Outcomes of Combined Phacoemulsification and iStent Inject to Phacoemulsification Alone From the Fight Glaucoma Blindness Registry

*First Author: Mitchell **LAWLOR***
*Co-Author(s): Colin **CLEMENT***

Purpose: To utilise the fight glaucoma blindness (FGB) registry to compare outcomes from combined phacoemulsification and iStent inject to phacoemulsification alone.

Methods: The FGB was searched for eyes that had undergone phacoemulsification and istent inject (phaco-istent) or phacoemulsification alone (phaco-only), and outcomes were compared in terms of change in intraocular pressure (IOP), changes in medication, and adverse events up to 24 months following surgery.

Results: A total of 772 eyes from 518 patients who had phaco-istent were compared to 143 eyes from 116 patients who had phaco-only. Baseline IOP was 16.2mmHg for each group, baseline medications were 1.4 and 1.6 for the phaco-istent and the phaco-only groups respectively, and visual field mean deviation was -4.6dB and -7dB respectively. After 24 months, the mean IOP had reduced by 12.3% in the phaco-istent group and 4% in the phaco-only group, whereas mean medication had reduced by 58% in the phaco-istent eyes and 7.2% in the phaco-only eyes. No significant stent-related complications were documented, and the overall rate of complications was low and comparable between groups.

Conclusions: Data from the FGB shows IOP lowering and medication lowering are greater in eyes receiving phaco-istent compared to eyes that received phaco-only.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Comparison and Clinical Outcomes of Choroidal Detachment Following Phacoemulsification-Trabeculectomy Surgery Versus Glaucoma Drainage Devices

*First Author: Nimrita **NAGDEV***
*Co-Author(s): Shivam **GUPTA**, Techi **TARA***

Purpose: To evaluate clinical and surgical management of choroidal detachment in phacoemulsification-trabeculectomy surgery and Glaucoma Drainage devices.

Methods: Twenty-eight eyes of 28 patients (10 GDD and 18 Triple surgery groups) underwent filtration

surgery in a duration of 1 year. Intraocular pressure, best corrected visual acuity, number of antiglaucoma medications, time of onset and resolution of choroidal detachment (CD) were compared in both groups. Oral and topical steroids, along with cycloplegics, were given as the first line of management on the onset of CD. Surgical intervention in the form of drainage was done for persisting Choroidal effusions.

Results: Mean IOP (SD) reduced 36.90 to 11.4 (GDD group) & 19.79 to 11.94 (Triple group). Mean AGM (SD) decreased 3.4 to 0.6 (GDD) & 2.6 to 0.1 (Triple). Mean BCVA (SD) decreased 0.79 to 1.24 (GDD)& 0.30 to 0.44 (Triple). Time of onset of CD from the date of surgery was median 1.75 (GDD) &1.25 (Triple) months. Resolution of CD was median1.7 (GDD) 2.5 (Triple) months. A comparison of mean IOP, AGM & BCVA from preop to time of resolution of CD was done. Mean (SD) IOP reduced from 36.90 to 13.30 (GDD) (P = 0.007) &19.78 to 12.06 (Triple) (P =0.008). Mean AGM reduced 3.4 to 0.6 (GDD)(P=0.007) &2.6 to 0.1 (Triple) (P <0.001). Mean BCVA improved from1.33 to 0.79 (GDD)(P=0.139) &0.63 to0.39 (Triple) (P = 0.199). In the GDD group,1 patient had AC reformation with Tube religation. In the triple surgery group, 3 required CD drainage.

Conclusions: There was more vision drop in the GDD group compared to triple, although more surgical intervention was done in the latter group to avoid hypotony-related maculopathy.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Effect of XEN Gel Stent Implantation on Corneal Astigmatism

*First Author: Kannawee **BOONCHUENCHOM***

Purpose: The purpose of this study is to address surgically induced astigmatism (SIA) after XEN gel stent implantation during 5 visits of 3-month follow-up. Secondarily, intraocular pressure (IOP), IOP-lowering medications, and best-corrected visual acuity (BCVA) were also studied.

Methods: We recruited 24 eyes with glaucoma, which were primarily diagnosed with primary open-angle glaucoma (POAG) and juvenile open-angle glaucoma (JOAG). All eyes were scheduled for XEN. We analyzed preoperative and postoperative SIA, IOP, IOP-lowering medications, and BCVA.

Results: We observed a statistically significant SIA of 0.355 diopters (dpt) (IQR 0.248, 0.79) p<0.01 at 1 week following XEN. However, 2 weeks, 1,2, and 3 months postoperative, no significant statistical change was found in the existing SIA. We also found that there was no significant change in BCVA after XEN. Moreover, the reduction of IOP and IOP-lowering medications were both statistically significant.

Conclusions: There was a small refractive change which did not affect the visual acuity of patients, yet still needed to be addressed to patients preoperatively. Further study on how different surgical techniques could affect refractive change after XEN should be conducted.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Efficacy and Safety of Penetrating Canaloplasty Versus Canaloplasty for Primary Open-Angle Glaucoma: A Randomized Controlled Trial

*First Author: Wenqing **YE***
*Co-Author(s): Yuanbo **LIANG***

Purpose: To report the 2-year efficacy and safety of penetrating canaloplasty versus canaloplasty study in the treatment of primary open-angle glaucoma (POAG).

Methods: This was a prospective, randomized clinical trial. POAG patients were randomly assigned to the penetrating canaloplasty or canaloplasty group without being masked. It enrolled POAG patients having penetrating canaloplasty or canaloplasty assigned randomly. Surgical success, intraocular pressure (IOP), number of glaucoma medications, and surgical complications were all evaluated until 24 months postoperatively. Surgical success was defined as 6 mmHg ≤ IOP ≤ 21mmHg with IOP reduction ≥20% which included qualified success (with or without medications) and complete success (without medications).

Results: A total of 52 eyes (45 patients) were randomly assigned to one of two groups: penetrating canaloplasty group (PCP, n=26) and canaloplasty group (CP, n=26). The probability of qualified success and complete success were 92.3%, 76.9% in the PCP group, and 64.1%, 52.1% in the CP group at 24 months (P=0.013, P=0.042, log-rank test), respectively. The mean IOP decreased from 30.8±10.7 mmHg and 28.6±11.8 mmHg to14.1±3.3mmHg in the PCP group and 22.1±13.6mmHg in the CP group at year two (P=0.007). The PCP group also had fewer medications (0.2±0.5) than the CP group (0.7±1.2) at year two (P=0.038). The postoperative complications were similar, and the most common ones were transient IOP elevation and hyphema in the PCP group (42.3%, 46.2%) and the CP group (38.5%, 23.1%) (P>0.05).

Conclusions: Compared to canaloplasty, penetrating canaloplasty has a higher surgical success rate, and higher IOP reduction with a comparable rate of complications.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Genetic Association of Primary Angle-Closure Disease: an Updated Systematic Review and Meta-analysis

*First Author: Yu Jing **LIANG***
*Co-Author(s): Li Jia **CHEN**, Calvin **PANG**, Shisong **RONG**, Clement C **THAM**, Yu Yao **WANG***

Purpose: This systematic review and meta-analysis aims to summarize the effects of common single-nucleotide polymorphisms (SNPs) and rare variants of overall primary angle closure disease (PACD) and primary angle-closure glaucoma (PACG), and the genetic factors of PACD progression.

Methods: Eligible studies from PubMed, EMBASE and Web of Science were retrieved, with the last update conducted on April 3, 2023. We extracted the information of SNPs and rare variants from eligible reports and two genome-wide association study (GWAS) databases, UKBioBank and FinnGen. Summary odds ratios (OR) and 95% confidence intervals (CIs) of SNP associations were calculated using fixed- or random-effect models.

Results: For PACD, 69 studies were eligible for meta-analysis, involving 206 SNPs in 64 genes/loci. Totally 17 SNPs in 15 genes/loci showed nominal associations with PACD, and 15 SNPs in 13 genes/loci showed nominal associations with PACG. Two SNPs, one in ABCA1 and another in ZNRF3, were associated only with PACD but not with PACG. Six genes, ATOH7, FBN1, IL6, LOXL1, MMP19 and VAV3, were not reported in previous systematic reviews or PACG GWAS. This study summarized rare variants in 16 genes associated with PACD. For PACD progression, only one study investigated the genetic factors in a longitudinal cohort.

Conclusions: This systematic review and meta-analysis confirmed the association of 15 genes/loci with PACD and 13 genes/loci with PACG, and summarized the rare variants in 16 loci associated with PACG. Also, this study revealed a need for longitudinal genetic studies on PACG progression.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Melatonin Prevents EAAC1 Deletion-Induced Retinal Ganglion Cell Degeneration by Inhibiting Apoptosis and Senescence

*First Author: Chenyang **HU***
*Co-Author(s): Jingjing **HUANG**, Yanlin **FENG**, Yue **XU***

Purpose: This study aimed to explore whether long-term oral administration of melatonin could block RGCs loss and prevent retinal morphology and function defects associated with EAAC1 deletion, and the molecular mechanisms underlying EAAC1 deletion-induced RGC degeneration and the neuroprotective effects of melatonin.

Methods: Retinal structure and function evaluation was performed using hematoxylin and eosin staining, optical coherence tomography and electroretinogram. RNA-seq was employed to define pathways involved in the neuroprotective effects of melatonin administration. TUNEL and SA β gal staining were used for the detection of apoptotic and senescent cells, respectively. Western blot, immunohistochemistry, and immunofluorescence were utilized to assess apoptosis and senescence-related proteins, oxidative stress level, and inner retinal neurons.

Results: Melatonin helped maintain relatively normal inner retinal structure and function by preserving inner retinal neurons, particularly RGCs. RNA-seq data indicated melatonin protected against neuron loss via regulating oxidative stress, apoptosis, and aging. Moreover, in vivo experiments showed that EAAC1 deletion caused elevated oxidative stress, activation of apoptosis and cellular senescence pathways in RGCs. However, melatonin administration efficiently prevented these detrimental effects. Furthermore, we investigated the potential role of apoptosis and senescence-related redox-sensitive factors in EAAC1 deletion-induced RGCs degeneration and the neuroprotective effects of melatonin administration. We observed remarkable upregulation of p53 and downregulation of NRF2 and Sirt1 in EAAC1-/- mice, which were ameliorated by melatonin treatment.

Conclusions: Long-term oral administration of melatonin prevents EAAC1 deletion-induced retinal ganglion cell degeneration by inhibiting apoptosis and senescence. And melatonin exerted its neuroprotective effects possibly though modulating redox sensitive factors NRF2/p53/Sirt1 in RGCs.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Outcomes From the Australian Combined Phacoemulsification and 3 iStent W Clinical Trial

*First Author: Colin **CLEMENT***

Purpose: To report intermediate outcomes from the trial of 3x istent inject W combined with phacoemulsification for the management of cataract and glaucoma.

Methods: In this prospective multicentre study, patients with cataract and glaucoma underwent phacoemulsification combined with 3 istent inject W. Outcomes of interest included change in intraocular

pressure (IOP), changes in medication and adverse events up to 24 months following surgery. Outcomes up to 18 months after surgery are available so far.

Results: A total of 93 eyes of 61 patients underwent surgery with outcomes available for the 6-month (n= 77), 12 months (n=63) and 18-month (n= 25) follow-up. Baseline IOP and the number of medications were 15.99mmHg and 1.79, respectively, with a mean cup-disc ratio of 0.72 and a visual field mean deviation -3.48dB. Mean IOP and mean number of medications were reduced by 21.1% and 50.8%, respectively at 6 months and reductions were maintained out to 18 months (21.0% and 58.7% respectively). There have been no stent-related complications documented at either of the 3 follow-up visits so far.

Conclusions: Intermediate results from this prospective study show cataract surgery combined with 3 istent inject W is associated with significant IOP and medication reduction up to 18 months after surgery. No stent-related complications have been identified so far.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Outcomes From the Australian Stand-Alone 3 iStent W Clinical Trial

*First Author: Colin **CLEMENT***

Purpose: To report intermediate outcomes from the trial of 3x istent inject W as a stand-alone treatment for glaucoma.

Methods: In this prospective multicentre study, patients with glaucoma underwent implantation of 3 istent inject W's as a stand-alone treatment. Outcomes of interest included change in intraocular pressure (IOP), change in medication and adverse events up to 24 months following surgery. Outcomes up to 18 months after surgery are available so far.

Results: A total of 65 eyes of 52 patients underwent surgery with outcomes available for the 6-month (n= 27), 12 months (n=12) and 18-month (n= 5) follow-up. Baseline IOP and the number of medications were 17.41 mmHg and 2.54, respectively with a mean cup-disc ratio of 0.75 and a visual field mean deviation -5.13dB. Mean IOP and mean number of medications were reduced by 12.8% and 44.5% respectively at 6 months, and reductions were maintained out to 18 months (18.7% and 73.7%, respectively). There have been no stent-related complications documented at either of the 3 follow-up visits so far, however, 1 eye went on to have glaucoma filtration surgery because the IOP target was not met.

Conclusions: Intermediate results from this prospective study show implantation of 3 istent inject W's is associated with significant IOP and medication reduction up to 18 months after surgery. No stent-related complications have been identified so far.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Phaco-Endoscopic Cyclophotocoagulation Versus Phaco Alone in Primary Angle Closure Glaucoma-A RCT

*First Author: Adithi **MURTHY***
*Co-Author(s): Dewang **ANGMO**, Tanuj **DADA***

Purpose: To compare outcomes of Phaco-ECP (Endoscopic Cyclophotocoagulation) Vs Phaco alone in PACG (Primary angle closure glaucoma) with co-existing cataract.

Methods: A prospective randomized control trial -30 PACG patients (moderate to advanced PACG) uncontrolled on maximal hypotensive therapy, meeting all inclusion criteria were recruited. 15 patients were randomized to Phaco-ECP (Power 0.2-0.3 W, 180 degrees nasally) and 15 patients to Phaco alone group. The pre-op and post-op IOP, angle parameters on ASOCT and the number of medications were recorded at 6 months and 12 months.

Results: Mean pre-op IOP was 19.87±5.8 mmHg and 20.77±7.16mmHg, which reduced post-op to 13.47±3.521mmHg and 15.2±2.74 at 6 months (p=0.06) and to 13.9±3.0 and 15.57±2.31 (p=0.02) 12 months in Phaco-ECP and Phaco group respectively. •Reduction in post-op no. of medications observed- Phaco-ECP (3.9±1091 to 2.27±0.1.04) and Phaco (3.47±1.3 to 2.4±1.1) (p=0.5) respectively at 12 months. Widening of the angle on ASOCT was noted at 3 months and 6 months with an increase as compared to baseline values. Phaco-ECP showed a significantly greater increase in nasal angle parameters compared to Phaco alone.

Conclusions: Both Phaco and Phaco-ECP resulted in a reduction in IOP and the number of medications and Phaco-ECP resulted in significantly lower IOP, and a decreased number of medications compared to Phaco alone.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Repeatability of Selective Laser Trabeculoplasty in Open-Angle Glaucoma and Ocular Hypertension During the LiGHT China Trial

*First Author: Yang **YANG***
*Co-Author(s): Zidong **CHEN**, Gus **GAZZARD**, Kezheng **XU**, Minbin **YU***

Purpose: To prospectively investigate the repeatability of selective laser trabeculoplasty (SLT) in Chinese open-angle glaucoma (OAG) and ocular hypertension (OHT) during the LiGHT China trial.

Methods: Treatment-naive OAG and OHT were enrolled in LiGHT China trial to receive standard 360-degree 100-spot SLT at baseline. Treatment escalation would be conducted if predefined criteria based on guidelines were triggered. Repeat SLT was the primary choice.

Results: A total of 180 eyes of 105 subjects received repeat SLT from 10th March 2015 to 25th April 2023. These subjects had worse visual field (P<0.001) and stricter target IOP (P<0.001) at baseline. Both initial SLT and repeat SLT effectively reduced IOP (P<0.001). Compared to initial SLT, repeat SLT achieved less IOP reduction (P=0.001), but it lowered IOP to at least an equivalent level (P=0.24), and maintained IOP below target and glaucoma progression-free with longer duration (P<0.001). The IOP reduction after repeat SLT was independent (P=0.68) of the IOP reduction after the initial SLT.

Conclusions: SLT can effectively lower IOP in OAG and OHT, and it is repeatable even if the efficacy of initial SLT was unsatisfactory.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Single-cell Transcriptomic Atlas of Aging Macaque Ocular Outflow Tissues

*First Author: Jian **WU***
*Co-Author(s): Hongyi **LIU***

Purpose: To establish a dynamic single-cell transcriptomic landscape of aged macaque TM.

Methods: Conduct single-cell sequencing on the aqueous humor outflow tissue of non-human primates in the young and old age groups to generate their transcriptome expression profiles. By grouping the experimental animals according to age, we will further characterize the molecular processes and changes associated with aging in the trabecular meshwork. Additionally, we will attempt to elucidate the potential molecular mechanisms underlying the increased incidence of glaucoma with age.

Results: the APOE gene was an important differentially expressed gene during the aging process, highlighting the close relationship between cell migration and extracellular matrix regulation, and TM function.

Conclusions: Our work further demonstrated that silencing the APOE gene could increase migration and reduce apoptosis by releasing the inhibition on the PI3K-AKT pathway and downregulating the expression of extracellular matrix components, thereby increasing the aqueous outflow rate and maintaining intraocular pressure within the normal range. Our work provides valuable insights for future clinical diagnosis and treatment of glaucoma.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

The Effect of Oral Vitamin D on Tumor Necrosis Factor-α Expression in Aqueous Humor of Wistar Glaucoma Model

*First Author: Pattih **PRIMASAKTI***
*Co-Author(s): Andrini **ARIESTI**, Rikha **ERINA***

Purpose: TNF-α is an important modulator of neuroinflammation, synthesized primarily by activated monocytes due to tissue ischemia, damage, or high pressure resulting in cellular apoptosis. TNF-α levels were elevated in the aqueous humor of patients with open-angle glaucoma. Vitamin D has an anti-inflammatory effect and modulates cytokine production by suppressing TH1 cell expression and inducing TH2 cell expression.

Methods: In this experimental study, 30 Wistar glaucoma models were divided into 3 groups, non-treatment groups (A and B) and the oral vitamin D (1200 IU/kg/day) group (C) for 14 days. TNF-α expressions in aqueous humor were measured by immunohistochemical staining. Group A was measured on day 3, while Groups B and C were measured on day 14. The differences between the three groups were analyzed statistically using a one-way ANOVA test.

Results: The mean expression of TNF- α in the aqueous humor of the Wistar glaucoma model in Groups A, B, and C was 206.75 ± 19,17; 253.99 ± 25,60; 137.31 ± 20.30 respectively. There was a significant difference in TNF-α expressions between the three groups (p=0.003).

Conclusions: Vitamin D per oral modulates and suppresses TNF-α expression in the aqueous humor of the Wistar glaucoma model on day 14 and holds promise as a therapeutic adjunct in the management of glaucoma. Further research is needed to elucidate the precise mechanisms, dosage, and timing of vitamin D supplementation in glaucoma patients.

Intraocular Inflammation, Uveitis and Scleritis

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Alteration of Oral Flora in Mongolian Patients With Behcet's Disease: A Multi-centre Study

First Author: Javzandulam ***BALT***

Purpose: Behcet's disease is characterized by repeated acute inflammatory attacks with oral aphthous ulcers, uveitis, skin symptoms, and genital ulcers. Although its etiology is still unknown, there is evidence of oral bacteria involvement in systemic diseases. Various types of oral bacteria may be involved in the development and progression of Behcet's disease. Therefore, the present study investigated the alterations in the oral flora of patients with Behcet's disease in Mongolia. We collected saliva samples from the Mongolian Behcet's disease (BD) and healthy control (HC) groups, and the oral flora was analyzed using next-generation sequencing (NGS).

Methods: DNA was extracted from the saliva samples of BD and HC groups. The DNA was amplified from the V3-4 region of 16s rRNA using PCR, and the data were acquired using NGS. Based on the data obtained, we analyzed the alpha diversity, beta diversity, and bacterial taxonomy of saliva.

Results: Beta diversity showed a significant difference in the flora between BD and HC. The results indicated that bacterial species types were significantly different between the two groups. We found that the proportions of three genera, S24-7 family unknown species, mitochondria family unknown species, and mucin-degrading Akkermansia species were significantly lower in the BD than in the HC group.

Conclusions: The reduced portions of the S24-7 family and Akkermansia species may be key phenomena in the oral flora of patients with BD.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Antiviral Treatment for Acute Retinal Necrosis: A Systematic Review and Meta-analysis

First Author: Asri ***RIDWAN***
Co-Author(s): Metta ***DEWI****, Rina* ***LA DISTIA NORA****, Carlos* ***PAVESIO****, Ikhwanuliman* ***PUTERA****, William* ***ROJAS-CARABALI***

Purpose: Acute retinal necrosis (ARN) is a progressive intraocular inflammatory syndrome characterized by progressive diffuse necrotizing retinitis, which can lead to a poor visual outcome, mainly due to retinal detachment. The antiviral treatment approach for ARN varies as there are no established guidelines. This review summarizes the outcomes of ARN with available antiviral treatment approaches.

Methods: Electronic searches were conducted in PubMed/MEDLINE, EMBASE, Scopus, and Google Scholar for interventional and observational studies. Meta-analysis was performed to evaluate the pooled proportion of the pre-defined selected outcomes. This study was registered in PROSPERO (CRD42022320987).

Results: Thirty-four studies with a total of 963 participants and 1,090 eyes were included in the final analysis. The estimated varicella zoster virus (VZV) and herpes simplex virus (HSV) polymerase chain reaction (PCR)-positive cases were 63% (95% CI: 55-71%) and 35% (95% CI: 28-42%), respectively. The three main antiviral treatment approaches identified were oral antivirals alone, intravenous antivirals alone, and a combination of systemic (oral or intravenous) and intravitreal antivirals. The overall pooled estimated proportions of visual acuity (VA) improvement, recurrence, and retinal detachment were 37% (95% CI: 27-47%), 14% (95% CI: 8-21%), and 43% (95% CI: 38-50%), respectively.

Conclusions: Patients treated with systemic and intravitreal antivirals showed a trend towards better visual outcomes than those treated with systemic antivirals (oral or intravenous) alone, even though this analysis was not statistically significant (test for subgroup differences p = 0.83).

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Assessment of Anxiety and Depression in Patients With Posner-Schlossman Syndrome

First Author: Chaoxu ***QIAN***

Purpose: To assess the anxiety and depression levels in patients with Posner-Schlossman syndrome (PSS) and to determine the potential risk factors.

Methods: In this cross-sectional study, a total of 195 participants, including 93 PSS patients and 102 healthy controls were recruited. Sociodemographic and clinical information were collected for all participants. The Hospital Anxiety and Depression Scale (HADS) was administered to evaluate the anxiety and depression levels. Visual function (VF) and quality-of-life (QOL) questionnaires were administered to assess variables potentially associated with anxiety and depression.

Results: Increased anxiety level was observed in 22 (23.65%) PSS patients as compared to 10 (9.80%) of controls (P = 0.009). Meanwhile, the frequency of depression between the two groups was not

significantly different (P = 0.349). The mean anxiety and depression scores were 6.98 ± 4.20 and 6.44 ± 3.66 in PSS patients as compared to 6.67 ± 3.21 (P = 0.564) and 5.96 ± 2.93 (P = 0.311) in controls. Logistic regression analysis showed mental well-being was significantly associated with anxiety (odds ratio [OR] = 0.920, 95% confidence interval [CI] = 0.881 - 0.962, P < 0.001) and depression (OR = 0.959, CI= 0.926 - 0.994, P = 0.023) in PSS patients.

Conclusions: More patients with PSS may experience anxiety as compared to healthy controls. Mental well-being is an independent risk factor for anxiety and depression. It is important for ophthalmologists to be aware of these factors and should pay more attention to mental health when PSS is managed in the clinic.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Blau Syndrome: A Case Report From Palestine

*First Author: Mohammad **ABU SAFIEH***

Purpose: This case study documents the first familial case of Blau syndrome (BS) in Palestine characterized by a mutation in CARD15/NOD2.

Methods: Case report.

Results: An eighteen-year-old female was initially misdiagnosed with juvenile idiopathic arthritis (JIA). The patient had been on steroids and methotrexate treatment for the last 16 years, but did not respond well to treatment. Initial examination at Saint John of Jerusalem Eye Hospital Group clinic showed bilateral intermediate uveitis with camptodactyly. The patient's sister (aged 19 years) had bilateral intermediate uveitis and camptodactyly. Both eyes of their father had signs of old posterior uveitis. Father's left eye showed 360 degrees posterior synechia, mature cataract with old Keratic precipitates (KPs). He also had camptodactyly. The patient was referred to a pediatric rheumatologist to rule out sarcoidosis. A Lung CT scan showed bronchiectasis, and genetic consultation followed. Complete eye examination, full history, refraction, and Optical coherence tomography (oct) were done. Systemic and topical steroid therapy could not control the ocular inflammation. The family then was referred to a geneticist. Genetic analyses showed that the proband and all three family members had an R334q mutation in the CARD15/Nod2 gene.

Conclusions: BS should be considered in the differential diagnosis of childhood uveitis, especially in low and middle-income countries where it is misdiagnosed in many cases, which delays appropriate diagnosis and, thus, control. Genetic analysis of the CARD15/Nod2 gene is helpful in the diagnosis. Steroids alone are not enough to control the disease. Other immunosuppressants and biologics are needed.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Changes in Choroidal Thickness and Choroidal Vascularity Index in Post-fever Retinitis

*First Author: Aditya **PATIL***
*Co-Author(s): Ankush **KAWALI**, Padmamalini **MAHENDRADAS**, Sai Bhakti **MISHRA**, Radhika **SRIRAM**, Rohit **SHETTY***

Purpose: To study the structural changes in choroidal vasculature using choroidal vascularity index (CVI) and subfoveal choroidal thickness (SFCT) in post-fever retinitis (PFR) cases vs. healthy controls.

Methods: EDI-OCT was performed for PFR (30 eyes) and healthy age-matched controls (16 eyes). Central retinal thickness (CRT) and SFCT were measured. EDI OCT scans were segmented and total choroidal area, luminal area, stromal area, and subfoveal CVI were calculated using a validated technique of image binarization on public-domain software ImageJ. MedCalc software was used for statistical analysis. One-way ANOVA was used for comparing normal vs. PFR. Paired samples t-test was used for comparing PFR baseline vs. follow-up.

Results: PFR patients secondary to rickettsial infection (14 eyes), typhoid (6 eyes), and dengue (10 eyes) were included. CVI was significantly lower in PFR (65.6 ± 3.6%) vs. normal (69.7 ± 2.5%; p<0.001), while stromal area was higher in PFR vs normal (p<0.05) and CRT was higher in PFR vs. normal (p<0.001). Among the PFR group, after a median follow-up duration of 4 weeks, there was a significant reduction in CRT (p<0.0001), an increase in CVI (67 ± 2.7%, p<0.01) and a decrease in SFCT (p<0.05).

Conclusions: There is significantly decreased CVI with increased SFCT in PFR patients during active retinitis, suggesting a decrease in choroidal vascularity and an increase in the stromal area. In the resolving phase, the SFCT decreases while the choroidal luminal area and CVI improve. Retinal inflammation in PFR is accompanied by dynamic changes in choroidal vasculature.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Clinical Presentation, Microbiology and Management Outcomes of Endogenous Endophthalmitis in 109 Newborns

*First Author: Sameera **NAYAK***
*Co-Author(s): Subhadra **JALALI**, Tapas **PADHI***

Purpose: To describe the epidemiology, clinical features, microbiological profile and outcome of neonatal endogenous endophthalmitis.

Methods: We analysed the clinical and microbiological data of clinically diagnosed patients of neonatal endogenous endophthalmitis from April 2013 to January 2023 at four tertiary eye care centres in three neighbouring states of India. The data included demography, systemic comorbidities, perinatal history, ocular findings, microbiology, ophthalmic management, and outcomes.

Results: The median gestational age of 109 babies (127 eyes) was 38+ 4.42 weeks, 53.21% were females; 67.20% of babies had the definite systemic focus of infection, 18 had bilateral affection. The median birth weight was 1850+-836.73 grams. The median postmenstrual age at presentation was 38 +-5.01 weeks, and the median follow-up period was 5 +- 23.32 months. The systemic associations included vaginal delivery (41.665), NICU care (78.78%), oxygen therapy (54.4%), intravenous drugs use (84.46%), broad spectrum antibiotics (84.40%). The typical presentation was with conjunctival congestion, cloudy cornea anterior chamber exudates with no fundus view; however, 37 (33.94%) had a white eye (no conjunctival congestion), 40 (36.66%) had clear cornea, 19 clear lenses, 12 lens abscess, seven retinal detachment, four choroidal thickening. The culture positivity rate in the vitreous biopsy sample was 40%(30/79), of which gram-negative bacteria were 15 (8, pseudomonas aeruginosa), nine fungus (8, candida albicans) and six gram-positive cocci, 4 had mixed organism. After a median follow-up of 5 +-23.32 months, 31 eyes went to phthisis bulbi, 24 eyes had normal anterior and posterior segment anatomy.

Conclusions: Endogenous endophthalmitis in the newborn is predominately caused by gram-negative organisms and candida spp. The overall outcome is poor despite prompt management.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Endogenous Staphylococcus aureus Endophthalmitis: Clinical Features, Treatments, and Visual Outcomes

*First Author: Kuanjen **CHEN***

Purpose: To investigate the visual outcomes in patients with endogenous Staphylococcus aureus endophthalmitis (ESaE) at a tertiary referral center in Taiwan.

Methods: Retrospective medical records were reviewed in 31 eyes of 28 patients with ESaE between January 2006 and April 2019.

Results: The most common predisposing factor was diabetes mellitus. Bacteremia was identified in 68% of patients with ESaE. The most commonly identified infectious source was septic arthritis, followed by infective endocarditis, pneumonia, and urinary traction infection. Methicillin-resistant S. aureus (MRSA) accounted for 54% (15/28). All isolates were susceptible to vancomycin. Presenting visual acuity (VA) ranged from no light perception to counting fingers. Most eyes underwent vitreous tapping with intravitreal antibiotic injections, while 3 eyes received pars plana vitrectomy. Final visual acuity was 4/200 vision or better in 10 (32%) of 31 eyes, and 20/200 in 7 (23%) eyes. Poor presenting VA (P = 0.02) and retinal detachment (P = 0.001) had a worse visual outcome. There was no statistically significant difference in visual prognosis between MRSA and methicillin-susceptible S. aureus (MSSA) groups (P = 0.981).

Conclusions: Visual outcome was not statistically different between the MRSA and MSSA groups. Poor presenting VA and retinal detachment were predictors for worse visual outcomes.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Globe Salvage in Panophthalmitis: Identification of Significant Predictive Factors Using Logistic Regression and Fine-Gray Models

*First Author: Meghana **TANWAR***
*Co-Author(s): Sabyasachi **CHAKRABARTY**, Usha **KIM***

Purpose: To identify predictor variables affecting globe survival in panophthalmitis.

Methods: This retrospective study included patients treated for panophthalmitis in a tertiary eye hospital between 01/01/2017 and 31/12/2019. Patients showing significant improvement with parenteral anti-microbials, in the absence of contraindications,

received systemic steroids. Frill evisceration was performed if there was a loss of globe integrity or when there was no improvement after 6 days of in-hospital therapy. Unadjusted and multi-variable logistic regression analyses were performed to identify predictor variables associated with globe salvage. A Fine-Gray sub-distribution hazard model for competing events was constructed to identify co-variates significantly affecting the time to evisceration. A p<.05 was considered significant.

Results: A total of 85 eyes of 85 patients (31 culture-positive) were eligible. 43.53% (n=37) patients were administered parenteral steroids. Overall, 51.76% (n=44) of globes could be salvaged. The use of systemic steroids [OR=0.156 (0.056-0.432); p <.001] was a significant predictor for globe salvage in the logistic regression model. Uncontrolled diabetes mellitus (glycosylated hemoglobin > 7%) was a significant risk factor for globe loss [SHR=4.079 (1.638-10.16); p = .003] in the Fine-Gray model.

Conclusions: The use of systemic steroids promotes globe salvage in select cases of panophthalmitis while uncontrolled diabetes mellitus is a significant hazard for globe loss.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Predictors of Poor Visual Outcomes In Vogt-Koyanagi-Harada Disease

*First Author: Nazima **ALI***
*Co-Author(s): Susan **LIGHTMAN**, Peter **MCCLUSKEY**, Rachael **NIEDERER**, Oren **TOMKINS-NETZER**, Sophia **ZAGORA***

Purpose: To identify the predictors of poor visual outcomes in Vogt-Koyanagi-Harada disease (VKHD).

Methods: Setting: Multi-centre tertiary uveitis practices. Study Population: 351 eyes of 178 patients with VKHD were evaluated between 1999 and 2022. Procedures: Clinical, demographic data, treatment and its duration and time to disease recurrence were analysed from a database. Main Outcome Measures: Visual loss (≤20/50), recurrence and complications.

Results: The median age at the time of VKHD diagnosis was 38.8 years ± 14.9 years, and 69.1% were female. Additional systemic immunosuppressive drugs were started in 47.2% of patients. Median follow-up was 5.0 years. Recurrence occurred in 214 eyes (61.0%). There were no demographic or clinical factors that predicted recurrence. Complications were common, including CAU 31.1%, glaucoma 16.0%, CME 12.3%, CNVM 3.1% and optic neuropathy 2.8%. Vision loss ≤20/50 occurred in 66 eyes at final follow up (18.8%). On univariate analysis the following factors predicted vision loss: presenting visual acuity (p=0.001); vitritis (p=0.019); glaucoma (p=0.002); and recurrence (p<0.001). On multivariate analysis the following factors predicted vision loss: presenting vision (<0.001) and recurrence (p=0.005). Immunosuppressive drug use protected against visual loss (p=0.038).

Conclusions: VKHD is associated with a high rate of recurrence, complications and visual loss. This study suggests that immunosuppressive therapy prevents visual loss in patients with VKHD.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Re-examining Anterior Uveitis Through a New Lens

*First Author: Matthew K **KENWORTHY***
*Co-Author(s): Jo **RICHARDS**, Mei-ling **TAY-KEARNEY**, Xia Ni **WU***

Purpose: To evaluate the effectiveness of an online lecture series and clinical audit on quality of anterior uveitis diagnosis and workup.

Methods: Ophthalmology fellows were invited to participate in an ophthalmology college's accredited online/ in-person lecture series and clinical audit. Fifteen ophthalmologists completed the program, with lectures presented by three uveitis specialists. Self-reflection and evaluation were done by means of pre- and post-surveys on the SurveyMonkey platform consisting of 10 clinical scenarios with photographs and a 10-question quiz. A one-tailed Wilcoxon signed-rank test was conducted to compare pre- and post-test individual question results for each subsection of the test (most likely diagnosis, differential diagnosis, investigations, medical management, and short quiz).

Results: The results showed a significant improvement in differential diagnosis ($T+ = 76$, $p < 0.05$), investigations ($T+ = 76$, $p < 0.05$), and quiz results ($T+ = 55$, $p < 0.05$). Although there was an increase in the mean score for the most likely diagnosis (pre-test: 58%, post-test: 61%) and medical management (pre-test: 51%, post-test: 54%), these were not statistically significant ($T+ = 52$, $p > 0.05$, $T+ = 6$, $p > 0.05$), respectively.

Conclusions: The online lecture series on anterior uveitis was an effective means of improving the knowledge and confidence of general and subspecialty ophthalmologists. These findings suggest that continued education through online platforms can provide a valuable resource to enhance skills and expertise.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Serum Angiotensin Converting Enzyme, Mantoux Test and Lymphocyte Count in the Specific Diagnosis of Ocular Sarcoidosis and Tuberculosis: How Reliable Are They in Isolation/ Combined?

*First Author: Harsha **P***
*Co-Author(s): Murugan **BALA**, Poorani **R***

Purpose: To evaluate the diagnostic utility of serum angiotensin converting enzyme (ACE), Mantoux test and lymphocyte count, both in isolation and combined, in the final clinical workup of uveitis patients.

Methods: A monocentric prospective cross-sectional study was conducted from December 2020 to June 2022, in 95 acute uveitis patients examined by a single trained uveitis expert. The outcome measures were sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of the above-mentioned three diagnostic tests in the clinical diagnosis of ocular sarcoidosis and tuberculosis.

Results: The sensitivity, specificity, PPV and NPV of elevated serum ACE in isolation to diagnose sarcoidosis were 89.5%, 69.7%, 42.5% and 96.4% respectively. Positive Mantoux test in isolation had a sensitivity, specificity, PPV and NPV of 58.3%, 85.5%, 36.8% and 93.4% respectively in tuberculosis. Negative Mantoux had a sensitivity, specificity, PPV and NPV of 84.2%, 22.4, 21.3% and 85% respectively in sarcoidosis. Sensitivity, specificity, PPV and NPV of lymphopenia in isolation to diagnose sarcoidosis were 10.5%, 100%, 100% and 81.7% respectively. But the sensitivity, specificity, PPV and NPV for elevated serum ACE, negative Mantoux and lymphopenia analyzed in combination for sarcoidosis were 5.26%, 100%, 100% and 80.9% respectively.

Conclusions: In this study, the combined correlation of elevated serum ACE, negative Mantoux and lymphopenia had a better ability to diagnose ocular sarcoidosis over tuberculosis owing to high specificity and PPV. Interestingly as NPV was high, patients with normal serum ACE levels and negative Mantoux test may not require further screening tests for sarcoidosis and tuberculosis respectively unless suggested by strong clinical suspicion.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Single Center Experience of the Impact of COVID-19 Pandemic on 101 Patients With Ocular Inflammation on Immunomodulatory and Biological Therapies (SIMCO Study)

*First Author: Aditya **PATIL***
*Co-Author(s): Ankush **KAWALI**, Padmamalini **MAHENDRADAS**, Sai Bhakti **MISHRA**, Radhika **SRIRAM***

Purpose: To evaluate the patient profile, uveitis relapses, modifications in treatment, and the effect of COVID-19 and vaccination on 101 patients with ocular inflammation during the pandemic.

Methods: Data collected from electronic medical records of 101 patients from 24 March 2020 to 31 January 2023 were analyzed.

Results: A total of 178 eyes of 101 patients (mean age: 40.58±18 years, 46 males) were included. Due to the pandemic, 95% of the patients were lost to follow-up for a mean duration of 7.3 ± 6.5 months. 36% of patients had active inflammation at first visit during the pandemic. 17% of patients had stopped IMT on their own, and 88.2% of those patients developed inflammatory relapse due to stopping IMT. 92% of the patients were on IMT, while 13.8% of patients were on biologics. 48.5% of patients developed relapses during the pandemic, and IMT had to be altered in 54.4% of patients. Four patients developed severe COVID-19, and one lost his life. Two patients lost one eye in the pandemic due to complications. 97% of patients underwent vaccination, while four developed VZV reactivation.

Conclusions: Our experience showed that the majority of the patients had an uneventful course despite ongoing IMT and biological therapies, which in turn helped to preserve vision and reduce ocular and systemic morbidity.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

The Possible Effect of Topically Applied Azithromycin and Moxifloxacin on the Alleviation of Uveitis

*First Author: Soner **GUVEN***
*Co-Author(s): Sedat **ARIKAN**, Sait **ELMAS**, Muserref Hilal **SEHITOGLU***

Purpose: To investigate the inhibitory effect of topically administered azithromycin (AZM), and moxifloxacin (MXF) against tumor necrosis factor-α (TNF-α) production in a rat model of endotoxin-induced uveitis (EIU).

Methods: Thirty-six Wistar albino rats were divided into 6 equal groups. Groups 1, 2 and 3 were determined as a sham, a control group for topical AZM application, and a control group for topical MXF application, respectively. Sterile saline, topical AZM 1.5%, and topical MXF 0.5%, was instilled 5 times daily for totally 6 days on both eyes of the rats in Group 4, Group 5, and Group 6, before and after inducing EIU by intravitreal injections of lipopolysaccharide, respectively. At 24 hours after intravitreal injections, aqueous humor was collected from both eyes of each rat for the assessment of TNF-α concentration.

Results: There was a significant reduction in mean aqueous humor concentration of TNF-α in EIU rats pretreated with topical AZM in comparison with those pretreated with sterile saline (139±38.6 in Group 4 vs. 72±12.6 in Group 5, p=0.006). There was also a marked decrease in mean aqueous humor concentration of TNF-α in EIU rats pretreated with topical MXF (139±38.6 in Group 4 vs.86.1±35.5 in Group 6, p=0.025). Also, evident suppressions were determined in the mean density of NF-κB, and in the mean number of cells in EIU rats pretreated either with topical AZM, or topical MXF.

Conclusions: Topically applied AZM or MXF may be beneficial in the suppression of TNF-α production in aqueous humor.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

The Predictive Value of Inflammatory Factors for the Clinical Diagnosis of Posner-Schlossman Syndrome

*First Author: Fuxiao **LUAN***
*Co-Author(s): Jing **FENG**, Yong **TAO***

Purpose: To find the indicators with predictive value to assist the clinical diagnosis of Posner-Schlossman syndrome (PSS) through detecting inflammatory factors and virus-related indicators in the aqueous humor of PSS patients.

Methods: A total of 114 eyes of 114 patients with PSS and 50 eyes of 50 patients with senile cataracts between May 2019 and July 2021, were investigated using aqueous analysis. The main clinical outcome measures were age, gender, BCVA, KPs, iris atrophy, uveitic cataract and/or glaucoma. And the main aqueous outcome measures were inflammatory factors, which included interleukin (IL)-6, IL-8, IL-10, and vascular cell adhesion molecule (VCAM).

Results: There were statistically significant differences between the mean age at diagnosis, eyes with iris atrophy, and eyes with glaucoma of PSS patients in the CMV-positive and CMV-negative group (45.8 ± 9.8 vs 38.1 ± 13.8, P=0.022; 37.9% vs 7.1%, P<0.001; 58.6% vs 17.6%, P<0.001; respectively). On logistic regression, three cytokines were found to be significant: IL-8 (OR, 0.892; P=0.041), IL-10 (OR, 1.583; P=0.018), and VCAM (OR, 1.009; P=0.002). Using the 80% specificity criterion, we found that the levels of IL-8 and VCAM in the aqueous humor were statistically significant in predicting PSS (P=0.033, P<0.001, respectively). The area under the receiver operating characteristic (ROC) curve for VCAM was 0.92.

Conclusions: The increase of cytokines IL-8 or VCAM in aqueous humor was helpful for the clinical diagnosis of PSS. Particularly, it should be noted that VCAM had the highest specificity and sensitivity for the diagnosis of PPS, and VCAM was the most clinically valuable predictor for PSS.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

The Usefulness of Polymerase Chain Reaction Testing in Patients With Bacterial Endophthalmitis

*First Author: Hikaru **KITANO***
*Co-Author(s): Hideki **FUKUOKA**, Kentaro **KOJIMA**, Kenji **NAGATA**, Hiroshi **TANAKA***

Purpose: In bacterial endophthalmitis, early diagnosis and identification of the causative bacteria are crucial for treatment. Herein, we investigated the utility of polymerase chain reaction (PCR) analysis of intraocular fluid in bacterial endophthalmitis.

Methods: In endophthalmitis patients who underwent vitreous surgery, PCR tests targeting the 16S rDNA region of bacteria and the mecA gene associated with methicillin resistance were performed on vitreous samples collected during surgery, and comparative analysis was conducted between the results of PCR, culture, and smear microscopy.

Results: The study involved 15 eyes of 15 patients (10 males, 5 females; mean age: 70.8 years) with postoperative endophthalmitis (n = 8 cases), suprachoroidal infection (n = 4 cases), endogenous endophthalmitis (n = 2 cases), and post-vitreous injection endophthalmitis (n = 1 case). In vitreous culture, causative bacteria were detected in 12 of the 15 cases (80%), with 5 of those being methicillin-resistant Staphylococcus epidermidis (MRSE). The detection of MRSE was exclusive to the cases of postoperative endophthalmitis. Among the 3 cases without bacterial growth in culture, 1 was a post-vitreous injection endophthalmitis case that received pre-treatment with antibiotics, and the other 2 were cases of suprachoroidal infection. Smear microscopy detected bacteria in 8 of the 15 cases (53%). PCR analysis detected bacteria in all cases, and the mecA gene was only detected in the 5 MRSE cases identified via culture.

Conclusions: PCR testing for bacteria and methicillin resistance in bacterial endophthalmitis is highly sensitive and specific, making it valuable for early diagnosis and selection of appropriate treatment strategies.

Myopia

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

A Novel Artificial Intelligence-Based Classification of Highly Myopic Eyes Based on Visual Function and Fundus Features

*First Author: Xiangjia **ZHU***
*Co-Author(s): Yi **LU**, Jiaqi **MENG**, Yunxiao **SONG***

Purpose: To develop a novel classification of highly myopic eyes based on both contrast sensitivity function (CSF) and fundus features using artificial intelligence.

Methods: Six hundred and sixteen highly myopic eyes were enrolled. CSF curves were measured using the quantitative CSF method. Myopic macular degeneration (MMD) was graded according to the International META-PM Classification System. β-peripapillary atrophy (β-PPA) and the thickness of the macula and peripapillary retinal nerve fiber layer (p-RNFL) were assessed by fundus photography and optical coherence tomography. The classification was performed by combining CSF and fundus features with principal component analysis and k-means clustering.

Results: With 83.35% total variance explained, highly myopic eyes were classified into 4 categories. The percentages of highly myopic eyes in categories 1 to 4 were 14.9%, 37.5%, 36.2%, and 11.4%, respectively. The CSF of the eyes in Category 1 was the best, followed by those in Categories 2 and 3, while the worst was seen in Category 4 ($P<0.05$). Compared to those in category 1, eyes in category 2 presented a significantly higher percentage of MMD2 and thinner temporal p-RNFL. Eyes in categories 3 and 4 presented a significantly higher percentage of MMD≥3, larger β-PPA area, thinner nasal macular thickness and p-RNFL ($P<0.05$). Multivariate logistic regression showed category 4 was associated with higher MMD grades, thinner macular and p-RNFL thickness compared to category 3.

Conclusions: We proposed a novel classification of highly myopic eyes by integrating features from both visual function and fundus. It might serve as an important tool to comprehensively evaluate highly myopic eyes.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

A Strategy Study on the Step Increase of the Concentration of Low-Dose Atropine Treatment for Controlling Myopia Progression

*First Author: Shifei **WEI***
*Co-Author(s): Shi-ming **LI**, Ningli **WANG***

Purpose: To explore the step strategy for starting with 0.01% atropine for 6 months, and then determine whether to switch to higher concentrations according to the effect of myopia control.

Methods: A total of 150 myopic children aged 8 to 14 years were enrolled. In phase 1 (6-month period), children received 0.01% atropine once daily. In phase 2 (1-year period), if myopia progression was less than -0.25 D at the 6-month visit, subjects were continued with 0.01% atropine (referred to as Group A). However, if myopia progression was between -0.25 D and -0.375D, the concentration was increased to 0.02% atropine (Group B). If myopia progression was more than -0.375D, subjects were switched to receive 0.04% atropine (group C). Cycloplegic refraction and axial length were measured.

Results: In Group B, the mean SE change significantly decreased from -0.31±0.07 D in phase 1 to -0.09±0.22 D after switching to 0.02% atropine during the 6th-12th month, and -0.12±0.25 D during the 12th-18th month. Similarly, in Group C, the mean SE change significantly reduced from -0.53±0.12 D in phase 1 to -0.02±0.18 D after switching to 0.04% atropine during the 6th-12th month, and -0.16±0.31 D during the 12th-18th month. During the 6th-18th month in phase 2, there were no significant differences in the mean SE change among Group A (-0.31±0.30 D), Group B (-0.21±0.38 D), and Group C (-0.18±0.40 D) ($P = 0.273$).

Conclusions: This study suggested that the step atropine treatment method, according to the effect of myopia control, would be an effective treatment strategy.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Axial Length and Choriocapillaris Flow Deficits in Non-pathological High Myopia

*First Author: Kangjie **KONG***
*Co-Author(s): Jingwen **JIANG**, Fengbin **LIN**, Yunhe **SONG**, Cheng **WEIJING***

Purpose: To examine the relationship between axial length (AL) and choriocapillaris (CC) flow deficit

percentage (FD%) in non-pathological, highly myopic eyes.

Methods: This study included Chinese patients with non-pathological high myopia, which was defined by an AL of > 26 mm and a META-PM classification grade of <2. Swept-source optical coherence tomography angiography was used to obtain 6 × 6 mm images of the macular CC. The CC FD% was measured in the fovea, parafovea, and perifovea subfields.

Results: A total of 1017 individuals (1017 eyes) with a mean age of 35.95 ± 14.11 years were included. After adjusting for age, sex, intraocular pressure, body mass index, systolic blood pressure, and image quality score, the overall CC FD% increased by 0.27% (95% CI 0.02, 0.52; P = .034) for each mm increase in AL. Among subfields, longer AL was associated with a higher CC FD% in the perifovea (β = 0.53, 95% CI 0.30, 0.77; P < .001), and was not associated with a higher CC FD% in the parafovea (β = 0.08, 95% CI -0.26, 0.42; P = .652) and fovea (β = 0.001, 95% CI -0.50, 0.50; P = .999).

Conclusions: The CC FD% increased with a longer AL in high myopia in the perifovea region but not in the fovea and parafovea fields. These findings may be of interest in elucidating the etiology of myopic axial elongation.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Can We Really Distinguish 'Non-responders' to Myopia Control Interventions?

*First Author: Monica **JONG***
*Co-Author(s): Noel **BRENNAN**, Mark **BULLIMORE**, Xu **CHENG**, Alex **NIXON***

Purpose: It is common to hear talk of 'responders' and 'non-responders' with respect to myopia control interventions. We consider the reality of distinguishing these sub-groups using data from the first year of the Low-concentration Atropine for Myopia Progression (LAMP) study.

Methods: LAMP study was a robustly designed, placebo-controlled trial with a large sample size comparing different concentrations of atropine. The adjusted mean axial elongation and myopia progression rates generated in generalized estimating equations by age group were used to calculate efficacy in terms of absolute reduction in myopic progression and in axial elongation for different atropine concentrations at each age group. These efficacy data were compared to the overall progression for each of the two progression metrics.

Results: The data demonstrate the invariant nature of efficacy, in terms of clinically meaningful reduction in progression, despite a substantial range of overall progression. Faster progressors (so-called non-responders) achieved a similar reduction in axial elongation and myopia progression as the slower progressors (so called responders) within the various atropine treatment groups.

Conclusions: The use of the terms responders and non-responders during myopia progression interventions is erroneous. Those designated as such are simply slower or faster progressors, due to multiple potential factors— but the clinical response to treatment is unmeasurable. While changes in treatment regimens for fast progressors may artefactually seem to achieve better efficacy, it is unclear that arbitrary switching of treatments provides any real benefit. Initiating treatment with the most powerful interventions, using combination therapy and emphasizing compliance are preferred clinical strategies.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Clinical Predictors of Progression in a Singaporean Cohort of Highly Myopic Adults

*First Author: Xavier **CHAN***
*Co-Author(s): Yee Shan **DAN**, Quan **HOANG**, Shi Yi **LIM**, Jordan Ze Jing **MA***

Purpose: We seek to identify potential predictors of progression in a cohort of Singaporean highly myopic (HM) patients.

Methods: HM patients (<-6.00 D and/or > 25 mm axial length (AL) in at least 1 eye), with clinically-diagnosed myopic macular degeneration (MMD) or staphyloma, were recruited between 1/2017-12/2022 and underwent clinical examination including axial length (AL) measurement, fundus photography/ autofluorescence and widefield swept-source optical coherence tomography (SS-OCT).

Results: From 2111 eyes of 1068 HM patients (68% female, 63±14 years-old, range 16-96 years-old, AL 29.2 ± 2.2 mm (range 25-39.7 mm)), 23% had META-PM MMD Category 1 (MMD1), 41% MMD2, 21% MMD3 and 13% MMD4. 81% of eyes had staphyloma, 34.7% dome- or saddle-shaped macula, 15.6% active-or-quiescent myopic choroidal neovascularization (mCNV), 10.2% intrachoroidal cavitations, and 3.1% lacquer cracks. The main outcome variable was progression, defined as imaging evidence of anatomic enlargement, or worsening grade of degenerative or tractional pathology in the most recent examination compared to the penultimate annual clinic visit. Multivariate logistic regression showed that the presence of staphyloma (+0.094, p=0.018), the presence of dome- or saddle-shaped macula (+0.088, p=0.002), and the presence of mCNV (+0.109, p=0.017) at the penultimate clinic visit were predictive of progression to HM.

Conclusions: The presence of staphyloma, dome- or saddle-shaped macula, and mCNV may be predictive

of progression within 1 year's time in our cohort of HM patients. Further longitudinal studies are needed to confirm if these could serve to guide the frequency of clinical follow-up.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Education Effect on Myopia Prevalence in Children From Kindergarten to Primary School: The Hong Kong Children Eye Study

*First Author: Yuzhou **ZHANG***
*Co-Author(s): Li Jia **CHEN**, Fenfen Allie **LI**, Jason **YAM**, Xiu Juan **ZHANG***

Purpose: Myopia is associated with years of schooling in schoolchildren and adults. However, it is not clear whether a similar association exists in kindergarten. In this study, we aimed to evaluate the education effect on myopia development among children in kindergarten and lower grades of primary school.

Methods: This is a population-based, cross-sectional study. A total of 11,543 kindergarten and primary school children who received standardized ocular examinations before COVID-19 pandemic were included. Cycloplegic autorefraction and axial length (AL) were measured for all children. Parental myopia, family income and children's lifestyle including time spent on outdoor activities and near work were obtained by a standardized questionnaire.

Results: 2525 children from kindergartens (413 in grade 2 (K2) and 2112 in grade 3 (K3)) and 9018 children from primary schools (4250 in grade 1 (P1) and 4768 in grade 2 (P2)) were recruited. The myopia prevalence significantly increased with academic grades, 7.6% in K2, 8.7% in K3, 17.3% in P1 and 29.1% in P2 (P for trend<0.001). Education duration had a significant mediation effect on myopia prevalence (P<0.001), SE (P<0.001), and AL (P<0.001) with adjustment of other confounding factors. For kindergarten students, myopia prevalence was only associated with parental myopia (OR=1.49, P<0.001). For primary school students, grade, age, sex and parental myopia were significantly associated with myopia prevalence (all P values<0.05).

Conclusions: Education has a significant mediation effect on myopia development in primary school students but not in kindergarten students. Interventions including more outdoor activities and less near work may be considered for primary school students.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Evaluating Efficacy and Associated Rebound With Atropine 0.01% in Preventing Myopia Progression Among School-Aged Indian Children

*First Author: Vinay **GUPTA***
*Co-Author(s): Rebika **DHIMAN**, Swati **PHULJHELE**, Rohit **SAXENA**, Namrata **SHARMA***

Purpose: To evaluate the effectiveness and associated rebound of atropine 0.01% in halting the progression of myopia among school-aged children in India.

Methods: A group of 95 children (Age: 6-14 years), with documented myopia progression (MP) ≥0.5D/year and myopia (-1 to -6D), were administered atropine 0.01% eye-drops at bedtime over a span of 2 years. Ethical approval and informed consent were obtained. Changes in spherical-equivalent refractive error (SER) (measured through cycloplegic autorefraction) and axial length (AL) (measured using IOL Master®700) were recorded at baseline, 1-year, 2-year follow-up on atropine 0.01%, and 1 year after discontinuation of atropine.

Results: At the study's outset, the children (mean age: 9.3±3.2years, 61%male) had a mean SER of -3.93±1.81D and mean AL 24.24±2.43mm. When compared to baseline (-0.67±0.15D), significant change in MP was observed after first-year (-0.28±0.15D,p<0.001), second-year (-0.25±0.15D,p<0.001), and 1 year post cessation of atropine (-0.38±0.16D,p< 0.001). Although the change in axial length while on atropine (0.16±0.08 mm/yr) and 1 year post stopping atropine (0.21±0.11mm) was not statistically significant (p=0.062), a significant difference was observed in MP (p=0.031) at these follow-ups. Notably, 26 (27.4%) children exhibited myopia progression of ≥0.5D after one year of stopping atropine [having baseline characteristics: age (8.1±1.9years); SER (-4.87±2.1D); MP (-0.78±0.22D)].

Conclusions: The findings from this study demonstrate a favorable efficacy in preventing myopia progression after a 2-year treatment with atropine 0.01% among school-aged Indian children. Nonetheless, a rebound was noted in some children (with a younger age, greater myopia, and a high rate of myopia progression at the time of enrolment) following the cessation of atropine treatment, however, this rebound does not correlate with alterations in axial length.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Form-Deprivation Myopia Promotes Sclera M2-type Macrophages Inflation in Mice

*First Author: Bingru **ZHENG***
*Co-Author(s): Dongmei **CUI**, Baodi **DENG**, Junwen **ZENG***

Purpose: In this study, we aimed to explore the phenotype of sclera macrophage in form-deprivation (FD) myopia mice and provide new insights into the biological characteristics and related hub genes in M2 macrophage-human sclera fibroblasts (HSFs) coculture system.

Methods: In vivo study, 4-week-old C57BL/6 mice were under 2 weeks of unilateral FD treatment. Immunofluorescence and RT-qPCR were used to explore the sclera macrophage type in the FD-Treat and FD-Fellow eyes. In vitro study, we analyzed the M2 macrophage and human sclera fibroblasts (HSFs) coculture system by using the transcriptome sequencing method (RNA-seq). The STRING database was used to construct the Protein-Protein Interaction (PPI) network, and Cytoscape software was used to explore the Hub genes of M2 macrophages and sclera fibroblasts. Furthermore, the RT-qPCR was performed to validate the differential expression of the hub genes.

Results: Using the FDM mouse model, we found that the M2-type sclera macrophage density and M2 macrophage makers expression rose in myopic eyes. We further explored whether M2 macrophage affects HSFs extracellular matrix (ECM) remodeling. Through GO analysis, coculture groups were strongly enriched in ECM organization extracellular components and ECM structural constituents. Subsequently, five hub genes (FN-1, MMP-2, COL1A1, CD44, and IL6) were identified using Cytoscape software; RT-qPCR confirmed the differential expression among the hub genes.

Conclusions: We report that M2 macrophages inflation in the sclera in FDM mice. Based on RNA-seq analysis and validated by RT-qPCR. M2 macrophages play a key role in regulating the sclera ECM remodeling.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Global Ocular Deformation in Pathologic Myopia

*First Author: Shida **CHEN***
*Co-Author(s): Bingqian **LIU**, Nan **LUO***

Purpose: To explore the equatorial and posterior ocular deformation in pathologic myopia.

Methods: This hospital-based, cross-sectional study included 180 pathologicmyopic eyes with atrophic maculopathy grading C2 (diffuse chorioretinal atrophy or more) from 180 participants who underwent comprehensive ophthalmic examination, including high-resolution 3-dimensional magnetic resonance imaging.

Results: The mean (SD) age of 180 participants with pathologic myopia was 55.14 (10.74) years; 127 were female (70.6%), and the mean (SD) axial length of studied eyes was 30.22 (2.25) mm. The predominant equatorial shape was pyriform (66 eyes [36.7%]), followed by round (45 eyes [25.0%]). The predominant posterior shape was bulb-shaped (97 eyes [52.2%]), followed by multi-distorted (46 eyes [24.7%]). Equatorial circularity and equatorial shapes were correlated (r = −0.469; 95%CI, −0.584 to −0.346; P < .001) and ocular sphericity was correlated with posterior shapes (r = −0.533; 95%CI, −0.627 to −0.427; P < .001). In eyes with a vertical-elliptical equator, equatorial circularity and ocular sphericity were positively linearly correlated (R2 = 0.246; 95%CI, 0.050-0.496; P = .002) and the prevalence of inferior staphyloma was higher (27.8%; P = .04). Eyes with a horizontalelliptical equator have the most horizontally oriented axis of corneal flat keratometry. (median, 43.55 [interquartile range, 43.84] degrees; P = .01) and tended to present with a multi-distorted posterior shape (21.7%; P = .04).

Conclusions: These findings suggest ocular deformation is common in pathologic myopia and can affect the entire eye, including the equatorial and posterior regions.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Impact of 0.01% Low-Dose Atropine on Ocular Biometric Parameters Particularly Crystalline Lens Power in Children With Progressive Myopia

*First Author: Vinay **GUPTA***
*Co-Author(s): Rebika **DHIMAN**, Swati **PHULJHELE**, Namrata **SHARMA***

Purpose: To assess alterations in ocular biometry including crystalline lens power (LP) in a group of Indian children with progressive myopia who received atropine 0.01%, in comparison to an untreated control group.

Methods: This non-randomized, placebo-controlled clinical trial encompassed 120 children [atropine-group (70 children) and control-group (50 children) with myopia progression ≥0.5D/yr; age: 6-14yr, spherical-equivalent refractive error (SER): -1 to -6D]. The atropine group was administered 0.01% atropine eye drops once daily in both eyes for 1 year, while the control group received no treatment. Changes in cycloplegic SER, axial length (AL), keratometry (KER),

anterior chamber depth (ACD), and lens thickness (LT) were measured. LP was calculated using the Bennett formula.

Results: There was no significant difference noted in age, SER and AL between the two groups at baseline. After 1 year, the mean progression of myopia was significantly lower in the atropine group (-0.18±0.2D) compared to the control group (-0.59±0.2D) (P<0.001). The increase in AL was notably different between the two groups (Atropine: 0.21±0.12mm; Control: 0.29±0.11mm, P<0.001]. Furthermore, there was a significantly greater reduction in LP in the atropine group (-0.67±0.34D) than in the control group (-0.28±0.42D) (P<0.001). The change in LT also differed significantly between the atropine and control groups (P=0.02). However, alterations in ACD and KER were comparable across both groups.

Conclusions: Atropine 0.01% induced significant changes in AL, LT and LP with no significant impact on ACD and KER. The amplified reduction in lens power could contribute to the anti-myopic effects of atropine, and therefore, should be taken into consideration in studies that evaluate the efficacy of atropine in managing myopia.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Influence of Parental Myopia on Childhood Myopia Progression: The Hong Kong Children Eye Study

*First Author: Yuzhou **ZHANG***
*Co-Author(s): Li Jia **CHEN**, Ka Wai **KAM**, Jason **YAM**, Xiu Juan **ZHANG***

Purpose: Parental myopia is associated with the prevalence of childhood myopia. However, its association with childhood myopia onset and progression is unclear. In this study, we aimed to determine the influence of parental myopia on childhood myopia onset and progression.

Methods: This is a longitudinal population-based study with a 3-year follow-up. A total of 3,279 subjects in 1,093 family trios from the Hong Kong Children Eye study received standardized ocular examinations and questionnaires both at baseline and at the 3-year follow-up visits. Cycloplegic auto-refraction was measured for children and non-cycloplegic auto-refraction for parents. Parental education, children's outdoor time and near work were collected by questionnaires.

Results: A total of 548 boys and 545 girls were recruited, with a mean age of 7.53± 0.94 years old and spherical equivalent (SE) of 0.31±1.47 D at the baseline visit. After 3 years (3.45±0.46 years) follow-up, cumulative myopia incidence was 43.4% (95% CI, 40.3% to 46.9%) and SE change was -1.44±1.12 D. After adjusting for confounding factors, parental myopia was associated with the cumulative myopia incidence (OR=1.13, P<0.001) and myopia progression (β=-0.08, P<0.001) over three years. Mild parental myopia did not increase the risk of childhood myopia incidence (P=0.34) or myopia progression (P=0.17). However, the risk of myopia onset was 5.18-fold when both parents were highly myopic.

Conclusions: Parental myopia confers an independent effect on childhood myopia onset and myopia progression in a dose-related manner. Children with a high risk of myopia progression can be identified for early prevention, based on parental myopia data.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Physiological Growth of Axial Length in Myopic Children: A 6-Year Cohort Study

*First Author: Yanxian **CHEN***

Purpose: To investigate the patterns of physiological growth of axial length (AL) in myopic eyes and thresholds of physiological AL growth to differentiate the progressive and non-progressive myopia.

Methods: A longitudinal cohort comprising 1181 children aged between 7 and 18 years was followed up for 6 years. Ocular biometry, cycloplegic refraction, and demographic data were obtained annually. Patterns of AL growth were investigated in four refractive categories: Persistent Emmetropia (PE), Emmetropia to Myopia (EM), Progressive Myopia (PM), and Non-Progressive Myopia (NMP).

Results: The mean annual changes in AL were similar in the PE group and in the NMP group during ages 7 to 9 years. For individuals aged 10 to 12 years, the progressions in AL and SER within the EM, PM and NMP groups were significantly higher than those observed in the PE group (all P<0.001). The slop of AL growth curve for the NMP was similar to that of the PE group (P=0.610). The change in AL showed a robust association with the rate of height growth before 15 years of age in all four groups. Number of myopic parents associated with AL progression solely within the EM group (P<0.001). The threshold indicative of physiological AL growth was 0.16 mm for individuals with emmetropia at baseline and 0.15 mm for those initiating with myopia.

Conclusions: This study reveals a consistent pattern of axial elongation in persistently emmetropic eyes and non-progressively myopic eyes, emphasizing the presence of physiological axial length growth as a pivotal determinant in maintaining optimal refractive conditions even in myopic eyes.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Prediction of 3-Year Axial Elongation and Refractive Progression Among Myopes From 1-Year Data: A Meta-analysis

*First Author: Monica **JONG***
*Co-Author(s): Noel **BRENNAN**, Mark **BULLIMORE**, Xu **CHENG**, Paul **WEISS***

Purpose: To examine the feasibility of using 1-year data to predict 3-year myopia control efficacy.

Methods: A systematic review of the literature identified papers that contained both 1- and 3-year axial elongation (AE) or refractive progression (RP) data for either control or intervention groups. Meta-regression was used to model the primary outcome at 3- years, with that measure at 1 year as the primary predictor variable. Hierarchical models controlled for study as a random effect and created additional meta-regression models to control for study-level characteristics to determine whether such additions improved overall predictive power. Validation was performed by employing a holdout sample approach (bootstrapping) which was replicated 10,000 times to create competing models.

Results: There were 36 data sets in which AE at both one and three years were reported. 1-year AE predicted 3-year AE with impressive accuracy and the mean multiplier was 2.0. Different equations were not required for treated and untreated groups, and the value of '2' can be directly applied to 3-year MC efficacy. Models for RP showed more variability in terms of results and performance.

Conclusions: The mean cumulative absolute reduction in AE at three years can be estimated for optical interventions by simply doubling the group mean value at one year. The reason that it is not triple the value relates to the initial boost in slowing progression, and the general, known reduction in progression with age.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Prospective Study on Binocular Imbalance as a Potential Indicator of Myopia Development Using a Virtual Reality Platform

*First Author: Tao **ZHENGYANG***
*Co-Author(s): Hang **CHU**, Hongwei **DENG**, Zhihong **LIN**, Jiao **WANG**, Zefeng **KANG***

Purpose: To explore the relationship between binocular imbalance and myopia development.

Methods: In this prospective study (6-month follow-up), we enrolled 40 participants (aged 6–18 years) who were diagnosed with myopia. The BI value (BIV) at baseline, spherical equivalent (SE), axial length (AL), and corneal curvature radius (CR) changes were collected. The Spearman's rank correlation coefficient, univariate logistic regression, and quantile regression analyses were used to assess the relationship between BIV and the progression of myopia.

Results: The BIV at baseline demonstrated a significant correlation with SE progression at 6 months (OD: $R = 0.794$, OS: $R = 0.684$, $P < 0.05$). In quantile regression analysis, the influence of baseline BIV on SE progression in both eyes increased as SE progression increased within the P90 percentiles. Univariate logistic regression analysis revealed that the OR value of the baseline BIV was 1.210 (95% CI: 1.067-1.374, $P = 0.003$) for SE progression in the right eye and 1.180 (95% CI: 1.064-1.309, $P = 0.002$) for SE progression in the left eye.

Conclusions: During the six-month follow-up period, there was a significant correlation between current BIV and myopia progression. However, the linear relationship between the two existed only within a certain range of myopia progression. BIV is a risk factor for the rapid progression of SE, indicating that it has the potential to be an early indicator of myopia.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Proteomics Approach to Research the Mechanism of Effect of Atropine in the Therapy of Myopia in Guinea Pigs

*First Author: Jianfeng **ZHU***
*Co-Author(s): Chen **CHU**, Jiangnan **HE***

Purpose: Myopia is a global public health concern. The main interventions for myopia include atropine, optical correction, and surgical treatment. The present study aimed to assess changes in the expression levels of retinal proteins after atropine therapy for myopia.

Methods: Guinea pigs were randomized into 4 groups: control group, monocular form-deprivation myopia (FDM) group, FDM and atropine therapy for 2 weeks, as well as atropine therapy group. The spherical equivalent was tested with a streak retinoscope. Axial length values of the eye were measured using A-mode ultrasound. Retina samples collected from various groups were subjected to SWATH-MS and detailed data analysis.

Results: There was a statistically significant difference in refractive error and elongated axial lengths in the FDM group compared to the control group. 246 differentially expressed proteins (DEPs) were identified with differential expression between the retinas of myopic and normal eyes ($P<0.05$). Atropine-treated retinas had 503 DEPs with dysregulated expression

levels in the atropine-treated myopic model group compared with the myopic model group. In total, we identified 77 proteins that were responsible for the changes in retinal response induced by atropine treatment of myopia. Protein-protein interactions and gene ontology analysis showed the VEGF signaling pathway, inflammatory response, oxidative stress and endoplasmic reticulum-associated degradation (ERAD) pathway. Ingenuity Pathway Analysis (IPA) analysis showed the involvement of these dysregulated proteins in necrosis and apoptosis.

Conclusions: The extensive proteomic analysis, together with the pathway analysis, also identified new molecular networks that may contribute to the insight into retinal variation in myopia inhibition by atropine.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Refractive Errors in Adolescents With Varying Degrees of Internet Addiction

*First Author: Elina **SHAYKHUTDINOVA***
*Co-Author(s): Rustem **AKHMADEEV**, Alesya **KHUSNIYAROVA**, Timur **MUKHAMADEEV***

Purpose: To study refractive errors in adolescents with different degrees of Internet addiction (IA) and intensity of device use.

Methods: A population-based cross-sectional study was conducted with 84 adolescents between 14 and 18 years old enrolled in high schools in the city of Ufa, Russia. Psychometric and ophthalmological studies to determine IA, duration, and length of time using devices, and measure the spherical equivalent (SE) of refraction (Righton Speedy-K) were applied. The associated factors were identified by using the chi-squared test.

Results: The overall prevalence of IA was 17,9%, intermediate stage – 59.5%, non-IA – 22.6%. The prevalence of myopia on average was 76.2%, hypermetropia - 7.1%, and the average SE value was shifted towards myopia. The minimum SE values were found in adolescents with IA. Between the group of adolescents with IA and non-IA adolescents, no significant intergroup differences were found. Correlation analysis did not reveal a significant association between the severity of IA and refractive errors. A weak negative association was found between refraction and the length of time using a computer, smartphone, and the Internet.

Conclusions: The high prevalence of myopia, weak correlations between IA and the intensity of using devices, on the one hand, and SE values, on the other, do not at all indicate the absence of a negative impact of handheld device use on the vision of children and adolescents, but once again confirms opinion about the complexity of the processes of development of myopia in them.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Relationship Between Flicker Modulation Sensitivity and Axial Length in Myopic Subjects

*First Author: Shaoying **TAN***
*Co-Author(s): John **BARBUR**, Aiman **HAFEEZ***

Purpose: This study aims to investigate the impact of axial length (AL) elongation of the eyeball on foveal and parafoveal flicker modulation (FM) sensitivity in individuals with myopia.

Methods: Twenty-three myopic subjects without myopic retinopathy (mean age: 37.2 ± 11.6 years) with spherical refractive errors ranging from -0.50 to -7.75 D participated in the study. Monocular FM thresholds were obtained at the fovea and at an eccentricity of 4 degrees (parafovea) in each of the four quadrants using rod and cone-enhanced stimuli. The study explored the associations between axial elongation and foveal and parafoveal FM thresholds.

Results: Significant correlations were observed between AL and spherical refractive error ($R = -0.758$, $P < 0.001$). With cone-enhanced stimuli, only the FM threshold at the superior-temporal quadrant exhibited a significant correlation with axial elongation ($R = 0.436$, $P = 0.038$). For rod-enhanced stimuli, FM thresholds were correlated with axial elongation at the averaged parafovea ($R = 0.540$, $P = 0.008$), specifically at the superior-temporal ($R = 0.436$, $P = 0.037$), superior-nasal ($R = 0.560$, $P = 0.005$), and inferior-nasal ($R = 0.579$, $P = 0.004$) quadrants. No correlation was found between foveal FM thresholds and AL for either cone ($R = 0.357$, $P = 0.094$) or rod ($R = 0.392$, $P = 0.064$) enhanced stimuli.

Conclusions: The findings indicate that axial elongation in myopic individuals primarily affects parafoveal rod FM sensitivity. Elongation of the eyeball in myopia may lead to early-stage, potential, parafoveal changes in sensitivity, even in the absence of myopic retinopathy.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Repeated Low-Level Red-Light Therapy Combined With Orthokeratology for Myopia Control in Children With Poor Response to Orthokeratology: A Multicenter Randomized Controlled Trial

*First Author: Mingguang **HE***
*Co-Author(s): Xiangbin **KONG**, Ruihua **WEI**, Ruilin **XIONG**, Xiao **YANG***

Purpose: To investigate the efficacy and safety of repeated low-level red-light (RLRL) therapy combined with orthokeratology (Ortho-k) in myopia control among schoolchildren with a poor response to Ortho-k.

Methods: This multicenter randomized controlled trial was conducted from March 2021 to March 2023 in China. Eligible children were aged 8-13 years with a cycloplegic spherical equivalent refraction of -1.0 to -5.0 diopters measured in the initial Ortho-k fitting examination and had poorly controlled myopia despite using Ortho-k for 1 year (annual axial length [AL] elongation≥0.50mm). Children were randomly assigned to the RLRL combined with Ortho-k (RCO) or Ortho-k group in a 2:1 ratio. The Ortho-k group wore Ortho-k at night only, while the RCO group additionally received daily RLRL therapy twice a day for 3 minutes. AL was measured at baseline and at 1, 3, 6, and 12 months.

Results: Forty-seven children were included in the analysis (30 in the ROC group and 17 in the Ortho-k group). The mean AL elongation before the trial was 0.597mm/year in the ROC group and 0.612mm/year in the Ortho-k group. After 12 months following the intended intervention, the adjusted mean AL elongation was -0.024mm (95% CI: -0.078 to 0.030mm) in the RCO group and 0.265mm (0.191-0.338mm) in the Ortho-k group. The mean difference in AL elongation was 0.288mm (0.137-0.440mm) between the RCO and Ortho-k groups. No serious adverse events or documented ocular damages were observed following RLRL therapy.

Conclusions: RLRL therapy combined with Ortho-k shows promise as an effective and safe treatment for myopia control in schoolchildren with a poor response to Ortho-k.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Safety of 0.01% Atropine Eye Drops in Chinese Children and Adolescents With Myopia: A Real-world Study

*First Author: Lei **GUO***
*Co-Author(s): Xiaowen **WEI**, Ying **YAO***

Purpose: There is less real-world evidence about patient-reported outcomes (PROs) in the use of 0.01% atropine in myopic children and adolescents in China. To evaluate the real-world safety of 0.01% atropine sulfate eye drops applied to a myopic population of Chinese children and adolescents.

Methods: This survey was conducted from June 6 to August 31, 2022. Chinese children and adolescents aged 6-15 years with myopia (spherical equivalent between -0.5D and -4.0D in either eye) who purchased and used 0.01% atropine sulfate eye drops from May 1st to 31st, 2022, were randomly selected and contacted. Patients who refused follow-up, or were using other mydriatics, or had been out of therapy for more than one month were excluded. Telephone calls or questionnaires were used to obtain safety data of PROs during administration. The adverse events (AEs), treatment-related AEs (TRAEs), and serious AEs (sAEs) were collected.

Results: A total of 7516 patients were randomly selected in this analysis, with 3636 (48.38%) females. The mean age was 9.8 ± 2.02 years, and the median duration of medication was 12.00 (IQR 4.00-19.00) months. A total of 2,246 AEs occurred in 1,589 (21.14%) patients, including 1,807 TRAEs in 1,458 (19.4%) patients. No sAE was reported. The most common AEs were photophobia 665 (8.85%) and eye irritation 278 (3.70%). AEs leading to treatment discontinuation occurred in only 140 patients (1.86%), and only 115 patients (1.53%) discontinued due to TRAEs.

Conclusions: Atropine (0.01%) showed good safety and tolerability in Chinese children and adolescents with myopia.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

The Effect of Dual-focus Soft Contact Lenses on Peripheral Refraction

*First Author: Ji **KOU***
*Co-Author(s): Longqian **LIU**, Bi **YANG***

Purpose: It has been verified that myopic peripheral refraction is effective for myopia control. The dual-focus soft contact lens (DF) is one of the optical interventions imposing myopic defocus on the peripheral retina. The purpose of this study was to investigate the change of

peripheral refraction profile in myopic children after wearing DF (Misight® 1 day, CooperVision).

Methods: In this self-controlled study, relative peripheral refraction (RPR) of the right eye before and after wearing DF was measured using multispectral refraction topography (MRT) MSI C2000 (thondar.cn). With the subjects maintaining the head position still and eyes in the primary gaze, MRT obtains RPR of a circular field of 53° centered on the macular fovea in only several seconds. Each measurement was repeated three times and the best-focused image with the highest score was selected for analysis.

Results: Twenty-eight subjects (17 female, 11 male; age, 9.39±1.10 years; SER, -1.91±0.81D) were involved in the study. After wearing DF, total RPR became more negative (before: 0.44±0.32, after: 0.25±0.43, P=0.042); correspondingly, RPR in the temporal quadrant (RPR-T) showed a similar trend (before: 0.90±0.40, after: -0.11±0.72, P<0.001). However, RPR in the nasal quadrant (RPR-N) became more positive (before: 0.30±0.45, after: 1.16±0.64, P<0.001).

Conclusions: Total RPR and RPR-T became more myopic after wearing DF, which may serve as a putative stimulus to slow eye growth. However, RPR-N became more hyperopic. It is speculated that this is caused by temporal lens decentration, which is common in soft contact lens wearers.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

The Efficacy and Safety of Orthokeratology, 0.04% Atropine, and 0.01% Atropine on Myopia Control

*First Author: Jianfeng **ZHU***
*Co-Author(s): Jiangnan **HE**, Hannan **XU***

Purpose: To evaluate the efficacy and safety of orthokeratology, 0.04% atropine, and 0.01% atropine on myopia control for 1 year.

Methods: A total of 211 children aged 6-12 with refractive error of – 0.5D to -6.0 D were enrolled in this randomized, controlled clinical trial and randomly assigned (1: 1: 1) to groups A, B, or C. Group A received orthokeratology for 1 year, while Groups B and C received 0.04% and 0.01% atropine, respectively. The participants and the investigators were unaware of the allocation of Groups B and C.

Results: Among the 211 children enrolled in this study, 59 participants in Group A (81%), 55 in Group B (79%), and 56 in Group C (82%) completed the 1-year visit. During 1 year, children in Group C achieved 0.31±0.17 mm in axial length, which was significantly greater than that in Groups A (0.19±0.14 mm, p<0.001) and B (0.13±0.19 mm, p<0.001). No difference in axial length growth was found between Groups A and B (p = 0.17). No severe adverse events were observed.

Conclusions: Results from this one-year study suggested that the anti-myopia efficacy of 0.04% atropine was similar to that of orthokeratology. Both of them outperformed 0.01% atropine. All three treatments were well-tolerated. The long-term efficacy and safety need further investigation.

Neuro-Ophthalmology

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1-GF)

Clinical and Radiological Outcomes of Double Versus Triple Immunosuppression for Dysthyroid Optic Neuropathy

*First Author: Fatema **ALJUFAIRI***
*Co-Author(s): Kelvin Kam-lung **CHONG**, Kenneth Ka Hei **LAI**, Jake Uy **SEBASTIAN**, Wing Chi Stella **SIO***

Purpose: To compare the clinical and radiological outcomes of double versus triple medical decompression in dysthyroid optic neuropathy (DON).

Methods: Prospective comparative study of 82 patients (115 eyes) diagnosed with DON between January 2012 and June 2023 managed in 2 centres. 19 patients (25 eyes) received double therapy (intravenous methylprednisolone (IV-PMP) with either steroid-sparing agent or orbital radiotherapy. While 63 patients (90 eyes) received triple therapy (IV-MP, steroid-sparing agent, and orbital radiotherapy). Main outcome measures included pre and post-treatment clinical and radiological parameters. The latter involved manual segmentation of magnetic resonance imaging parameters of rectus muscle size and intensity before and after medical decompression.

Results: Triple therapy showed a significant improvement in Clinical activity score (CAS) (p= 1.9e-14), best-corrected visual acuity (BCVA) (p=0.001), eye motility in all gazes (Abduction p=0.0057; adduction p=0.0091, elevation p=0.00021 and depression p=0.033), and a reduction in exophthalmos (p=0.0037) while dual therapy only significant improvement in CAS (p=0.0049). All rectus muscle size on T1-weighted images and T2-fat suppressed intensity significantly reduced after triple therapy (T1-SR p=2.3e−08; T1-IR p=1e−09; T1-MR p=2.7e−08; T1-LR p=2.6e−09; T2-SR p=3.7e−08; T2-IR p=5e−11; T2-MR p=2e−06; T2-LR p=0.0028), while only two muscle size significantly responded after double therapy (T1-IR p=0.045, T1-MR p=0.047).

Conclusions: Triple immunosuppressive therapy provides substantial improvement in clinical and

radiological parameters, including BCVA, extraocular motility, exophthalmos, CAS, and reduction in muscle size and inflammation. This disease-modifying therapy may serve as a medical decompression alternative to surgical decompression.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Detection of Serum Aquaporin-4 Antibody and Myelin Oligodendrocyte Glycoprotein Antibody in SARS-COV-2 Infection-related Optic Neuritis by Cell-Based Assay

*First Author: Chuan-bin **SUN***

Purpose: To evaluate the prevalence of serum AQP-4 A) and MOG-A) by cell-based assay (CBA) in SARS-CoV-2 infection-related optic neuritis (ON), and to report the clinical characteristics of SARS-CoV-2 infection-related ON.

Methods: In this prospective case series study, thirty-five patients clinically diagnosed as ON after SARS-CoV-2 infection from December 8, 2022 to February 8, 2023 were included, and detailed medical records including medical history, best corrected visual acuity (BCVA), ophthalmic examination, colour fundus photography, visual field test, orbital or cranial MRI examination, and serum testing data, were collected and analyzed.

Results: The mean age of 35 patients (46 eyes) was 38.2 years, with the mean follow-up period of 7.6 weeks. Females accounted for 17 cases. Seven Of 35 cases had a past medical history of ON. Thirty-three and two cases showed positive SARS-CoV-2 RNA test results before or after ON onset, respectively. ON occurred unilaterally in 24 cases and bilaterally in 11 cases. Ophthalmic examination revealed swollen optic in 37 eyes, normal optic discs in 6 eyes, and temporally or wholly paled optic discs in 3 eyes. CBA revealed seropositive MOG-Ab in 10 cases, AQP4-Ab in 2 cases, and GFAP-Ab in 2 cases, respectively, among whom, two AQP4-Ab seropositive, one MOG-Ab seropositive, and one GFAP-Ab seropositive case had a past medical history of ON. Most ON patients showed a rapid and dramatic response to steroid therapy. The median of BCVA at onset and at last follow-up was 20/500 and 20/67, respectively.

Conclusions: SARS-CoV-2 infection is related to the induction and relapse of ON, as well as the production of MOG-Ab.

Feb 24, 2024 (Sat)
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Venue: Uluwatu 4 (BNDCC1–GF)

Effect of Folic Acid Prophylaxis on Malondialdehid Expression and Retina Ganglion Cell Density (Experimental Study of Wistar Rats Administered Ethambutol)

*First Author: Bramantya **UTAMA***
*Co-Author(s): Liana **EKOWATI**, Riski **PRIHATNINGTIAS**, Arnila **SAUBIG***

Purpose: To prove the effect of folic acid prophylaxis on MDA expression and retinal ganglion cell density in Wistar rats given ethambutol.

Methods: Experimental analytical research. Wistar rats were divided into 2 groups for 30 days. The treatment group was given 32mg/200gramBW/day of ethambutol and 18mcg/200gramBW/day of folic acid. The control group was given ethambutol without folic acid. MDA expression was examined by IHC staining and retinal ganglion cell density was examined by HE staining.

Results: Analysis of MDA expression in the treatment group obtained Mean±SD (4.20±0.84) and the control group 4.80±0.84 with a p-value=0.316. Analysis of the density of retinal ganglion cells in the treatment group found the Mean±SD (15.40±3.95) and the control group 9.08±1.20 with a p-value=0.034. A correlation analysis of MDA expression with retinal ganglion cell density was obtained p=0.929 and r=-0.032.

Conclusions: MDA expression in the treatment group was lower but not significant compared to the control group. The density of retinal ganglion cells in the treatment group was significantly higher than in the control group. There was no significant relationship between MDA expression and retinal ganglion cell density.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Evaluation of Peripapillary and Macular Optical Coherence Tomography Angiography (OCT-A) Characteristics in Different Stages of Papilledema in IIH (Idiopathic Intracranial Hypertension)

*First Author: Akshra **PAHUJA***

Purpose: Prospective evaluation of OCT and OCT-A characteristics in papilledema.

Methods: In this prospective, observational study, patients of IIH with papilledema were recruited and divided into 3 groups- early/established (Group 1), chronic (Group 2), and atrophic papilledema (Group 3). Peripapillary RNFL (retinal nerve fibre layer) and macular GC-IPL (ganglion cell-inner plexiform layer)

were recorded on OCT. Peripapillary and macular perfusion was documented at superficial retinal, deep retinal, and choriocapillary levels using OCT-A. The investigations were repeated at 3 months.

Results: RNFL showed significant thinning in all groups on follow-up, with the atrophic group showing maximum thinning (p=0.01- group 3). GC-IPL was significantly reduced in all stages at baseline compared with the controls. The thinnest GC-IPL was noted in the atrophic group (52.75±7.44µm; p=0.00 in Group 3 vs controls) that showed further deterioration on follow-up. On Image J analysis, a significant decrease was noted at various levels in the peripapillary and macular perfusion at baseline, especially in the atrophic group which showed further deterioration on follow-up. Final visual acuity showed a statistically significant weak negative correlation with baseline RNFL (r=-0.306) and GC-IPL (r=-0.384), and a moderately negative correlation with baseline superficial peripapillary retinal perfusion (r=-0.553). A significant negative correlation was seen between increasing grade of papilledema and superficial peripapillary retinal perfusion with both Image J and automated indices (r= -0.46; r= -0.61), respectively.

Conclusions: GC-IPL may help identify early damage in papilledema, even in the presence of thicker RNFL. Significant vascular changes can be observed on OCT-A that may help predict the final visual outcome in papilledema due to IIH.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1-GF)

Evaluation of Visual Morphology and Functional Indicators in Patients With Acute Non-arteritis Anterior Ischemic Optic Neuropathy

*First Author: Hai-yan **WANG***
*Co-Author(s): Lei **ZHANG***

Purpose: To analyze the changes in the morphology and function of the macula and optic nerve in the eyes of acute non-arteritis anterior ischemic optic neuropathy (NAION), and to explore the correlation between morphological and functional indicators, visual acuity changes and morphological function changes.

Methods: A retrospective analysis was performed for 28 patients (average age 58.18±10.54 years) with unilateral NAION in our eye clinic, with the contralateral eye as the control group. The disease time from onset is 3~30 days (average 15.11±7.73 days). All patients underwent exams of optical coherence tomography angiography (OCTA), pattern visual evoked potential (P-VEP), and multifocal electroretinography (mfERG). And all patients were given classical treatment with follow-up for more than 6 months.

Results: Compared with the contralateral eye, the retinal nerve fibre layer (RNFL) layer in the acute NAION group was thickened (236.88± 60.23 µm vs 103.69 ±13.75 µm), thinning of ganglion cell complex (GCC) in the macular region (75.08± 15.93 µm vs 85.4 ±9.44 µm), superficial capillary density (VD) in the center of the optic disc increased (12.56± 4.61% vs 9.47±4.77%), P100 peak value of PVEP extended (109.36±15.02ms vs 100.75 ±5.04ms), P100 amplitude decrease (7.13±2.88µV vs 15.96±5.60µV) and mfERG center reaction density decreased (46.41±23.10 nv/degree^2 vs 67.48±22.30 nv/degree^2), the differences were statistically significant (P<0.05). In addition, GCC thickness was positively correlated with P100 amplitude and mfERG center reaction density.

Conclusions: Patients with NAION have visual morphological impairment in the acute stage, and the change in GCC thickness is closely related to the impaired macular and optic conduction function.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1-GF)

Increased Risk of Optic Neuritis in Patients With Fibromyalgia: Nationwide Population-Based Cohort Study

*First Author: Ju-yeun **LEE***
*Co-Author(s): Kunho **BAE**, Hyung Rae **CHO**, Geung Kyu **LEE***

Purpose: To estimate the risk of incidence of optic neuritis and identify the high-risk group among patients with fibromyalgia (FM).

Methods: A nationwide, population-based study was conducted using data from the National Health Claims database from 2012 to 2021. This study included all the patients with FM from the entire population aged 20–79 years (FM group). Moreover, those with pain but not diagnosed with FM were considered as the non-FM group. A cohort was established by classifying it into the FM and non-FM groups during the recruitment period. A log-rank analysis was used to compare the risk of optic neuritis incidence between the FM group and the non-FM group. Cox proportional hazards regression analysis was performed to calculate the adjusted hazard ratio (HR).

Results: The FM and non-FM groups included 479,892 participants each. The incidence rate of optic neuritis was 35.65/100000 person-years in the FM group; the HR was significantly higher in the FM group than in the non-FM group (95% confidence interval [CI], 1.84–2.41; p < 0.001). The mean interval between the onset of FM and incident optic neuritis was 2.4 ± 1.8 years. The risk increased significantly in men between 60-79 years (HR, 3.37; 95% CI, 2.54–4.48) and in women between 20-39 years (HR, 2.07; 95% CI, 1.38–3.22).

Conclusions: We quantified the risk of optic neuritis through a long-term follow-up, which could contribute to understanding the pathophysiology and estimating the healthcare burden associated with FM in a practical setting. Great attention should be paid to its risk in older men and younger women.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Is There a Chance for Neuro Regeneration in Mitochondriopathy in Methanol Toxic Optic Neuropathy?

*First Author: Bambang **SETIOHADJI***

Purpose: Blindness due to methanol intoxication is higher in males of productive age. The oxidative stress caused mitochondriopathy in retinal ganglion cells. The management of methanol-induced toxic optic neuropathy has yet to produce satisfactory results. Antioxidant (TEMPOL, SOD mimetic) therapy is used as an alternative method of preventing methanol intoxication. This study was to observe the effect of SOD on retinal ganglion cells.

Methods: This experimental study was conducted in 20 male Wistar rats that were 10-12 weeks old and weighed 300-350. They were divided into four groups, and each received a different treatment: a negative control group, a positive control group, a methanol group, and a methanol + TEMPOL group. Enucleated eyes from all groups were sliced and stained using hematoxylin-eosin (HE). The retinal layer and ganglion cells were assessed based on cellular structure, cellular swelling, and vacuole formation in the ganglion cell layer as observed at × 200 magnification. The Kruskal-Wallis test and the Mann-Whitney test were used, with significance taken to correspond to $p < 0.05$.

Results: Retinal ganglion cells of the control group had fewer vacuoles and a more well-organized cellular structure compared to those of the methanol group. The histopathologic scores of the methanol-intoxicated were lower than those of the TEMPOL therapy group; $p = 0.011$ (i.e., $p < 0.05$).

Conclusions: Neuro Regeneration showed by the positive impact of TEMPOL on the structure of retinal ganglion cells methanol toxic optic neuropathy.

Feb 24, 2024 (Sat)
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Venue: Uluwatu 4 (BNDCC1–GF)

Myelin Oligodendrocyte Glycoprotein Antibody-Associated Disease in a Paediatric Population

*First Author: Jane **SHI***
*Co-Author(s): David **CHOI**, Helen **DANESH-MEYER**, Stefan **IVANOV**, Daniel **SCOTT***

Purpose: Myelin oligodendrocyte glycoprotein antibody-associated disease (MOGAD) is an inflammatory central nervous system demyelinating disease, with a predilection for the paediatric population. Our purpose is to describe the clinical characteristics of paediatric (<16 years old) MOGAD patients in a New Zealand setting.

Methods: Data of all paediatric patients (age of onset <16 years) referred to the tertiary Neuro-ophthalmology Service with confirmed MOG-IgG antibody serology were collected from 2017. The study captured patient demographics, clinical features, treatment summaries, serology results, MRI results, and ophthalmology clinic visit summaries.

Results: Twenty-eight cases were identified, comprised of 17 (61%) females. The average age was 9 (0-16). Ethnicity distribution was NZ European (n=14; 50%), Samoan (n=6; 21%) and other (n=8; 29%). Neurological findings at first presentation were isolated optic neuritis (n= 9; 32%); other CNS syndromes (n=19; 69%) including ADEM, cortical encephalitis, or transverse myelitis. 8 (29%) had both optic neuritis and CNS syndromes. 11 (39%) had relapsing disease, 7 (25%) of which had optic neuritis at onset. All patients were commenced on intravenous methylprednisolone therapy at disease onset, with 12 (43%) requiring additional steroid-sparing immunosuppression. Intravenous immunoglobulin was used in 10 (36%) patients and plasma exchange in one case. 12 (43%) had a vision of 20/200 (HM-20/20) or worse at initial presentation, with a mean 5-line improvement in visual acuity post-treatment.

Conclusions: Optic neuritis is the most common disease phenotype of paediatric MOGAD, which occurs more frequently in relapsing disease. Vision can be adequately restored with timely treatment.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1-GF)

Neuroimaging Changes in the Pregeniculate Visual Pathway and Chiasmal Enlargement in Leber Hereditary Optic Neuropathy

*First Author: Xintong **XU***
*Co-Author(s): Shihui **WEI**, Patrick **YU-WAI**-MAN, Huanfen **ZHOU***

Purpose: To describe the pattern of magnetic resonance imaging (MRI) changes in the pregeniculate visual pathway in Leber hereditary optic neuropathy (LHON).

Methods: This retrospective observational study enrolled 60 patients with LHON between January 2015 and December 2021 in a tertiary neuro-ophthalmology centre.

Results: Twenty-eight (47%) patients had the m.11778G>A mutation, and 32 (53%) patients had other disease-causing mtDNA mutations. Thirty-four (57%) patients had T2 hyperintense signal (HS) in the pregeniculate visual pathway, of whom 13 (22%) had optic nerve involvement in the intraorbital (IO), intracanalicular (ICn) and intracranial (ICr) segments, and 21 (35%) patients had T2 HS in the optic chiasm and optic tract (OCh/OTr), including 13 (22%) patients with chiasmal enlargement. Twenty patients (71%) carrying the m.11778G>A mtDNA mutation had T2 HS, which was significantly more frequent compared to the 14 patients (44%) with T2 HS in the other LHON mutation groups (p=0.039). Furthermore, significantly more patients in the m.11778G>A group (16 patients (57%)) had T2 HS in the OCh/OTr compared to the other LHON mutation groups (7 patients (22%), p=0.005). Optic chiasmal enlargement was more frequently seen in patients with duration of vision loss <3 months compared with those ≥3 months (p=0.028).

Conclusions: T2 HS in the pregeniculate visual pathway is a frequent finding in patients with LHON. Signal changes in the OCh/OTr and chiasmal enlargement, in particular within the first 3 months of visual loss, were more commonly seen in patients carrying the m.11778G>A mtDNA mutation, which may be of diagnostic significance.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1-GF)

Peripapillary Retinal Nerve Fiber Layer Thickness in Idiopathic Optic Neuritis and Neuromyelitis Optica Spectrum Disorder Associated Optic Neuritis

*First Author: Shaoying **TAN***
*Co-Author(s): Jincui **WANG**, Xiayin **YANG***

Purpose: This study aims to monitor the progressive features of peripapillary retinal nerve fiber layer (pRNFL) thickness in idiopathic optic neuritis (IDON) and neuromyelitis optica spectrum disorder associated optic neuritis (NMOSD-ON), in order to discriminate NMOSD-ON from IDON in clinical practice.

Methods: IDON and NMOSD-ON patients were recruited. The affected eyes were further classified into edematous-optic-disc (EOD) and non-edematous-optic-disc (NEOD) groups. The pRNFL thickness measured by optical coherence tomography (OCT) in average and quadrants were compared among groups.

Results: A total of 183 eyes (96 IDON and 87 NMOSD-ON) were recruited in our study, including 61 EOD and 122 NEOD eyes. The proportion of the apparent EOD in IDON (73.8%) was higher than that in NMOSD-ON (26.2%). In EOD eyes, the pRNFL thickness of IDON was demonstrated to be thicker than NMOSD-ON, particularly in 1-3 months [average pRNFL thickness was 150.79±69.59μm and 95±14.47μm in IDON and NMOSD-ON, respectively (P<0.001)]. The pRNFL thickness of EOD NMOSD-ON in 1-3 months showed thinning in the quadrants of inferior (-25.74%), nasal (-49.20%) and superior (-40.84%), compared to that within 1 month. However, there was no thinning of pRNFL thickness in EOD IDON. The NEOD NMOSD showed a significant thinning of pRNFL thickness within 3 months (average: -14.97%; temporal: -15.07%, inferior: -20.58%, superior: -20.06%).

Conclusions: The result indicated that IDON eyes suffered from a more severe edematous optic disc. Thinning of pRNFL thickness occurred earlier in NMOSD-ON eyes.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1-GF)

Retinal Nerve Fiber Layer Thinning on Optical Coherence Tomography: Is It Always Glaucoma?

*First Author: Pir Salim **MAHAR***

Purpose: The purpose of this presentation is to highlight the importance of differentiating between glaucomatous and non-glaucomatous causes of retinal

nerve fiber layer (RNFL) thinning on optical coherence tomography (OCT) to ensure appropriate management and treatment for patients. The presentation aims to raise awareness that not all cases of RNFL thinning are related to glaucoma and that other disorders can produce similar findings, leading to an erroneous diagnosis of glaucoma.

Methods: The presentation utilizes a descriptive approach to discuss various non-glaucomatous disorders that can show RNFL thinning on OCT, mimicking glaucoma. The authors present clinical cases and relevant information to illustrate the diverse conditions that can lead to RNFL thinning and emphasize the need for careful evaluation and differentiation.

Results: The result of the presentation is to create awareness among eye care professionals about the potential misdiagnosis of glaucoma based solely on RNFL thinning. By presenting different non-glaucomatous conditions that can cause similar OCT findings, the authors aim to emphasize the importance of comprehensive evaluation, including neuro-ophthalmic consultation, brain and orbital imaging, and serological tests, if necessary, to accurately diagnose and manage the underlying cause.

Conclusions: The presentation concludes that while glaucoma is a common cause of RNFL thinning. it is not the exclusive cause. Other optic nerve disorders can produce similar OCT findings, leading to misdiagnosis. Therefore, eye care professionals must remain vigilant and avoid complacency, reevaluating patients periodically and considering alternate evaluations when the clinical course does not fit with typical glaucomatous patterns.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1-GF)

Using Retinal Vessel Pulsation to Accurately Estimate Intracranial Pressure

*First Author: William **MORGAN***
*Co-Author(s): Anmar **ABDUL-RAHMAN**, Vukmirovic **ALEKS**, Khoo **JO**, Dao-yi **YU***

Purpose: Pathological elevation in ICP results in structural damage causing idiopathic intracranial hypertension (IIT) and affecting outcomes in traumatic brain injury and stroke. Currently, invasive procedures which tap directly into the cerebrospinal fluid are required to measure this pressure. Recent fluidic engineering modelling analogous to the ocular vascular flow suggests that retinal venous pulse amplitudes measured by photoplethysmography (PPG) are predictably influenced by downstream pressures, suggesting that ICP could be estimated by detecting the IOP required to nullify pulsation (physiologic model). Also, machine learning techniques may possibly be applied to PPG data to predict ICP.

Methods: We measured amplitudes in 30 subjects with suspected IIH undergoing invasive ICP measurements by lumbar puncture (LP) or external ventricular drain (EVD). We estimated ICP from these amplitudes using physiologic and machine learning modelling using the PPG data.

Results: The physiologic model had a mean absolute error of 3.0 mmHg and a slope of 1.00 (r = 0.91). Ninety-four percent of differences between the PPG and invasive method were between -5.5 and +4.0mmHg, which compares favourably to comparisons between LP and EVD. The Bland - Altman 95% confidence interval for differences was -6.3 to 5.8mmHg. The machine model had similar error magnitudes using arterial or venous amplitude data. It also produced estimates from each vessel region which could be assessed as a frequency histogram to estimate prediction accuracy.

Conclusions: This type of modelling may be useful for understanding retinal vessel pulsatile fluid dynamics and may provide a method for non-invasive ICP measurement.

Ocular Imaging

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1-GF)

Boom-type Handheld Ultrahigh-Resolution OCT With High-Performance Integrated Imaging Probe for Pediatric Retinal Imaging

*First Author: Peng **XIAO***

Purpose: Since mainstream tabletop stationary optical coherence tomography (OCT) is not practical for non-cooperative infants and handheld OCT suffers motion artifacts and relatively low imaging quality, we developed a boom-type handheld ultrahigh-resolution OCT for pediatric retinal imaging in a supine position.

Methods: A high-performance integrated handheld OCT imaging probe was developed by incorporating the OCT sample arm with real-time iris display for easy alignment. To reduce the motion artifacts and operator fatigue during image acquisition, the handheld imaging probe was coupled on a self-locking multi-directional manipulator. The full OCT module was installed on a moveable cart to ensure easy movement of the system for point-of-care bedside imaging. System stability was evaluated by imaging a stationary model eye and its imaging performance was further demonstrated on healthy human subjects, sedated infants, and non-sedated awake neonates.

Results: The system achieves an ultrahigh axial resolution of ≈2.3µm in tissue with an A-line acquisition rate of up to 128 kHz. The handheld OCT imaging probe weighs less than 500g. The average peak-peak value of axial and lateral motions when imaging the model eye in self-locking mode are 5µm ±1.1µm and 78µm±2.4µm, far smaller than that in the handheld mode of 24±5.6µm and 138±3.8µm. A high imaging success rate of 91.2% on infant subjects and 100% on bedridden adults was achieved, resolving major retinal structures in both healthy and diseased subjects.

Conclusions: Our prototype has the potential to bring the OCT system to the bedside or incubator imaging, enabling non-contact, high-resolution and high-stability retinal examinations to be performed on pediatric subjects in a supine position.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1-GF)

Early Rate of Change in Circumpapillary Vessel Density Is Associated With Normal Tension Glaucoma Progression: An Optical Coherence Tomography Angiography Longitudinal Study

*First Author: Ruyue **SHEN***
*Co-Author(s): Carol **CHEUNG**, Poemen **CHAN**, Anni Annie **LING**, Timothy Pak Ho **LIN**, Clement C **THAM***

Purpose: To prospectively evaluate the early rate of changes in circumpapillary vessel density (cpVD) as measured by optical coherence tomography angiography (OCTA) in normal tension glaucoma (NTG) eyes, and its relationship to the subsequent risk of glaucoma progression.

Methods: Two hundred and eight-five eyes from 198 NTG patients with a minimum 24-month follow-up were included. A swept-source OCT (Triton DRI-OCT, Topcon, Japan) was used to acquire OCTA images of the 3mm × 3mm peripapillary region. An automated customized program was used to measure cpVD after the removal of retinal arterioles and venules from the OCTA images. The relationship between the early change rate of cpVD, defined as the first-year follow-up, and the subsequent risk of glaucoma progression was evaluated by Cox proportional hazards regression models.

Results: Seventy-two eyes (25.3%) developed progression identified by visual field assessment over a mean follow-up period of five years. In comparison with NTG eyes without progression, the rate of change of superotemporal cpVD was significantly faster in NTG eyes with progression (-2.77 ± 1.37 %/year vs -0.14 ± 0.68 %/year, P = 0.045). Multivariable Cox models showed that each 1% of superotemporal cpVD per year decrease during the first year of follow-up increased the hazard of glaucoma progression by 4.8% (hazard ratio [HR] 1.048, 95% confidence interval [CI], 1.012 - 1.085; P = 0.009).

Conclusions: This study demonstrated the significant association between an early decrease in cpVD and the subsequent risk of NTG progression, which supported the prognostic value of retinal microvasculature analysis by OCTA.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1-GF)

Enface SS-OCT Angiography in Peripapillary Pachychoroid Syndrome – A Novel Entity

*First Author: Priyanka **GUPTA***
*Co-Author(s): Charu **GUPTA**, Cyrus **SHROFF**, Daraius **SHROFF***

Purpose: To describe features and quantitative analysis of peripapillary pachychoroid syndrome (PPS) using multimodal imaging including En face - SS-OCT angiography (OCTA).

Methods: Prospective observational case series of 12 eyes. Multimodal imaging was performed with detail using the Enface SS- OCTA analysis. Quantitative analysis was done on choroidal thickness and CVI using Image J software.

Results: Imaging patterns of 12 eyes of 6 patients were analysed. Middle age (61.7+_7.47) & male predominance with hyperopia (1.03+_0.78 dioptres) was seen. EDI OCT showed thicker nasal macular choroid (407.25+_32.66). The ratio of nasal macula choroidal thickness to temporal choroidal thickness at 1500 µm was found to be extremely significant. ($p<0.0001$). The fluid was noted overlying the dilated pachyvessels. In all eyes sub- retinal fluid / intraretinal fluid was present, extending to the temporal disc margin. The extent of pachyvessels was usually seen from the peripapillary area to sub foveal area. Nasal CVI was found to be higher than subfoveal CVI. Enface OCTA showed dilated choroidal vessels, dark spots & dark areas in choriocapillaries segmentations in the nasal quadrant. A filamentous network was seen in 1 eye, indicating pachychoroid neovasculopathy. FFA showed hyper-reflective dots & ICG showed hypercyanescence with choroidal hyperpermeability.

Conclusions: Enface SS- OCT A is imperative in diagnosing the peripapillary pachychoroid syndrome. Dilated choroidal vessels, dark spots & dark areas in the peripapillary area are important findings. It is important to identify this disease as treatment and monitoring of this is different from other diseases, which remains a challenge.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Evaluation of Microvascular Changes and Optic Nerve Head Perfusion Following Trabeculectomy – An Optical Coherence Tomography Angiography (OCT-A) Study

*First Author: Madhavi **PILLAI***
*Co-Author(s): Mohideen **ABDUL KATHER**, Ramakrishnan **RENGAPPA***

Purpose: To determine the effect of Trabeculectomy on peripapillary vessel density and optic nerve head perfusion using Optical Coherence Tomography Angiography (OCT-A).

Methods: In this prospective, observational study, 67 patients with primary glaucoma, both open-angle (POAG, n=25) and angle closure (PACG, n=42) who underwent trabeculectomy were included. OCT-A scans were performed using AngioPlex™ CIRRUS™ HD-OCT one week prior and 1 month, 3 months and 6 months postoperatively. Changes in peripapillary vessel density (pVD), perfusion index, flux index, retinal nerve fiber layer thickness (RNFL), and macular ganglion cell layer – Inner plexiform complex (GCL-IPL) were analyzed. Correlation with changes in Intraocular pressure (IOP) was also evaluated.

Results: The mean IOP decreased in both POAG ($p<0.001$) and PACG ($p<0.001$). The pVD measurements in all the quadrants showed significant improvement, superior ($p= 0.016$, $p=<0.001$), inferior ($p< 0.001$,$p <0.001$), nasal ($p < 0.001$, $p < 0.001$), temporal ($p=0.009$, $p<0.009$) in follow-up visits at 1 month, 3 months and 6 months in both groups after trabeculectomy. There was a significant increase in the perfusion index of peripapillary vessels ($p=0.022$, $p= 0.004$) in POAG and PACG and flux index in POAG (p-value <0.001). There was no significant correlation between IOP and change in pVD. Linear regression analysis showed a significant influence of Mean RNFL thickness in superior ($p < 0.002$) and inferior ($p< 0.009$) pVD in PACG patients.

Conclusions: OCT-A demonstrated a significant improvement in peripapillary vessel density and optic nerve head perfusion after trabeculectomy in both POAG and PACG patients. The reversal of microvascular and structural parameters after surgery is a shred of supportive evidence for the role of trabeculectomy in controlling glaucoma progression.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Imaging Retinal Dystrophies Using Ultrahigh Resolution Polarization Sensitive Optical Coherence Tomography (PS-OCT)

*First Author: Poornachandra **BALUGHATTA***
*Co-Author(s): Nivedita **GOVINDASWAMY**, Rahul **PATIL**, Abhijit **SINHA ROY***

Purpose: To study tissue-specific changes in retinitis pigmentosa, Stargardt's and normal eyes using PS-OCT.

Methods: A total of fifty eyes, normal and those with dystrophies were studied using custom-built ultrahigh resolution PS-OCT that operated at a central wavelength of 840 nm and a full-width-at-half-maximum (FWHM) spectral width of 100 nm. A macula-centered volume of 64 raster B-scans of 6x6 mm scan field was acquired. Phase retardation (PR) and axis orientation (AO) were obtained by evaluating the co- and cross- polarization channel information. PR and AO en face maps at inner limiting membrane (ILM), ellipsoid zone (EZ) and retinal pigment epithelium (RPE) layers, six annular zones each of 1 mm width were defined for the en face from ILM, EZ and RPE. Mean PR was computed for each annular zone and compared across RP, Stargardt's and normal eyes.

Results: A characteristic bow-tie pattern at EZ layer was observed in normal eyes. In diseased cases, this pattern was disrupted. Across all zones, at the ILM, Stargardts eyes (~41°) had the highest mean PR followed by RP (~32°) and Normal (~26°). A similar trend was observed in the case of EZ layer, too, where Stargardt's (~46°) had the highest PR followed by RP (~39°) and Normal (~30°). Eyes with good central vision (say 6/6), but clinically diagnosed as RP, showed changes in the EZ layer at the macula compared to normal.

Conclusions: PS-OCT is a promising tool to identify and characterize retinal dystrophies. Its ability to detect structural changes in the retina before functional changes occur gives it an advantage.

Feb 24, 2024 (Sat)
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Venue: Uluwatu 2 (BNDCC1–GF)

In-Vivo Confocal Microscopy Predicts Cytomegalovirus As the Cause of Chronic or Recurrent Anterior Uveitis Among Chinese

*First Author: Stephanie Hiu-wai **KWOK***
*Co-Author(s): Ka Wai **KAM**, Eugenie **MOK**, Alvin **YOUNG***

Purpose: To evaluate and compare endothelial features by in-vivo confocal microscopy (IVCM) in Chinese eyes with chronic or recurrent anterior uveitis with and without cytomegalovirus (CMV).

Methods: A double-masked, prospective cohort study at a tertiary eye clinic.

Results: Thirty eyes of 30 subjects were analyzed. Fifteen eyes (50%) were CMV positive, while fifteen eyes were negative for herpes simplex, varicella zoster virus and CMV. The absence of pseudoguttata was the strongest, independent risk factor for CMV (OR 34.53, 95% CI: 1.84-648.02, p=0.018), followed by severe iris depigmentation (OR 31.45, 1.02-965.81, p=0.048) and low corneal endothelial cell density (ECD) (OR 14.79, 1.14-191.30, p=0.039) on univariable regression. All three remained statistically significant after adjustment. The combination of the absence of pseudoguttata and low ECD on IVCM achieved a predictive value similar to that of iris depigmentation examination.

Conclusions: The absence of pseudoguttata on IVCM was an independent predictor of positive CMV detection after adjusting for iris depigmentation and corneal endothelial cell density. The addition of this feature to severe iris depigmentation and low corneal ECD can increase the PPV of detecting CMV. IVCM was a useful non-invasive tool to predict CMV in patients with chronic or recurrent AU.

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Venue: Uluwatu 2 (BNDCC1–GF)

Proof-of-Principle Ex-vivo Cross-Sectional B-mode Acoustic Impedance Imaging of the Posterior Segment of Guinea Pig Eye Using Scanning Acoustic Microscope

*First Author: Edo **BAGUS PRASTIKA***
*Co-Author(s): Jiang **LIQIN**, Hoang **QUAN VAN MANH**, Sherlyn Hui Yu **SEAH**, Dan **YEE SHAN***

Purpose: Our previous work demonstrated that the scanning acoustic microscope (SAM) is a powerful tool to assess ocular tissue in diseased states that affect biomechanical properties such as myopia, glaucoma, and corneal ectasias. Unlike the conventional, qualitative B-scan ultrasounds used in routine clinical practice in vivo, the SAM image provides quantitative data at resolutions up to 4 microns. However, this is generally limited to in vitro tissue sections. We therefore aim to develop an analysis algorithm capable of translating a high-resolution in vitro SAM into a system capable of ex-vivo scanning, as a stepping stone towards developing a high-resolution SAM in vivo.

Methods: Eyeball enucleated from a 4-week-old guinea pig was raster-scanned with a 40-MHz annular-array transducer. The reflection coefficient of the tissue was then obtained through subjecting each reflection to a deconvolution process in the time and frequency domain, allowing for calculation of the acoustic impedance through a Time Domain Reflectometry-inspired algorithm.

Results: Cross-sectional acoustic impedance images of the posterior segment were successfully acquired, which correlates with elasticity. The analysis demonstrated that eye tissue had a greater acoustic impedance value (1.68+/-0.03) than water (>1.49 MNs/m3, p=0.0001).

Conclusions: This proof-of-principle study provides evidence that the SAM need not be limited to only 2-D tissue sections, but can also be applied to whole ex-vivo eyes. Thus, this may be a stepping stone toward in-vivo, high-resolution imaging of biomechanical properties of the eye to aid in detecting eyes with higher susceptibility towards diseases with a biomechanical basis, such as myopic progression and glaucoma.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Quantitative Assessment of Retinal Microcirculation Changes in SLE Patients Using Wide-Field OCTA and the Correlation With SLE Disease Activity

*First Author: Lihui **MENG***
*Co-Author(s): Huan **CHEN**, Lulu Zhao **CHEN**, Youxin **CHEN**, Xinyu **ZHAO***

Purpose: To assess the retinal microcirculation changes quantitatively using wide-field optical coherence tomography angiography (OCTA) in systemic lupus erythematosus (SLE), and explore its correlation with systemic clinical features.

Methods: Prospective, cross-sectional, observational study. Patients with SLE who presented to the Ophthalmology Department of a tertiary, multi-specialty referral hospital from November 2022 to April 2023 were collected. The subjects were divided into retinopathy and without retinopathy groups. The characteristics of retinal OCTA parameters and correlation with systemic clinical indicators of patients without retinopathy were analyzed.

Results: A total of 102 SLE patients were included, 24 of which had retinopathy and 78 had the retina unaffected. Wide-field OCTA could effectively detect retinal vascular obstruction, non-perfusion area, and morphological abnormalities in patients with lupus retinopathy. By comparing with age and gender-matched healthy controls (n=65), SLE patients without retinopathy had significantly higher superficial capillary plexus vessel density (SCP-VD) in foveal (P=0.02), para-foveal temporal (P=0.01), nasal (P=0.01), peripheral foveal temporal (P=0.02) and inferior areas (P=0.02), as well as subregion temporal (P=0.01) and inferior areas (P=0.03). The AUC value of subregion inferior SCP-VD combined parafoveal temporal SCP-VD is up to 0.70. There was a significantly positive correlation between SCP-VD and disease activity in SLE without retinopathy

group. Patients with severe activity had the most significant increase in SCP-VD.

Conclusions: Wide-field OCTA can provide a relatively comprehensive assessment of the retinal microcirculation in SLE. In the absence of pathological changes of the retina, the SCP-VD was significantly increased and was positively correlated with the disease activity of SLE.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Retinal Oxygen Metabolism, Hemodynamics and Nerve Related Changes After Anti-VEGF in Retinal Vein Occlusion by a Multi-Modal System

*First Author: Jingyuan **ZHU***
*Co-Author(s): Haowen **LI**, Jinyuan **WANG**, Wenbin **WEI**, Shiyi **YIN**, Han **ZHANG***

Purpose: To assess the alterations in retinal oxygen metabolism, hemodynamics, pupillary light responses and smooth pursuit eye movements (SPEM) in patients with retinal vein occlusion (RVO) treated with anti-VEGF.

Methods: Spectrophotometric retinal oximetry, laser speckle contrast imaging, and pupil and eye movement recorder were conducted using a newly-developed rapid non-invasive multimodal ocular structural-functional imaging system.

Results: This cross-sectional study on RVO treated with anti-VEGF comprises 30, 18 and 31 eyes as branch RVO (BRVO), central RVO (CRVO) and healthy subjects, respectively. BRVO group had higher arteriovenous differences in retinal oxygen saturation, oxygen concentration, and oxygen extraction fraction ($p<0.01$ or 0.05). For hemodynamics, the blood flow acceleration index and resistivity index were higher, while the systolic period was shorter, blowout score and blood flow velocity (especially in arteries) were lower in both RVO groups ($p<0.001$ or 0.05). Blood flow volume was lower in BRVO ($p<0.05$). Arterial external diameter was smaller in CRVO ($p<0.001$). CRVO had lower pupil contraction rate, amplitude and velocity ($p<0.05$ or 0.01). The velocity of SPEM was faster in BRVO ($p<0.05$).

Conclusions: There were retinal hypoxia conditions with increased retinal blood flow resistance in RVO patients even after anti-VEGF treatments. Compensatory retinal blood flow and pulsation may be unable to meet the oxygen metabolic needs. Pupil constriction disorder may be related to parasympathetic nerve injury. Saccade may be related to central visual impairments caused by macular edema. This system is made possible by breakthroughs in multifunctional integration in a single system, which will facilitate clinical examinations and be helpful for early-stage diagnoses and interventions.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Retinal Vessel Tortuosity and Fractal Dimension Differences in Regular Hemodialysis Patients With and Without Type 2 Diabetes Mellitus in a Tertiary Hospital in Indonesia

*First Author: Muhammad **FARIZ***
*Co-Author(s): Sauli **ARI WIDJAJA**, Muhammad **FIRMANSJAH**, Ady **PRAKOSA**, Wimbo **SASONO**, Ima **YUSTIARINI***

Purpose: To compare retinal vessel tortuosity and fractal dimension, obtained from optical coherence tomography angiography (OCT-A) scans of regular hemodialysis patients with and without Type 2 diabetes mellitus (DM).

Methods: This analytic observational study with a cross-sectional design used medical records and OCT-A scans from regular hemodialysis patients in a tertiary hospital in Surabaya, Indonesia. Retinal vascular tortuosity from OCT-A scan images was measured using ImageJ software. Fractal dimensions of retinal vessels were measured from a binarized and skeletonized image of OCT-A scans and then analyzed with Fractalyse software. Retinal vessel tortuosity and fractal dimension were compared in regular hemodialysis patients with and without Type 2 DM.

Results: From 120 samples of regular hemodialysis patients, 35 patients (29,2%) had a history of Type 2 DM, while 85 patients (70,8%) did not. We found a significant difference ($p<0.001$) between the tortuosity of the superficial capillary retinal vessels in regular haemodialysis patients with and without Type 2 DM. Significant differences were also found between the fractal dimension of superficial ($p<0.001$) and the deep capillary plexus ($p<0.001$) of the retinal vessels in regular hemodialysis patients with and without Type 2 DM.

Conclusions: Tortuosity and fractal dimension of retinal blood vessels are closely related to DM status in regular hemodialysis patients, which is known to lead to other retinal diseases. The following findings demonstrate that the geometric parameters of the retinal vessels from the OCT-A scans can be an early screening tool that can produce high-quality images and a quantitative measure for retinal to prevent a worse prognosis.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Smart vs Traditional: Evaluating the Accuracy of Smartphone-Based Diabetic Retinopathy Screening in Pakistan

*First Author: Rehman **SIDDIQUI***
*Co-Author(s): Arshad **MEHMOOD**, Danish **SHABBIR**, Rida **SHAHZAD***

Purpose: Diabetic retinopathy (DR) is a leading cause of blindness globally. The gold standard for DR screening is stereoscopic fundus photography with tabletop cameras. VistaView (Volk Optical Inc, Mentor, Ohio) is a novel smartphone-based retinal camera which offers mydriatic retinal imaging. This study compares the diagnostic accuracy of the smartphone-based VistaView camera to a traditional tabletop fundus camera (Triton Topcon) for the screening of DR.

Methods: This prospective study took place between December 2021 and June 2022 at an eye hospital in Karachi, Pakistan. Consecutive diabetic patients were imaged following mydriasis using both VistaView and Topcon cameras at the same sitting. All images were graded independently by two graders based on the International Classification of Diabetic Retinopathy (ICDR) criteria. Individual grades were assigned for the severity of DR and maculopathy in each image. Sensitivity, specificity, PPV and NPV were calculated using the Topcon camera as the gold standard for any stage of DR and referrable DR (RDR).

Results: A total of 1428 images were available from 371 patients with both cameras. The overall sensitivity of VistaView for any DR was 69.9% (95% CI 62.2-76.6%), while the specificity was 92.9% (95% CI 89.9-95.1%), and PPV and NPV were 80.5% (95% CI 73-86.4%) and 88.1% (95% CI 84.5-90.9) respectively. The sensitivity of VistaView for RDR was 69.7% (95% CI 61.7-76.8%), while the specificity was 94.2% (95% CI 91.3-96.1%), and PPV and NPV were 81.5% (95% CI 73.6-87.6%) and 89.4% (95% CI 86-92%) respectively.

Conclusions: The VistaView offers high diagnostic accuracy for DR screening in low-middle-income countries.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Temporal Retinal Vessel Angle as a Novel Clinical Marker in FEVR

*First Author: Christopher **GO***
*Co-Author(s): Gem **CHEW**, Wei-chi **WU***

Purpose: To investigate the relationship between temporal retinal vessel angles with visual acuity and foveal hypoplasia in patients with FEVR.

Methods: A single-centre retrospective review of patients with FEVR was managed between 2006 and 2021 at Linkou Chang Gung Memorial Hospital. Patients with Stage 4/5 disease on presentation were excluded. Temporal retinal artery (TAA) and vein (TVA) angles were determined using a semi-manual method using computer software by 2 reviewers.

Results: A total of 117 eyes of 65 patients were included in the analysis. There were 32 males and 33 females. The mean age of presentation was 6.0 years, and the mean presenting visual acuity (VA) was 0.74 logMAR. The mean TAA and TVA were 63.7±29.5˚ and 78.6±33.9˚with a moderate inverse correlation with VA, central macular thickness, foveal hypoplasia and FEVR stage ($p<0.001$). The predictive power of TAA and TVA were analysed using the ROC curve, and the AUCs of poor VA (logMAR ≥1.0) and foveal hypoplasia were 0.80 and 0.83, and 0.86 and 0.82 for artery and vein, respectively. Furthermore, the odds ratio of poor VA was 13.62 in patients with TAA ≦ 65˚ compared to those with TAA > 65˚($p<0.0001$) and 22 in patients with TVA ≦ 73˚($p<0.0001$).

Conclusions: Temporal retinal vessel angle may serve as a novel marker of visual prognosis in FEVR, showing a correlation to visual acuity, FEVR stage, central macular thickness, and the presence of foveal hypoplasia. Further studies are required to create a more standardised and clinically relevant method given there is a significant inter-observer variability despite the use of a semi-manual method with the assistance of computer software.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

The Smartscope Kit: A Frugal Portable Do-It-Yourself Comprehensive Eye Examination Kit for Every Ophthalmologist

*First Author: Hirika **GOSALIA***

Purpose: To describe the step-by-step making of a comprehensive frugal do-it-yourself smartphone-based eye examination kit (Cost:25USD) and effectiveness in screening ophthalmic pathologies in outreach programmes deficient in ophthalmic instruments.

Methods: Threechart paper (5x2cm) with a hole is stuck with 15D,8D & 4x30D intraocular lens (IOL) attached to a smartphone camera for anterior-segment images,gonioscopy-images and microorganism (parasites/fungae) examination, respectively. Additional cobalt blue filter for fluroescein photography was used. A modified hand sanitiser bottle with a 20D lens for fundus photography. This describes the making of smartscope kit done with a budget of 25USD used as a point-of-care diagnostic tool for anterior to posterior segment examination without slit lamp aid.

Results: Prospective study in 20 camps including 2315 patients were screened in 10 months- we diagnosed – 1454 cataracts, 7 fungal corneal ulcers, 3 foreign bodies of the cornea, 17 primary angle closure suspects, 42 diabetic retinopathy, 8 retinal detachments, 9 iris colobomas with retinal-choroidal colobomas, 2 macular holes, 1 ICE syndrome with PAS on gonioscopy, 1 CRAO, 3 corneal tears, 4 uveitis, 3 vitreous hemorrhage, 2 OSSN, 3 neovascular glaucoma case - treatment requiring cases were referred to the base hospital.

Conclusions: It is the only study with a large volume of community screening done with only a smartphone-based innovative frugal do-it-yourself kit. It is a new-age community screening kit with near-perfect images compared to slit lamp diagnosis of ocular diseases and also helpful in early diagnosis and prompt treatment, documentation, immediate referral, and point-of-care diagnostics. it is a cost-effective alternative to slit lamp in setups devoid of expensive ophthalmic instruments.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Ultrasound Biomarkers: Contrast Enhanced Ultrasound and Nakagami Imaging to Differentiate Benign and Malignant Choroidal Tumor

First Author: Vishal ***RAVAL***
Co-Author(s): Himanshu ***SHEKHAR****, Karla M* ***SHEKHAR***

Purpose: We hypothesize contrast-enhanced ultrasound (CEUS) using a focused microbubble technique quantifying microvascular changes, while Nakagami imaging used for tissue characterization would provide a new approach for diagnosing and differentiating benign and malignant choroidal lesions.

Methods: One patient with choroidal hemangioma (CH) and choroidal melanoma (CM) was selected. Definity®, which contains perflutren microbubbles, was administered as a slow IV bolus (1 ml). CEUS was performed for one minute post-injection of the dye with continuous video recording. The mean intensity was calculated for each ROI, and the time-averaged difference in pixel intensities of post-injection frames relative to the reference pre-injection frame was calculated. Based upon Nakagami statistical distribution model, two Nakagami parameters, m and Ω, where m (shape parameter), representing tissue heterogeneity, and Ω (scale parameter), representing the average energy of backscattered signals was studied.

Results: CEUS analysis showed the time-averaged contrast increased by a percentage difference of 9.9% ± 5.2% (Mean ± SD) for CH and decreased by 4.2% ± 4.7% for CM. Furthermore, the intensity within the normal choroidal region was higher compared to the choroidal tumor region for both CH and CM. Nakagami analysis showed the m estimates were comparatively higher for hemangioma than melanoma (18.7 vs 8.8), which indicates that hemangioma is a more heterogeneous tumor compared to melanoma. There was no significant difference in Ω estimates between hemangioma and melanoma (0.65 vs 0.54).

Conclusions: Quantitative intensity-based contrast ultrasound and back scattering signal analysis characterizing tissue heterogeneity using Nakagami imaging can be a potentially promising tool for differentiating benign and malignant choroidal lesions.

Ocular Oncology and Pathology

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

BcCL-10 Expression in Correlation With Prognostic Outcome in Ocular Adnexal B Cell Non-Hodgkin Lymphoma Patients: An Indonesian Experience

First Author: Whisnu ***JATMIKO***

Purpose: B-cell Non-Hodgkin Lymphoma (BNHL) is the most common type of malignancy in the ocular adnexa region. Most types are indolent with mild and non-specific clinical manifestations, so patients often come with poor morbidity accompanied by decreased or loss of visual function. BCL-10, known as one of the biomarkers which have a role as a pro-apoptotic agent that suppresses tumor development, is even more found in BNHL. To assess the correlation between BCL-10 expression and the prognostic outcome in the form of overall survival (OS), progression-free survival (PFS), and event-free survival (EFS) in Ocular Adnexal B-cell Non-Hodgkin Lymphoma (OABNHL) patients.

Methods: A five-year cohort retrospective study with immunohistochemical staining using antibodies against BCL-10 was performed on OABNHL's paraffin blocks. Expression assessment was carried out on the nucleus and cytoplasm by manual and semi-quantitative methods.

Results: A total of 47 patients were analyzed. The age group > 61 had a ten times greater risk of dying (p=0.03). The most common histopathological type was Extranodal Marginal Zone Lymphoma (EMZL) (83%). BCL-10 expression was stronger in the aggressive than the indolent type (p<0.01). The percentage of each PFS, OS, and EFS were 80%, 55%, and 82%, respectively.

Conclusions: There is no significant correlation between BCL-10 expression and OABNHL patients' prognosis. However, there is a tendency for a correlation between nucleus-positive expression and

strong intensity in the cytoplasm with lower prognosis rates. Meanwhile, there is a significantly greater risk of death in older OABNHL patients and higher BCL-10 expression in an aggressive type of OABNHL.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Demographic Profile of Orbital Exenteration in a Tertiary Eye Care Centre in India

*First Author: Sahil **AGRAWAL***
*Co-Author(s): Neelam **PUSHKER***

Purpose: This study aimed to determine clinical indications for orbital exenteration, the demographic profile of these patients, and clinicopathological correlations in current times, and to compare these results with previous published data.

Methods: It was a retrospective study. All exenterations performed at a tertiary eye care centre over a period of 20 years were included. Patient records were reviewed to obtain demographic data, presenting symptoms and their duration, laterality, and clinical and histopathological diagnosis.

Results: A total of 352 cases (males: females, 222:130) were identified who underwent exenteration. Patients ranged in age from 11 months to 87 years (mean: 43.86 years, median: 50 years). The most common indication for exenteration was found to be eyelid malignancy in 54.36%, followed by retinoblastoma in 18.75% and primary orbital tumors in 14.49%. Out of 156 cases of eyelid malignancies requiring exenteration, squamous cell carcinoma (SCC) was the most common histologic subtype (n=94; 60.26%), followed by sebaceous gland carcinoma (n=40; 25.64%), and basal cell carcinoma (n=20; 12.82%). The most common primary orbital tumors requiring exenteration were adenocystic carcinoma of the lacrimal gland in adults and rhabdomyosarcoma in the paediatric age group. Benign conditions requiring exenteration included fulminant fungal orbital infections and lymphangioma, amongst others.

Conclusions: The number of exenterations performed has significantly increased in terms of absolute numbers. However, the ratio of exenteration to other tumour-related surgeries, mainly excision biopsy, has reduced as compared to that reported from the previous study. The most common indication in our study remains eyelid malignancy followed by intraocular malignancy with SCC as the most common tumor histologic subtype requiring exenterations.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

High-Risk Histopathologic Features in Conjunctival Melanoma

*First Author: Tianyu **ZHU***
*Co-Author(s): Renbing **JIA**, Shiqiong **XU***

Purpose: To identify high-risk histopathology and molecular features of local recurrence, nodal metastasis, distant metastasis (DM), and disease-specific death (DSD) in CoM.

Methods: We retrieved 90 patients with pathological diagnoses of CoM between 2008 and 2023, 65 of 90 patients performed immunohistochemistry staining on BRAFV600E, NRASQ61R, and CD117, and 45 of 90 patients performed immunohistochemistry staining on PD-1 and PD-L1. Cox regression analysis and Kaplan-Meier survival analyses were performed to identify risk factors for local recurrence, nodal metastasis, DM, and DSD.

Results: Pathologically, ulceration (hazard ratio [HR],3.170; 95%CI:1.312-7.659; P=0.01) and regression (HR,3.196; 95%CI:1.094-9.335; P=0.034) were risk factors for DM. Tumor thickness ≥ 4mm (HR,4.889; 95%CI:1.846-12.946; P=0.001) and regression (HR,4.011; 95%CI:1.464-10.991; P=0.007) were risk factors for DSD. For patients with tumor thickness < 4 mm, the presence of ulceration indicated a higher risk of nodal metastasis, DM, and DSD (log-rank P=0.0011;0.00051;0.02). By Kaplan–Meier survival estimates, patients with regression (+)/tumor-infiltrating lymphocytes (TILs) (+) had a higher risk for DM (log-rank P=0.011) and DSD (log-rank P=0.0032). Molecularly, the positive rate of BRAFV600E, NRASQ61R, CD117, PD-1, and PD-L1 was 40.00% (26/65), 43.08% (28/65), 70.77% (46/65), 46.67% (21/45), 28.89% (13/45), respectively. BRAFV600E positivity was identified as an independent risk factor for DM (HR,2.533; 95%CI:1.046-6.136, P=0.039). BRAFV600E expression was significantly associated with vascular invasion, PD-1, and PD-L1 expression (P=0.01; P=0.038; P=0.049).

Conclusions: Tumor thickness≥4mm, ulceration, the coexistence of regression and TILs, and BRAFV600E expression were risk factors for CoM patient prognosis. BRAFV600E expression is significantly associated with PD-1/PD-L1 expression.

Feb 23, 2024 (Fri)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Histone Lactylation-Boosted ALKBH3 Potentiates Tumor Progression and Diminished Promyelocytic Leukemia Protein Nuclear Condensates by N1-Methyladenosine Demethylation of SP100.

*First Author: Xiang **GU***
*Co-Author(s): Peiwei **CHAI**, Xianqun **FAN**, Renbing **JIA***

Purpose: N1-Methyladenosine (m1A) RNA modification represents an important regulator of RNA metabolism and participates in carcinogenesis. However, the role of m1A modification in uveal melanoma (UM) remains enigmatic.

Methods: m1A dot-blot assays and survival analysis were used to explore decreased global m1A levels, indicating a poor prognosis of UM. CUT&Tag and Chip-seq revealed that excessive histone lactylation levels in UM lead to upregulated ALKBH3 expression and m1A hypomethylation status. Multiomic analysis of meRIP-seq, RNA-seq and iTRAQ elucidated that m1A RNA modification posttranscriptionally promoted the expression of SP100, a core component for PML condensates.

Results: First, ALKBH3 is specifically upregulated in high-risk UM due to the excessive histone lactylation levels, referring to m1A hypomethylation status. Moreover, the multiomics analysis subsequently identified that SP100 serves as a downstream candidate target for ALKBH3. Therapeutically, the silencing of ALKBH3 exhibits efficient therapeutic efficacy in UM both in vitro and in vivo, which could be reversed by the depletion of SP100. Mechanistically, we found that YTHDF1 is responsible for the recognition of the m1A methylated SP100 transcript, which increases its RNA stability and translational efficacy.

Conclusions: We initially demonstrated that m1A modification is necessary for tumor suppressor gene expression, expanding the current understanding of dynamic m1A function during tumor progression. In addition, our results indicate that lactylation-driven ALKBH3 is essential for the formation of PML nuclear condensates, which bridges our knowledge of m1A modification, metabolic reprogramming, and phase-separation events.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

IL1B-Dependant FAPa+ Cancer-Associated Fibroblasts Promote Uveal Melanoma Metastasis

*First Author: Fang **LI***
*Co-Author(s): Shengfang **GE***

Purpose: To identify the role of IL1B and cancer-associated fibroblasts (CAFs) in promoting uveal melanoma metastasis.

Methods: Using human fibroblasts incubated with uveal melanoma cell line conditioned medium or IL1B-stimulated fibroblasts, we assessed the migration of uveal melanoma cells through co-incubation in vitro. Then we studied the hyaluronan difference in tumors and the metastasis inhibition using a hyaluronan synthesis inhibitor. We then studied the effects of selective CAF depletion induced by the IL1B knockdown on tumorigenesis and metastasis in vivo.

Results: IL1B may induce FAPa+ CAF population formation and confer metastasis of UM, revealing a link between IL1B and FAPa+ CAF differentiation. Furthermore, the inhibition of CAF formation via targeting of IL1B reduces tumor metastasis. The co-incubation of CAF and uveal melanoma cells also caused hyaluronan synthesis and the effect could be inhibited by hyaluronan synthesis inhibitor. More importantly, UM patients with CAFs show a poor outcome and a worse response rate to immunotherapy.

Conclusions: IL1B stimulates cancer-associated fibroblast generation, resulting in tumor cell metastasis. This critical process in the early metastasis of uveal melanoma may be blocked by inhibiting the CAF subpopulation in the uveal melanoma microenvironment.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Immune Checkpoint System: SIRP Alpha and CD47 As the Escape Plan of a Retinoblastoma Cells

*First Author: Datu **RESPATIKA***
*Co-Author(s): Banu **DIBYASAKTI**, Agus **SUPARTOTO**, Purjanto **UTOMO**, Aloysius Angga **WIBOWO**, Irene **DARAJATI***

Purpose: The high recurrence rate and low survival rate in retinoblastoma patients in Indonesia are of particular concern to ophthalmologists. Previous studies have shown that solid tumor cells are thought to be able to evade immune system surveillance by interacting with immune cells called the immune checkpoint

system. The aim of this study is to determine the expression of an immune checkpoint system, Signal Regulatory Protein Alpha (SIRP alpha) and Cluster of Differentiation 47 (CD47), and their relationship with high-risk histopathology features in patient with retinoblastoma.

Methods: This was an analytic observational study with a cross-sectional design. A total of 47 patients were enrolled in this study. The mRNA of SIRP alpha and CD47 were extracted from formalin-fixed, paraffin-embedded tissue sections and quantified with quantitative PCR.

Results: All samples showed an increase of SIRP alpha expression (12.71±5.29-fold change) and CD47 expression (46.04±23.10-fold change) when compared to normal retina. We then grouped the patient based on SIRPα expression and histopathological degree. There was an association between high expression of SIRP alpha (p=0.001) and CD47 (p=0.031) with high-risk histopathological features in patients with retinoblastoma.

Conclusions: We found an increased expression of SIRP alpha and CD47 in patients with retinoblastoma. Furthermore, the high expression of SIRP alpha, as well as CD47, were associated with high-risk histopathological features of retinoblastoma. Thus, SIRP alpha and CD47 as immune checkpoint system might play important roles in retinoblastoma. These findings mark SIRP alpha and CD47 as potential targets for immunotherapy of retinoblastoma.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Landscape of Plasma ctDNA in Conjunctival Melanoma

*First Author: Hao **TIAN***
*Co-Author(s): Shengfang **GE**, Shiqiong **XU***

Purpose: To evaluate the monitoring value of circulating tumor DNA (ctDNA) in conjunctival melanoma (CoM) management. a retrospective noninterventional pilot study was conducted to analyze the ctDNA characteristics of CoM patients and to explore the relationship between ctDNA characteristics and clinical manifestations.

Methods: We customized a large panel containing common mutations in CoM and common drug-sensitive mutations using next-generation sequencing (NGS) technology to analyze ctDNA mutations in plasma. Clinical and radiological records were used to assess tumor status. From July 2021 to February 2022, 12 CoM patients in our center underwent plasma ctDNA assessment during treatment.

Results: Twelve CoM patients were assessed, and 6 of the 12 patients had distant metastases, including liver, lung, bone, skin, and thyroid metastasis. Three of the 6 metastatic patients died of melanoma metastasis, and the others were alive with disease at the last follow-up. Plasma ctDNA was not detectable in CoM without distant metastasis, while CoM-related driver mutations were detected in the plasma of 6 patients with distant metastasis, including 4 cases of BRAF p.V600E mutation, 1 case of NRAS p.G12A mutation, and 1 case of NF1 p.L327R mutation. CoM patients with distant metastasis showed a higher ctDNA variant allele fraction (p=0.0131), and patients with positive ctDNA had a higher SLD than patients with negative ctDNA (p=0.0004).

Conclusions: The abundance of ctDNA in patients was positively correlated with tumor burden, and positive plasma ctDNA indicated the presence of metastases.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Long-term Outcomes and Complications of Local Treatment in Abcd Groups of Retinoblastoma

*First Author: Andrei **YAROVOI***
*Co-Author(s): Denis **VOLODIN**, Vera **YAROVAYA***

Purpose: To analyze the effectiveness of local treatment in ABCD groups of retinoblastoma.

Methods: Two hundred seventy-four patients (354 eyes) were treated from 2007 to 2022 with laser thermotherapy, Ru-106/Sr-90 brachytherapy, and cryotherapy. One method was used in 49%, two in 32%, and three in 17%. Group A was diagnosed in 75 eyes, group B in 121, group C in 54, and group D in 104. Forty percent of patients underwent systemic chemotherapy, 9% intraarterial and/or intravitreal chemotherapy, 43% both, 8% only focal therapy. The follow-up was from 6 to 158 months, a mean of 53 months.

Results: There were no statistical differences in the number and types of focal modalities between the groups (p=0.3) and time of tumor regression (p=0.1). Complete tumor control was achieved in 100% in group A, 95% in group B, 92% in group C, and 85% in group D (p=0.0012). Complications were observed in 10% in group A, 20% in group B, 25% in group C, and in 35% in group D (p=0.001). Risk factors for complications were brachytherapy as a component of treatment (p<0.0001) and multicomponent focal treatment (p=0.0009). Eyes were preserved in 100% in group A, in 96% in group B, in 98% in group C, and in 82% in group D (p=0.0012). Three patients died because of trilateral retinoblastoma, one because of secondary cancer in the field of EBRT. There were no statistical differences between groups in overall (p=0.74) and recurrence-free survival (p=0.3).

Conclusions: Focal treatment results strongly depend on the group of retinoblastoma.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Multifactor Prognosticator of Uveal Melanoma Metastatic Risk

*First Author: Vera **YAROVAYA***
*Co-Author(s): Aiza **GALBATSOVA**, Ilia **LEVASHOV**, Ekaterina **MALAKSHINOVA**, Andrei **YAROVOI***

Purpose: Despite the various prognostication systems used in uveal melanoma patients, there is currently no single and straightforward method to assess the risk of metastasis that takes into account clinical, morphological, and genetic factors. The objective of this study was to create a user-friendly prognostic system that incorporates these factors to evaluate metastatic risk in clinical practice.

Methods: We included 202 patients who received brachytherapy, stereotactic radiosurgery, and enucleation for their treatment. We used eye-sparing methods to obtain tumor material through fine-needle aspiration biopsy. We assessed mutations in genes such as EIF1AX, SF3B1, MYC, and PPARG, and determined the cell type using an approach that classified them as epithelioid or spindle types. Out of the patients, 78 had metastatic melanoma. The median follow-up period was 42 months, ranging from 1 to 182.

Results: The study found that mutations in MYC and PPARG genes and a binary approach in cell type determination are linked to patient survival ($p<0.01$). Researchers developed a multifactor prognostic system by combining statistical methods like Cox regression, Kaplan-Meier, and ROC analysis. This system assigns patients with UM into three prognostic categories based on their overall score ranging from 0 to 12.5. These categories are low risk (0-3), intermediate risk (4-6), and high risk (7-12.5) of metastasis. The statistical significance of this multifactor prognostic system was confirmed ($p<0.01$).

Conclusions: The prognostic system for uveal melanoma metastatic risk evaluation considers clinical, morphological, and genetic factors. It is user-friendly in clinical practice with a scoring system. Further validation of the system is required.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Onco-eccDNAs Boosted SUZ12 Amplicon Potentiates Cancer Progression Through Re-defining Histone Modifications of KLF4

*First Author: Ludi **YANG***
*Co-Author(s): Renbing **JIA***

Purpose: The nonchromosomal inheritance of eccDNA enables the amplification of oncogenes, expediting the process of genome evolution in diverse tumor populations. Howbeit, the role of eccDNA in epigenetic remodelling remains enigmatic. Herein, we demonstrated that extrachromosomal circular SUZ12 amplicons regulate H3K27me3 modification during the oncogenic progression of retinoblastoma (RB).

Methods: We employed a combination of Circle-Seq, RNA-Seq, and DNA FISH techniques to identify significant extrachromosomal circular oncogene amplicons. Furthermore, the utilization of CUT&Tag and transcriptomic analysis allowed us to ascertain the role of eccDNAs in gene regulation. To evaluate the oncogenic behaviors, we conducted orthotopic xenograft and anchorage-independent growth analyses.

Results: Herein, we revealed that extrachromosomal circular SUZ12 amplicons regulate H3K27me3 modification during the oncogenic progression of RB. First, we initiated the characterization of eccDNA in retinoblastoma, uncovering its role as a template for the amplification of SUZ12. The presence of SUZ12-containing amplicons results in increased levels of H3K27me3 modification on Krüppel-like factor 4 (KLF4), leading to the suppression of its expression and promoting cell proliferation both in vitro and in vivo.

Conclusions: In conclusion, our study has provided an initial comprehensive understanding of the eccDNA landscape in retinoblastoma. This has led to the discovery of a novel oncogenic mechanism involving eccDNA, whereby it promotes the progression of retinoblastoma by tunning epigenetic modifications in functional candidates.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Orbital Lymphoma- Retrospective Analysis of Large Case Series

*First Author: Subhav **PERSHAD***

Purpose: To outline the clinico-pathological features, histopathology-guided treatment modalities, and outcomes of all cases of orbital lymphoma presenting to the ocular oncology clinic at a tertiary care centre.

Methods: A retrospective analysis of 171 patients diagnosed with orbital lymphoma.

Results: The mean age at presentation was 49.3 years (range 3-85), with a male predominance (66.67%) noted. Unilateral involvement was noted in 89.47% of the cases, with right eye dominance in 89.5% overall. The most common presenting symptom was a protrusion of the involved eye (53.8%). A multi-level incision biopsy revealed a majority of it being B cell type non-specified, ENMZL (n=20), DLBCL (n=7), FL (n=7) Burkitt's non-African (n=1), Burkitt's aggressive (n=2), small cell (n=7), T cell lymphoblastic type (n=1) and orbital metastasis (n=2). Treatment involved EBRT as monotherapy for localized cases and those with systemic lymphoma received chemotherapy. Recurrence was noted in 8.6%. Overall outcome in terms of disease-free survival was accessible in 58.4% of cases and was 61%.

Conclusions: The majority of orbital lymphomas are of the B cell type, of which ENMZL, DLBCL, and FL are the common subtypes and are linked to survival outcomes. Treatment involved EBRT as monotherapy for localized cases and those with systemic lymphoma received chemotherapy.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Outcomes of Gamma-Knife Radiosurgery of Posterior Uveal Melanoma Unsuitable for Other Eye-Sparing Treatment: 10-Year Single Center Experience

*First Author: Vera **YAROVAYA***
*Co-Author(s): Aiza **GALBATSOVA**, Andrey **GOLANOV**, Ekaterina **MALAKSHINOVA**, Andrei **YAROVOI***

Purpose: To present the results of gamma-knife radiosurgery (GKRS) of PUM unsuitable for other eye-sparing treatment modalities.

Methods: Since 2012, 81 consecutive patients aged 13 to 78 years with PUM were treated with GKRS. These tumors were not indicated to other eye-sparing modalities available in Russia. Three patients had the only seeing eye. Tumor thickness was from 3.0 to 10.8 mm, mean 8.0 mm, basal diameter from 8.7 to 21.4 mm, mean 13.8 mm. GKRS irradiation doses were 30-40Gy on 50% marginal isodose curve. Maximum doses on critical structures were calculated – lens (2.1-35.5Gy, mean 10.7), ciliary body (5.1-53.0Gy, mean 21.4), optic disc (3.4-62Gy, mean 21.2Gy), central retina (3.5-65Gy, mean 24.8Gy).

Results: Seventy-eight eyes (92%) were preserved. The mean tumor regression was 35%. Retina was reattached in all but 4 patients. Two tumors progressed, and the eyes were enucleated. Two patients underwent surgical excision of the tumor 2 years after GKRS. Radiation complications (41%) included retinopathy, optic neuropathy, cataract, vitreal and subretinal hemorrhages, and glaucoma. One eye was removed because of phthisis bulbi. Vision increased in 13% of patients, unchanged in 31%, decreased in 56%. Five patients developed liver metastasis after treatment, and one patient died because of the second cancer.

Conclusions: GKRS is an effective alternative for removing the eye in patients with PUM when brachytherapy or surgical excision is not indicated. GKRS can save vision in selective cases. Radiation complications were associated with large irradiated tumor volume and may be reduced by planning optimization.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Profile of NF2 and SIRPα in Orbitocranial Meningioma

*First Author: M.Hadri **AR-RIDHO***
*Co-Author(s): Banu **DIBYASAKTI**, Datu **RESPATIKA**, Agus **SUPARTOTO**, Purjanto **UTOMO**, Irene **DARAJATI***

Purpose: The aim of this study is to determine the relationship between the expression of NF2 and SIRPα in orbitocranial meningioma.

Methods: All the patients underwent surgical removal of the tumor as well as histopathological examination to establish the diagnosis of orbitocranial meningioma. This is a cross-sectional observational study. The research was conducted at a tertiary hospital. The expression of SIRPα was determined by an immunohistochemistry examination,

Results: A total of 70 patients were included in this study. Sixty (85%) samples were in WHO grade 1 category, 14 (20%) of the patients were diagnosed at the onset of 12 months. This study shows that there is an association between SIRPα and NF2 in orbitocranial meningioma (p=0.014). Increased NF2 was found to be significantly associated with SIRPα expression of meningioma (odds ratio [OR]=3.44, 95%CI: 1.26-9.38, p=0.013).

Conclusions: This study shows a relationship between NF2 and SIRPα expression in orbitocranial meningioma and their possible role in tumor cell proliferation in meningioma. Thus, we expect that these two therapeutic targets can increase the success of immunotherapy for meningioma in the future.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Role of 18-Fluorodeoxy-Glucose Positron Emission Tomography/ Computed Tomography in Uveal Melanoma: A Prospective Interventional Study

*First Author: Anchal **GERA***
*Co-Author(s): Rohan **CHAWLA**, Rakesh **KUMAR**, Rachna **MEEL**, Radhika **TANDON***

Purpose: To correlate the metabolic activity of primary uveal melanoma on 18-fluorodeoxy-glucose positron emission tomography/computed tomography (18-FDG PET/ CT) scan with the known clinical and Pathological prognostic factors.

Methods: This prospective interventional study recruited 30 primary uveal melanoma cases. A whole body 18 FDG PET/CT scan was done prior to initiation of treatment and post-intervention at 12 months period to assess the standardized uptake value (SUVmax) of the tumor and its correlation with known clinical, histopathological high-risk features and metabolic response to treatment at 12 months follow up.

Results: Out of 30 patients, 22 patients underwent enucleation, and 8 patients underwent eye conservative management. All 30 eyes showed 18 FDG uptake with a mean SUVm uptake of 4.93 (range 1.1-13.81). The mean patient age was 48.9 years (SD 14.5 years). SUVmax values were found to have a significant correlation with the tumour's largest basal diameter, apical thickness, size by COMS classification, proximity to the optic disc, presence of necrosis, and retinal detachment. SUVmax did not statistically correlate with age, gender, laterality, ciliary body involvement, pigmentation, location, proximity to the fovea, histopathology, and local invasion. In the conservatively managed group, the metabolic activity showed a corresponding decrease with the tumor response to conservative radiation treatment.

Conclusions: Baseline FDG PET/CT has been found useful to prognosticate the high-risk uveal melanoma patient for early and more aggressive treatment and follow-up.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1–GF)

Role of Combined Systemic Chemotherapy and Periocular Topotecan in Advanced Intraocular Retinoblastoma

*First Author: Antriksh **WAHI***
*Co-Author(s): Rachna **SETH**, Radhika **TANDON***

Purpose: To assess the early response of periocular topotecan and standard systemic chemotherapy in advanced IORB.

Methods: A prospective interventional study was conducted in patients with Group D/E retinoblastoma. They received 6 cycles of standard intravenous chemotherapy comprising of vincristine, etoposide and carboplatin every 4 weeks, along with three subtenon injections of topotecan (0.09-0.27 mg/kg) administered at 3 weekly intervals. Vision testing, IOP, tumor dimensions on ultrasound and Retcam fundus images were recorded in each visit.

Results: In our study involving 12 patients with advanced intraocular retinoblastoma (Group D/E), the median age at presentation was 1.9 years (range 8 months - 4.7 years). Among the 12 eyes, 8 (66.7%) were classified as Group D, while 4 (33.3%) were Group E. At baseline, 7 eyes (58.3%) had retinal detachment. After a minimum 6 months of follow-up, the following parameters were Assessed using Repeated Measures Anova:- The mean tumor size decreased from 12.32 to 7.35 mm^2.(p-value=0.12); mean visual acuity improved from 2.72 (LogMAR) to 2.15 (p-value=0.62); IOP increased from 12.00 to 13.91 mm Hg (p-value=0.4). Complete tumor regression occurred in 5 eyes, partial regression in 2 eyes, and progression in 5 eyes (Stuart Maxwell: X^2 test=9.00; p-value=0.011). The globe salvage rate was 50% (6 eyes), 3 eyes underwent enucleation, and 3 eyes received adjuvant Intra-arterial chemotherapy.

Conclusions: With the proper case selection, adjuvant periocular topotecan in combination with standard systemic chemotherapy has been found to be a safe and effective approach for the management of advanced intraocular retinoblastoma.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 2 (BNDCC1-GF)

Transcriptome Analysis of Sebaceous Carcinoma and Basal Cell Carcinoma of the Eyelid Unveils Differentially Expressed Genes and Relevant Biological Process

*First Author: Masato **AKIYAMA***
*Co-Author(s): Yuya **FUJII**, Naohiko **FUNATSU**, Tanabe **MIKA**, Yusuke **SANO**, Koh-hei **SONODA***

Purpose: To characterize differences in gene expression between sebaceous carcinoma (SeC) and basal cell carcinoma (BCC) of the eyelid.

Methods: We used frozen tumor samples which were collected from surgical resection at our Hospital for RNA extraction. Total RNA samples with an RNA Integrity Number >5 estimated by Bioanalyzer® were used for library preparation using TruSeq RNA Library Prep Kit, and sequencing was performed on the Illumina NovaSeq. Mapping of the sequence reads and quantification of the transcripts were carried out using STAR and RSEM, respectively. Quantified expression data were analyzed with edgeR to identify differentially expressed genes (DEGs) that met the criteria of false discovery rate (FDR) < 0.01 and base-2 logarithmic fold-change > 1.

Results: A total of 40 samples, including 22 SeC and 18 BCC, were successfully sequenced. We identified 2,867 DEGs, including 1,410 upregulated in BCC and 1,457 upregulated in SeC. PLIN2 (adipophilin), a common marker for SeC, was highly ranked among DEGs, and 76 genes exhibited stronger and more significant expression than PLIN2. Gene ontology (GO) enrichment analysis revealed 126 significantly enriched GOs (FDR < 0.01) for genes upregulated in SeC, involving catabolic process of lipid, carboxylic acid and small molecules, as well as metabolic process of monocarboxylic acid, steroid, fatty acid, thioester, and acyl-CoA. For genes upregulated in BCC, 539 enriched GOs were identified, characterized by extracellular matrix organization, Wnt signaling pathway, epithelial cell proliferation, response to growth factor stimulus.

Conclusions: Our findings highlight genes and the biological process that differentiate the two major eyelid carcinomas.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1-GF)

A Cascading, Tumor Microenvironment-Responsive Nanomaterial Approach: Overcoming Lactic Acid-Induced Radiotherapy Resistance in Uveal Melanoma

*First Author: Yiran **YAO***
*Co-Author(s): Renbing **JIA**, Ai **ZHUANG***

Purpose: Uveal Melanoma (UM) is the leading primary intraocular malignancy in adults, characterized by an alarmingly poor prognosis and a 5-year mortality rate that oscillates between 17% and 50%. The intrinsic radiation resistance of UM complicates therapeutic intervention, pressing the need for groundbreaking approaches to improve radiosensitization. Critical elements like reactive oxygen species (ROS), hypoxia, and lactic acid emerge as key modulators in the UM's resistance to radiotherapy. The overarching goal of this research is to pioneer an effective treatment modality for UM by synergistically targeting lactate clearance, ROS amplification, and oxygen production through the use of a multifunctional nanoenzyme.

Methods: The work introduces the novel synthesis and applications of CoMnFe-Layered Double Oxide (CoMnFe-LDO or LDO). A comprehensive assessment encompassing biocompatibility, ROS generation, oxygen production, and lactic acid scavenging capabilities was performed. Both in vitro and in vivo evaluations were executed to scrutinize the radiotherapy sensitization effects. Density Functional Theory (DFT) calculations were employed to decode the transformational pathway from lactic acid to pyruvic acid.

Results: Initiating with robust biocompatibility, LDO nanosheets further displayed potent lactic acid scavenging properties and significantly augmented ROS and oxygen levels. Therefore, LDO presented with great radiotherapy sensitization both in vitro and in vivo settings. Mechanistically, DFT calculations unveiled the CoMnFe-LDO catalyzed transition from lactic acid to pyruvic acid, revealing a hitherto unexplored dimension of the nanoenzyme's activity.

Conclusions: This study reveals LDO nanosheets as a highly active, TME-responsive, long-residence nanomaterial with multifaceted capabilities to enhance radiotherapy sensitization in UM, potentially revolutionizing the UM treatment landscape.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1-GF)

A Novel MYCN-YTHDF1 Cascade Contributes to Retinoblastoma Tumor Growth by Eliciting m6A -Dependent Activation of Multiple Oncogenes

*First Author: Yingxiu **LUO***

Purpose: This research aimed to investigate the effect and regulatory mechanism of m6A modification on tumorigenesis and tumor progression in retinoblastoma with MYCN amplification. Furthermore, this study aimed to investigate the underlying mechanism and potential targets of YTHDF1.

Methods: CUT & Tag assay was used to capture the genome-wide binding sites of MYCN. Construction of m6A-binding deficient mutant and rescue assay was applied to clarify that m6A-binding ability is required for the protumorigenic function of YTHDF1. MeRIP-seq, RIP-seq and RNA-seq were used to screen out the downstream target of YTHDF1. Sucrose gradient analysis of RB was used to collect polysomes and investigate whether YTHDF1 can promote the translation of its downstream mRNAs. CCK8, soft agar colony formation assay, and intravitreal implantation were applied to test the in vitro proliferation ability, anchorage-independent growth, and in vivo proliferation ability, respectively.

Results: MYCN upregulates YTHDF1, which encodes one of the reader proteins for N6-methyladenosine (m6A) RNA modification, in retinoblastoma. We further found that this MYCN-upregulated m6A reader functions to promote retinoblastoma cell proliferation and tumor growth in an m6A binding dependent manner. Mechanistically, YTHDF1 promotes the expression of multiple oncogenes by binding to their mRNAs and enhancing mRNA stability and translation in retinoblastoma cells. Taken together, our findings reveal a novel MYCN-YTHDF1regulatory cascade in controlling retinoblastoma cell proliferation and tumor growth, pinpointing an unprecedented mechanism for MYCN amplification and/or activation to promote retinoblastoma progression.

Conclusions: MYCN upregulates YTHDF1 in RB by directly binding to its promoter. YTHDF1 controls retinoblastoma cell proliferation and tumor growth via an m6A binding-dependent manner.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1-GF)

A Radiotherapy Sensitizer for Uveal Melanoma That Eliminates Radiation-Induced Senescent Cells

*First Author: Yu **HUA***
*Co-Author(s): Shengfang **GE**, Fang **LI**, Jie **YU***

Purpose: To explore the senescence of uveal melanoma (UM) cells after radiotherapy and to develop a nanomedicine, lipo@ABT263@Au, for the UM treatment with the function of radiation sensitization and radiation-induced senescence elimination.

Methods: Cell senescence was detected by β-galactosidase staining, P21 RNA and protein. The CCK8, colony formation, cell scratch and transwell assays were used to detect the effects of radiation on cell proliferation, migration, and invasion. The morphology of lipo@ABT263@Au was characterized by transmission electron microscopy and the sustained-release curve was determined by UV-visible spectrometry.

Results: After irradiation, the senescence-associated pathways were significantly activated in UM, and the proportion of senescent UM cells increased in a time-dependent manner. A high-throughput drug screening containing 1913 approved drugs identified ABT263, which can sensitize radiotherapy in UM and eliminate senescent cells induced by radiotherapy. In view of the time dependence of senescent cells after radiation, ABT263 was encapsulated with liposome to achieve a sustained release. Au was attached to the liposome to further sensitize radiotherapy. The size of the dual-functional lipo@ABT263@Au was approximately 150 nm, the morphology was regular, and the drug encapsulation rate reached 94%. The dual-functional lipo@ABT263@Au can enhance the radiotherapy of UM and slow the release of ABT263. Mechanically, lipo@ABT263@Au can eliminate senescent UM cells and reduce senescence-associated secretory phenotype in UM.

Conclusions: The dual-functional lipo@ABT263@Au had the effect of sensitizing radiotherapy and eliminating senescent cells induced by radiotherapy, which provides a novel idea for UM radiotherapy.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1–GF)

American Joint Committee on Cancer Classification Predicts the Outcome in Chinese patients with Lacrimal Gland Adenoid Cystic Carcinoma

*First Author: Xin **SONG***
*Co-Author(s): Yiyi **FENG**, Renbing **JIA**, Xiaowen **ZHOU***

Purpose: To evaluate the predictive value of the American Joint Committee on Cancer (AJCC) classification and histologic characteristics for outcomes in lacrimal gland adenoid cystic carcinoma (LGACC).

Methods: Forty patients diagnosed with LGACC were enrolled. Kaplan–Meier survival curves and Cox proportional hazards regression models were used for risk factor analyses.

Results: At presentation, 6 patients (15%) had T1 tumors, 22 patients (55%) had T2 tumors, 1 patient (2.5%) had T3 tumors, and 11 patients (27.5%) had T4 tumors. One patient (2.5%) had nodal metastasis and distant metastasis (M1). During follow-up, 15 patients (37.5%) developed local recurrence, 3 patients (7.5%) developed nodal metastasis, 16 patients (40%) developed distant metastasis, and 8 patients (20%) died of disease. The lung and brain were common distant metastasis sites. Higher T category and Ki-67>20% were risk factors for disease-specific death and distant metastasis. Bone erosion, Ki-67>20%, and basaloid subtype were risk factors for local recurrence. Among the 16 patients who developed distant metastasis, 5 patients had multiple sites of distant metastasis, lung metastasis was observed in 9 patients (56%), followed by the brain in 8 patients (50%), nose in 3 patients (19%), bone in 1 patient (6%). Brain metastasis was associated with perineural infiltration (P = 0.042).

Conclusions: This study confirmed the prognostic value of AJCC classification for Chinese patients. A higher T category was associated with increased risks of disease-specific death and distant metastasis. Histologic features, such as Ki-67 and basaloid subtype, should be emphasized when assessing prognosis and guiding the treatment of LGACC.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1–GF)

Chloroma Masquerading As Pott's Puffy Tumor

*First Author: Patricia Abigail **LIM***

Purpose: Myeloid sarcoma, or chloroma, is a rare manifestation of acute myeloid leukemia. It is an extramedullary solid tumor caused by an abnormal proliferation of immature precursors of white blood cells. In 60% of cases, it occurs in children below 15 years, but may develop at any age. This report will discuss a case of chloroma initially masquerading as Pott's disease. As it is a rare disease, there have been no established guidelines for diagnosing and treating chloroma.

Methods: The manuscript details the treatment progress of a patient seen in a tertiary hospital in the Philippines.

Results: A 15-year-old male first presented with a tender supraorbital mass, which was initially managed as Pott's puffy tumor versus a supraorbital abscess secondary to tuberculosis. The patient was referred due to unilateral proptosis, extraocular movement limitation, and a computed tomography scan finding of dacryoadenitis. He was given Anti-Koch's medication but there was no resolution. Peripheral blood smear showed immature blast cells with a high leukocyte count. Bone marrow aspirate immunohistochemistry was positive for CD33, CD34, CD117 and myeloperoxidase which cemented the diagnosis. Diagnosing myeloid sarcoma is challenging as its presentation is uncommon, and multiple differentials present during its course. In 88% of chloroma cases with proptosis, there is no history of leukemia at the time of presentation. Chemotherapy is currently the mainstay treatment.

Conclusions: Chloroma is a rare disease and is usually diagnosed late due to its uncommon presentation in the orbit. Increased awareness of the disease and timely diagnosis can help initiate early treatment and potentially save a life.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1–GF)

Clinical Features and Long-Term Follow-Up of 28 Cases of Intraocular Schwannoma

*First Author: Li **DONG***
*Co-Author(s): Wenbin **WEI***

Purpose: Intraocular schwannoma is a rare tumor, which is often misdiagnosed. We presented the demographics and clinical characteristics of patients with intraocular schwannoma.

Methods: Retrospective case series were collected between May 2005 and July 2021 in Beijing Tongren Hospital.

Results: A total of 28 patients were diagnosed with intraocular schwannoma on histopathological examination of surgical specimens. The median age was 39 years (range:12-64). Fourteen patients were female, and 14 were male. Among all subjects, 21/28 patients (75.0%) presented as visual loss, and 3/28

patients (10.7%) had visual field loss. Intraocular schwannoma presented as a non-pigmented mass in the ciliary body in 12/28 cases (42.9%), in the choroid in 9/28 cases (32.1%), and in ciliochoroid in 7/28 cases (25.0%). Intraocular schwannoma was often clinically misdiagnosed as uveal melanoma, which occurred in 16/28 patients (57.1%). Tumor excision with pars plana vitrectomy was performed for all included patients. Endoresection with lens removal was performed for tumors in the choroid, while transscleral resection was performed for tumors located in the ciliary body or ciliochoroid. Increased light transmission was detected in 12/28 cases (42.9%). In the consecutive follow-up (median: 73 months, range: 7-193 months), no cases of recurrence or metastatic disease were detected.

Conclusions: Intraocular schwannoma is a rare benign tumor. It usually presents as a non-pigmented mass, which can easily be misdiagnosed as a non-pigmented uveal melanoma.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1–GF)

Clinical Features and Treatment Outcomes of Periocular Sebaceous Gland Carcinoma in 511 patients

*First Author: Aniruddh **HEROOR***
*Co-Author(s): Swathi **KALIKI**, Anshika **LUTHRA**, Vishakha **TANNA***

Purpose: To analyze the clinical features and treatment outcomes of periocular sebaceous gland carcinoma (SGC).

Methods: Retrospective study of 511 patients.

Results: Histopathology confirmed SGC in all 511 patients, with 509 (99.6%) cases presenting unilaterally. The mean age at presentation with SGC was 59 years. There were 286 (56%) females. Eyelid mass (89%) was the most common presenting complaint. The mean duration of symptoms was 18 months. Upper eyelid (66%) was the most common tumor epicenter. The mean tumor size was 12 mm. Based on the 8th edition of the American Joint Cancer Committee classification, T2b (18%) was more common. Locoregional lymph node and systemic metastasis at presentation were noted in 10% and 3% of patients respectively. Wide excisional biopsy (70%) was the most common primary treatment. Over a mean follow-up period of 23 months, outcomes included tumor recurrence in 33%, locoregional lymph node metastasis in 13%, systemic metastasis in 6% of patients, and death in 2%.

Conclusions: Periocular SGC, a common tumor in the Asian Indian population, is associated with high rates of tumor recurrence and locoregional metastasis.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1–GF)

Correlating Somatic Copy Number Alteration in Aqueous Humour cfDNA With Chemotherapy History, Eye Salvage and Pathological Features in Retinoblastoma

*First Author: Yingxiu **LUO***

Purpose: This study determined to probe the potential association between somatic copy number alteration (SCNA) in retinoblastoma (RB) aqueous humour (AH) and pathological high-risk factors, clinical features and previous chemotherapy history.

Methods: Single-centre retrospective cohort study including 58 AH samples collected from 58 patients diagnosed. Among them, 41 samples were collected after enucleation and 17 samples were collected before intravitreal chemotherapy. SCNAs were accessed by conducting shallow whole-genome sequencing in cell-free (cf) DNA of AH. HRs and ORs were applied to measure risk factors.

Results: Canonical RB SCNAs, including 1q gain (87%), 2p gain (50%), 6p gain (76%), 16q loss (69%), were frequently detected. Non-classical RB SCNAs in AH, including 17q gain (53%), 19q loss (43%), 7q gain (35%), were also commonly observed. 19q loss was significantly more common in patients with cT3c or worse stage than others (p=0.034). 2p gain (p=0.001) and 7q gain (p=0.001) were both more common in patients with primary enucleation than those with previous chemotherapy. Interestingly, both 2p gain (HR=1.933, p=0.027) and 7q gain (HR=2.394, p=0.005) might predict enucleation. Correlation analysis with pathological features among enucleated eyes showed that 19q loss can predict a higher risk for both massive choroid invasion (OR=4.909, p=0.038) and postlaminar optic nerve invasion (OR=4.250, p=0.043).

Conclusions: Sequencing of AH cfDNA in RB can provide sufficient in vivo information. 2p gain and 7q gain were more common in primary enucleated eyes and 19q loss was a potential signature of advanced cases clinically and pathologically.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1-GF)

Differentiation of Choroidal Metastasis From Primary Cancer Sites: A Multi-Modal Imaging Study

First Author: Anjali ***MAHESHWARI***
Co-Author(s): Vishal ***RAVAL***

Purpose: To differentiate choroidal metastasis from various primary cancer sites based on clinical presentation and multi-modal imaging.

Methods: Retrospective, observational multi-modal imaging study of 67 eyes (58 patients) diagnosed with choroidal metastasis in the Indian population.

Results: The mean age at presentation was 60 years, with an M: F ratio of 1:1. At presentation, 41 eyes (61%) with choroidal metastasis had a known primary cancer, whereas 26 eyes (39%) precluded the diagnosis of primary cancer. Overall, primary cancer sites were the lung (36 eyes; 53%), breast (14 eyes; 21%), gastrointestinal tract (6 eyes; 11%), genitourinary tract (4 eyes, 8%), and others (7 eyes, 13%). About 2/3rd of patients with lung carcinoma had eye lesions as a presenting feature compared to only 1/5th of patients with breast carcinoma (p=0.006). The majority of all the choroidal lesions were yellowish in color except for 5 eyes with orange color secondary to lung neuroendocrine tumors. On multimodal imaging, FFA demonstrated hyperfluoresence in early and late phases in 11 eyes (61%), whereas ICG demonstrated hypofluorescence throughout all phases in 11 eyes (69%). OCT showed the presence of lumpy-bumpy choroid with compression of overlying choriocapillaries in 52 eyes (91%), and surrounding subretinal fluid in 40 eyes (75%). Based upon b-scan findings, lung metastatic lesions presented with a mean basal diameter to thickness ratio of 2.8 compared to breast lesions of 3.7 (p=0.06).

Conclusions: Multimodal imaging, in combination with clinical presentation, can provide clues to the origin of choroidal metastasis from various cancer sites, thereby aiding in early diagnosis, staging, and treatment of primary cancer.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1-GF)

Direct Injection of Bleomycin for the Treatment of Visually Threatening Cavernous Hemangioma

First Author: Honglei ***LIU***

Purpose: This study evaluates the efficacy of direct intra-tumor injection of bleomycin as an alternative treatment for visually threatening cavernous hemangioma, aiming to avoid the potential risks associated with surgical resection.

Methods: Six cases of orbital cavernous hemangioma were selected based on tumor location, specifically those situated beneath the ocular artery or at the apex of the orbit. Surgery was performed to expose the anterior surface of the tumor, and without repositioning, bleomycin was directly injected into the tumor. Bipolar electrocautery was employed for hemostasis and to prevent leakage of the bleomycin.

Results: With the implementation of this modified technique, all cases maintained stable visual acuity and experienced improved visual acuity post-operatively. The size of the tumor demonstrated atrophy within one week of surgery and persisted as a ghost structure throughout the one-year follow-up period. Two cases experienced transient paralysis of the third nerve, which resolved in less than one year.

Conclusions: The modified treatment approach using direct injection of bleomycin for cavernous hemangiomas located in specific regions yields better clinical outcomes while avoiding the severe complications associated with previous surgical resection methods. This technique offers an effective alternative with improved results in treating visually threatening cavernous hemangioma.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1-GF)

Metastatic Conjunctival Melanoma: A Multicenter International Study

First Author: Puneet ***JAIN***
Co-Author(s): Paul ***FINGER***

Purpose: To analyse ocular and systemic findings in metastatic conjunctival melanoma.

Methods: Retrospective, registry-based data from 10 ophthalmic oncology centers (9 countries,4 continents). Patients were diagnosed between January 2001-December 2013

Results: Of 288 patients,29 patients (10%) developed metastasis-5 (17%) had metastasis presentation,24 (83%) developed metastasis at a mean follow up of 4.6 + 3.2 years after treatment. Metastasis at presentation cohort (C1)- all 5 had ulceration, 4/5 had caruncle-plica involvement, 4/5 melanotic, all staged T3, 4/5 died in 1 year of presentation. Metastasis on follow up cohort (C2)-13/24 had T1 disease at baseline, 6/24 had T2, 2 had T3 and 3 had Tx disease (no T4).17/24 (71%) patients died in this cohort. The cumulative risk of systemic metastasis after treatment was 0.4% (95% CI=0.6 to 2.9%) at 1 year, 8.6%(5.1 to 14.3%) at 5 years and 22.3%(14.5 to 33.5%) at 10-years follow up.T3 disease had the highest risk of systemic metastasis

(p<0.001); for every 1 stage increment in T stage there was 89% higher risk of metastasis (HR = 1.89, p<0,001). The liver and lung were the most common sites of metastasis (13/29). A comparison between baseline characteristics cohort C1 v/s C2- C1 had significantly a greater number of tumor nodules (p<.001), a higher proportion of ulceration (p=0.01), and more incidence of plica and caruncle involvement (p=0.02).

Conclusions: Metastatic conjunctival melanoma affects 10% of patients with conjunctival melanoma. Survival rates are dismal for those with evidence of metastasis at presentation. Clinical characteristics/staging predicts metastasis from conjunctival melanoma.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1–GF)

NGS of Vitreoretinal Lymphoma by Vitreous Liquid Biopsy: Diagnostic Potential and Genotype/Phenotype Correlation

*First Author: Christopher **LEE***
*Co-Author(s): Jay Jiyong **KWAK***

Purpose: To determine the diagnostic potential of next-generation sequencing (NGS) in vitreous samples, analyze genotype-phenotype characteristics, and compare NGS of matched vitreous and brain samples in patients with associated central nervous system lymphoma (CNSL).

Methods: A total of 32 patients suspected of vitreoretinal lymphoma (VRL) were included. Fresh vitreous specimens from diagnostic vitrectomy underwent NGS using a custom panel targeting 747 candidate genes for lymphoma. Malignancy cytology, interleukin (IL)-10/IL-6, immunoglobulin heavy chain (IGH)/immunoglobulin kappa light chain (IGK) monoclonality testing was also performed. MYD88 L265P mutation was examined from anterior chamber tap samples. The sensitivity and specificity of NGS were compared with conventional diagnostic tests. Brain tissues suspected of lymphoma were collected by stereotactic biopsy and underwent NGS. Genetic variations detected in NGS of vitreous and brain tissue specimens were compared.

Results: The sensitivity values for cytology, IL-10/IL-6>1, clonality assays for IGH and IGK, MYD88 L265P detection in anterior chamber tap samples, and vitreous NGS were 0.23, 0.83, 0.68, 0.79, 0.67, and 0.85, with specificity values of 1.00, 0.83, 0.50, 0.25, 0.83, and 0.83, respectively. The sensitivity of vitreous NGS was the highest. The most common mutations were MYD88 (91%), CDKN2A (36%), PIM1 (32%), IGLL5 (27%), and ETV6 (23%). Although several gene alterations demonstrated heterogeneity between the brain and eyes, some common mutational profiles were observed in matched vitreous and brain samples.

Conclusions: Overall, NGS of the vitreous demonstrated high sensitivity among conventional diagnostic tests. VRL and CNSL appeared to have both shared and distinct genetic variations, which may suggest site-specific variations from a common origin.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1–GF)

New Retinoblastoma Rosette: Molecular Pathology Interpretation

*First Author: Rutusha **DODWAD***
*Co-Author(s): Harsha **BHATTACHARJEE**, Dipankar **DAS**, Nikita **SAH***

Purpose: Newly described retinoblastoma rosettes have various pathological significance. Some of its characteristics were revealed in the immunohistochemistry (IHC) study of the cases.

Methods: 5 retinoblastoma paraffin embedded eyeballs were sectioned with LEICA RM 2145 microtome. They were deparaffinised and the antigen retrieval method was used for IHC. NSE, p53, p16, BAX, C-Myc, GFAP, Synaptophysin and Chromogranin were done and interpreted. All the cases were documented in ZEISS microscope Axioskop 40 with AxioCam MRc.

Results: The relative size of new rosettes compared with classical Flexner Wintersteiner and Homer Wright rosettes. NSE, p53, p16 were significantly expressed in the cells of new rosettes.

Conclusions: Evolving new rosettes in retinoblastoma were found to be larger than the conventional rosettes and correlated with the prognosis.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1–GF)

Risk Factors of Cataract in the Treatment of Retinoblastoma

*First Author: Shichong **JIA***
*Co-Author(s): Jiayan **FAN**, Renbing **JIA**, Xuyang **WEN**, Jie **YU**, Min **ZHOU***

Purpose: To investigate the risk factors of cataract following eye-preserving therapies for retinoblastoma.

Methods: This retrospective, single-centre cohort study included patients diagnosed with retinoblastoma receiving eye-preserving therapies between January 2017 and June 2021. Cataract by the end of the follow-up was the main outcome. Risk factors of cataract were analysed using a competing risk regression (Fine- Gray model) in the presence of enucleation as a competing risk.

Results: Cataract was found in 31 of 184 (16.8%) included eyes during a mean follow-up of 27.6 months.

The cataract and control groups were similar regarding patients' laterality, sex, and disease stage. Eyes in the cataract group were more likely to present with endophytic retinoblastoma (p=0.02) and greater intraocular pressure (p=0.001). The Univariate Fine-Gray model showed that the growth pattern (p=0.01), intraocular pressure (p=0.01), number of intra-arterial chemotherapy (IAC) cycles (p=0.001), melphalan dose per IAC cycle (p=0.001) and number of intravitreous chemotherapy (IvitC) cycles (p=0.001) were associated with cataract occurrence. Multivariate analysis included higher intraocular pressure (p=0.003), a higher melphalan dose per IAC cycle (p=0.001) and an increasing number of IvitC cycles (p=0.04) as independent risk factors of cataract.

Conclusions: Repeated IAC and/or IvitC with melphalan were the most common eye-preserving therapies that induced cataract formation. The toxic effect of melphalan was an essential factor in cataract development, as indicated by the association of cataract occurrence with the melphalan dose.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 2 (BNDCC1–GF)

Survey of Orbital Tumors in Elderly Population: A Large Case Series

*First Author: Shaifali **CHAHAR***
*Co-Author(s): Santosh **HONAVAR***

Purpose: To analyse the spectrum and management outcomes of orbital tumors in the elderly population aged 60 years and above.

Methods: Retrospective consecutive interventional case series.

Results: Biopsy-proven orbital tumors in 213 eyes of 208 patients were analysed. Median age was 65 years (range 60-100), 107 (51.4%) were males and bilaterality seen in 17 (7.98%) cases. Known systemic malignancy was noted in 3.8% at presentation. The most common presenting feature- mass in 114 (53.5%) followed by proptosis in 91 (42.7%) cases. Imaging included CT and/or MRI. Incisional biopsy was done in 125 (58.6%) and 47 (22%) underwent excision biopsy. Exenteration was performed in 37 (17.7%) cases. Orbital tumors were malignant in 142 (66.7%) and benign in 71 (33.3%) cases. The most common histopathological diagnosis was lymphoma in 56 (28.43%), followed by secondary involvement by sebaceous gland carcinoma of an eyelid in 17 (8.63%), lacrimal gland tumors in 11 (5.58%), OSSN with orbital extension in 10 (5.08%) and fungal granuloma in 9 (4.57%). Inflammatory lesions were seen in 16 (8%) cases. At a median follow-up of 76.5 days, systemic metastasis was seen in 21 (9.86%), and recurrence of the disease was seen in 15 (7%).

Conclusions: This case series highlights the distinctive nature of orbital pathologies seen in the elderly population. It is prudent to keep malignancy in mind when dealing with this set of population, and such cases must undergo systemic examination at presentation and follow-up for appropriate management.

Ocular Trauma

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

Expanding Horizon of Aesthetic Oculoplasty – Outcome of Orbital Fractures in Oculofacial Trauma at Tertiary Centre by Multidisciplinary Approach

*First Author: Vinita **RAMNANI***
*Co-Author(s): Sakshi **RAMNANI**, Sunil **RATHOR***

Purpose: To observe the outcome of orbital fracture repair in poly-trauma patients by a multidisciplinary approach.

Methods: Papers of 380 consecutive patients with oculofacial injuries were retrospectively reviewed. Data were analyzed with respect to the extent, severity, type and location of the oculofacial injury. Treatment outcomes were assessed after surgeries performed by a combined approach of ophthalmologists and plastic surgeons.

Results: Periorbital soft tissue trauma was observed in 246 (64.74%), orbital and Periorbital fracture in 134 (35.26%) cases. The combined inferomedial orbital wall fracture in 90 (67.16%) patients followed by isolated inferior wall fracture 23 (17.16%), lateral orbital wall fracture 9 (6.72%), and mixed fracture associated with facial fractures 12 (8.96%) were noted. Associated intraocular injuries of all kinds were observed in a total of 145 (38.16%) patients, including 89 (61.38%) eyes with normal vision, 42 (28.97%) mild to moderate and 13 (9.65%) severe reduction in vision. The goal of repair was to restore the anatomical and cosmetic appearance of patients, and we achieved 95% cosmetic satisfaction, only 5 eyes lost vision with the best of our care.

Conclusions: Oculofacial trauma patients have a tremendous fear of visual loss and aesthetic appearance. A major impact of trauma is directed towards the orbital bone and protects the eye from severe injuries. The functional and cosmetic outcome of oculofacial injuries depends on multiple factors. A well-planned, appropriate, early intervention by a multidisciplinary approach provides the best surgical outcome. Immediate repair following trauma helps in better functional and aesthetic outcomes and fulfills the objectives of orbital reconstruction by restoring the normal anatomy and volume of the orbit.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1–GF)

D.O.T.S: Documenting Ocular Trauma With Smartscope Kit

*First Author: Prithvi **CHANDRAKANTH***

Purpose: To photograph cases of ocular trauma in casualty using Smartphone-based frugal do-it-yourself devices to document, explain prognosis, plan treatment, follow up and avoid problems faced in Medicolegal cases (MLC) for an ophthalmologist safety in situations where slit lamp is not available.

Methods: A prospective study was done on patients attending the emergency/casualty. The step-by-step process of making the smartscope kit was described. All the patients underwent examination and imaging using SMARTSCOPE kit (cost-25USD/2000INR) to document the nature of the ocular injury. It consists of Smartphone-based tools made with chart paper (5x2cm) attached with 15D intraocular lens (IOL) and 8D IOL for anterior segment evaluation and Gonio-imaging, respectively. Modified sanitizer bottle with 20D lens at one end and smartphone at the other for posterior segment photography, 15D lens with cobalt blue filter for fluorescein photography to detect epithelial defect, seidels test. Patients were then grouped into their respective specialties for documentation and management. These were done without the aid of slit-lamp/expensive ophthalmic instruments.

Results: A total of 350 patients were recorded over 3 months. We recorded: lid tear-2%, subconjunctival haemorhage-10% corneal tear, 26% traumatic cataract, 4% hyphema, 10% hypopyon, 4% lens dislocation, 6% commotio retinae, 2% IOFB, 2% traumatic optic-neuropathy 2%, vitreous hemmorhage-4%, retinal detachment-6%. Patients were shown the photographs and explained about the prognosis, which was used to compare pre and post-op results and for MLC.

Conclusions: Our study shows how any ophthalmologist can make their own smartphone-based devices for imaging anterior to posterior segment pathologies with an investment of just 25 USD, which can help in documentation, follow-up, treatment planning, explaining prognosis, and helping in medicolegal aspects. Smartscope Kit is a potential and efficient replacement for the slit lamp.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1–GF)

Endoscope-Assisted Vitrectomy in the Treatment of 133 Severely Traumatized Eyes Without Light-Perception

*First Author: Yang **XUN***

Purpose: To evaluate the effect of endoscope-assisted vitrectomy (EAV) in eyes with no light perception (NLP) or doubtful light perception (dNLP) after severe trauma and analyze their outcomes.

Methods: The medical records, and surgical video when necessary, of all involved cases with visual acuity (VA) of NLP or dNLP after suffering severe ocular trauma from 2003 to 2022, were retrospectively analyzed.

Results: Of the 118 NLP and 15 doubtful NLP eyes that underwent EAV were included in the study, the mean follow-up was 9.34±13.77 months, final VA was better than 0.01 in 5 eyes (3.76%), counting fingers in 19 eyes (14.29%), hand motion in 43 eyes (32.33%), light perception in 24 eyes (18.05%), NLP in 36 eyes (27.07%) and 3 eyes lost information. Three eyes underwent secondary enucleation. In 76 eyes, the preoperative IOP was below 10mmHg (5.69±2.50 in average, below 6 in 48 eyes), the postoperative IOP was 11.87±4.07 in average (still below 10mmHg in 20 eyes, below 6 in 3 eyes) (P=0.000).

Conclusions: Treated with EAV, most severely traumatized eyes without light perception can avoid enucleation and have a long-term improvement in VA with normal IOP.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1–GF)

Etiology and Demographic Factors Associated With Open Globe Injuries in the United States: A Multi-Site Study

*First Author: Fasika **WORETA***
*Co-Author(s): Shruti **ANANT**, Grayson **ARMSTRONG**, Kara **CAVUOTO**, Yoshihiro **YONEKAWA***

Purpose: Open globe injuries (OGIs) are a major cause of preventable blindness worldwide. However, studies on the etiology and epidemiology of OGIs are limited. We performed a retrospective, cross-sectional study to investigate the incidence, demographics, and injury mechanisms of open globes in the United States.

Methods: Patients with OGIs (n=1570) presenting to four high-volume, tertiary care eye centers from January 2018 to December 2021 were reviewed. Factors associated with the cause of injury were assessed using multivariable logistic regression.

Results: Among 1570 patients (mean age: 48.2 ± 22.8 years) presenting with OGIs, 1150 (74.8%) were male and 940 (66%) presented at an outside facility before transfer. Most injuries were lacerations (836 patients, 55.4%) and Zone I (760 patients, 52.1%). Etiology included being struck by objects (602 patients, 39.2%), falls (334 patients, 21.7%), construction-related work injuries (255 patients, 16.6%), and assaults (157 patients, 10.2%). Patients 61 and older were 11 times more likely than those 41 to 60 years to have an OGI from a fall (OR=10.88; 95% CI 7.54-15.7; p<0.001), and female patients were 5 times more likely than males to have a fall-related injury (OR=4.73; 95% CI 3.66-6.12; p<0.001). Compared to white patients, Hispanic patients were more likely to experience a construction work OGI (OR=1.95; 95% CI 1.43-2.65; p<0.001) and Black patients had a greater risk of experiencing assault (OR=5.15; 95% CI 3.44-7.72; p<0.001).

Conclusions: OGI etiology varies by demographic and clinical variables. Preventive strategies aimed at reducing the incidence of ocular trauma may benefit from targeting high-risk populations for falls, work-related accidents, and assaults.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1-GF)

Ocular Emergency Study (OES): Exploring the Where, How, and What of Ocular Trauma in a Community Eye Hospital

*First Author: Hom **GURUNG***
*Co-Author(s): Adita **DHOJU**, Aleena **GAUCHAN**, Mohini **SHRESTHA**, Kalpana **SINGH**, Sunil **THAKALI***

Purpose: Ocular trauma is a major concern in public health, and it demands thorough exploration to comprehend its patterns and implications. This research is part of an ocular emergency study and aims to analyze the circumstances and causes of ocular trauma cases seen at a community eye hospital's emergency department.

Methods: Retrospective descriptive study of a one-year period at a community eye hospital. Data was retrieved from the hospital's electronic medical registration (EMR) system. Data categorization, classification, and cleaning were done using MS Excel. Qualitative, quantitative, and comparative analyses were done with appropriate statistical tools.

Results: A total of 2173 ocular trauma cases were seen in the study period, of which 75.5% were males and 84.6% belonged to the working age group population. The most common circumstance of trauma was accidental, while workplace injury along with welding or metal work was the second most common circumstance. The most common cause of trauma was nonspecific corneal and conjunctival foreign bodies, followed by chemicals, sticks and iron products. only one out of five patients came for follow-up, and the average follow-up period was 1.87 days.

Conclusions: Recognizing the distinct circumstances and causes of ocular trauma based on regional factors is important. Simple measures like workplace protective glasses can significantly alleviate corneal and conjunctival foreign bodies. Long-term plans and strategies aimed at targeted workplaces, including education initiatives, can mitigate the occurrence of ocular trauma and its associated complications.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1-GF)

Patterns and Prognosis of Visual Field Changes in Patients With Traumatic Optic Neuropathy

*First Author: Jungyul **PARK***
*Co-Author(s): Hee-young **CHOI**, Jun **HEO***

Purpose: This study aimed to analyze visual field patterns and prognostic factors in patients diagnosed with traumatic optic neuropathy (TON).

Methods: We retrospectively analyzed 54 patients with TON from 2014 to June 2023 at Pusan National University Hospital. Parameters such as gender, trauma mechanism, treatment, and visual tests were studied. Visual field patterns were classified based on the Ocular Hypertension Study (OHTS).

Results: Out of 54 eyes, 43 were male (79.6%). The common causes were head trauma (42.3%) and falls (22.2%). Altitudinal loss and total loss were common in both initial and final visual tests, 85.7% and 83.3% respectively. High-dose steroid treatment within 24 hours was significantly associated with an improvement in final visual acuity by 0.1 or more (p=0.017). Maintaining 80% or more of the initial visual field index was associated with the absence of intracranial hemorrhage (OR=0.10, p=0.030) and high-dose steroid treatment within 24 hours (OR=9.37, p=0.017).

Conclusions: Visual field defects in TON patients were mainly horizontal field loss and total blindness. Existing classification schemes were found to be limiting. Prognostic factors included the initial visual field index, intracranial hemorrhage, and early high-dose steroid treatment. Further research is needed to better understand visual field patterns in TON.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1–GF)

Profile of Firework Related Ocular Injuries During Festivals at a Tertiary Eye Hospital, Nepal

*First Author: Ashma **MANANDHAR***

Purpose: To find out the types of ocular injuries associated with firework-related injuries and whether active ignitors or bystanders had more severe injuries in firework-related ocular injuries in our part of the country.

Methods: It is a hospital-based cross-sectional study done at a tertiary eye hospital in eastern Nepal. Medical records of patients presenting to the hospital emergency department with firework-related injuries during November month of 2021 and 2022, which includes both festivals Tihar and Chaat, were analyzed. Data included types of ocular injuries, number of active ignitors, bystanders and patients with more severe ocular injuries were recorded. Institutional review committee approval was obtained for the study.

Results: A total 73 eyes of 73 individuals with ocular injuries due to fireworks during the Tihar and Chaat were enrolled in the study. The right eye was involved in 58 (79.45%) of the patients. More than 50% of firework-related injuries were found to have occurred during the Tihar festival, but open-globe injuries were seen more during the Chaat festival. Of all the recruited patients, 55 (75.34%) were male. The majority of the ocular injuries were closed globe 56 (76.71%). Bystander patients were 56 (76.71%). The majority of patients with ocular injuries needed medical management 39 (53.4%). None of the patients reported using any protective eyewear at the time of injury.

Conclusions: Closed globe injuries, especially one related to the cornea, were found to be more common after firework-related ocular injuries. It is dangerous to be in the vicinity of fireworks being launched.

Ophthalmic Epidemiology and Prevention of Blindness

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

A Study of Various Factors Affecting Activities of Daily Living and Instrumental Activities of Daily Living in the Visually Impaired

*First Author: Jung Sun **HEO***
*Co-Author(s): Ungsoo **KIM***

Purpose: We analyzed how the Activities of Daily Living (ADL) and Instrumental Activities of Daily Living (IADL) change depending on the level of visual impairment and which factors affect the ADL and IADL of the visually impaired based on big data.

Methods: The 2020 annual report on disabled people in Korea published by the Korea Institute for Health and Social Affairs was investigated. We evaluated the demographics, degree of visual impairment, duration of illness, various overlapping disabilities, and systemic diseases. We analyzed the effect of ADL and IADL on various factors related to visual impairment. The association between the degree of visual impairment and activities of daily living was analyzed.

Results: The more severe the visual impairment, the harder it was to perform activities of daily life except for swallowing and changing position while lying down. Differences in ADL and IADL according to age of onset of visual impairment were not significantly different (p=0.035). Duration of illness did not affect the ADL and IADL. The most common combined disability was hearing problems. ADL and IADL tended to worsen as patients had more chronic illnesses. In multivariate analysis, the degree of visual impairment, age of onset, and hepatitis B among systemic diseases were found to affect ADL and IADL.

Conclusions: The degree of visual impairment and accompanying systemic diseases were significantly related components. By analyzing detailed factors related to the daily activities of the visually impaired, we can understand their lives in more detail and, therefore, provide more practical support.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1-GF)

Assessment of Knowledge and Attitude of Cataract and Their Associated Factors Among Adults of Islamic Boarding School Neighborhood in a Rural District in Malang, Indonesia

*First Author: Intan **KAUTSARANI***
*Co-Author(s): Nina **HANDAYANI**, T.Budi **SULISTYA***

Purpose: To assess the knowledge and attitude of cataract and their associated factors among adults in a rural district of Malang.

Methods: This is a cross-sectional study design conducted on adults aged ≥18 years old in an Islamic boarding school neighborhood in a rural district of Malang. We use a closed-ended questionnaire to assess the level of knowledge and attitude of cataracts. The questionnaire used is derived from an original preliminary article, which was translated into Indonesian and validated with Cronbach's Alpha with value >0.6. The level of knowledge was classified as poor (<6) and good (≥6) of the overall score (9). Statistical analysis was performed using chi-square and logistic regression analysis. The attitude towards cataract was scored using the Likert scale model (T-score).

Results: A total of 270 respondents were enrolled in this study. Most of the respondents (66,7%) were female, within the age range of 18-29 years old (55,2%), senior high-level education (40,4%), and had a monthly income of < 1 million Rupiahs (44,4%). Of the total participants, 68.5% of them had good knowledge about cataract. There was a significant association between age (p 0.003), female gender (0.021), higher education (0.000), monthly income (0.000), and cataract knowledge. Most of the respondents (59,6%) had a negative attitude towards cataract.

Conclusions: Most participants had good knowledge but had contradicting negative attitudes towards cataract. Age, gender, higher education, and monthly income were all significantly associated with individuals' levels of knowledge of cataracts. Hence, it is recommended to pay more attention to raising awareness about cataract.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1-GF)

Association Between Physical Fitness and Allergic Conjunctivitis in Youth: A Nationwide Cohort Study

*First Author: Tsai-chu **YEH***

Purpose: Allergic conjunctivitis (AC) is a prevalent allergic condition among children, significantly impacting their quality of life. Despite its prevalence, the influence of physical fitness on the development of AC remains insufficiently investigated. This study aims to evaluate the correlation between physical fitness and AC occurrence in the pediatric and adolescent population.

Methods: The study encompassed 4,552,866 Taiwanese children ranging from grades 4 to 13, who engaged in physical fitness assessments spanning from January 1, 2010, to December 31, 2018. The nationwide physical fitness evaluation served as an unbiased gauge of physical fitness encompassing cardiorespiratory endurance (CE), musculoskeletal endurance (ME), musculoskeletal power (MP), and flexibility fitness (FF).

Results: The 6-year cumulative incidence of allergic conjunctivitis (AC) varied across quartiles of musculoskeletal power (MP) performance, with rates of 4.69%, 4.73%, 4.84%, and 5.21% for the best-to-worst quartiles, respectively (P < .001). A multivariable analysis revealed that students in the higher MP quartiles (first or second) exhibited a reduced risk of AC compared to those in the lower MP quartiles (third or fourth), with an adjusted hazard ratio (aHR) of 0.95 (95% confidence interval [CI]: 0.93 to 0.98; P < .001). Similarly, cardiorespiratory endurance (CE) showed a protective effect, with an aHR of 0.93 (95% CI: 0.91 to 0.95; P < .001).

Conclusions: Our extensive nationwide cohort study demonstrated a clear connection between physical fitness and the occurrence of allergic conjunctivitis (AC) among children. Notably, children with lower musculoskeletal power (MP) or cardiorespiratory endurance (CE) exhibited a significantly elevated risk of AC.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Associations of Predicted Lean Body Mass and Fat Mass With Diabetic Retinopathy in Patients With Type 2 Diabetes Mellitus

*First Author: Yujie **WANG***
*Co-Author(s): Chufeng **GU**, Chenxin **LI**, Zhi **ZHENG***

Purpose: The relationship between obesity and diabetic retinopathy (DR) remains inconclusive, possibly owing to the effect of varying compositions of body components. The present study aims to investigate the associations of lean body mass (LBM) and fat mass (FM) with DR in patients with type 2 diabetes mellitus (T2DM).

Methods: This cross-sectional study evaluated 9855 Chinese participants with T2DM at three hospitals between 2005 and 2016. LBM and FM were estimated for all participants using validated anthropometric prediction equations previously developed from the National Health and Nutrition Examination Survey. Logistic regression and restricted cubic spline analysis were used to assess the associations of LBM and FM with DR.

Results: Among the total of 9855 patients (50.6% women), the median (interquartile range) for LBM and FM is 42.2 (35.5-50.4) and 22.3 (18.3-26.6), respectively. Evidence indicated significant interactions between LBM, FM and sex with DR (both $p < 0.05$). In men, both LBM and FM were inversely associated with the presence of DR (odds ratio [OR] per standard deviation [SD] increase: 0.88 [95% CI, 0.82-0.98] for LBM; 0.92 [95% CI, 0.86-0.99] for FM). The inverse relationship of LBM remained robust with further adjustment of body mass index (BMI) (OR, 0.85 [95% CI, 0.76-0.94] per SD increase). However, for women, LBM and FM did not show a significant association with DR.

Conclusions: A higher LBM appeared to independently confer a protective effect on DR in men, while FM might not have a significant effect independently of BMI.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Awareness Generation Is the Key Factor for the Early Detection of Children's Sight and Life-Threatening Eye Diseases

*First Author: Soma **ROY***

Purpose: To generate awareness for early detection of sight and life-threatening eye diseases of children under 6 years of age.

Methods: It was a community and hospital-based pilot project from July 2019 to August 2021. Primary school teachers, health workers, traditional healers, and prominent community leaders of a division of Bangladesh were trained in a day-long workshop about the different symptoms of six major childhood sight and life-threatening diseases like refractive error, congenital cataract, congenital glaucoma, squint, ocular injury, and retinoblastoma. It also provided information about the need for proper referral and the importance of a team approach. Along with this, six eye screening camps were performed. A Diod laser and fundus camera donation was also a part of this project. The referred patients were treated in a tertiary eye care center.

Results: A total of 656 primary school teachers, 571 health workers (intern doctors, 5th-year medical students, paramedics, nurses, traditional healers); 121 community leaders, social workers, religious leaders, NGO workers were educated. Three hundred thirty-one children under 6 years of age were screened, and among them, 55 refractive errors, 2 congenital cataracts, 1 congenital glaucoma, 10 squints, 0 retinoblastoma, and 20 other eye diseases were detected. All these children were treated in the tertiary hospital, and 50 children of retinoblastoma who were referred from different centers were treated with Diod laser.

Conclusions: Awareness generation with proper information is the key to early detection of cases, which will not only save sight and life but will also decrease the treatment burden of developing and underdeveloped countries.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Blindness in Open-Angle Glaucoma Patients at a Tertiary Eye Care Center in Indonesia: Who Is at Risk?

*First Author: Siti **FADHILA***
*Co-Author(s): Yeni **LESTARI**, Astrianda **SURYONO***

Purpose: Open-angle glaucoma (OAG) is one of the leading causes of irreversible blindness worldwide. Several studies have investigated risk factors for glaucoma progression, but only a few have reported risk factors for blindness from OAG. Thus, the purpose of the study was to determine the prevalence, incidence, and associated risk factors of blindness in patients with OAG in a tertiary eye care center in Indonesia.

Methods: A retrospective observational chart review of all new patients with OAG who were seen between January 2018 and December 2019 by glaucoma service providers at a tertiary hospital in Indonesia. The disease stage at diagnosis was defined by a modified

Hodapp-Parrish-Anderson glaucoma staging system using perimetric mean deviation (MD) to define six stages of severity. Blindness was defined according to WHO criteria. Variables considered to be possible risk factors for blindness were evaluated using odds ratio (OR) and confidence interval (95% CI) in univariate and multivariate analyses.

Results: Eighty-five patients were blind [85/203 (41.9%) - unilaterally and 17/203 (8.4%) - bilaterally] at baseline. Sixteen eyes [16/287 (5.6%)] became blind during the follow-up period of treatment (median 6.5 months, range 0.5-35 months). Multivariate regression analysis revealed that baseline MD was significantly associated with blindness, (OR: 1.38; 95%CI: 1.1-1.7) and a history of previous glaucoma surgery was found to be a potential factor (OR: 1.13; 95%CI: 0,01-1,18).

Conclusions: Late presentation OAG is common at the tertiary care center, therefore early detection and proper treatment are important. Regular monitoring of visual fields may reduce the risk of blindness in glaucoma patients.

Feb 23, 2024 (Fri)
14:30 – 16:00
Venue: Mengwi 3,5 (BNDCC2–GF)

COVID-19 and the Eye – An Update

*First Author: Hannah **NG***
*Co-Author(s): Helen **DANESH-MEYER**, Rachael **NIEDERER**, Daniel **SCOTT***

Purpose: To provide a comprehensive review of the ocular manifestations of COVID-19, including the reported prevalence of each condition, suggested mechanisms of action, and clinical red flags.

Methods: A narrative literature review was conducted in May 2023 using 4 electronic databases: PubMed, EMBASE, MEDLINE and Cochrane Database of Systematic reviews. Articles were sourced by using appropriate keywords related to COVID-19 and ocular disease. All articles were analysed and abstracts were reviewed for relevance and appropriate demographics, comorbidities, risk factors and extent of disease were analysed.

Results: A total of 1131 articles were obtained from the literature search for analysis. 243 papers were included in the analysis based on inclusion criteria. A wide range of ocular conditions related to COVID-19 were identified in the literature including papers reporting cases of conjunctivitis (n= 75), keratitis or graft rejection (n= 7), episcleritis (n=2), scleritis (n= 6), uveitis (n= 56) endogenous endophthalmitis (n= 63), glaucoma (n=7), retinal artery occlusion (n= 19), retinal vein occlusion (n= 56), optic neuritis (n= 32), ischaemic optic neuropathy (n= 15), strabismus (n=4), retinitis (n=19), COVID-19-retinopathy (n=22), orbital sequelae (n= 687), amongst other rarer conditions (n=7).

Conclusions: There is an increasing body of knowledge on how COVID-19 infection can lead to ocular disease of varying severity. Increasing clinician awareness of the range of ocular symptoms that a patient may present with during or after COVID-19 infection is essential to ensure patients undergo prompt ocular examination for early diagnosis and treatment of potentially sight-threatening disease.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Changing Trends in Pediatric Ocular Trauma During COVD-19 Pandemic

*First Author: Rabeeah **ZAFAR***

Purpose: The COVID-19 pandemic has been associated with a decline in overall emergency presentations for trauma worldwide. The purpose of this study is to compare the incidence and characteristics of ocular trauma in children during the pandemic to those in the pre-pandemic era.

Methods: In this study, we retrospectively reviewed the charts of all children with ocular injuries presenting to the hospital emergency department. Data was analysed from March 24, 2020 (the day lockdown was implemented in our country) to March 23, 2021and compared with the same study period from the previous year (i.e March 24, 2019 to March 23, 2020).

Results: In the 2020 study period, ocular trauma reduced to 35% of all emergency cases (n=1140) as compared to 55% in 2019 (n=2349). In 2020, injuries due to household chemicals increased to 5.5% (n=57) from 2.95% (n=74) in 2019. Outdoor trauma was more prevalent than indoor trauma (68% in 2019; 62.3% in 2020). The commonest presentation was penetrating injury in both groups (25% in 2019; 46.3% in 2020). During the pandemic, a significant reduction in road traffic accidents related to ocular injuries was observed (8% n=91 vs 15.2% n=373 in 2019). There was a 3-fold rise in endophthalmitis-related visual loss during the pandemic (9.2% vs 3.4% in 2019). A significant increase in assault-related (5 times) and media-inspired (3 times) ocular injuries was observed in the 2020 study group.

Conclusions: Ocular trauma is a major cause of vision loss in children. The importance of seeking timely treatment should be stressed to all caregivers to prevent ocular morbidities.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Comparison of Cost-effectiveness Among Patients Undergoing Keratoplasty at Secondary Versus Tertiary Health Centre in South India

*First Author: Shalini **SINGH***

Purpose: To assess and compare the cost-benefit and improvement in the QOL of the patients undergoing corneal transplant surgery at secondary health centres (SHC) and a tertiary health centre (THC) in South India.

Methods: A retrospective observational study was done over a period of six months, wherein 50 corneal transplant patients across 4 SHC were compared with age and gender-matched 50 corneal transplant patients from THC. Demography, clinical history, expenditure incurred, treatment and outcome were obtained from the electronic medical records and analysed.

Results: There was a significant improvement in the BCVA at both types of centres (P<0.05). In comparison to THC, the mean overall expenditure for travel, accommodation and the surgery was significantly lesser at SHC (P=0.0002). At SHC, the distance from home, with an average distance from the nearest secondary centre, being 110 km, as compared to the distance from the nearest tertiary centre which was 215km, the days of absenteeism from the workplace, the cost of surgery and medications were significantly lesser than tertiary care. At SHC, the number of follow-up visits was significantly more (15.56 vs 11.04, P=0.009), also an indicator of more compliant treatment with the advantage of early detection of complications and timely intervention whenever needed.

Conclusions: The availability of health care centres to the rural people at their doorstep can be more cost-effective with a better clinical outcome. The convenience in terms of proximity, cost-effectiveness, early management of complications, and regular treatment follow-ups can make corneal transplants popular amongst the rural population.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Contemporary Patterns and Underlying Causes of Vitrectomy in Pediatric and Adolescent Patients: A Nationwide, Population-Based Analysis

*First Author: Kunho **BAE***
*Co-Author(s): Kyungsik **KIM**, Ju-yeun **LEE***

Purpose: We determined the incidence, etiology, and longitudinal trends of vitreoretinal diseases necessitating pars plana vitrectomy (PPV) in the pediatric and adolescent population.

Methods: This was a nationwide, population-based cohort study. All pediatric and adolescent patients who underwent PPV across the Korean population were included. The cumulative incidence of PPV was estimated from 2009 to 2020, with 2009 to 2011 as the washout period. The annual trends of PPV incidence, the proportion of each etiology, and comorbidity were estimated based on sex and specific age groups.

Results: In total, 1,913 patients, including 93 infants, 746 pediatric patients, and 1,084 adolescents, were newly identified as having undergone PPV surgery. The cumulative incidence of PPV surgery per 100,000 individuals was 21.42 (95% CI, 21.41–21.43). The rate of PPV was 2.4 times higher for males than females, and the rate of trauma as a comorbidity was also higher for males than females (13.1% vs. 4.8%). Among males aged 5 years and older, the incidence of PPV nearly halved from 2011 to 2020. Among the primary etiologies, ROP had the highest rate (72%) in infants (under 1 year), while RD was the most common (63%) in individuals aged 5–19 years. Myopia was present in 30.3% of patients, and atopic dermatitis was present in 31.8% of all patients.

Conclusions: The primary causes of PPV in the pediatric and adolescent populations vary by sex and age group. The incidence of PPV continues to decline in the adolescent population. Therefore, tailored patient education and age-specific etiological examination are recommended.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Corneal Curvature and Developmental Disabilities in Special Needs Students: Is It Correlated?

*First Author: Raden **ADINUGROHO***
*Co-Author(s): Nanda **ANANDITA**, Anny **SULISTIYOWATI***

Purpose: To analyze the correlation between corneal curvature among special needs students with developmental disabilities in Malang, Indonesia.

Methods: This consecutive cross-sectional study involved 330 eyes (165 students) with developmental disabilities in all special needs schools in Malang from September 2019 to February 2020. The age range was between 7 and 17 years old. All students underwent measurement using the Handyref (Nidek®) handheld autorefracto keratometer (ARK), and the result was stated in diopter (D). We analyzed the corneal curvature by the type of disability and age.

Results: Among 330 eyes (165 respondents), 103 were boys (62%) and 62 were girls (38%). The most common disability was intellectual impairment (35%). The

steepest average corneal curvature of 45.64 D (SD ± 2.85) was found in respondents with Down syndrome, while the flattest of 41.60 D (SD ± 2.87) was found in respondents with attention deficit hyperactivity disorder (all p=0.040). Against-the-rule, oblique, and with-the-rule astigmatism were found in 256 (82%), 32 (10%), and 25 (8%) eyes, respectively. The steepest average corneal curvature of 45.82 D was obtained at the age of 17, while the flattest of 42.47 D was obtained at the age of 15 (all p=0.502). The average corneal curvature in girls was steeper than in boys.

Conclusions: There is a significant correlation between corneal curvature and type of disability. Respondents with Down syndrome have the steepest corneal curvature due to its frequent eye rubbing. Against-the-rule astigmatism is the most common type in all age ranges. Keywords: type of disabilities, corneal curvature, age, and type of astigmatism.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Multiple Visual Function Impairments in Older Asians: Prevalence; Health and Patient-Centered Impact

First Author: Preeti ***GUPTA***
Co-Author(s): Eva ***FENWICK****, Ecosse* ***LAMOUREUX****, Ryan* ***MAN****, Sahil* ***THAKUR****, Tai Anh* ***VU***

Purpose: To determine the prevalence; health and patient-centered impact of multiple visual function impairments (VFIs) in multi-ethnic older Asian adults.

Methods: We included 2,380 participants (mean age: 72.9 ± 8.3 years; 54.2% female) from the baseline phase of the Population Health and Eye Disease Profile in Elderly Singaporeans (PIONEER; 2017-2022) study. Comprehensive visual function assessments comprised visual acuity, contrast sensitivity, depth perception, and colour vision. Logistic and linear regression models explored the impact of multiple VFIs (i.e., the co-occurrence of impairments in any two, three, or four bilateral visual functions, respectively) on patient-centered (vision-related quality of life [VRQoL], instrumental activities of daily living (IADL), loneliness, and falls) and health (sarcopenia, frailty, and cognitive impairment [CI]) outcomes.

Results: The census-adjusted prevalence of 2, 3 and 4 VFI was 11%, 4.2% and 1.6%, respectively. An increasing number of concurrent VFIs was associated with progressively worse outcomes, including decreased VRQoL scores (β: -0.70 to -2.99; P-trend<0.001); low IADL (OR: 1.46 to 6.12; P-trend=0.006) and higher odds of CI (1.43 to 8.28; P-trend<0.001). Importantly, individuals with 4 VFIs had the worst outcomes, including lower VRQoL (β=-2.99; P<0.001); higher odds of low IADL (OR=6.12; P<0.001); loneliness (OR=7.43; P=0.007) and CI (OR=8.28; P< 0.001) compared to no VFI.

Conclusions: Almost 17% of older Singaporeans had multiple VFI. Importantly, an increasing number of concurrent VFIs was associated with progressively worse patient-centered and health burdens than those without. Comprehensive visual function testing (beyond visual acuity) and appropriate management are warranted to prevent the debilitating consequences of VFIs and promote successful ageing.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Ocular Morbidity Among the Students of Blind Schools in Allahabad and Its Vicinity: A Causal Assessment

First Author: Sushank ***BHALERAO***
Co-Author(s): Santosh ***KUMAR***

Purpose: Information on eye diseases in blind school children in Allahabad is rare and sketchy. A cross-sectional study was performed to identify causes of blindness (BL) in blind school children with an aim to gather information on ocular morbidity in the blind schools in Allahabad and in its vicinity.

Methods: It was a cross-sectional study carried out in all four blind schools in Allahabad and its vicinity. The students in the blind schools visited were included in the study and informed consents from parents were obtained. Relevant ocular history and basic ocular examinations were carried out on the students of the blind schools.

Results: A total of 90 students were examined in four schools for the blind in Allahabad and in the vicinity. The main causes of severe visual impairment and BL in the better eye of students were microphthalmos (34.44%), corneal scar (22.23%), anophthalmos (14.45%), pseudophakia (6.67%), optic nerve atrophy (6.67%), buphthalmos/glaucoma (3.33%), cryptophthalmos (2.22%), staphyloma (2.22%), cataract (2.22%), retinal dystrophy (2.22%), aphakia (1.11%), coloboma (1.11%), retinal detachment (1.11%), etc. Of these, 22 (24.44%) students had preventable causes of BL and another 12 (13.33%) students had treatable causes of blindness.

Conclusions: It was found that hereditary diseases, corneal scar, glaucoma and cataract were the prominent causes of BL among the students of blind schools. Almost 38% of the students had preventable or treatable causes, indicating the need for genetical counseling and focused intervention.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Prevalence and Risk Factors for Pterygium and Its Association With Conjunctival Ultraviolet Autofluorescence: A Multicentric Study

*First Author: Saumya **YADAV***
*Co-Author(s): Dipali **DEKA**, G.V. S. **MURTHY**, Radhika **TANDON**, Praveen **VASHIST***

Purpose: To determine the prevalence and risk factors of pterygium in geographically diverse rural populations of India and to assess the presence and area of conjunctival ultraviolet autofluorescence (CUVAF) associated with pterygium.

Methods: In this population-based, cross-sectional study, 9735 adults aged ≥40 years participated from India's plains, hilly and coastal regions. All participants underwent a detailed questionnaire-based assessment for risk factors. Pterygium was diagnosed and graded clinically. Autofluorescence photographs of the lesion were captured and the presence and area of CUVAF were noted.

Results: The prevalence of pterygium in any eye was 13.2%, and bilateral pterygium was 6.7%. The prevalence increased with age (<0.001) and was highest in the coastal region (20.3%), followed by the plains (11.2%) and hilly region (9.1%). On multi-logistic regression, pterygium was positively associated with coastal location (P<0.001), illiteracy (P = 0.037), and increasing lifetime sun exposure (P<0.001). CUVAF was detected in the majority of the pterygiums.

Conclusions: Pterygium has a high prevalence in the rural Indian population and is associated with several potentially modifiable risk factors. The presence and area of CUVAF are linked to the pterygium.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Prevalence and Risk Factors of Glaucoma in Sri Lanka - A National Survey

*First Author: Lalitha **SENERATH***

Purpose: Glaucoma is a leading cause of visual impairment and blindness among the rapidly ageing population in Sri Lanka. Because paucity of evidence at the national level on prevalence and risk factors the results may help to develop and implement preventive and curative health strategies for glaucoma.

Methods: Multistage stratified cluster random sampling was used to select a nationally representative sample of 3750 persons aged above 40 years. Data were collected using a validated study instrument consisting of socio-demographic data, past medical and ocular history, and ocular examination with a slit lamp biomicroscope to ascertain the presence of glaucoma. All subjects were tested for visual acuity, slit-lamp examination, tonometry, pachymetry, and fundus photography. Glaucoma diagnosis was confirmed according to ICO guidelines as per intra-ocular pressure (IOP) 22 or more, cup-to-disc ratio 0.7 or more, and presence of signs of glaucoma optic neuropathy.

Results: The response rate was 87.9%, with a mean age of 58.4 with female representation of 57.9%. 82.7% were rural dwellers. 33.4% had prior awareness of glaucoma. Mean values are, IOP 15 mmHg, central corneal thickness 542 µm, C:D 0.5, 88% had Van Herrick grading of 3 and 4. According to the diagnostic criteria, the prevalence of glaucoma in this nationally representative sample is 5% (95% CI 3.9-5.4%). The most common secondary type is pseudo-exfoliative glaucoma. 30% had diabetic retinopathy.

Conclusions: The majority are primary open-angle glaucoma and pseudo-exfoliative glaucoma. Diabetes is a high-risk factor. High prevalence indicates the importance of the expansion of public health strategies to control the burden of visual disability due to glaucoma in Sri Lanka.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Quality of Refractive Error Care in Cambodia, Vietnam and Pakistan

*First Author: Anthea **BURNETT***
*Co-Author(s): May **HO**, Neath **KONG**, Ling **LEE**, Beatrice **VARGA***

Purpose: Fundamental to achieving universal health coverage is ensuring eye care is affordable, high-quality, and equitable. This study aimed to build the methodology and evidence to investigate 'real-world' refractive error quality and provide tangible recommendations.

Methods: A diverse cohort of 'patients'—with myopia, hyperopia, astigmatism, presbyopia, or emmetropia—underwent standardized training. These patients then visited optical services across Vietnam, Cambodia, and Pakistan, observed examinations, obtained written prescriptions, and purchased recommended spectacles, which were classified as optimal or sub-optimal based on established tolerances.

Results: This study provided valuable evidence to policymakers and service administrators about opportunities to improve quality following low levels of optimal spectacle provision in Vietnam (27%), Cambodia (35%), and Pakistan (43%). Further analysis revealed inconsistent/absent interpupillary distance measurements, as well as difficulties prescribing for patients with astigmatism. These findings have

provided opportunities to further improve training for optical dispensers and mechanics in Pakistan, helped advocate for the provision of a job code for optometry in Vietnam and encouraged the National Program for Eye Health in Cambodia to commit to regulations in the public/private vision sector, as well as adjust courses to include more clinical practice, assessment and mentoring.

Conclusions: Significant disparities in refractive error care quality persist across countries. However, leveraging tools like the Q.REC study, we can generate evidence addressing both quality and quantity gaps, ultimately moving closer to the 2030 targets. Sharing these tools is vital to ensure scalable solutions without exacerbating existing challenges.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Situation Analysis of Cataract Blindness and Cataract Surgical Rate Targets in Indonesia

*First Author: Dessy **ANDRIYANA***
*Co-Author(s): Hera Dwi **NOVITA***

Purpose: Cataract Surgical Rate (CSR) calculation data in Indonesia is still lacking. CSR is essential to lowering the prevalence of cataract blindness in Indonesia, which still affects 1.9% of adults over 50. This study determines the achievement target of CSR in each province of Indonesia. Thus, this data can be the basis for local governments to choose national and regional cataract programs.

Methods: The calculation of the total cataract blindness rate per province was based on the percentage of cataract blindness and total blindness. CSR target was calculated based on population and population growth rate. Population data were taken from the Central Statistical Agency and the percentage of cataract blindness according to the Rapid Assessment of Avoidable Blindness (RAAB) survey. The calculation of blindness, cataract blindness, and CSR targets were processed on a worksheet in Microsoft Excel.

Results: The highest cataract burden rate was found in West Java Province (298,933) and the lowest in West Sulawesi Province (1,149) out of 38 Provinces. West Java Province had the highest CSR target of about 267,099, and South Papua Province had the lowest CSR target of about 1,135 cataract operations per million population per year.

Conclusions: The highest cataract burden and CSR target were found in West Java Province. This data is used for planning and monitoring indicators included in expanded eye care indicators. That is very helpful for ophthalmologists in calculating the burden of cataracts and the target of achieving CSR. It can be used in program evaluation and advocacy steps.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1–GF)

Telemedicine Using Less-Expensive Camera Can Be Used as a Tool for Universal Eye Screening in Developing Countries. 3 Years Analysis of 4952 Preterm Babies

*First Author: Prema **SUBRAMANIAM***
*Co-Author(s): Kushal **AGRAWAL**, Parag **SHAH**, Narendran **VENKATAPATHY**, Abhishek **DAS***

Purpose: To suggest that telemedicine using less-expensive cameras could be incorporated for universal eye screening in developing countries as many coincidental non–retinopathy of prematurity (ROP) findings are detected during telescreening for ROP.

Methods: It is a retrospective analysis of data from a telescreening project using less-expensive camera (Forus 3 Nethra) in a tertiary eye care center from April 2020 to June 2023. Data of non-ROP findings and diseases detected during this time period was further analyzed in terms of demographics, disease characteristics and further management.

Results: A total of 4952 preterm babies were examined in 12636 sessions during this time period. Non-ROP findings were noted in 291 eyes of 154 babies (3.1%); of which 85 were male babies (53.7%) and 73 were female (46.2%). Posterior segment abnormalities were noted in 85.4% (135/154 babies) of which hemorrhages were most common in 65 % (103/154). Anterior segment pathologies were seen in 12 % (19/154) of which congenital cataract was the most common and required surgical intervention. Globe abnormalities were seen in 1.9 % (3/154) and Adnexal disorder in 0.6 %(1/154). Life-threatening condition like retinoblastoma was seen in 0.6% (1/154) and sight-threatening condition like endogenous endophthalmitis in 0.6% (1/154) and with early intervention infection resolved and vision salvaged.

Conclusions: Both ROP And non-ROP findings can be captured and documented using digital imaging with a wide-field less-expensive fundus camera, so training the District Early Intervention Centre (DEIC) optometrist and implementing telemedicine for universal eye screening in developing countries can prevent needless blindness in childhood.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 2 (BNDCC1-GF)

The Establishment and Evaluation of Nomogram for Prediction of Referable Diabetic Retinopathy Among Type 2 Diabetes Population in Shaanxi, China

*First Author: Yanchun **ZHANG***
*Co-Author(s): Hongli **LIU**, Dongling **NIU**, Chang **WANG**, Li **ZHANG**, Ziwei **KANG***

Purpose: To establish an accurate risk prediction model for referable diabetic retinopathy (RDR) in a large-scale population-based survey using cost-effective and easily accessible patient characteristics and clinical biomarkers.

Methods: Clinical data and test results from 1602 patients with type 2 diabetes mellitus (T2DM) in various communities in Shaanxi province, China, were collected for model development and validation. Univariate analysis and variable screening were performed using the LASSO regression, followed by constructing a nomogram using multifactor logistic regression analysis. The area under the curve (AUC), calibration curve, and decision curve analysis were used to assess discriminative ability, calibration, and clinical utility, respectively. The dataset was divided into training and validation sets (80%:20%) and both were evaluated.

Results: Ten candidate variables, including urinary microalbumin, hematocrit, age, duration of DM, fasting blood glucose (FBG), HbA1c, urinary protein, urinary glucose, urea nitrogen, and glomerular filtration rate, were selected for constructing the nomogram. The AUCs were 0.823 (95% CI, 0.801-0.846) and 0.787 (95% CI, 0.730-0.844) in the training and validation sets, respectively, indicating satisfactory predictive performance. The decision curve analysis confirmed the clinical utility of the nomogram.

Conclusions: We developed and validated a nomogram capable of accurately predicting personalized RDR risk in T2DM patients in Shaanxi, China. This nomogram facilitates risk stratification, screening, and management of diabetic retinopathy, ultimately reducing the risk of vision loss and blindness.

Orbital and Oculoplastic Surgery

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1-GF)

A Case Report of a Solitary Fibrous Tumor in the Fascia of the Lateral Rectus Muscle

*First Author: Yuki **KAMIYA***
*Co-Author(s): Miwa **AIKAWA**, Ryo **KIKUCHI**, Tomoyuki **KASHIMA**, Masashi **MIMURA***

Purpose: To report a rare case of a solitary fibrous tumor (SFT) in the fascia of the lateral rectus muscle.

Methods: This is a case report.

Results: A 46-year-old woman was referred to our hospital with a complaint of a left orbital mass. She first visited another hospital with left eye pain two months before presenting to us. Magnetic resonance imaging (MRI) of the orbits with contrast revealed a hypointense-enhancing mass within the left lateral rectus muscle on T1-weighted images. On T2-weighted MRI images, the mass exhibited a homogenous hyperintensity. She had normal visual acuity and intraocular pressure in both eyes. The first examination did not reveal left eye proptosis by Hertel exophthalmometry but did reveal a limitation of the left eye abduction. Under general anesthesia, the tumor was entirely removed through an incision along the muscle fibers. The tumor was enclosed within a smooth-surfaced capsule in the fascia and measured 19x15 mm. Microscopically, it consisted of the proliferation of spindle cells with round to oval nuclei irregularly arranged in a focal scattered pattern. Immunohistochemistry (IHC) testing revealed positive results for CD34, vimentin, and STAT6, while S-100, CD31, and desmin were negative. These findings led to a definitive diagnosis of SFT. Notably, post-surgery diplopia did not worsen.

Conclusions: The total tumor removal was accomplished with minimal damage to the muscle fibers and without exacerbating diplopia. To the best of our knowledge, this is the first case of an SFT occurring in the fascia of the lateral rectus muscle.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1-GF)

Anatomical and Ocular Surface Outcomes of Cicatricial Entropion Repair Using Oral Mucosal Graft in Stevens-Johnson Syndrome

*First Author: Thanchanit **SAWETRATANASTIEN***
*Co-Author(s): Kiatthida **HOKIERTI**, Pimkwan **JARU-AMPORNPAN**, Siripong **SIRAMON**, Pinnita **TANTHUVANIT**, Kornkanok **SAKSRITAWEE***

Purpose: To evaluate both anatomical and ocular surface outcomes following cicatricial entropion repair utilizing oral mucosal grafts in patients with Stevens-Johnson Syndrome (SJS).

Methods: A total of 30 eyelids from 17 SJS patients who underwent cicatricial margin entropion repair with oral mucosal grafts and had a minimum of 6 months of postoperative follow-up were included in the study. Retrospective analysis of clinical data was performed. Eyelid surgical success was defined as either complete or partial anatomical resolution of entropion. Improvement in ocular surface conditions was assessed based on a reduction in the dry eye-related quality-of-life score (DEQs) in conjunction with at least 1 or more improvement of the corneal findings.

Results: Complete anatomical success was achieved in 50.0% of cases, while partial success was observed in 43.3% of eyelids. Improvement in ocular surface conditions was documented in 83.3% of cases. Post-surgery, significant improvement in the grading of superficial punctate keratopathy and conjunctival inflammation (p-values 0.008 and 0.030, respectively) were found. Six eyelids (20.0%) required additional lid surgery due to disease recurrence or progression, with an average time to recurrence of 1.2 years.

Conclusions: Managing cicatricial entropion resulting from SJS presents considerable challenges due to its progressive and devastating sequelae, coupled with the potential for recurrence. Although surgical intervention may yield a 50.0% chance of achieving complete resolution of margin entropion, significant improvement in ocular surface conditions is observed in the majority of cases.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1-GF)

Change in Blood Vessels and Thickness of Retina and Choroid in Dysthyroid Optic Neuropathy After Orbital Decompression As Measured by Optical Coherence Tomography Angiography

*First Author: Apisit **KHANTHIK***
*Co-Author(s): Sunee **CHANSANGPETCH**, Pear **PONGSACHAREONNONT**, Vannakorn **PRUKSAKORN**, Preamjit **SAONANON***

Purpose: To evaluate the effect of the orbital decompression on peripapillary and macular vasculature using optical coherence tomography (OCT) angiography, retinal nerve fiber layer (RNFL) thickness and choroidal thickness of dysthyroid optic neuropathy (DON) patients.

Methods: This is a prospective case series of 12 DON eyes in 8 patients who received the orbital decompression surgery. Each patient was examined by OCT angiography (Cirrus HD-OCT with AngioplexTM) before and after the surgery. The measured parameters included peripapillary blood perfusion density (pPD), macular superficial plexus perfusion density (mPD), foveal avascular zone, peripapillary RNFL thickness, and choroidal thickness achieved from enhanced depth imaging protocol. These parameters measured at 1 day, 1 week, and 1 month after the surgery were compared to the preoperative measurement using linear mixed model analysis.

Results: The mean age was 57.1±14.5 years. At 1 month after the surgery, there were significant increments of peripapillary perfusion density including global pPD ($p = 0.024$), superior pPD ($p = 0.029$), and inferior pPD ($p = 0.027$). All RNFL thickness parameters seem reduced, even though only the nasal pPD showed statistical significance ($p = 0.003$). On the first postoperative day, the mPD at the central circle and choroidal thickness showed a significant reduction ($p = 0.004$, $p = 0.001$, respectively), while the later visits had a nonsignificant change from the baseline.

Conclusions: The surgical orbital decompression had an effect on chorio-retinal vasculature by increasing the peripapillary perfusion density at 1 month and transient reduction in choroidal thickness and central macular perfusion density.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

Clinical Efficacy of Orbital Computed Tomographic Assessment in Determination of the Optimal Length of the Jones Tube in Endoscopic Conjunctivodacryocystorhinostomy

*First Author: Eun Hyang **CHA***
*Co-Author(s): Se Hyun **BAEK**, Lee **HWA**, Hyungyu **LEE***

Purpose: To investigate whether preoperative orbital computed tomography may be useful for predicting the optimal length of the Jones tube and determine the predictive parameters of orbital CT that are associated with the optimal length of Jones tubes in Endoscopic CDCR.

Methods: The medical records of 36 patients (42 eyes) who underwent Endoscopic CDCR with Jones tube insertion and preoperative orbital CT from March 2018 to April 2022 were retrospectively evaluated. Analyzing the orbital CT films using the Picture Archiving and Communication System (PACS), the distance from the lacrimal fossa to the nasal septum was measured in coronal and axial views.

Results: In the successful group, the length of the inserted Jones tube was significantly correlated with the length difference between the inserted tube and the diagonal length measured in the axial view ($r = -0.485$, $p = 0.030$). Equivalency of the length verified in the operating room and length measured on orbital CT were demonstrated as follows: diagonal length measured in axial view (Da), horizontal length between the medial eyeball to the nasal septum in coronal view (Hc), the estimated length (Ej) in axial view with $\alpha = \tan30°$ and $\alpha = \tan25°$.

Conclusions: The optimal length of the Jones tube is best predicted using the length of the lacrimal fossa to the nasal septum in coronal and axial views. Preoperative orbital CT assessments can be noninvasive and useful in predicting adequate lengths of the Jones tube.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

Clinical Results of Congenital Microphthalmos

*First Author: Phil Kyu **LEE***
*Co-Author(s): Wonkyung **CHO**, Jiyoung **LEE**, Suk-woo **YANG***

Purpose: To report long-term clinical outcomes of non-surgical treatments in congenital microphthalmos patients.

Methods: We retrospectively reviewed the medical records of 20 patients, 21 eyes, who have been diagnosed with congenital microphthalmos from 2008 to 2022 at Seoul St. Mary's Hospital, Korea.

Results: A total of 20 patients were included. The average age at the time of diagnosis was 4 months. Among the observed ophthalmic anomalies, there were 2 congenital cataract, 1 posterior embryotoxon, 1 corneo-iris strand, 4 iris coloboma, 5 corneal opacity, 1 Peter's anomaly, and 1 retrobulbar cyst. Patients were accompanied by systemic abnormalities, including lateral ventricle atrophy, corpus callosum atrophy, patent ductus arteriosus, atrial septal defect, and developmental language disorder. Genetic abnormalities were detected, including Anti SS-A/Ro Ab positivity, positive Anti-nuclear antibody at a titer of 1:100, and PAX6 mutation identified through next-generation sequencing. There was no specific history of the patients' families or during pregnancy. The average follow-up period was 5.94 years (1 month~18 years). The average corneal diameter was 6mm, and the average axial length was 17.44mm. The average age of the first artificial eye attempt was 5.96 years (7 months~19 years old). The average interval of artificial eye replacement was 22 months (4 months~5.75 years).

Conclusions: We report on a non-surgical method of gradually expanding the artificial eye in 20 patients with congenital microphthalmos. They replaced the prosthesis at regular intervals, progressively expanding size until an appropriately sized implant could be inserted. Through this approach, the patients achieved aesthetically and emotionally favorable outcomes.
Keywords: Artificial eye, Congenital microphthalmos, Long term follow-up, Ocular prosthetic, non-surgical treatment.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

Dacryocystorhinostomy Ostium Scoring (DOS) in Post-operative Evaluation of Anatomical Outcomes After Primary Endoscopic Dacryocystorhinostomy Using Cold-Steel Technique

*First Author: Hà Huy **THIÊN THANH***
*Co-Author(s): Anh **NGUYEN**, Pham **THI KHANH VAN***

Purpose: To describe characteristics of the ostium using the DOS system and explore the relationship between the parameters and anatomical outcomes.

Methods: A prospective study on 84 cases after primary endoscopic dacryocystorhinostomy performed by one oculoplastic surgeon from 2018 to 2023. The cold-steel technique was used to avoid trauma from heat, and a silicone stent was placed at the end of the procedure. All the cases were re-assessed after 3

months, 6 months and 12 months. In all the follow-ups, the lacrimal patency was evaluated upon irrigation, and the ostia were assessed using a DOS system including parameters in 10 categories: ostial location, size, shape, internal common opening mobility, stent mobility, adhesion, granuloma, functional endoscopic dye test, fibrotic scarring and other anomalies. The stents were removed after 6 months.

Results: 78.6% of cases had the ostium located supero - anteriorly to the axilla of the middle turbinate. 75.1% of the ostia were circular or oval in shape with a shallow or deep base. Most of the cases had a medium or small ostium (92.9%). Regarding complications, 11.9% had adhesions and 2.4% had granulomas. The anatomical success rate after 1 year was 86.9%. Ostial shape, size, fibrotic scarring, internal common opening and stent mobility, adhesion within ostium, positive FEDT and total score were factors associated with anatomical success.

Conclusions: DOS is a useful tool to quantify outcomes after dacryocystorhinostomy. The relating factors are round ostial shape, larger size, less scarring, good internal common opening and stent mobility, no adhesion within ostium, positive FEDT and total score.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

Diagnostic Challenges in Orbital Apex Fungal Infection Without Significant Sinonasal Involvement

*First Author: Dave Michael **OYAS***
*Co-Author(s): Pimkwan **JARU-AMPORNPAN**, Angkoon **LUANGARAM**, Kanograt **PORNPANICH**, Chottiwat **TANSIRISITHIKUL***

Purpose: To investigate clinical characteristics, diagnostic challenges, and treatment outcomes of invasive fungal infections in the orbital apex, particularly in the cases lacking apparent sinus infections.

Methods: We analyzed 3 cases of orbital apex fungal infection without significant sinonasal involvement who had confirmed tissue biopsy/culture at a tertiary care center in Bangkok, Thailand.

Results: All 3 cases presented with vision impairment and limited eye movement, along with relative afferent pupillary defect, ptosis, and proptosis. MRI scans revealed soft tissue abnormalities in the orbital apex and adjacent cavernous sinus. Initially, biopsies from the adjacent sphenoid sinuses by ENT yielded chronic inflammation without any evidence of fungal infection, creating a diagnostic challenge. After treating the inflammation without clinical improvement, a subsequent endoscopic biopsy of the orbital apex and cavernous sinus carried out by a multidisciplinary skull-base team unveiled the presence of an invasive fungal infection. The patients received systemic antifungal treatment and 2/3 underwent orbital apex and cavernous sinus resection, resulting in improved overall condition and controlled infection. Unfortunately, the vision loss persisted.

Conclusions: These cases underscore the potential for infections within the orbital apex, even without significant sinus involvement. Adequate tissue biopsy is pivotal in confirming diagnosis and preventing life-threatening outcomes. If clinical suspicion persists despite a negative sinus biopsy, consideration should be given to biopsies of the orbital apex and the cavernous sinus. The absence of sinus findings emphasizes the intricate nature of these orbital infections, necessitating heightened clinical awareness and vigilant management.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

Effect of Unilateral Optic Nerve Sheath Fenestration in Improving Headache in Patients of Idiopathic Intracranial Hypertension

*First Author: Sidrah **LATIF***

Purpose: The purpose of this study was to collect data from patients with idiopathic intracranial hypertension using a standard headache impact test tool to measure the effect of fenestration on headaches.

Methods: Materials and methods: Prospective cohort conducted from 09/2017 to 09/2019. Patients diagnosed as IIH following the modified Dandy criteria with transient visual obscurations on maximal medical therapy (oral tablet acetazolamide 250 mg QID) scheduled to undergo optic nerve sheath fenestration by the ophthalmology department were included in this study. Surgery was performed using the medial transconjunctival approach in the worse eye. Patients were followed up one and six months later. Patient scores using HIT-6 were calculated. HIT-6 score ≥ 56 was taken as a significant headache. A post-operative HIT-6 score of ≤55 with tapered medical treatment was considered an improvement in headache. A ≥6 point improvement in score was taken as a meaningful change.

Results: Six patients (66.67%) reported improvement in headache (HIT-6 score ≤ 55) and successful tapering of medical therapy as well. Meaningful change in HIT-6 score was seen in 100% (9 patients) at first-month follow-up. The mean pre-operative HIT-6 score was 72.00±4.39 (range, 66-78). At the first month follow-up, the mean HIT-6 score was 46.78±9.85 (range, 36-62), (p-value <0.05). At six month follow-up, 9 patients (100%) had improvement in headache (HIT-6 score ≤

55) with a mean HIT-6 score of 37.78±2.11 (range, 36-42), (p-value <0.05).

Conclusions: Optic nerve sheath fenestration improves the headache in patients with idiopathic intracranial hypertension in addition to visual improvement.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

Efficacy and Safety of Weekly EUGOGO Protocol vs. 3 Weekly Low Dose Intravenous Methylprednisolone in Thyroid Eye Disease: A Prospective Randomized Controlled Trial Study

*First Author: Ankita **AISHWARYA***
*Co-Author(s): Rachna **AGARWAL***

Purpose: This study aimed to compare the efficacy and safety of two corticosteroid treatment regimens for thyroid eye disease (TED), the weekly EUGOGO protocol (total 4.5g to 7.5g) and 3 weekly low dose intravenous methylprednisolone (IVMP) (total 4g), with or without immunomodulation.

Methods: From January 2018 to July 2022, a prospective randomized cohort study was conducted on naïve patients with active, moderately to severe TED undergoing the two IVMP protocols. Primary analysis was done at the end of the two cycles, and follow-ups were done at 6, 9, and 12 months. Primary Outcome measures were reduction in clinical activity scoring (CAS), proptosis reduction, visual acuity improvement, and diplopia resolution in primary and downgaze. Secondary outcome measures were compliance with treatment and complications.

Results: There were 146 eyes of 88 patients (n=44 in each group) with a median age of 43.1 years, and clinically both groups were comparable. Improvement in CAS score, proptosis reduction, and visual acuity was comparable in both groups (p<0.001, p=0.13, and p=0.21, respectively) while the 3 weekly low-dose IVMP group exhibited more prominent improvement in diplopia and eyelid swelling (p=0.05 vs p=0.45). Compliance was higher with 3 weekly cycles (96% vs. 63%). Corticosteroid-related side effects like weight gain and mood disturbances were higher in the weekly EUGOGO group (48%) than in the 3 weekly low-dose IVMP group (13%).

Conclusions: 3 weekly low-dose IVMP is a promising therapy in thyroid eye disease with better clinical outcomes, improved compliance, and fewer side effects.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

Epithelial-Myoepithelial Carcinoma of the Lacrimal Gland - Case Report and Review of Literature

*First Author: Mara Augustine **GALANG***
*Co-Author(s): Jose **CARNATE JR**., Gary **MERCADO**, Armida **SULLER-PANSACOLA***

Purpose: To describe the clinicopathologic features and outcome of a patient with epithelial-myoepithelial carcinoma of the lacrimal gland who underwent modified lateral orbitotomy with en toto removal of the lesion and adjuvant radiotherapy.

Methods: This is a descriptive case report.

Results: A 31-year-old Filipino male seafarer presented with a 2-month history of an enlarging left superotemporal orbital mass and inferonasal displacement of the globe. Magnetic resonance imaging revealed a superotemporal extraconal mass within the lacrimal sac fossa with evidence of osseous infiltration of the superolateral orbital rim. Modified lateral orbitotomy was performed with en toto removal of the lesion and the clinically infiltrated adjacent lateral bony margin. Histopathologic diagnosis of epithelial-myoepithelial carcinoma of the lacrimal gland was made based on the classic and distinct biphasic morphology and was confirmed with immunohistochemistry studies (cytokeratin-7, S-100, and p63). Systemic surveillance using positron emission tomography and computed tomography scan with contrast revealed no evidence of regional or distant metastasis. Adjuvant radiotherapy of the orbital area was performed for increased local control. Twelve months postoperatively, the patient showed no evidence of tumor recurrence.

Conclusions: Epithelial-myoepithelial carcinoma of the lacrimal gland is a rare condition, and this is the first documented case from the Philippines. Accurate diagnosis is necessary for appropriate treatment. It should be included in the differential diagnosis of infiltrative lesions in the lacrimal gland fossa.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1-GF)

Orbital Compartment Syndrome (OCS) Following Transcutaneous Retrobulbar Amphotericin B (TRAMB) – Factors Affecting Occurrence and Visual Implications in a Missed Diagnosis

*First Author: Tarjani **DAVE***
*Co-Author(s): Amruthavalli **KOLLAPARTHI***

Purpose: To report the occurrence of OCS in a subset of rhino-orbital-cerebral-mucormycosis (ROCM) that underwent TRAMB and elicit risk factors for the development of OCS.

Methods: A retrospective observational study included patients with proven ROCM treated with TRAMB. The incidence of developing OCS and the demographic and clinical features of the subset that developed and that did not develop OCS are compared.

Results: Forty-six orbits of 44 patients who underwent TRAMB for ROCM were included. Of the 44 cases, 15 (32.6%) developed compartment syndrome (OCS) and 31 (67.39%) did not (NOCS). The interval between TRAMB injection and the development of OCS was 4.46±6.68 days (median 3). The mean number of injections preceding the development of OCS was 4.26±2.12 injections (median 5). Forty percent in the OCS group lost vision during treatment as compared to the NOCS group (p=0.005, 95% C.I. 8.84% to 58.24%). On both bivariate and multivariate analysis a sinus debridement without a medial orbital wall decompression had an odds of 22.16 (p=0.004, 95% C.I. 2.57 to 190.99) in favor of developing an OCS during follow-up. The relative risk of OCS developing was 10.76 (p=0.01, 95% C.I. 1.54 to 75.28) when the medial wall was not decompressed along with sinus debridement. For every two patients who are treated with TRAMB but do not undergo a medial orbital wall decompression, 1 patient is at risk of OCS.

Conclusions: The risk of orbital compartment syndrome and vision loss from the same can be reduced by performing simultaneous medial orbital wall decompression.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1-GF)

Orbital Decompression With a Novel Navigation Surgical Robot

*First Author: Xianqun **FAN***
*Co-Author(s): Yinwei **LI**, Yanping **LIN**, Yi **WANG**, Huifang **ZHOU***

Purpose: To evaluate the clinical value of applying a novel navigation surgical robot in orbital decompression.

Methods: Nine patients with stable thyroid eye disease were prospectively enrolled to receive monocular orbital decompression in which osteotomy of the lateral wall was performed by a navigation surgical robot. Intraoperative blood loss, operative time, and complications were recorded to assess surgical safety. The distance and angle deviations between the actual osteotomy route and the pre-operative plan were analyzed to reflect the surgical accuracy. For every patient, the exophthalmos and lid aperture of the operated eyes were measured both preoperatively and 1 month postoperatively to assess the surgical effect. Five of the nine patients received conventional orbital decompression in the other eye. Surgical safety and accuracy, as well as reduction in exophthalmos and lid aperture, were self-paired compared between robotic and conventional surgery in these 5 patients.

Results: All nine robotic surgeries were successfully completed without complications. Comparative analysis revealed that no significant differences between robotic and conventional surgeries were observed in terms of blood loss, total operative time, complications, or reduction in exophthalmos and lid aperture. However, the average accuracy of orbital lateral wall osteotomy in robotic surgery was 0.97±0.44 mm and 3.98±1.57°, significantly better than those of conventional orbital decompression (2.37±0.97 mm, P=0.0382; 9.21±3.55°, P=0.0096) in the five binocularly-operated patients.

Conclusions: Application of the novel navigation surgery robot in orbital decompression can increase the surgical accuracy of orbital lateral wall osteotomy without significantly affecting surgical safety or efficacy.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

Tangled: A Case Report on Periorbital Arteriovenous Malformation Treated With Triamcinolone Injection and Excision

*First Author: Gillian Louise **SAQUIAN***
*Co-Author(s): Marco **TUMALAD**, Sandra **WORAK***

Purpose: Periorbital arteriovenous malformations are rare, high-flow, developmental hamartomas that result from vascular dysgenesis. It usually presents at birth and becomes evident during childhood. Since these lesions are highly vascularized and recurrence is very common, treatment modalities should be directed towards the prevention of ischemia of associated structures, minimize blood loss, and prevent recurrence.

Methods: This is a case of a forty-five-year-old female who presented with vascular masses on both her left upper and lower lids. The masses started to appear when the patient was eighteen years old. The mass gradually increased in size up until it partly obscured the visual axis. Several attempts to excise the mass were made, however, it recurred. Due to the recurrent nature of the mass, the patient underwent brain imaging and angiography, revealing arteriovenous malformation on both the upper and lower lids.

Results: The patient was then referred to an interventional radiologist, and partial endovascular embolization of the vessels was done. A decrease in the vascularity of the mass was noted, but excision was still warranted. Prior to excision, intralesional Triamcinolone was injected to aid fibrosis and to ensure minimal blood loss. Then, the patient underwent excision of the arteriovenous malformation of the left upper and lower lids. On subsequent follow-ups, there was marked improved cosmesis, and additional intralesional Triamcinolone was injected to prevent recurrence.

Conclusions: A combination of embolization and excision of arteriovenous malformations carry the highest success rates. Care must be done to prevent embolization of the major arteries. Following excision, regular follow-up is necessary for monitoring.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Uluwatu 6 (BNDCC1–GF)

The Differences in Conjunctival Impression Cytology Profile, Interleukin-6 Levels in Tears, and Stages of Dry Eye Between Anophthalmic Socket and Contralateral Healthy Eye

*First Author: Nur Aulia **AMIR***

Purpose: Anophthalmic socket eye is related to changes in the conjunctival epithelium and inflammatory processes in the anophthalmic socket eye. This study aims to determine differences in the degree of conjunctival impression cytology, tear pro-inflammatory cytokine interleukin-6 (IL-6), and degree of a dry eye between the anophthalmic socket eye and the contralateral healthy eye.

Methods: This research is a cross-sectional study. Seventeen patients with anophthalmic socket eyes underwent conjunctival impression cytology examination, assessed tear levels of the pro-inflammatory cytokine IL-6, Schirmer test examination, and filled in the Dry Eye Questioner-5 (DEQ-5). The examination was performed simultaneously on the anophthalmic socket eye and the contralateral healthy eye.

Results: This study showed a significant difference in conjunctival impression cytokine (p= 0.004) and a significant difference in tear pro-inflammatory cytokine IL-6 levels (p= 0.014). There was no significant difference (p=0.319) in the results of the Schirmer 1 test, but there was a significant difference in the Schirmer 2 test (p=0.0047). There is a significant difference in the value of the DEQ-5 questionnaire (p = 0.003).

Conclusions: There were significant differences in conjunctival impression cytology, tear pro-inflammatory cytokine IL-6, and degree of the dry eye between the anophthalmic socket eye and the contralateral healthy eye.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1–GF)

A Decade of Experience With Coleman Micro-Fat Graft for Orbital Volume Augmentation in Post-enucleation and Evisceration Sockets

*First Author: Christine **PUTRI***
*Co-Author(s): Zanna **CURRIE***

Purpose: Coleman micro-fat graft is a technique to restore volume-deficient socket in post-enucleation or evisceration socket syndrome (PESS). The purpose of this study is to evaluate the long-term results of this

technique, including in cases combined with eyelid procedures or without orbital implants.

Methods: Retrospective review of clinical and photographic records of all patients who underwent Coleman micro-fat graft procedure for PESS from 2012-2022 in a tertiary referral centre in the United Kingdom.

Results: Thirty-two patients were identified with an average follow-up of 70 months (9 - 127 months). An average volume of 3.3mL (1 - 7mL) of micro-fats was injected into the retrobulbar space and upper sulcus. A volume of more than 5mL was required in three patients with no orbital implants as an alternative to secondary orbital implantation. Twenty-eight patients (88%) reported subjectively better orbital fill and cosmetic appearance following the Coleman procedure, 16 (50%) of whom had concurrent lid surgeries. Five patients (16%) required re-do Coleman procedure and subsequently reported good outcome. All patients with lack of orbital implant (n=6) and larger injected volumes had good results. Eleven patients (34%) only required a single surgery to correct all elements of PESS. Two patients had orbital fat prolapse requiring debulking surgery.

Conclusions: This is the largest case series of Coleman micro-fat graft for PESS. Coleman micro-fat graft is an effective, long-lasting and safe technique for orbital volume enhancement in PESS. This technique can safely be considered in patients without orbital implants and be combined with lid procedures.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1–GF)

A Phase I Dose Escalation Study to Evaluate the Safety and Tolerability of Single Intravenous Infusion of IBI311 in Healthy Volunteers

*First Author: Huifang **ZHOU***
*Co-Author(s): Xianqun **FAN**, Lei **QIAN**, Yongfang **YUAN***

Purpose: IBI311 is a novel monoclonal antibody in solution targeting insulin-like growth factor 1 receptor for thyroid eye disease (TED) treatment. This phase I study aimed to evaluate the safety, tolerability, pharmacokinetics, and immunogenicity of IBI311 in healthy volunteers.

Methods: This was a randomized, double-masked, placebo-controlled, single-dose escalation Phase I study. Twenty-eight healthy volunteers were randomized in a 3:1 ratio to receive a single intravenous infusion of 3, 10, 20, or 30 mg/kg IBI311 or placebo (n=4, 8, 8, and 8, respectively). Pharmacokinetic analysis was performed using non-compartmental analysis.

Results: Nineteen participants (19/21, 90.5%) receiving IBI311 treatment experienced treatment-emergent adverse events (TEAE) of Grade 1 or 2. The most common TEAEs were sinus bradycardia (33.3%), elevated uric acid (28.6%) and urine erythrocyte positive (23.8%). No serious adverse event was reported. For the IBI311 dosage groups (3, 10, 20, or 30 mg/kg), the mean (coefficient of variation, CV%) maximum concentrations were 56 (7.6%), 209.8 (20.7%), 488.7 (8.3%), and 671.7 (15.2%) μg/mL, respectively; the mean (CV%) area under the plasma concentration-time curve were 10,330.5 (15.9%), 49,771.1 (23.1%), 99,140.4 (7.28%), and 144,363.5 (16%) h·μg/mL, respectively; the mean (CV%) clearance were 0.0174 (28.9%), 0.012 (19%), 0.0126 (12.8%), and 0.0128 (21.9%) L/h, respectively; the mean (CV%) half-life were 8.95 (20.2%), 12.0 (16.1%), 13.7 (12.9%), and 14.4 (34.1%) days, respectively. None of the participants receiving IBI311 treatment tested positive for anti-drug antibodies.

Conclusions: IBI311 was safe and well tolerated. The pharmacokinetic profiles support every three weeks of administration of a selected dose of IBI311 in TED patients.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Age-Specific and Sex-Specific Volume of the Orbit and Globe in the Healthy Pediatric Population: A Cross-Sectional Study

*First Author: Honeylen Maryl **TEO***

Purpose: This study aims to determine 4 parameters (bony orbit volume [BOV], soft tissue orbit volume [STV], globe volume [GV], soft tissue minus globe volume [STMGV]), the correlation of age with each parameter, and BOV versus the 3 other parameters in the pediatric population.

Methods: This is a cross-sectional study using cranial and/or orbital CT images from 2 hospitals (January 2018-December 2020) of 1-day-old to 18-year-old patients. Images were manually traced in coronal/axial/sagittal views to automatically generate 3D reconstructions. The patients were stratified into 5 age groups and 2 sexes. The mean (standard deviation) of each parameter was computed via SPSS. The correlation coefficient [R] determined the correlation between age and the 4 parameters, and BOV and the 3 other parameters.

Results: The overall population (n=372 orbits, 225 boys, 147 girls) had BOV 16.68cm3 (3.87), STV 20.50cm3 (4.87), GV 6.47cm3 (1.46), and STMGV 14.07cm3 (4.19). Age and GV [0.458] have a fairly positive correlation; Age and BOV [0.713], STV [0.769], or STMGV [0.735] have a moderately positive correlation. The >12-18 years age subgroup and BOV [0.061], STV [0.070], GV

[-0.174], or STMGV [0.116] have poor to no correlation. BOV was very strongly positively correlated to STV [0.954] or STMGV [0.902], but only fairly correlated with GV [0.565].

Conclusions: Age is positively correlated with each of the 4 parameters. Beyond 12 years, the growth of BOV and STV slows. BOV is positively correlated with each of the 3 other parameters. However, the bony orbit growth seems to be more associated with STV rather than GV.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Agreement Between Agger Nasi and Lacrimal Sac: Radiological Evaluation Compared to Intraoperative Findings in Primary Acquired Nasolacrimal Duct Obstruction Patients That Underwent Endoscopic Dacryocystorhinostomy

*First Author: Evan **REGAR***
*Co-Author(s): Yunia **IRAWATI**, Levina Chandra **KHOE**, Jacub **PANDELAKI**, Retno S **WARDANI***

Purpose: Proper access to the lacrimal sac is crucial in endoscopic DCR procedures in nasolacrimal duct obstruction. This may be obstructed by the presence of the agger nasi, which may complicate the surgery and increase the failure rate. This study was conducted to determine the anatomical variations of the agger nasi in relation to the lacrimal sac using a CT scan and comparing it with its opening.

Methods: This is a cross-sectional study conducted on 13 subjects diagnosed with primary acquired nasolacrimal duct obstruction. The subjects underwent CT to assess the presence of the agger nasi and its apposition to the lacrimal sac. EndoDCR was performed, and the operator assessed whether the agger nasi needed to be opened or not to access the lacrimal sac. Statistical analysis using Cohen's Kappa was conducted to evaluate the agreement between the two findings.

Results: Out of the 13 subjects, 12 out of 13 were female. Agger nasi was found in 12 out of 13 subjects. In radiological examination, 8 out of 12 subjects showed apposition of the lacrimal sac with the agger nasi. Intraoperatively, the agger nasi was opened in 9 subjects. There was substantial agreement with a κ = .800; p = .005. One patient did not show apposition, however, agger nasi was opened due to difficulty in accessing the lacrimal sac caused by the angulation of the frontal process of the maxilla.

Conclusions: There is substantial agreement between radiological examination and intraoperative findings regarding the opening of the agger nasi.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1–GF)

Analysis of Korean Upper Eyelid Contour Using Bezier Curves

*First Author: Da Young **SHIN***
*Co-Author(s): Suk-woo **YANG***

Purpose: To define and quantify the upper eyelid contour of normal Korean adults using the software program adapting Bézier curves.

Methods: Thirty eyes of 80 healthy subjects were included in this study. The Bézier curve tool of the Image J software was used to extract the upper eyelid contours, from the medial palpebral commissure to the lateral canthus. The values of the x,y coordinates of the line representing the contour were saved and transferred to the Matlab software for graphical analysis (MathWorks, Natick, Massachusetts, USA).

Results: The palpebral fissure length is 28.80 ± 5.59 in females and 28.18 ± 0.06 in males. The marginal reflex distance 4.55 ± 0.78 in females and 3.55 ± 0.95 in males. The mean contour peak height was 4.75±0.75 mm in females and 3.65 ± 0.94 in males. The lateral end point is located higher than the medial. The angle of the line connecting the medial canthal end to the lateral canthal end was 7.57 ± .2.87° in males and 10.58 ± 3.07° in females.

Conclusions: Bézier curves can easily measure the upper lid contour with just one single measurement. The main feature of the Korean eyelid contour is that the medial endpoint of the line (or curve) starts from the palpebral commissure, not from the upper lacrimal punctum, as in Caucasians. And the lateral end point is located higher than the medial.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Bird's Eye-View of 27 Years of Orbital Lesions in a Tertiary Care Hospital in Pakistan

*First Author: Asad **KHAN***
*Co-Author(s): Sidrah **LATIF***

Purpose: The purpose of this descriptive paper is to overview the total number of orbital lesions handled at a tertiary care hospital in Pakistan over a period of 27 years.

Methods: A total of 2651 patients with orbital lesions were received in a tertiary care hospital and managed. Among them, 2068 cases were included in the analysis, as 583 left follow-up against medical advice. Orbital lesions were divided into 4 types - Primary originating from the tissues of the orbit including eyeball; Secondary orbital lesions arising from paranasal

sinuses, eyelids, cranial cavity and naso-pharynx; Haematopoeitic reticuloendothelial system lesions and Metastatic.

Results: 2068 cases of orbital lesions were treated at Mayo Hospital Lahore, Pakistan from 1996 to 2022 (27 years). 60.9 % were in adults and 39.1 % were in children. 65.66 % were neoplastic and 34.33 % non-neoplastic lesions. Amongst neoplastics, 29.8 % were benign, and 70.2 % were malignant. Primary was 81.04 %, Secondary was 14.50 %, Haemaopoeitic reticuloendothelial system lesions were 4.06 %, and Metastatic 0.38 %. Amongst Primary 28.75 % were Ocular, 22.07 % were inflammatory, 14.73 % were cystic, 09.84 % were Lacrimal gland lesions, 08.65 % were Vascular, 04.11 % were Optic Nerve Lesions, 03.40 % were nervous tissue related. Amongst Secondary Orbital Lesions, 65.66 % were from eyelids, 33.0 % were from Paranasal Sinuses, 1.0 % from cranial cavity, and 0.33 % from Nasopharynx. Haematopoeitic reticuloendothelial lesions were mainly Lymphomas/ Leukemias 79.76 %, Angio-lymphoid hyperplasia 5.96 % amongst others.

Conclusions: This is the biggest descriptive series of orbital lesions catered to in a tertiary care setup.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Botox; Management of Upper Eyelid Ptosis

*First Author: Bassem **MORSHED***

Purpose: A temporary alternative to surgery in cases of mild ptosis, refusing surgery, or not eligible for surgery is Botox injection to the upper eyelid. It provides a wider spectrum of cases to have their eyelid ptosis corrected.

Methods: A series of 17 cases with mild to moderate degree ptosis were injected with Botox in the pretarsal orbicularis muscle, 2 cases of which already had surgery elsewhere and were not satisfied with the results. 2 - 3 units of Botox are injected per eyelid. Follow-up is after 2 weeks to assess the level of the eyelid and decide if additional injection is needed or not. The procedure is done as an outpatient procedure under topical anesthesia. Clinical, photographic, and patients' satisfaction were all documented.

Results: Twelve cases showed satisfactory improvement from the 1st session without any further injections. Three cases needed another injection after 2 weeks and showed satisfactory improvement without any further injections. Two cases showed improvement but were not satisfactory enough to the patient. Results lasted for an average of 9 - 15 months without any need to repeat the procedure again. No side effects were detected in any of the 17 cases. 4 cases stated some foreign body sensation or discomfort during the first week.

Conclusions: Botox injection to treat mild ptosis seems like a safe, reliable and effective procedure. It carries minimal side effects, if any. Results relatively last for a good period of time.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Comparative Analysis of the Effect of Total Thyroidectomy on Serum Antibody Levels of Patients With Graves' Disease With and Without Thyroid Eye Disease

*First Author: Kate Angelli **LUCERO***
*Co-Author(s): Ethel **ESTANISLAO**, Yoon-duck **KIM**, Kyung In **WOO***

Purpose: To compare the effect of total thyroidectomy on the serum antibody levels of patients with Graves' Disease with or without thyroid eye disease (TED).

Methods: Retrospective chart review of patients who underwent total thyroidectomy for Graves' disease (GD) at a single center from 2015 to 2022. Patients were grouped according to those with TED and without TED. TSH receptor antibody was measured using a second-generation assay (TBII), and recorded preoperatively and at intervals within a 36-month follow-up period. Ophthalmologic parameters (severity, CAS, diplopia score, exophthalmos) were collected from the TED group.

Results: Sixty-nine patients were enrolled. There were 42 patients in the group without TED and 27 patients with TED, with an average age of 39 years and 42.4 years, and median time to surgery from GD diagnosis of 92 months and 46.1 months (p=.126), respectively. The majority were female (85.7%) and had antithyroid drug therapy before surgery (97.1%). TBII significantly decreased postoperatively in both groups (p<.001); however, no significant differences were noted between groups (p=0.054). TED developed after a median time of 15.9 months from GD diagnosis, with most graded as mild (59%). There was no significant association between TED severity and TBII levels preoperatively (p=.292) and differences in median TBII across severity (p=.129). CAS showed a significant association with decreasing TBII levels from baseline to post-thyroidectomy (p=.007).

Conclusions: Total thyroidectomy results in a significant decrease in TSH receptor antibody levels. In patients with clinically active TED, surgery impacts TED activity, as seen in the decrease in CAS with declining TBII levels.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Comparative Study of Subjective and Objective Outcomes of Ptosis Surgery in a Tertiary Level Hospital

*First Author: Dikshya **BISTA***
*Co-Author(s): Malita **AMATYA**, Purnima **RAJKARNIKAR STHAPIT**, Rohit **SAIJU***

Purpose: To assess the subjective and objective outcomes of Blepharoptosis surgery and to compare the correlation between the outcomes. It provides information about the types of surgeries performed, complications, and outcomes of surgery which help to increase the effectiveness of surgery either from the patients' or surgeons' point of view.

Methods: It is a prospective observational study including patients diagnosed with blepharoptosis and undergoing ptosis surgery in a tertiary-level hospital. Demographic evaluation, types and severity of ptosis, types of surgery performed, postoperative complications, and causes of revision surgery were noted. Subjective outcome (scored by the patient) and objective postoperative outcomes (scored by the surgeon) were graded as poor, sub-optimal, and good at 3 months follow-up. The level of agreement between subjective and objective outcomes was measured using weighted kappa analysis.

Results: A total of 64 cases were included in the study. Four (6.25%) cases underwent bilateral eye surgery, and 60 (93.75%) cases underwent surgery for unilateral eye. Post-operative outcomes were graded objectively by the surgeon as good in 37 (57.8%), suboptimal in 20 (31.3%), and poor in 7 (10.9%) cases, and subjective outcomes were graded as good in 37 (57.8%), suboptimal in 24 (37.5%) and poor or no change in 3 (4.7%) cases. 16 (25%) cases had a disagreement between the subjective and objective outcomes. The correlation between subjective and objective outcomes was statistically significant.

Conclusions: Though the patient and surgeon's perspectives towards the outcomes of surgery may vary, there is a substantial level of agreement between the outcomes when evaluated in our study.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1–GF)

Comparison of Postoperative Outcomes in Cases Undergoing Biopsy and Debulking Surgery for IgG4-Related Dacryoadenitis

*First Author: Rikako **IWASAKI***
*Co-Author(s): Yoshiyuki **KITAGUCHI**, Takeshi **MORIMOTO**, Kohji **NISHIDA***

Purpose: This study aimed to compare the outcomes of steroid administration and recurrence rates between two surgical approaches, namely lacrimal gland excision biopsy and debulking surgery, in patients diagnosed with IgG4-related dacryoadenitis.

Methods: We retrospectively analyzed 24 sides of 15 patients diagnosed with IgG4-related dacryoadenitis between March 2017 and February 2022. The patients were categorized into two groups: the biopsy group, which involved resecting only the minimum tissue needed for diagnosis, and the debulking group, in which a substantial portion of the mass was removed to decrease tumor size. Postoperative outcomes such as steroid administration, recurrence rate, and lacrimal gland function changes were compared between the two groups.

Results: The biopsy group comprised 7 patients, and the debulking group included 8 patients. After surgery, 100% of the biopsy group and 25% of the debulking group required steroid treatment (p=0.0070). Postoperative relapse occurred in 71% of the biopsy group and 13% of the debulking group (p=0.041). Maintenance steroid therapy was needed in 43% of the biopsy group and 13% of the debulking group (p=0.119). Schirmer test values did not significantly decrease before and after surgery in both the biopsy group (10.2±10.4 mm before surgery, 9.1±4.5 mm after surgery, p=0.702) and the debulking group (4.5±3.8 mm before surgery, 2.2±2.3 mm after surgery, p=0.088). However, two patients, one from each group, developed severe dry eye and required lacrimal duct closure surgery.

Conclusions: Debulking surgery effectively reduced the need for postoperative steroid administration in IgG4-related dacryoadenitis. Further investigation is necessary to understand the risk of postoperative dry eye.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Congenital Upper Eyelid Colobomas: Demographics Features and Surgical Outcomes in Bangladeshi Population

First Author: Md.Ismail ***HOSSAIN***
Co-Author(s): Sharmin ***AHMED****, Narayon* ***BHOWMIK****, Golam* ***HAIDER****, Shawkat-ara* ***SHAKOOR***

Purpose: To describe our experiences in the surgical management of congenital upper eyelid coloboma in the Bangladeshi population.

Methods: A descriptive, observational, retrospective study was performed in patients with congenital eyelid colobomas between 2010 and 2021. A detailed clinical history, including personal and family history, exposure to drugs or diseases during pregnancy, and a complete ophthalmic examination at the time of referral, at subsequent follow-up, and in the postoperative period were done.

Results: Fifty-four eyelids were included in this study. Congenital upper eyelid coloboma was bilateral in 24 (44.44%) patients, isolated in 34 (62.9%), and as part of a syndrome in 20 (37.01%) patients. Congenital upper eyelid coloboma was commonly located in the medial upper lid (31 lids, 57.4%) and mostly involved the full thickness of the lid (38 lids, 70.37%). Corneal adhesion (25 eyes, 46.3%) and poorly formed eyebrows (29 eyebrows, 53.7%) were the most common ocular/adnexa associations. Visual acuity at the final follow-up was 20/40 or better in 18 (33.3%) eyes. Complete lid closure without lagophthalmos after one or more surgical procedures was achieved in 22 (40.74%) cases.

Conclusions: Eyelid colobomas are a potential threat to vision. In children, it requires close monitoring of the visual development. Dermal scarring and defective orbicularis muscles are common. Achieving good cosmetic and functional success after management is always challenging.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1–GF)

Development of a High-Pixel Channel-Less Dacryoendoscope

First Author: Akemi ***IWASAKI***
Co-Author(s): Yoichi ***MANABE****, Seira* ***SHIMODA****, Masatake* ***YAMAGUCHI***

Purpose: Conventional dacryoendoscopes have a 0.3 mm water channel, which is difficult to disinfect and can become clogged. In this study, a new dacryoendoscope with a novel shape was developed, and the water channel was eliminated from the insertion part of the dacryoendoscope into the lacrimal duct.

Methods: The dacryoendoscope consists of an insertion part and a grip part. The insertion portion of the dacryoendoscope into the lacrimal duct contains only the objective lens, image guide fibers, and light guide fibers, and the channel for water was eliminated. The diameter of the insertion portion is approximately 0.9 mm and can be inserted into an 18-gauge catheter. The grip portion of the dacryoendoscope has a water channel. A special adapter is attached between the grip and the insertion portion, which can be slid back and forth like a trombone using only the fingers. The special adapter can be connected to a catheter attached to the insertion part. Thus, the catheter can be used instead of a water channel on the insertion part to pass saline water.

Results: Saline water can now be passed through the catheter. The smallest diameter of the channel in the grip was 1.1 mm, allowing cleaning with a brush and disinfection with hydrogen peroxide low-temperature plasma sterilization. Eliminating the water channel in the insert also allowed the number of fiber pixels to be increased from 10,000 to 15,000.

Conclusions: The water channel of the dacryoendoscope was successfully eliminated from the dacryoendoscope insertion part into the lacrimal duct.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Evaluation of Two Surgical Approaches for Orbital decompression: Transconjunctival vs Transnasal

First Author: Yinwei ***LI***
Co-Author(s): Jing ***SUN****, Rou* ***SUN***

Purpose: To compare the effectiveness of endoscopic orbital decompression by two surgical approaches for thyroid-associated ophthalmopathy (TAO).

Methods: A prospective, randomized controlled trial was performed on 48 moderate-to-severe or sight-threatening TAO orbits. All patients, who were randomly assigned into the transconjunctival group or the transnasal group, underwent endoscopic orbital decompression according to the surgical design. Clinical and radiological data were collected at baseline and 3 months after surgery by a masked investigator. The main outcome was the effective rate. If the postoperative proptosis measured by computed tomography (CT) was below 18 mm or the value of proptosis reduction was over 8 mm, it would be defined as effective. The secondary outcomes included surgical accuracy, best-corrected visual acuity (BCVA), ocular motility grade, diplopia grade, and safety.

Results: A total of 48 orbits of 41 patients were enrolled in the study, with 24 orbits each in the transconjunctival and transnasal groups. The effective rate was 87.5% in the transconjunctival group and it was 79.2% in the transnasal group (P=0.087). The proptosis reduction was 5.38±2.60 mm in the transconjunctival group and 4.40±1.66 mm in the transnasal group (P=0.435). A significant difference was found between preoperative and postoperative proptosis in both groups (P<0.01). In the transconjunctival group, a higher surgical accuracy in the medial wall was found (P=0.001). There was no significant difference in both groups between preoperative and postoperative BCVA and ocular motility grade. Complications showed no significant difference between two groups (P>0.05).

Conclusions: Both transconjuntival and transnasal endoscopic orbital decompression were feasible, and could be utilized by surgeons.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Uluwatu 6 (BNDCC1–GF)

Microscopic Deep Orbital Fat Decompression for Thyroid Eye Disease

*First Author: Tomoyuki **KASHIMA***
*Co-Author(s): Ryo **KIKUCHI**, Masashi **MIMURA***

Purpose: In this study, we investigated how the fusion image area (FIA) changes after orbital decompression surgery, which mainly involves microscopic resection of the orbital fat inside and outside the muscle cone, using the binocular single vision (BSV) test.

Methods: Included were 203 patients with thyroid eye disease who underwent bilateral orbital fat decompression using a microscope under general anesthesia at our clinics between January and December 2021. Patient age and sex, postoperative changes in Hertel exophthalmometer measurements, amount of orbital fat removed, ocular findings, and BSV were recorded. The FIA was defined as the average of the four locations (up, down, right, and left gaze) from the primary position at which diplopia was felt. Of the 203 patients, changes in the FIA were investigated in 75 patients who could be followed up to 6 months postoperatively.

Results: The 203 patients (163 women, 40 men) had a mean age of 40.0±12.7 years (range, 15–65 years). The mean ocular protrusion decreased from 19.8±2.9 mm preoperatively to 16.7±2.5 mm postoperatively. The average amount of fat removed was 3.5±1.5 ml. The FIA decreased from 44.5±12.9 degrees preoperatively to 44.3±11.9 (p=0.768), 44.1±12.5 (p=0.567), and 44.5±11.8 degrees (p=0.977) at 1, 3, and 6 months, respectively, after surgery. Postoperatively, 25 of 406 eyes (6.16%) had mild mydriasis, while none had complete mydriasis. There was no case of postoperative visual disturbance or visual field defect.

Conclusions: Microscopic deep orbital fat decompression is a safe procedure that is less likely to cause visual dysfunction than existing techniques.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Pearls and Paradigms for Orbit, Oculofacial and Lacrimal Surgery Videography

*First Author: Alexander Gerard Nino **GUNGAB***
*Co-Author(s): Emmanuel **BONIAO**, Reynaldo **JAVATE**, Blanche **LIM**, Gangadhara **SUNDAR***

Purpose: To establish a guideline in standardizing videographic documentation in Orbit, Oculofacial and Lacrimal Surgery.

Methods: We enumerated various aspects that are essential and important in making high-quality surgical video documentation in orbit, oculofacial and lacrimal surgery.

Results: Guidelines suggested are as follows: 1. Patient and informed consent; 2. Recording device; 3. Computer or laptop; 4. Audio and video editing software; 5. Storage and archiving; 6. Final presentation for teaching, publications and scientific meetings.

Conclusions: A well-documented orbit, oculofacial case, comprises standardized pre and post-operative photos, and a well-seized surgical video. The video should maintain patient anonymity and showcase the essential steps and principles of the surgery. To also manifest proper instrument handling and demonstration of technique to facilitate learning. A well and cleanly edited surgical video with audio narration aims to provide the viewers with visual learning. The voice-over helps the audience tap into the thinking process of the surgeon, thus augmenting learning.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Quantitative Magnetic Resonance Imaging Predictors of Dysthyroid Optic Neuropathy in Patients With Thyroid Associated Ophthalmopathy

*First Author: Yun **SU***
*Co-Author(s): Xingtong **LIU**, Jing **SUN***

Purpose: To evaluate apparent diffusion coefficients (ADC) and normalized ADC (n-ADC) of the optic nerve (ON) and extraocular muscles (EOMs) in magnetic resonance imaging in the prediction of dysthyroid optic neuropathy (DON) in thyroid-associated ophthalmopathy (TAO) and to find out the correlation of these parameters with disease changes after anti-inflammatory treatment.

Methods: A total of 58 patients (116 orbits) were enrolled. Twenty-two patients received anti-inflammatory treatment and underwent a follow-up evaluation. Twenty age- and gender-matched healthy participants (40 orbits) were also included as normal controls. N-ADC values were calculated as ADC normalized to the signal intensity of patients' white matter. ADC and n-ADC values of ON and EOMs were measured. Changes in these parameters before and after anti-inflammatory treatment were also evaluated.

Results: Both mean ADC and n-ADC values of ON were significantly higher in TAO patients, and higher in orbits with DON ($p<0.001$). Univariate analysis showed that higher n-ADC of ON ($p<0.001$), ADC of ON ($p=0.003$), and n-ADC of inferior rectus ($p=0.015$) were associated with a higher risk of DON. Multivariate modeling found only n-ADC values to be a significant independent predictor of DON. The sensitivity and specificity of n-ADC of ON to detect ON was 92.7% and 75.2%, respectively. The n-ADC of EOMs decreased significantly after treatment.

Conclusions: A quantitative MRI parameter of n-ADC values of ON can be a valuable indicator for identifying DON in TAO patients. N-ADC of EOMs can be promising tools to monitor the efficacy of anti-inflammatory treatment in patients with DON in the active stage.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Revision of Recurrent Severe Ptosis With Combined Levator-Mullers and Frontalis Advancement Flaps in Eighteen Indian Eyes: A Case Series

*First Author: Joyeeta **DAS***
*Co-Author(s): Nibedita **DAS***

Purpose: The aim of this study is to determine the efficacy of combined levator [LPS] - Mullers and frontalis muscle advancement in the surgical treatment of recurrent severe ptosis with poor levator function.

Methods: Patients who underwent combined levator resection and frontalis muscle advancement for recurrent severe ptosis at a tertiary eye hospital in India between May 2020 and 2022 were reviewed retrospectively. Inclusion criteria were levator function of 4 mm or less and margin reflex distance 1 (MRD1) of 0 mm or less. The primary outcome measures were postoperative MRD 1, vertical fissure height (VPFH), lagophthalmos, corneal staining (SPK), lash angle, and grades of eyelid contour and crease. Medical records and photographs were used to evaluate the outcomes.

Results: The inclusion criteria were met by 17 patients (18 eyelids). At 6 months follow-up, the mean preoperative MRD1 was -2.27+/-0.55 mm and VPFH was 3.09 +1.58 mm, which improved to 3.23+/-0.72 mm and 9.23+/-1.26 mm, respectively, with an average lagophthalmos of 0.27+ 0.44 mm. The eyelid symmetry was 90.9% (10/11) at the final follow-up, the contour was 81.8% (14/18), the crease was 72% (13/18), and the eyelash angle was 90.9% (16/18). One eyelid (9%, 1/18) required revision surgery and entropion correction. There were no other significant complications other than corneal SPK in two cases at the first and second-month visits, which resolved at the final follow-up at 6 months.

Conclusions: Combined levator Mullers and frontalis muscle advancement is a promising method for long-term correction of recurrent severe ptosis with cosmetically pleasing outcomes and minimal complications.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

Role of Concurrent Intravenous Pulse Steroids and Orbital Radiation in the Management Thyroid Eye Disease

*First Author: Sonam **NISAR***

Purpose: To analyze the effects of concurrent intravenous pulse steroids and orbital radiation (ORT) in thyroid eye disease (TED).

Methods: A retrospective, single-centre interventional study. A total of 24 patients were included in the study. All patients received concurrent ORT (20 Gy in 10 fractions) and pulsed intravenous methylprednisolone (IVMP) 500mg. Improvement was assessed using the ITEDS-VISA scoring system.

Results: Forty-eight orbits of 24 patients were included in the study. There was an equal male and female (12 each) distribution. The mean age at presentation was 53.6 ± 11.4 years. The median duration of orbital disease was 5.5 months. Double vision (22, 91.66%) was the most common presenting complaint. All patients underwent an orbital Magnetic Resonance Imaging (MRI) and were documented to have a bilateral radiologically active disease. Post-treatment, there was a significant reduction in the mean inflammatory score ($p<0.05$). Complete resolution of diplopia was seen in 82.6% ($p=0.0009$) patients and a significant improvement in extraocular motility was seen in 95.8% of patients ($p<0.05$). One patient underwent cosmetic orbital decompression surgery for unilateral proptosis. The mean follow-up was 20 ± 16.506 months. No significant complication was noted at the last follow-up in any of the patients.

Conclusions: Concurrent pulse IVMP with ORT is a safe and effective treatment modality for TED-related diplopia. Appropriate selection of cases along with a pre-treatment MRI to look for radiologically active disease aids in better planning and understanding of

the disease. Considering the safety profile and the long-term efficacy, it can be considered an effective treatment option.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

The Relation Between Bony Nasolacrimal Canal and Primary Acquired Nasolacrimal Duct Obstruction

First Author: Bayasgalan ***PUREVDORJ***
Co-Author(s): Tumenjargal ***ERDENEBAATAR***

Purpose: To study the relationship between the anatomy of the bony nasolacrimal canal and primary acquired nasolacrimal duct obstruction.

Methods: This study used a hospital-based, retrospective case-control design with 584 participants grouped into PANDO patients and the control group. Morphometry of the bony nasolacrimal canal was measured by a CT scan. The diagnosis of PANDO was confirmed by a blockage on the lacrimal irrigation test. The analyses were performed using Stata version 11.2. Statistical significance was defined as $p<0.05$.

Results: The average age of PANDO patients was 63.1±11.3 years, while the average age of control patients was 62.9±12.6 years. The BNLC's minimum transverse diameter was 3.67±1.96 mm on the PANDO side, 3.98±2.01 mm on the non-PANDO side, and 4.03±1.12 mm for the control group. The distal BNLC transverse diameter was 4.39±1.21mm for the PANDO side, 4.33±1.32 mm on the non-PANDO side, and 5.11±1.25 mm for the control groups. The BNLC entrance transverse diameter was 4.36±1.59 mm on the PANDO side, 4.43±1.83 mm on the non-PANDO side, and 4.69±1.61 mm in the control group.

Conclusions: A susceptibility for primary acquired nasolacrimal duct obstructions' development may result from narrower bone nasolacrimal canal shape. We detected a narrow distal bony nasolacrimal transverse diameter for both the PANDO and non-PANDO sides in unilateral PANDO patients compared with the control group.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 4 (BNDCC1–GF)

To Evaluate the Role of Intralesional Bleomycin in Periocular Capillary Hemangiomas Non-responsive to Oral Propranolol

First Author: Abhishek ***KUMAR***
Co-Author(s): Mandeep ***BAJAJ****, Neelam* ***PUSHKER***

Purpose: To evaluate the role of intralesional bleomycin in periocular capillary hemangiomas non-responsive to oral propranolol.

Methods: A prospective interventional study was done after obtaining ethical clearance from the Institute Ethics Committee, AIIMS, ND.10 patients were recruited after taking written informed consent from parents, and intralesional bleomycin injections were given at a dose of 0.5mg/kg maximum of up to 3 times over 6 weeks interval after baseline evaluation and were kept on 6 monthly follow up.

Results: The median age of presentation was 9.50 months with a female-to-male ratio of 9:1. Upper lid involvement (n=8) and superficial lesions (n=7) were predominant. 20% of patients had a reduction in ptosis. No patient had strabismus. The mean percentage reduction in area (cm^2) at 3 months and 6 months was 27.9 and 34.8 respectively .50% of patients had color regression. There was no statistically significant improvement in visual acuity. The majority (60%) of patients showed moderate response.

Conclusions: Capillary hemangiomas are self-resolving, but early treatment may be necessary for large lesions to prevent visual impairment or amblyopia. We evaluated the effect of intralesional bleomycin injections in patients who were non-responsive to propranolol. The treatment demonstrated a favorable side-effect profile and resulted in statistically significant reductions in lesion area. In conclusion, intraleural bleomycin can be considered a safe, moderately effective, minimally invasive treatment option.

Pediatric Ophthalmology and Strabismus

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Assessment of Reading Speed in Children With Anisometropic Amblyopia Before and After Occlusion Therapy

*First Author: Abhyuday **SAXENA***
*Co-Author(s): Vinay **GUPTA**, Rohit **SAXENA***

Purpose: To evaluate uniocular reading speed (URS) and binocular reading speed (BRS) of children with unilateral anisometric amblyopia and assess the effect of occlusion therapy on reading speed.

Methods: Children with unilateral anisometric amblyopia aged between 6-12 years; logMAR best corrected visual acuity (BCVA) of better than 0.1 in good eye and between 1.00 to 0.3 in amblyopic eye; difference of at least 3 lines on logMAR scale; able to perform basic grade level reading were enrolled. Ethical clearance and informed consent were obtained. Children were asked to occlude the good eye for 6 hr/day for 3 months. Subjective refraction; BCVA; URS and BRS using MNREAD (Minnesota low vision reading chart) chart (black on white background), were assessed at baseline and 3-month follow-up.

Results: Thirty children enrolled with a mean age of 8.6±2.2year; logMAR BCVA of 0.01±0.04 in the good eye, 0.48±0.12 in the amblyopic eye; spherical equivalent refractive error of 1.5±4.2D in the amblyopic eye and -0.45±2.1 in the good eye at baseline. URS was significantly poorer in the amblyopic eye (118±45wpm) vs. good eye (155±32wpm) at baseline (P: 0.03). After 3 months, the URS significantly improved in the amblyopic eye (148±37wpm) (P:0.021); however, no significant improvement was observed in the good eye (166±42wpm) (P:0.08). The BRS also showed significant improvement from baseline (145±46wpm) to 3 months (170.34±37.81wpm) (P:0.043).

Conclusions: Despite being able to read, the reading speed of the amblyopic eye and BRS is poorer than the good eye in unilateral anisometropic amblyopia. After occlusion as amblyopia resolves, both the reading speed of the amblyopic eye as well as BRS show significant improvement.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Botulinum Toxin Treatment for Restrictive Myopathy of Thyroid-Associated Ophthalmopathy

*First Author: Do-ah **KIM***
*Co-Author(s): Helen **LEW***

Purpose: To evaluate the clinical effects and predictive factors of successful treatment with botulinum toxin injection in restrictive myopathy of thyroid-associated ophthalmopathy (TAO).

Methods: This retrospective study included 14 patients. The average dose of botulinum toxin A injection was 12 units in each muscle through a swan neck incision under topical anesthesia. The success was defined as horizontal deviation < 10Δ, vertical deviation < 5Δ, and no diplopia in the primary position at 1 month and 5 months or the last follow-up. Influential factors for success were evaluated.

Results: The overall success rate at 1 and 5 months was 57.1% (8 cases) and 42.9% (6 cases). The average horizontal deviation decreased by 10.5Δ (24.2 to 13.7) at 1 month (p=0.012) and by 9.6Δ (24.2 to 14.6) at 5 months (p=0.037). The average vertical deviation decreased significantly by 8.1Δ (19.1 to 11.0) at 1 month (p=0.039) and by 7.7Δ (19.1 to 11.4) at 6 months (p=0.024). The success was significantly associated with two factors: smoking at 1, 5 months (p=0.012, 0.013), and low clinical activity score (CAS) at 5 months (p=0.045).

Conclusions: Botulinum toxin injection can be an alternative treatment of the restrictive myopathy in TAO. Better results can be expected in non-smokers and low CAS scores.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Chiasmal Misrouting in Infantile Nystagmus Syndrome (INS): Phenotypes in Patients With Molecular Diagnoses

*First Author: Maria **THEODOROU***
*Co-Author(s): Michael **GILHOOLEY**, Mariya **MOOSAJEE**, Magella **NEVEU***

Purpose: To determine if there are clinical-electrophysiological parameters that correlate with particular genotypes in INS.

Methods: A retrospective chart review at Moorfields Eye Hospital London identified 71 patients with a molecular diagnosis relating to INS. Visual acuity, presence of nystagmus, signs of albinism, and OCT foveal hypoplasia grade were recorded alongside flash

and pattern VEP (Visual Evoked Potential) amplitude and peak time. VEP asymmetry was assessed using the Pearson Correlation Coefficient (r).

Results: Pathological variants in 8 genes (TYR, OCA2, HPS6, HPS3, HPS1, GPR143, FRMD7, SLC38A8, OCA1) were identified. Mean BCVA per group ranged from 0.38-0.74LogMAR F (0.72,3.5)=2.8; p=0.04 one-way ANOVA. All genotypes demonstrated foveal hypoplasia (mode grade 4) except FRMD7 (all grade 1). In this cohort, positive flash and pattern VEP amplitude/peak time asymmetry correlated with clinical signs of albinism (flash VEP, r=0.22 (0-6yrs); pattern VEP, r=0.17 (6-65yrs)). There was marked asymmetry in SLC38A8 patients (r = -0.85 to-0.93), a feature known to be associated with foveal hypoplasia grade 4.

Conclusions: Chiasmal misrouting, once believed to be pathognomonic for albinism, has been reported in cases of INS, independent of melanin pathway disruption. This study provides a detailed genotype-phenotype correlation of VEP findings in a molecularly characterised INS cohort. Our findings suggest that cases of INS with foveal hypoplasia and marked electrophysiological misrouting are highly correlated with pathological SLC38A8 variants in the absence of clinical features of albinism. This may be useful in selecting clinically guided genetic testing and counselling patients.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Comparing Myopic Error in Patients With Basic and Convergence Insufficiency Intermittent Exotropia in China

*First Author: Qingyu **MENG***

Purpose: To compare the degree of myopia between the dominant and non-dominant eyes in teenagers with intermittent exotropia (IXT) in China.

Methods: A total of 199 IXT patients with myopia were included in this retrospective study and were divided into two groups: basic IXT and convergence insufficiency (CI) IXT. Patients were further stratified into the anisometropia group and the non-anisometropia group based on binocular SE values difference greater than 1.0D or not.

Results: There were 127 patients in the CI IXT group, with a near deviation of 46.94±20.53 prism diopters (PD) and a distance deviation of 28.36±14.34 PD, and there were 72 (36.2%) patients in the basic IXT group, with a near deviation of 37.68±22.21 PD and a distance deviation angle of 33.21±23.96 PD. The near exodeviation was significantly larger in the CI group than in the basic IXT group (P<0.001). In the CI IXT group, the mean SE was −2.09±1.45 diopters (D) in the dominant eye and −2.53±1.44D in the non-dominant eye, while in the basic IXT group, the mean SE was −2.46±1.56D in the dominant eye and −2.89±1.37D in the non-dominant eye. The SE of the dominant eye was less myopic than of the non-dominant eyes in both the CI and anisometropia groups (P=0.002 and P<0.001, respectively).

Conclusions: Our study revealed that convergence insufficiency IXT is more common than the basic type in the pediatric myopic population and is characterized by higher inter-eye differences in myopia. The dominant eye was found to be less myopic in IXT patients, particularly in those with convergence insufficiency and anisometropia.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Five-Year Outcomes of Corneal Cross-Linking in Children: A Save Sight Keratoconus Registry Study

*First Author: Stephanie **WATSON***
*Co-Author(s): Francisco **ARNALICH**, Himal **KANDEL**, Abbondanza **MARCO**, Adam **WATSON***

Purpose: To report long-term (5-year) outcomes of corneal cross-linking (CXL) in children who had had corneal cross-linking for keratoconus.

Methods: Data from routine clinical practice was captured through the Save Sight Keratoconus Registry (SSKR), an international database of patients with keratoconus. Children with no prior intervention who had undergone epithelium-off CXL were included. The outcomes included the habitual visual acuity (VA), Kmax, K2, minimum corneal thickness (MCT), and the frequency of adverse events. Paired t-test was used to compare the outcomes at baseline and follow-up visits.

Results: Data from 17 practices in Australia, New Zealand, Spain, France and Italy were included. 121 eyes of 73 patients (mean ±SD age at treatment 15.4±2.1) years; 72.7% male; 82.5% White or Caucasian) with keratoconus were included. The differences in VA and keratometry outcomes between baseline (mean VA [95% confidence interval] 69.1 [65.6, 72.7] logMAR letters; Kmax 52.9 [51.1, 54.8]D; K2 48.2 [47.2, 49.2]D) and follow-up at 5 years after CXL were not statistically significant (VA 70.4 [66.9, 73.8] logMAR letters; Kmax 54.6 [52.6, 56.6]D; K2 49.1 [47.9, 50.3]D); all p >0.05). The mean reduction in MCT was statistically significant (baseline 481 [472.9, 489.1] µm, follow-up 460.2 [450, 470.5] µm; p = 0.011). The occurrence of adverse events at the follow-up visit was low (haze 4, progressive keratoconus 3, scar 1).

Conclusions: Our long-term real-world data across multiple sites supports CXL as a safe and effective treatment for stabilising progressive keratoconus in children.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Functional Plasticity in Higher Visual Areas May Underlie Postoperative Recovery in Strabismus

*First Author: Sida **XI***
*Co-Author(s): Wen **WEN***

Purpose: This study employed resting-state fMRI (rs-fMRI) to investigate the functional plasticity underlying the recovery of patients with strabismus after surgical alignment.

Methods: Eighteen patients with intermittent exotropia were recruited. Rs-fMRI data and clinical assessments (exodeviation angle and binocular function) were acquired before and six months after strabismus surgery. Functional plasticity was investigated by measuring spontaneous brain functional changes using amplitude of low-frequency fluctuations (ALFF) (0.01 – 0.08 Hz). Changes in deviation angle and binocular function pre- and post-operation were calculated as indicators of ocular alignment improvement and binocular function recovery, respectively. Group-wise comparisons of rs-fMRI data were performed using paired-sample t-tests, with multiple comparisons corrected at voxel-level $p < 0.005$, cluster-level $p < 0.05$, GRF correction. Spearman's correlation analysis was utilized to assess the relationship between altered ALFF value and clinical improvement.

Results: Compared to preoperative values, enhanced postoperative ALFF values were reported in the right precentral gyrus, right inferior temporal gyrus, left cuneus, left calcarine sulcus, and bilateral lentiform nucleus in patients with exotropia. There's a significant positive correlation between ALFF values in the left cuneus, left calcarine sulcus, and postoperative ocular alignment improvement ($r = 0.726$, $P = 0.0007$; $r = 0.569$, $P = 0.014$). There was a significant negative correlation between ALFF values in the right precentral gyrus and postoperative improvement in ocular alignment ($r = -0.507$, $P = 0.032$).

Conclusions: The study suggested that functional plasticity in the higher-level visual areas after surgical alignment in patients with strabismus is a potential mechanism that facilitates ocular alignment recovery.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Intravitreal Anti-Vascular Endothelial Growth Factor Monotherapy for Aggressive Posterior Retinopathy of Prematurity: An In-depth Systematic Review of Randomized Controlled Trials

*First Author: Eric **TJOENG***
*Co-Author(s): Devina **ANNISA***

Purpose: To assess the efficacy of intravitreal anti-vascular endothelial growth factor (VEGF) monotherapy in treating aggressive posterior retinopathy of prematurity (APROP).

Methods: A literature search was performed across six databases: PubMed, Embase, Scopus, ScienceDirect, Cochrane, and EBSCO, and was conducted last on August 30, 2023. The search was limited to articles published in English with full text availability, and there were no publication-year constraints. The search yielded 729 articles, of which 41 were deemed relevant for full-text review. Among the pool of 41 studies, a subset of four randomized controlled trials (RCTs) were chosen for analysis. The research's validity was assessed using the Cochrane Risk of Bias Tool for Randomized Trials, version 2 (RoB 2).

Results: A total of 410 eyes with APROP from 4 different RCTs were analyzed in this review. Two RCTs compared the effect of two different anti-VEGF (conbercept vs ranibizumab and ranibizumab vs bevacizumab) while the rest compared the effect of anti-VEGF (aflibercept and bevacizumab) and laser photocoagulation on APROP cases. Overall, different anti-VEGF agents were effective in the regression of APROP with a low recurrence rate. In terms of regression and recurrence, anti-VEGF medications appeared to be as effective as laser treatment. Interestingly, eyes that underwent laser treatment exhibited a higher prevalence of severe myopia compared to eyes that underwent anti-VEGF treatment.

Conclusions: This review emphasizes the potential of intravitreal anti-VEGFs in the treatment of APROP. The review acknowledges the variability observed in different trials but emphasizes the importance of this therapeutic approach and its influence on clinical decision-making.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Layer-Dependent Amblyopic Deficits in Feedforward and Lateral Processing in Human Early Visual Cortex

*First Author: Wen **WEN***
*Co-Author(s): Peng **ZHANG**, Chen **ZHAO***

Purpose: To investigate the neural deficits in amblyopia by using ultra-high 7T fMRI and to explore the signals of different layers in monocular and binocular conditions of unilateral amblyopia, aiming to clarify the neural circuits in amblyopia.

Methods: In the 7T fMRI experiment (0.8mm isotropic voxels), we used a full contrast checkboard visual stimuli, reversing contrast at 4Hz temporal frequency, randomly appearing in amblyopia eye, fellow eye and binocular condition. Retinotopic ROIs of cortical visual areas were defined on the cortical surface according to the polar angle atlas from the 7T retinotopic dataset of the Human Connectome Project. With the spatial resolution of fMRI reaching the submillimeter scale, the visual cortex is divided into the superficial layer, the middle layer and the deep layer with 1/3 as the dividing line.

Results: In all visual areas, the fellow eye responded stronger than the amblyopia eye. Two-way ANOVA within-subject factors of stimuli (monocular/binocular) and layers (superficial/middle/deep) showed a significant main effect of layers ($F(1,18) = 9.403$, $p = 0.002$), indicating increased amblyopia deficits in the superficial layer of binocular condition compared to the monocular condition. The two-way interaction of stimuli × layers was also significant ($F(1,18) = 19.068$, $p<0.001$). Post-hoc-t-test showed a significant amblyopia deficit index in the superficial layer to the deficit index in the middle and deep layer ($p=0.002$ and $p=0.004$).

Conclusions: These findings revealed feedforward and lateral processing mechanisms involved in amblyopia and shed light on developing tools specific to multiple-dimension mechanisms for treating amblyopia and tracking the prognosis.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Long-term Efficacy of Botulinum Toxin for Treatment of Acquired Nonaccommodative Comitant Esotropia

*First Author: Jihae **PARK***
*Co-Author(s): Jeong-min **HWANG**, Hee-kyung **YANG***

Purpose: To investigate the long-term effectiveness of botulinum toxin (BTX) treatment in patients with acquired nonaccommodative comitant esotropia (ANAET) of 25 prism diopters (PD) or less.

Methods: Patients with ANAET of 25 PD or less, who received BTX injection in both medial rectus (MR) muscles without the use of electromyographic guidance, and were followed up for at least 1 year were included. The distant and near deviation angles were measured at baseline and 1 year after BTX injection. Treatment was considered successful if the final ocular alignment showed a horizontal deviation of 10 PD or less during distant and near fixation.

Results: In total, 29 patients were included in this retrospective study. The mean age at treatment was 30.6±14.1 years, and the average dose of BTX for the first injection was 6.3±0.9 units. An average of 1.6±0.6 injections were received for each patient, and 14 patients (48%) received two or more injections. The mean esodeviation pre-injection was 14.1±5.4 PD at distance and 14.0±5.9 PD at near. At 1 year after the first injection, the mean angle of esodeviation was 5.8±6.6 at distance, and 5.5±7.9 at near, and 89.7% showed successful alignment. Exodeviation of 20 PD or more occurred in 3 patients (10.3%) at two weeks after injection, which all resolved within three months.

Conclusions: BTX injection in MR muscles is a safe and effective treatment of ANAET. These results suggest that BTX treatment can be a valuable alternative to strabismus surgery in ANAET of 25 PD or less.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Long-term Outcomes of Children Undergoing Botulinum Toxin Injections or Strabismus Surgery for the Treatment of Infantile Esotropia

*First Author: Janice **LAM***
*Co-Author(s): Gillian **ADAMS**, Margarita **PAPADOPOULOU**, Clare **ROBERTS**, Katie **WILLIAMS***

Purpose: To determine the long-term outcomes of children with infantile esotropia (IET).

Methods: All children with IET seen at a tertiary eye centre from 2015 - 18 were identified via text search of

all electronic medical records. 68 neurologically normal children with no other ocular abnormalities with a constant ET of onset before 12 months were identified and followed up until 31 Dec 2022. A successful outcome was determined by achieving ocular alignment within 10 PD of orthotropia after surgery and/or toxin injections.

Results: The mean follow-up period was 56 months. For their primary treatment, 31 children had bimedial recti toxin injections, while 30 children had strabismus surgery. Seven children did not have any intervention due to parental choice. At long-term follow-up, >30% of the children within the surgery alone and the toxin and surgery combination groups had a successful outcome, with the least mean angle of deviation achieved in the toxin and surgery group. Consecutive exotropia (XT) was found in 20% of the children who had surgery alone and none in the other groups.

Conclusions: Our study is the first to provide long-term follow-up data >4 years. Successful outcomes were comparable between those with toxin or surgery as their first procedure, with the best outcomes achieved in those who had toxin first and then surgery later. Toxin injections may have a better safety profile (less risk of general anesthesia, consecutive XT, and shorter time to treatment) and could be performed as a first procedure in children with IET.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Non-syndromic Unilateral Congenital Cataract – CRYBB1 Related

*First Author: Lucy **BARKER***
*Co-Author(s): Dionysios **ALEXANDROU**, Maria **MOOSAGEE**, Anca **PANTALON***

Purpose: We report hereby the findings of two female siblings with unilateral non-syndromic congenital, lamellar cataract, that have been linked to the CRYBB1 mutation.

Methods: Extensive audit data from 111 children referred to Moorfields Eye Hospital over a 5-year interval demonstrated that CRYBB1-related cataracts are bilateral (nuclear and pulverulent types) and visually significant at an early age, mandating prompt surgical intervention. Approximately 1/3 of the congenital cataracts were genetically inherited and had been linked to over 100 pathogenic gene mutations. The majority of cases were bilateral with predominantly autosomal dominant inheritance. Mutations in the crystalline genes account for about 50% of non-syndromic cataracts. Particularly CRYBB1 mutations determine dense, bilateral lens changes by a rapid protein aggregation process in the embryonic lens (nuclear or pulverulent phenotypes).

Results: In our cases, important environmental factors were excluded (TORCH syndrome, trauma and iatrogenic causes), as well as any mild form of persistent fetal vasculature. Genetic testing confirmed an identical mutation in the two siblings, CRYBB1, with negative genetic findings in the mother. Historically, the father had been diagnosed with unilateral pediatric cataract, but did not provide a blood sample for the genetic analysis. They are at the moment under active monitoring for changes, with stable vision and ocular parameters.

Conclusions: The two presented cases prove that a gene's expression and function during lens development might be variable, leading to various phenotypes (mild, unilateral, lamellar cataract), despite a well-identified mutation. Further genetic tests to investigate potential missense mutations in CRYBB1 should be considered.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Picture Book As Media for Promoting Eye Health in Primary School Children: A Research & Development Study

*First Author: Devina **PERMATASARI***
*Co-Author(s): Andhika **DHARMA**, Liana **EKOWATI**, Dina **NOVITA**, Arnila **SAUBIG***

Purpose: Eye health problems in children have been increasing in the last 3 years while the promotion of eye health in children is lacking. Therefore, eye health education is required to overcome these problems. A picture book was developed as a tool for promoting eye health in primary school children.

Methods: This study is a research and development with a qualitative study to make a product in the form of a picture book as a promotional tool for eye health in primary school children. Qualitative data was collected through focus group discussions with six experts in various fields. Qualitative data were analyzed using a conventional content analysis approach with a thematic survey.

Results: Promotive eye health education is provided in the form of a picture book. The development of the picture book needs to pay attention to several aspects, such as how the book is prepared, who the target readers are, the writing structure, the educational materials, language, plot, personification, parental involvement, and accessibility.

Conclusions: The picture book can be developed as a promotional tool for eye health in primary school children.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Recession of Three Horizontal Recti With Y-Splitting of Ipsilateral Lateral Rectus in Unilateral Type 3 Exotropic Duane Retraction Syndrome

*First Author: Yulian **ZHOU***
*Co-Author(s): Chao **JIANG**, Ling **LING**, Wen **WEN**, Chen **ZHAO**, Xiying **WANG***

Purpose: To describe an alternative surgical approach in patients with unilateral type 3 exotropic Duane retraction syndrome (type 3 Exo-DRS) and evaluate its efficacy in treating the co-existing problems of globe retraction, overshoot and large angle of exodeviation in the primary position.

Methods: We performed simultaneous recession of both ipsilateral horizontal recti to improve globe retraction, Y-splitting of the recessed ipsilateral lateral rectus to treat overshoot, and recession of contralateral lateral rectus to restore alignment for unilateral type 3 Exo-DRS. Seven consecutive cases who underwent this surgical approach between June 2019 and August 2020 were included. Deviation angle in the primary position, ad-/abduction limitation, up-/downshoot, and globe retraction were compared before and after surgery.

Results: The mean age at surgery was 8.0±4.2 years (range, 2-12 years). The mean follow-up period was 8.0±4.2 months (range, 3-13 months). Preoperative exodeviation in the primary position was 31.4±3.8 prism diopters (PD) at near and 24.0±6.4 PD at distance. All patients had orthotropia or residual exotropia within 8 PD after surgery. Adduction (from degree -3.1±0.9 to -1.4±1.0 [p=0.018]), upshoot (from degree 3.1±0.7 to 0.3±0.5 [p=0.014]) and downshoot (from degree 1.8±0.8 to 0.2±0.4 [p=0.023]) were significantly improved postoperatively. Five patients showed improved abduction and two patients showed improved globe retraction after surgery. No patient required reoperation at the last visit.

Conclusions: Recession of three horizontal recti with Y-splitting of ipsilateral lateral rectus can be a promising technique to treat co-existing problems in unilateral type 3 Exo-DRS by one operation.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

Referral Uptake and Outcomes in Children Referred to Tertiary Eye Care from School Eye Screening

*First Author: Sahithya **BHASKARAN***
*Co-Author(s): P **VIJAYALAKSHMI***

Purpose: Early detection and treatment of childhood ocular problems have a huge role in eliminating avoidable causes of visual impairment in our country. There is little published evidence on post-school screening referral uptake. This study aims to report post-screening compliance to referral, and the acceptance of advised treatment at a tertiary care centre.

Methods: Primary screening was conducted at individual schools by specially trained vision screeners, children who failed primary screening were enrolled for a comprehensive eye examination by a team of optometrists and paediatric ophthalmologists. Children with minor ocular alignments like refractive error, VKC, and binocular vision anomalies were treated at the primary site. Children requiring detailed evaluation and further management were referred to a tertiary care centre. Referral cards were given to children, and parents were informed by involving the class teachers. If a child did not follow till the expected date, parents were then contacted by phone by a special co-ordinator. All advised investigations, glasses and surgical interventions under this programme were offered free of cost.

Results: A total of 3,79,073 children from 2204 schools were screened in 2 years. 27,611 underwent detail exam&1702 (6.42%) were referred. A majority of 31.61% were referred for strabismus. Initial attendance was 688 (40.42%), while 60.58% failed to attend tertiary care. After reminder calls, attendance increased to 836 (49.12 %). The highest acceptance for surgery was for retina (100%) & lens anomalies (85%) & the lowest (45.97%) for strabismus. 7/100 children screened required comprehensive eye exams, while 4-5/1000 children required referral. Gender and government/private schools did not influence referral uptake.

Conclusions: Strabismus had the lowest referral and surgical uptake despite being referred the most. Increased awareness & effort to ensure referral will provide better eye care.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

Sirolimus Versus Mycophenolate Mofetil During Combined Immunosuppression in Thyroid Eye Disease Patients With Recent-Onset Intractable Diplopia – A Prospective Comparative Case Series

*First Author: Kenneth Ka Hei **LAI***
*Co-Author(s): Fatema **ALJUFAIRI**, Karen **CHAN**, Kelvin Kam-lung **CHONG**, Calvin **PANG***

Purpose: To compare the efficacy of sirolimus with mycophenolate mofetil (MMF) as a primary or secondary immunosuppressant during combined intravenous pulse methylprednisolone (IVMP) and concurrent orbital radiotherapy (ORT) in thyroid eye disease (TED) patients with recent-onset, intractable diplopia.

Methods: Prospective comparative case series of patients managed from 2018 to 2021 in two centres. Primary outcome: change in Gorman diplopia score. Secondary outcomes: changes in extraocular muscle motility (EOMy), maximum thickness of extraocular muscle (EOM) on coronal plain MRI, exophthalmos, and clinical activity score (CAS) at 52 weeks.

Results: Twenty-three (12 men) TED patients (8 smokers/ex-smokers) aged 56 ± 12 years, were treated with sirolimus (5 primary, 5 secondary) or 720mg twice daily MMF (12 primary, 1 secondary) during or after IVMP and ORT. Among the 10 patients who received 2±0.4 mg daily sirolimus and trough levels at 7±3 mg for 12 months, 6 showed improvement of at least one grade of diplopia score, and the average change of diplopia score was higher, especially during the 6th to 12th months of sirolimus than those receiving MMF (P=0.049, Mann-Whitney U =37). Notably, 4 of the 6 patients who received sirolimus as salvage therapy showed improvement of at least one grade of diplopia score, after failing MMF (n=3) or methotrexate (n=1). Five (50%) patients on sirolimus had raised low-density lipoprotein-cholesterol levels requiring lipid-lowering therapies.

Conclusions: Future randomized clinical trials should compare the efficacy, safety and regimen of sirolimus or MMF-based combined immunosuppression for recent-onset intractable diplopia in TED.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1-GF)

The Correlation Between Body Mass Index, Refractive Error, and Central Corneal Thickness in School-Aged Children

*First Author: Lydia **MARGARETHA***
*Co-Author(s): Nanda **ANANDITA**, Anny **SULISTIYOWATI**, Lely **WULANDARI***

Purpose: Body mass index (BMI) was reported to have a correlation with anterior segment parameters and refractive error in obese individuals. This study was to evaluate the correlation of BMI with refractive error and central corneal thickness (CCT) in school-aged children.

Methods: A cross-sectional study, community service-based, was held from June to October 2021 in 13 orphanages. Weight and height measurements were used to obtain BMI data, then classified into normoweight, underweight, overweight, and obese. Myopia and hypermetropia were collected based on the spherical equivalent (SE) of the autorefractometer. Corneal astigmatism based on an autokeratometer was classified as with-the-rule, against-the-rule, or oblique. Central corneal thickness was examined by Pachpen handheld pachymeter. This study was analyzed using the chi-square test for BMI and astigmatism, and Pearson correlation for BMI, CCT, and SE.

Results: There were 762 eyes from 178 boys (46.7%) and 203 girls (53.3%) with the age range of 12-15 years old (55.7%). The highest prevalence of BMI was normoweight (44.4%). There was a negative correlation between BMI and myopia (r=0.015), while there was a positive correlation between BMI and hypermetropia (r=0.012). Children with higher BMI tended to have higher hypermetropia and lower myopia. Both were not significant. But, there was a significant and positive correlation with the astigmatism diopter (p=0.000; r=0.215), even though there was no significant correlation with the corneal astigmatism axis (p=0.684). Furthermore, a significant negative correlation was found between BMI and CCT (p=0.020; r=0.080).

Conclusions: This study shows a significant correlation between BMI with CCT and astigmatism. Children with higher BMI have a lower CCT and higher astigmatism diopter.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

The Use of Smartphone Fundus Photography for Retinopathy of Prematurity Screening in the Philippines

*First Author: Dana Celine **CAMMAYO***
*Co-Author(s): Angel **ANCHETA, JR**, Emilio **MACIAS III**, Sharlene **PRILE***

Purpose: To determine the feasibility of using smartphone fundus photography (SFP) as a cost-effective method of determining referral-warranted retinopathy of prematurity (ROP) cases for potential use in resource and manpower-limited areas.

Methods: This is a prospective, single-institution, comparative study. Fundus photographs of premature infants obtained using a smartphone and 28D condensing lens were sent to two pediatric ophthalmologists for grading of image quality and identification of referral-warranted ROP. These were compared to indirect ophthalmoscopy (IO) findings. Outcome measures included an agreement between IO and SFP findings, the sensitivity of SFP in determining referral-warranted cases, and interrater agreement between the two pediatric ophthalmologists who interpreted the photographs.

Results: A total of 73 eyes were included, with only three eyes assessed as having poor photo quality. Agreement between the IO and SFP assessments were 86% and 68% for the two pediatric ophthalmologists, respectively. Among the 11 referable eyes, 9 and 10 were correctly identified by the two pediatric ophthalmologists. Sensitivity for determining referable cases by pediatric ophthalmologists was 81.8% and 90.9%. The interrater agreement of the two pediatric ophthalmologists was 84%, and Cohen's kappa showed substantial agreement at 0.65. The burden for physical screening would have been reduced by 69.5% with this method applied.

Conclusions: Smartphone fundus photography is a feasible and cost-effective method of telescreening for referral-warranted ROP in resource-limited areas. Although it can never replace indirect ophthalmoscopy as the gold standard, it may effectively decrease the burden of physical screening and help prioritize referral to specialists for close monitoring and management.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 4 (BNDCC1–GF)

"Squint ASSIST" for Strabismic Angle Measurement Using Visage Photographs

*First Author: Nichakant **SRISAENPANG***
*Co-Author(s): Sirinya **SUWANNARAJ**, Phanthipha **WONGWAI***

Purpose: To assess the validity of "Squint ASSIST (Squint Automatic Strabismus Sizing using Image Sensing Technology)" for measuring the angle of deviation in horizontal strabismus patients.

Methods: A prospective cross-sectional study was conducted on 136 strabismic patients. Face photographs were taken from a smartphone camera with a flash by two photographers to evaluate the angle of deviations by two methods. The first method compares the corneal light reflex deviation between both eyes. The second method compares the corneal light reflex deviation in the same eye (when the eye is straight and deviated). Bland-Altman analysis and Pearson correlation were used to evaluate the agreement and strength of association of deviated angles measured by "Squint ASSIST" and an experienced pediatric ophthalmologist.

Results: Of those 964 photographs analyzed. Bland-Altman analysis shows that the mean difference of deviated angles measured by "Squint ASSIST" and the experienced pediatric ophthalmologist is 1.954 prism diopters (PD) in the first method and 2.279 PD in the second method. The 95% limits of agreement of the upper and lower limits were 26.3, -22.4 PD in the first method and 28.3, -23.7 PD in the second method consecutively. Pearson correlation shows a very strong and significant association between measuring deviated angles by the program and an experienced pediatric ophthalmologist in the first method ($r = 0.962$, p-value < 0.001) and the second method ($r = 0.955$, p-value < 0.001).

Conclusions: "Squint ASSIST" shows the feasibility of strabismic angle measurement compared with the conventional method.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

A Modified Yokoyama Procedure: A Report of Two Cases

*First Author: Lianqun **WU***
*Co-Author(s): Chen **ZHAO***

Purpose: We reported two cases of unilateral heavy eye syndrome successfully managed by the surgery modified from the Yokomama procedure.

Methods: The diagnosis of heavy eye syndrome was confirmed by the presence of progressive esotropia and hypotropia, increased axial length due to high myopia, globe dislocation into the superotemporal orbit, and the displacement of the lateral rectus and superior rectus. A modified Yokoyama procedure was applied and was processed as follows. Briefly, it was accessed via a supratemporal limbal incision, and the lateral rectus and superior rectus were identified and joined by an intramuscular 5–0 nonabsorbable suture 12.5mm posterior to the insertion. Then, an additional suture was placed 2 mm posterior to the first suture. No muscle splitting before the union of the lateral rectus and superior rectus, and no additional medial rectus recession was performed.

Results: Both cases showed moderate esotropia and hypotropia, without the contracture of the medial rectus and inferior rectus. This procedure achieved a satisfactory and stable outcomes in these two patients during a three-month follow-up.

Conclusions: The two-suture Yokoyama procedure without muscle splitting might be a simplified alternative to the classic Yokoyama procedure for heavy eye syndrome.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

A Pilot Randomised Clinical Trial Comparing Muscle Transplant Versus Novel Hang Back Recession in Extra-Large Angle Exotropia

*First Author: Amar **PUJARI***
*Co-Author(s): Sudarshan **KHOKHAR***

Purpose: For extra-large angle exotropia (>60 prism dioptres, PD), single-setting surgical alternatives are scarce; frequently, more than two muscle or two eye procedures are indicated. To evaluate the viability of single eye surgery, the current randomised comparative trial is undertaken.

Methods: Twenty adult patients with extra-large angle exotropia underwent a thorough orthoptic evaluation before being divided into two groups at random. Ten patients in Group 1 underwent medial rectus resection (5.5-7.5 mm), followed by transplant-aided lateral rectus recession (effective length: 4-5.5 mm) (9 mm). In Group 2, ten different patients underwent medial rectus resection (5.5-7 mm), but this time, the lateral rectus recession (9 mm) was aided with a hang-back suture (5-7 mm). The two procedures were compared at baseline and six months post-operatively.

Results: There was no significant difference in the groups' median ages (P = 0.95). In groups one and two, the median corrections achieved were 81.00 (79.50–85.50) PD and 81.00 (79.75–86.50) PD, respectively. The difference between the techniques was statistically insignificant (p = 0.99). In all patients, abduction limitation was frequently noted in the immediate post-operative period, which improved over time. In each group, there were two patients (> 90 prisms) with a residual deviation of at least 30 PD, for which the contralateral eyes were operated.

Conclusions: The hang-back recession was as successful as the muscle transplant procedure in correcting 80–90 PD of exotropia with notable clinical benefits and ease.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

Amplitude of Accommodation and Near Point of Convergence in Children: Its Relation With Age and Refractive Errors

*First Author: Nabilah **AFIFAH***
*Co-Author(s): Nanda **ANANDITA**, Anny **SULISTIYOWATI**, Lely **WULANDARI***

Purpose: Evaluation of the accommodative system, especially during near-tasks for children is important. Amplitude accommodation (AA) and refractive errors were not fully comparable in the previous study. This study was designed to determine the correlation between near point of convergence (NPC) and AA with age and refractive errors based on spherical equivalent (SE).

Methods: A population-based, consecutive cross-sectional study was conducted from June to October 2021. AA and NPC were measured with RAF Ruler in push up methods. Refractive errors in this study were measured with SE divided into myopia (<0 D) and hypermetropia (>0 D). Age divided into 6-12 years old (y.o), 13-15 y.o, and 16-18 y.o.

Results: This study has 384 respondents with 768 eyes, who are mostly girls (52.9%) and 13–15 y.o (46.9%). The highest mean ± SD value was obtained: AA binocular 13-15 y.o were 18.13±3.73, NPC break in 16-18 y.o were 5.98±1.41, and NPC recovery in 16-18 y.o were 7.21±1.68. AA and its correlation to age were statistically significant (AA monocular r=-0.128, p0.000), but not significant with myopia and hypermetropia. A positive correlation was found between NPC and age (NPC Break r=−0.116, p<0.002; NPC Recovery r=−0.184, p<0.000). There was an inverse correlation between AA with myopia and hypermetropia.

Conclusions: This study has shown a significant correlation between AA and NPC with age. The older the age the higher the NPC value, and the lower the AA was found. Monocular and binoculars of AA and NPC were not related to myopia and hypermetropia.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

Assessment of Surgical Outcome With Preoperative Prognostic Factors in Horizontal Strabismus Surgery-A Hospital Based Study

First Author: Sidratul ***NAZNIN***
Co-Author(s): Quazi ***IFTEKHAR****, Mohammad* ***MOSTAFA HOSSAIN***

Purpose: To identify prognostic factors that are predictive of successful outcomes in horizontal strabismus surgery.

Methods: It was a prospective study of 120 patients with horizontal strabismus from July 2016 to December 2017. Patients of 3-15 years with horizontal strabismus without vertical and oblique deviation were included, and patients with nystagmus, paralytic strabismus, organic amblyopia and ocular pathologies were excluded. Pre-operative assessment included history, visual acuity, cycloplegic refraction, orthoptic evaluation and fundoscopy. All patients had proper correction of ametropia and occlusion therapy before surgery. Selected patients underwent two muscle squint surgeries in one setting and were followed up to 6 months.

Results: Out of 120 patients, 45 (38%) were male, 75 (62%) were female. Mean age was 10+/-2 years. Thirty-four (28.4%) patients had a deviation 30 prism diopter (pd), 56 (46.6%) 30-50 pd; 30 (25%) >50 pd. Sixty-four (53.3%) patients became almost orthophoric in the final follow-up. Seventy-two (60%) patients were ametropic. Final visual acuity improved in 13 (10.8%) patients from (6/60-counting finger) logMAR1 to (6/24-6/60) log MAR (0.6-1); 59 (49.2%) patients from (6/24-6/60) log MAR (0.6-1) to (6/6-6/18) log MAR (0-0.32). Post-operatively 80% of patients' ocular motility was simultaneous, synchronous, and symmetrical. After 6 months, 105 patients enjoyed the benefit of binocular single vision. Surgery undertaken on patients with high myopia had less effective outcomes than patients with emmetropia or hyperopia.

Conclusions: For successful surgical outcomes, pre-operative deviation, age of presentation, binocular vision, and visual acuity need to be considered as prognostic factors. Patients of large angles with fluctuating deviation and high myopia showed poor surgical success.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

Association of Birth Weight and Gestational Age With Severity of Retinopathy of Prematurity

First Author: Tayyaba ***MALIK***
Co-Author(s): Noor ***UL AIN***

Purpose: Pakistan, like other low to middle-income countries, is facing an epidemic of retinopathy of prematurity. As the screening criteria of Pakistan are different from those of high-income countries (birth weight less than equal to 2000 grams and gestational age more than equal to 35 weeks), it is important to find out the association of these parameters with the severity of the disease.

Methods: Six hundred and fifty-six pre-term infants from a tertiary care center in Lahore, Pakistan, were screened and retrospectively analyzed. They were divided into four groups based on the severity of ROP (type 1, type 2, AROP, and advanced ROP with stage 4 or 5. Screening was done with indirect ophthalmoscopy and RetCam.

Results: There were 177 patients with type 1, 226 with type 2, 158 with advanced stage 4 or 5, and 95 infants had AROP. Based on multivariate analysis, gestational age, and birth weight were significantly associated with the severity of ROP (p values of 0.0058, < 0.0000, respectively). Patients with the lowest mean gestational age (30.26±2.96 weeks) had advanced, and patients with the highest mean gestational age (31.05±2.48 weeks) had type 2 ROP. Birth weight had a stronger effect on the severity of ROP than gestational age. Co-morbidities of pre-term infants, including sepsis, supplemental oxygen therapy, blood transfusion, postnatal steroid treatment, respiratory distress syndrome, patent ductus arteriosus, and intraventricular hemorrhage were not significantly different among the four groups of different severity.

Conclusions: Birth weight has a stronger association with the severity of ROP than gestational age. Low birth weight infants should also be screened irrespective of gestational age.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

Characteristics and Clinical Outcomes of Low-Dose Atropine Eyedrops for Slowing Myopia Progression in Children: A 5-Year Retrospective Study

*First Author: Hasiana **LUMBAN GAOL***
*Co-Author(s): Paramastri **ARINTAWATI**, Florence **MANURUNG**, Ni Retno **SETYONINGRUM**, Gusti Gede **SUARDANA**, Devina **ANNISA***

Purpose: To determine the profile and clinical outcomes of low-dose atropine eyedrops to slow myopia progression in children.

Methods: Data from pediatric patients (aged 4-15 years old) who received low-dose atropine eyedrops as myopia control were retrospectively reviewed. The main outcomes were changes of spherical equivalent (SE) and axial length (AXL) after atropine use. Subgroups of parental history and atropine response were analyzed.

Results: A total of 435 patients (865 eyes) were reviewed, with follow-up time ranging from 6-42 months. The majority of patients had a myopia history in their family, a long duration of near work, and a minimal duration of outdoor activity. The mean ± SD of atropine start was at 9.29±2.39 years old, baseline AXL was 25.32±1.16 mm, and baseline SE was -5.12±2.39 diopters (D) for subjective and -5.20±2.51 D for objective refraction. The biannual SE gain after atropine use was -0.18±0.28 D and -0.27±0.38 D for subjective and objective refraction, respectively, while the axial length increase was 0.13±0.32 mm. Patients with highly myopic parents were found to have significantly earlier onset of myopia ($p<0.05$), while older age showed better response than younger age ($p<0.05$).

Conclusions: Low-dose atropine eyedrops showed good results in slowing myopia progression in children, with an average gain of SE -0.18±0.28 D and AXL 0.13±0.32 mm every six months. Up to 64% of patients had less than -0.50 D progression annually. Younger age and patients with highly myopic parents showed poorer responses.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

Coats Disease in Vietnam: Clinical Presentation and Outcome

*First Author: Phu **NGUYEN***

Purpose: To present the clinical aspects and treatment outcomes of Coat's disease in Vietnam.

Methods: This is a retrospective case series from a single center of children diagnosed with Coat's disease from September 2020 to June 2023.

Results: The mean age of patients at diagnosis was 9.13 ± 5.38, with 29 males and 1 female. Retinal telangiectasia was most commonly involved in the temporal quadrant in 80% of eyes while just involved in the nasal quadrant in only 20% of eyes. Macular-off retinal detachment was present in 45% of eyes, and macular edema was present in 42% of eyes. Stage 2B was the most common with 10 eyes while there was only 1 eye at stage 2A. The most common primary treatment is photocoagulation in the early stage and cryotherapy in the advanced stage. Intravitreal anti-VEGF is used as an adjuvant treatment in 17 eyes. In 28 eyes (90,32%), the retina was reattached. However, we found vitreoretinal fibrosis in 7 eyes. At the final visit, 11 eyes had improved Snellen visual acuity, 16 eyes showed stabilization, and 4 eyes had a decline in visual acuity.

Conclusions: The common stage in the study is 2B. Early-onset patients often have more severe symptoms. Laser photocoagulation or cryotherapy combined with injections of anti-VEGF has led to improved disease resolution with greater globe salvage and improved vision, especially in the early stages.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

Effect of Horizontal Strabismus on Mental Health of Children and Adults in China

*First Author: Tao **ZHENGYANG***
*Co-Author(s): Jing **CHEN**, Zhixin **CHEN**, Hongwei **DENG**, Jiao **WANG**, Zefeng **KANG***

Purpose: The aim of the study is to investigate the effect of strabismus on mental health.

Methods: A total of 52 children (age 3-18) and 48 adults (age 18-60) diagnosed with horizontal strabismus were evaluated for mental health by three scales in Shenzhen Eye Hospital from December 2021 to February 2022 The Social Anxiety Scale for Children (SASC) was applied to evaluate mental health status of children; the Chinese Adult Strabismus Quality of Life Scale (CAS-20) was for adults; while the Symptom Checklist-90 (SCL-90) was for all the patients enrolled.

Results: In horizontal strabismus, the patients with greater prism degree (> 50Δ) scored higher in SCL-90 than those with less prism degree (≦ 50Δ) (P =0.039) in both children and adults. The overall score of SASC was higher in patients without binocular visual fusion function than that in those with normal function (P =0.014), especially with the dimension of "social avoidance and distress " (P =0.0025). For children, the total score of the SASC increased by 0.50 for every 1 year with age and increased by 3.25 with the loss of

binocular visual fusion function. The total score of SCL-90 of enrolled adults was greater than that of children in the dimensions of “somatization”, “obsession–compulsion”, “interpersonal sensitivity”, “depression”, “psychoticism” and “diet and sleep” effects.

Conclusions: Strabismus has significant effects on the mental health of both children and adults, which suggests that strabismic patients should intervened in timely and properly.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

Efficacy and Safety of Iris-Claw and Scleral Fixated Intraocular Lens in Pediatric Ectopia Lentis: A Systematic Review

*First Author: Siti **SORAYA***
*Co-Author(s): Dian **YULIA***

Purpose: This systematic review aims to elucidate current evidence regarding the efficacy and safety of iris-claw and scleral-fixated intraocular lenses (IOLs) to treat children with ectopia lentis.

Methods: A comprehensive search from multiple electronic databases such as PubMed, Cochrane Library, ProQuest, Scopus, EBSCO, Wiley, and Embase within the last ten years of publication. All seventeen studies matched with the studies’ criteria were included and assessed with eligibility assessment tools. The outcomes extracted and compared were BCVA, endothelial cell density, postoperative complications, and IOL stability.

Results: Seventeen studies were included, consisting of three observational studies, nine retrospective studies, and five interventional studies, in which the majority had a low risk of bias. Significant improvement in post-operative BCVA was shown on both IOLs. The most frequent complication found on ICIOL was pupillary ovalization, while SCIOL was an eye infection. Endothelial cell loss was higher in SCIOL, and both IOLs showed no significant difference ($p > 0,05$) in terms of the post-operative IOP. The IOL dislocation was more frequently found on ICIOL; however, ICIOL was much more preferred due to less manipulation and the duration of surgery.

Conclusions: ICIOL and SFIOL were both effective and safe for treating pediatric ectopia lentis. There was no superiority in both techniques. Thus, it varied according to each surgeon’s preference.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

Evaluation of the Morphological Features of the Ciliary Muscle in Children With Anisometropic Amblyopia

*First Author: Huaxin **ZUO***
*Co-Author(s): Yunwei **FAN**, Jia **LI**, Li **LI**, Qian **WU***

Purpose: To analyze and compare the morphological characteristics of the ciliary muscle in anisometropic amblyopic children’s amblyopic eyes with the contralateral eyes of normal visual acuity, as well as with the healthy control eyes.

Methods: A total of 29 children from 6 to 12 years with anisometropic amblyopia and normal visual acuity who attended our outpatient clinic from October 2020 to March 2023 were included. Ciliary muscle morphology parameters, including maximum ciliary muscle thickness (CMTmax), ciliary processes distance (CPD), and ciliary body cross-sectional area (SC), were evaluated by ultrasound biomicroscope (UBM), and measured and quantitatively analyzed using Image-Pro Plus image analysis software. The thickness differences, ratios, mean differences, and the imbalance of SC between the nasal and temporal sections were calculated and compared.

Results: CMTmax in amblyopic eyes was thicker than that in the contralateral normal eye and the normal group of eyes. Patients with thinner ciliary muscles, as well as the ratio of nasal to temporal Sc was 1.0 ~1.10 had better corrected visual acuity. The higher the imbalance of Sc of both eyes, the worse the corrected visual acuity. Contrarily, the percentage of imbalance in Sc between the eyes in the control group was lower than that in the amblyopia group with worse corrected visual acuity.

Conclusions: The characteristics of the morphometric parameters correlate with corrected visual acuity in children with anisometropic amblyopia. UBM examination combined with Image-Pro Plus image analysis software provides objective and quantitative clinical assessment criteria for the diagnosis and therapeutic efficiency of anisometropic amblyopia.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1-GF)

Exploring the Efficacy of the Plusoptix S12-C Photoscreener in Identifying Amblyogenic Risk Factors Among Children Aged 6 Months to 6 Years in Rural South India

*First Author: Kirandeep **KAUR***
*Co-Author(s): Bharat **GURNANI**, Veena **KANNUSAMY***

Purpose: This study aims to evaluate the screening effectiveness of a groundbreaking fourth-generation handheld Plusoptix S12 C photoscreener in identifying amblyogenic risk factors among children aged 6 months to 6 years residing in remote regions of South India.

Methods: In this cross-sectional investigation, a trained fieldworker conducted screenings on 381 children aged 6 months to 6 years at Anganwadis and schools using the Plusoptix photoscreener. Subsequently, a comprehensive ophthalmic assessment, encompassing retinoscopy, subjective refraction, and strabismus evaluation, was administered by an optometrist and an orthoptist. To validate outcomes, a senior pediatric ophthalmologist conducted a thorough ocular examination for all participants.

Results: Among the 367 children considered for analysis, the photoscreener exhibited a sensitivity of 86.76% and a specificity of 82.27%. Positive predictive value, negative predictive value, and receiver operating characteristics were 52.67%, 96.47%, and 83.11%, respectively. In the subgroup of children under 3 years, the photoscreener demonstrated a sensitivity of 89.19% and specificity of 81.18%. Notably, myopic astigmatism emerged as the most prevalent amblyogenic risk factor within our study cohort.

Conclusions: Given the scarcity of adequate healthcare professionals and limited healthcare-seeking behavior in India, the implementation of photo screeners assumes significance. Recommending the adoption of photo screeners for early screening, even as early as 6 months of age, particularly in underserved remote areas, holds promise. This approach can effectively extend reliable eye care services to previously marginalized regions.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1-GF)

Intraocular Lens Implantation for Congenital and Developmental Cataract in Infants Under One Year of Age

*First Author: Kabindra **BAJRACHARYA***

Purpose: To evaluate the practice of Intra Ocular Lens (IOL) implantation for congenital and developmental cataract in infants aged 6 months to 1 year.

Methods: This study was descriptive and retrospective. The subjects included children aged over 6 months and up to 1 year who underwent cataract surgery for congenital and developmental cataracts. The study period covered two years, from November 2019 to October 2021. Data collection encompassed demographic information, axial length measurements, biometric data, implanted IOL power, hyperopic corrections made, and postoperative retinoscopy.

Results: A total of 32 children underwent the surgical procedure, accounting for a total of 59 eyes. Out of these 32 children, 24 (75%) were male, and 8 (25%) were female, resulting in a male-to-female ratio of 3:1. In 54 eyes (91.53%), IOL was implanted, while in 5 eyes (8.47%), IOL implantation was not performed due to microphthalmia. Out of the total, 5 children (15.63%) had unilateral cataract, while 27 children (84.37%) presented with bilateral cataracts. Biometry measurements ranged from 10 D to 42 D, with implanted IOL power spanning from 25.5 D to 30 D. Axial length varied between 19.55 mm and 20.18 mm. No patients developed glaucoma. However, 2 patients developed posterior capsular opacification.

Conclusions: It is considered safe to perform primary IOL implantation in infants aged 6 months to 1 year. Primary IOL implantation with hyperopic correction according to age (considering even months) is important in the first year of life to neutralize myopic shift.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1-GF)

Retinopathy of Prematurity (ROP) Treatment Outcomes in a Single Tertiary Care Hospital in Pakistan

*First Author: Lubna **MIAN***
*Co-Author(s): Mohammad **MOIN***

Purpose: To describe the outcomes of ROP treatment among patients with various ROP stages.

Methods: A retrospective cross-sectional case series of premature infants presenting to ROP clinic at a tertiary care hospital in Lahore over eight years from 2015 to

2022. Non-probability consecutive sampling was used to include all patients presenting with stage 3, stage 4, stage 5 and aggressive ROP (A-ROP). Outcomes were studied in terms of fixation and following and retinal attachment.

Results: A total of 4075 patients met the criteria for prematurity in LGH NICU. Only 2037 were screened due to high mortality (n=1484) and loss of follow-up (n=554). 214 LGH patients and 217 referred patients were included. Ninety-five patients had (A-ROP), all had ROP regression, and only one progressed to stage 4B after receiving anti-VEGF only with no following laser. Thirty-two patients had stage 3 ROP in zone 1, five progressed to stage 5 (15.6%) after receiving a single treatment modality. All 145 patients having stage 3 zone 2 ROP had a regression. Six out of 28 eyes receiving PPV for stage4 ROP progressed to stage5, (21.4%). Twenty-two out of 124 patients with stage 5 ROP had surgical intervention, but none achieved retinal attachment or fixation and following in any eye.

Conclusions: Timely treatment with anti-VEGF followed by laser to PAR results in good outcomes. Zone1 stage 3 ROP has more risk of progression to detachment compared to A-ROP, especially when treated with a single treatment modality. Stage 5 patients do not benefit from surgical intervention, and timely ROP screening remains the key.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

Surgical Outcomes of Improved Recession-Resection Versus Decreased Recession-Resection in Patients With Convergence Insufficiency Type Intermittent Exotropia

*First Author: Miao **KONG***
*Co-Author(s): Junhong **LI***

Purpose: To compare the outcomes of two different surgical procedures of strabismus surgery in patients with convergence insufficiency intermittent exotropia (CI- IXT).

Methods: Patients with CI-IXT were included in this prospective study and were randomly divided into 2 groups: improved RR (i-RR)group in which patients underwent improved unilateral lateral rectus (LR) recession and medial rectus (MR) resection procedure (i-RR) biased to distance and near deviation, respectively, and the decreased RR (d-RR) group, in which patients underwent conventional MR resection and decreased 1mm LR recession based on the near deviation. A successful outcome at distant and near was defined as an alignment between 10 PD of exodeviation and 5 PD of esodeviation. Surgical success rate, preoperative and postoperative distant, near deviations, and near-distance disparity (NDD) among groups were analyzed.

Results: Sixty-three patients with CI-IXT were included. The success rate at the last follow-up was 64.7% for i-RR and 89.4% for d-RR (p <0.01). The success rate of distant exodeviation, near exodeviation, and NDD in the two groups after 6 months was statistically significant (P <0.05), respectively. At the 6-month follow-up, the rate of postoperative undercorrection was significant in these two groups (p<0.01), respectively. A significant reduction in the mean near-distance difference was achieved postoperatively in both groups: from 14.7 PD preoperatively to 2.5 at last follow-up after i-RR, and from 15.2 to 2.1 after d-RR (both p<0.005).

Conclusions: This study showed that the CI-IXT would converted to basic IXT after the strabismus surgery and d-RR should be performed in CI-IXT for favorable surgical outcomes. The new surgical dose calculation proposed provides a reference for surgical planning.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

The Downregulation of Apolipoprotein A4 in the Tear Fluid of Preterm Infants May Be a Promising Potential Retinopathy of Prematurity Biomarker

*First Author: Alicia **LIU***
*Co-Author(s): Chung Yin, Benjamin **CHU**, Connie **LAI**, Thomas Chuen **LAM**, Wai-ching **LAM**, Ying Hon **SZE***

Purpose: Retinopathy of prematurity (ROP) is the leading cause of preventable childhood blindness. Proper identification of the premature baby at risk is vital. Protein biomarkers in tear fluid may offer an accessible, non-invasive option.

Methods: An expansion of our previous study in identifying dysregulated tear proteins in ROP infants. Infants whose birth weight was ≤1500g or gestational age ≤30 weeks in NICUs were recruited. Examination began at 4 weeks chronologic age or 31 weeks postmenstrual age. ROP was diagnosed according to the International Classification for Retinopathy of Prematurity. Tear fluids from ROP (n=3) and non-ROP (n=15) infants (ROP: 34.8±2.6 postmenstrual age in weeks, non-ROP: 35.2±0.7, p=0.78) were collected with Schirmer's strips. Tear proteins were quantified by SWATH-acquisition in ZenoTOF 7600 mass spectrometer, analyzed in PeakView (Sciex).

Results: A total of 876 unique protein groups (1% FDR) were quantified, with 52 significantly differentiated proteins (FC ≥1.5 or ≤0.67, p<0.05). Among them, 17 (33%) were involved in protein-protein interaction with vascular endothelial growth factor A (VEGFA), a therapeutic hallmark of ROP treatment. This includes the significantly downregulated apolipoprotein A4 (APOA4, FC=0.29, p=0.03).

Conclusions: The downregulation of APOA4 is consistent with our previously reported findings with another mass spectrometry system (TripleTOF 6600, Sciex). These reproducible results on multiple platforms with independent samples signify the potential application of the APOA4 biomarker in ROP. APOA4 has been reported to regulate platelet aggregation and thrombosis, and its association with vascular disruption may lead to the development of an incompletely vascularized retina in ROP. Hence, our study highlights the potential of tear protein biomarkers for non-invasive ROP screening.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

The Effectiveness of Intra Arterial Chemotherapy (IAC) in Saving Vision Among Eyes With Group B, D and E Retinoblastoma

*First Author: Lubna **MIAN***
*Co-Author(s): Mohammad **MOIN***

Purpose: To explore the effectiveness of IAC in saving vision in eyes with group B, D and group E retinoblastoma.

Methods: A retrospective interventional case series was conducted at Lahore General Hospital, including consecutive children presenting with intra-ocular ICRB Group B, D or E retinoblastoma from 2017 to 2022. These children had 6 cycles of systemic chemotherapy but still showed active tumors. IAC was provided as a rescue treatment before going for enucleation, and effects were observed on monthly retinal images under general anesthesia.

Results: Thirty-one eyes of 31 patients received IAC. Group B n=13, Group D n=8, and Group E n=10 Eyes with huge tumors or retinal detachment were included. Eyes with secondary glaucoma, phthisis bulbi or unclear media were excluded and underwent enucleation. Nine treated patients had unilateral retinoblastoma, and 22 had bilateral retinoblastoma with the treated eye being the only eye of the patient. Useful vision was saved in 77% of Group B eyes, 62.5% of Group D eyes, and 70% of Group E eyes. (P-value 0.776). The cause of vision loss was CRAO in three Group B eyes with peripheral tumors, inadequate response in 2 Group E eyes, recurrence in one Group D eye and amblyopia in 2 Group D and 1 Group E eyes.

Conclusions: IAC is an effective rescue treatment in Groups B, D and E retinoblastoma. However, the risk of CRAO is higher with Group B peripheral tumors.

Feb 25, 2024 (Sun)
09:00 – 10:30
Venue: Uluwatu 6 (BNDCC1–GF)

Visual Outcome of Pediatric Cataract Surgery in Children Aged 8 Years and Older

*First Author: Kabindra **BAJRACHARYA***

Purpose: The objective of this study was to determine the visual outcomes of pediatric cataract surgeries conducted in children aged 8 years and older.

Methods: This was a retrospective, descriptive study conducted over the course of a year, from January 2022 to December 2022. The study included patients aged 8 years up to 16 years old with congenital and developmental cataracts who were operated on. Data were collected and recorded, including demographic information, pre-operative best corrected visual acuity (BCVA), BCVA immediately after surgery, and BCVA at the 3-month.

Results: A total of 48 congenital and developmental cataracts were operated on patients aged 8 to 16 years, with a mean age of 10.56 years. Among these, 13 (27.1%) were in the right eye, 17 (35.4%) in the left eye, and 18 (37.5%) involved both eyes. There were 26 male patients (54.2%) and 22 female patients (45.8%). Before the operation, the BCVA ranged from 6/6 to 6/18 in 14 right eyes (29.2%) and 14 left eyes (29.25%). Immediately after the operation, 23 right eyes (47.9%) and 15 left eyes (31.3%) achieved this range. During the 3-month follow-up, 24 right eyes (50%) and 20 left eyes (41.7%) achieved the 6/6 to 6/18 Snellen BCVA.

Conclusions: Late surgery for pediatric cataract is not less frequent. Bilateral presentation is common. The findings indicate a favorable visual improvement following cataract surgery in children aged 8 years and older.

Refractive Surgery

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

A Novel 3-D Corneal Diameter Profile and Artificial Intelligence Driven Sizing of Implantable Collamer Lens

*First Author: Naren **SHETTY***
*Co-Author(s): Mathew **FRANCIS**, Abhijit **SINHA ROY***

Purpose: Study the implantable collamer lens (ICL) sizing difference between measured minus predicted postoperative vault (prediction error) using an artificial intelligence (AI) model on three-dimensional (3D) corneal diameter (CD) profiles.

Methods: A total of 350 eyes of patients who had undergone ICL surgery were retrospectively selected. 25-meridian Scheimpflug corneal tomography scans (Pentacam HR, OCULUS Optikgeräte GmbH, Germany) were used to derive the 3D corneal diameter profile. From the profile min, max, horizontal, vertical, delta (max - min), meridian of min and meridian of max CD were derived. Also, a skewed Gaussian curve was fitted to the delta CD values and amplitude, centre, sigma, and gamma parameters were derived. The eyes were divided into two groups depending on whether the postoperative vault was within the target of 250–750µm or not. A descriptive and then a predictive AI analysis was performed.

Results: Delta CD value showed a significant difference between the groups (p=0.001). Other parameters such as amplitude, min CD, and max CD were also significantly different between the groups (p<0.05). Regression analysis between prediction error with delta CD had an r of 0.9 and was significant (p=0.03). Beyond 1.2mm of delta CD, the prediction error increased by 127µm for every 0.1m increase in delta CD. The desition tree AI model had an area under the curve of 0.9.

Conclusions: The three-dimensional corneal diameter could drive the next-generation ICL sizing calculator with a much more robust prediction of the vault to minimize postoperative vault surprise.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Applying Collagen Understanding to Refractive Assessment, Treatment and Evaluating Outcomes

First Author: Anisha ***R***
Co-Author(s): Rahul ***PATIL****, Abhijit* ***SINHA ROY***

Purpose: To determine and correlate the role of topography, biomechanics (BM), collagen fiber distribution, and Bowman layer thickness (BLT) in differentiating healthy from suspect corneas and to devise an algorithmic approach to customizing refractive surgery based on them.

Methods: A total of 350 patients underwent pre-operative screening for refractive surgery, including corneal topography (Pentacam HR) and BM (Corvis-ST). They were also imaged using ultra-high-resolution polarisation-sensitive (PS-OCT), which generated Phase Retardation (PR) maps from the posterior corneal surface and Bowman's layer (BW). Zonal analysis was performed on enface maps. Based on parameters derived from the aforementioned imaging modalities, customized refractive surgery (LASIK/SMILE/PRK/ICL) was planned. Post Refractive Surgery, Corneal Collagen fibril orientation was imaged to study collagen patterns between various surgeries.

Results: Eyes with normal topography and BM, SpA1>95, collagen orientation with healthy PR distribution and uniform BLT, underwent LASIK or SMILE. Eyes with normal topography, normal-to-borderline BM, SpA1<95 and structurally visible changes in collagen orientation and BLT, underwent PRK (Spherical equivalent (SE)<6D) or SMILE Xtra (SE>6D). Eyes with normal topography, abnormal BM, SpA1<80-90 and structurally visible changes in collagen orientation with thinning of BLT, underwent ICL implantation. At the 3-year follow-up, they had stable collagen orientation and no evidence of ectasia. Based on AI-driven analytics, SpA1 and CBI were found to correlate with changes in collagen orientation.

Conclusions: Changes in collagen fiber orientation may start before topographic and biomechanical changes and can be identified using PS-OCT. It can thus be utilized in clinical settings and can help in algorithmic planning of refractive surgery.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Central Toxic Keratopathy Following Collagen Cross Linking – A Case Series

First Author: Akhil ***BEVARA***
Co-Author(s): Pankaj ***DONGRE****, Pravin* ***VADDAVALLI***

Purpose: To report a case series of Central toxic keratopathy (CTK) following collagen cross-linking (CXL) in keratoconus.

Methods: This is a retrospective case series between January 2020 and September 2021. In this period, CXL was performed for progressive keratoconus in 964 eyes. CXL was done using epithelium off accelerated protocol in all patients with a riboflavin soak time of 20 minutes and a UVA light exposure of 9mW for 10 minutes using the Avedro KXL (Glaukos Inc, Aliso Viejo, CA) cross-linking system.

Results: 12 out of 964 eyes (1.2%) developed CTK within one week of CXL. All these patients presented with a well-circumscribed, central disciform haze with associated thinning and flattening, which gradually recovered with conservative management. The mean preoperative spherical equivalent (SE) was -4.32D with a best corrected visual acuity (BCVA) of 0.35 LogMAR, whereas the mean SE at the last follow-up was -3.54D with BCVA improving to 0.27 LogMAR. We noted initial flattening in keratometry up to three months post-CXL in these patients, which gradually steepened over 12 months, but did not reach preoperative levels. We also noted exuberant flattening in pachymetry in the first 3 months, which improved over 12 months, but the cornea stayed significantly thinner compared to preoperative levels.

Conclusions: Several reports of CTK post-refractive surgery have been described. However, the association

of CXL in the development of CTK has not been described previously. We elucidate the clinical features of CTK following CXL and how it differs from corneal scarring or haze that occurs post-CXL.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1-GF)

Clinical Outcomes of Surgical Management Following Enhancement for Presbyond Laser Blended Vision (LBV) LASIK

*First Author: Riya **CHOPRA***
*Co-Author(s): Shruti **REVANKAR***

Purpose: To evaluate the causes, safety and clinical outcomes of surgical management following enhancement for Presbyond Laser Blended Vision (LBV) LASIK procedure for presbyopia and refractive error correction.

Methods: This retrospective study included a total of 20 eyes that underwent surgical enhancement following the Presbyond LBV procedure operated between January 2014 and January 2023. All patients underwent a repeat micro-monovision assessment and treatment planning with the CRS-Master followed by flap re-lift and ablation using the MEL-90excimer laser for correction of the residual refractive error. As a standard protocol, the dominant eye (DE) is aimed at emmetropia, and the non-dominant eye (NDE) is aimed for a myopia of -1.5 D.

Results: Of 506 eyes,20 were enhanced at a mean follow-up of 203.3±342.76 days, the enhancement rate being 3.95%. Of the 20 eyes, 13 eyes had myopic & 7 had hyperopic preoperative refractive error. Overall 10 DE & NDE eyes were enhanced. The pre-op UDVA improved in DE eyes from a mean LogMAR of 0.28±0.19 to -0.03±0.079 in myopia group & from 0.24±0.12 to -0.04± 0.069LogMAR in hyperopia groups, with mean SE reducing from 0.83±0.28D to -0.08±0.18D in the myopia group v/s 0.91±0.38D to 0.04±0.26D in hyperopia group. For the NDEs, the mean SE reduced in the myopia group from -0.58±0.18D to -1.66±0.90D and in the hyperopia group from 0.31±0.12D to -1.40±0.18D. All NDE eyes improved to N6 or better near visual acuity.

Conclusions: Clinical outcomes following surgical enhancement of Presbyond LBV LASIK resulted in satisfactory outcomes, with a relatively low observed enhancement rate of 3.95 %.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1-GF)

Clinical Outcomes of Topography Guided Versus Wavefront Optimized LASIK for Correction of Myopia and Compound Myopic Astigmatism

*First Author: Deeksha **RANI***
*Co-Author(s): Sudarshan **KHOKHAR**, Venkatesh **NATHIYA**, Amar **PUJARI**, Aishwarya **RATHOD***

Purpose: To compare the safety, efficacy, and visual outcomes of topography-guided (TG) LASIK ablation versus Advanced Ablation Algorithm (AAA) on Zeiss Mel 90 on virgin eyes.

Methods: Case sheets of 30 patients who underwent TG LASIK and 45 patients who underwent AAA LASIK between January 2021 and September 2022 were retrieved and reviewed. TG group included 60 eyes of 30 patients and the AAA group included age and sex-matched 90 eyes of 45 patients. Both groups were compared for visual outcomes, residual refraction, and root mean square higher order aberrations (rms HOA) at 1 week, 1 month, 3 months and 6 months postoperatively and using unpaired t-test and Mann Whitney U test.

Results: The mean preoperative spherical equivalent in the TG group and AAA group was -3.12 (1.67) and -3.19 (1.61) respectively. The safety and efficacy of the treatment were 100% in both groups. The postoperative increase in rms HOA was comparable in both groups (p=0.55). The ablation duration was significantly longer in topo-guided LASIK (p=0.001).

Conclusions: AAA LASIK on MEL 90 is comparable to topography-guided LASIK for the management of low myopia and myopic astigmatism.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1-GF)

Compare the Outcomes of 4 Different Minimally Invasive Corneal Lens Extraction Techniques (SMILE (Zeiss Visumax 500), SMILE Pro (Zeiss Visumax 800), ATOS (Schwind), CLEAR (Zeimer Z8)) in Terms of Postoperative Uncorrected Visual Acuity and Refractive Error

*First Author: I-hung **LIN***
*Co-Author(s): Chao-kai **CHANG**, Chen-cheng **CHAO**, Tsung-jen **WANG***

Purpose: Evaluate outcomes of four minimally invasive corneal lens extraction techniques: SMILE (Zeiss Visumax 500), SMILE Pro (Zeiss Visumax 800), ATOS (Schwind), and CLEAR (Zeimer Z8) concerning

postoperative uncorrected distance visual acuity (UDVA) and refractive error.

Methods: Data were retrospectively collected from Taipei Nobel Eye Clinic (2023/2/1-2023/6/30). The analysis included 50 SMILE and SMILE Pro patients each (100 eyes per technique), and 20 ATOS and CLEAR patients each (40 eyes per technique), focusing on preoperative best-corrected visual acuity (BCVA) and refractive error, and postoperative UDVA and refractive error over a 3-month follow-up.

Results: Average ages across 4 different techniques groups ranged from 28-33 years. The preoperative average BCVA for each group was consistent at 0.00 logMAR. In each group, preoperative average spherical refractive errors ranged between -5.03 to -5.67D, while average cylinder refractive errors ranged from -0.90 to -1.35D. Three months post-operation, UDVA was similar across groups (SMILE: 0.02±0.06 logMAR; SMILE Pro: 0.06±0.07 logMAR; ATOS: 0.03±0.06 logMAR; CLEAR: 0.18±0.13 logMAR). Specifically, SMILE Pro exhibited the smallest postoperative average spherical refractive error (-0.08±0.4 D), followed by ATOS (-0.23±0.9 D), CLEAR (-0.41±0.90 D), and SMILE (-0.42±0.43 D). For postoperative average cylinder refractive error, ATOS led (-0.41±0.4 D), then SMILE (-0.47±0.34 D), SMILE Pro (-0.47±0.4 D), and CLEAR (-0.79±0.48 D).

Conclusions: Three months post-surgery, the UDVA outcomes across the four techniques were similar, indicating consistent visual improvement. SMILE Pro showcased the best results in spherical refractive error correction, while ATOS excelled in cylinder refractive error adjustment.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Early Changes of Anterior Chamber Segment After Implantable Collamer Lens (ICL) Surgery in High Myopia

*First Author: Yifei **PENG***

Purpose: To investigate the changes in intraocular pressure (IOP), both nasal and temporal angle opening distance (AOD) and trabecular iris angle (TIA) in the early postoperative period of implantable collamer lens.

Methods: A total of 107 eyes of 60 patients with high myopia underwent ICL/TICL surgery following the standardized processes. Patients were examined preoperatively and 3 hours (±0.5h) postoperatively. IOP was measured by non-contact tonometer (CT-1, Topcon, Japan). AOD500 and TIA500 were measured by swept-source anterior segment optical coherence tomography (SS-OCT, CASIA2, Tomey, Japan).

Results: There were significant differences between preoperative and early postoperative IOP, bilateral AOD500 and bilateral TIA500 (P=0.000). IOP measurement median increased from 18mmHg to 22mmHg. Both bilateral AOD500 and TIA500 decreased early postoperatively. Preoperative AOD500 medians were measured as 0.720mm in the nasal side while 0.704mm in the temporal, decreased to 0.312mm and 0.313mm postoperatively. The preoperative TIA500 measurement's median was 54.5 degrees on the nasal side, and 53.4 degrees on the temporal, which also decreased to 29.3 degrees and 28.3 degrees after surgery was performed. Comparing the D-value of five sets of parameters preoperative and postoperative, the correlation between IOP and bilateral AOD500, IOP, and bilateral TIA500 was weak (r=-0.089, P=0.362; r=-0.013, P=0.898; r=-0.096, P=0.325; r=-0.003, P=0.976).

Conclusions: IOP, bilateral AOD500, and TIA500 changed significantly in the early period after ICL/TICL surgery, but no significant correlation between the changes was found.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Efficacy, Predictability, and Safety of the New Small Incision Lenticule Extraction (SMILE) PRO in the Indonesian Population

*First Author: Vidyapati **MANGUNKUSUMO***
*Co-Author(s): Nashrul **IHSAN**, Viona **VIONA***

Purpose: This report aims to compare the refractive outcomes of SMILE PRO in two different age groups.

Methods: Retrospective study on patients who underwent SMILE Pro between January and February 2023. Inclusion criteria for this study were age > 18 years, a 1-month follow-up, and absence of ocular abnormalities. Exclusion applied to amblyopia with best corrected visual acuity ≤20/30.

Results: This study involved 219 SMILE PRO eyes: 186 eyes are in the ≤30 age group and 33 eyes in the>30 group. The ≤30 group had a preoperative mean spherical error of -4.62 ± 2.51D (-0.50 to -10.00 D) and astigmatism of -1.56 ± 0.99D (0.00 to -5.00 D). The >30 group showed preoperative a mean spherical error of -6.04 ± 1.02D (-1.25 to -9.00D) and mean astigmatism of -1.02 ± 0.77D (0 to -3.5D). In the ≤30 group, 99% achieved 20/20 UDVA post 1 month of the procedure. Notably, 1.1% gained ≥1 lines in visual acuity, with no line loss. Safety evaluation indicated that 98.4% maintained CDVA Snellen lines unchanged, while 1.1% gained 1 line. Predictability was high (R2=0.9731), 84.4% achieved ±0.5D accuracy, 97.3% achieved ±1.00D. Treatment stability was consistent in the one-month follow-up. Astigmatism correction was satisfactory, 83.3% achieved ≤0.5%, 96.8% achieved ≤1.00D, with strong predictability (R2=0.8359).
For the>30 group, 91% achieved 20/20 UDVA with monovision. Predictability was high, 98% reached the

targeted spherical equivalent, 91.2% within ±0.5D, all within ±1.00D. Treatment stability aligned with the ≤30 group. Astigmatism reduction was favorable (100% ≤0.5D, R2=0.9564).

Conclusions: SMILE PRO yielded equal excellent efficacy, safety, and predictability, in both groups.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1-GF)

Evaluation of Early Binocular Vision Function After ICL V4c Implantation in Patients With High Myopia

*First Author: Kaili **TANG***
*Co-Author(s): Liwei **MA**, Jing **WANG**, Jinsong **ZHANG***

Purpose: A comprehensive evaluation of early binocular vision function after ICL V4c implantation in high myopia patients.

Methods: To observe the clinical data of 35 patients with high myopia who underwent binocular phakic posterior chamber intraocular lens implantation in our hospital from May 2019 to May 2021. The visual acuity, subjective optometry, binocular vision instrument and visual quality analyzer inspection.

Results: Postoperatively, 35 cases (100%) had UDVA ≥ 1.0, and 16 cases (46%) had uncorrected visual acuity ≥ preoperative corrected visual acuity. Both postoperative uncorrected distance visual acuity and 80cmLogMAR medium visual acuity were improved compared with those before the operation, and the differences were statistically significant; the near vision of 40cmLogMAR was improved after the operation than before, and the difference was not statistically significant. The contrast sensitivity test of both eyes after the operation was better than that before the operation, and the difference was statistically significant. The intermediate vision and glare sensitivity (no glare) and the intermediate vision and glare sensitivity (glare) of both eyes increased by 4 points after operation compared with before, and the difference was not statistically significant. Almost all the third-order and fourth-order aberrations under the pupil diameter of 3.0mm and 5.0mm increased after operation compared with the preoperative median. And the postoperative satisfaction of the patients was high without clear symptoms of visual interference.

Conclusions: Although the high-order aberrations in one eye and the whole eye increased in the early stage after binocular implantation of ICL V4c in patients with high myopia, the binocular vision function was improved.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1-GF)

Impact of the Novel iSMART LASIK Software on Topography-Guided LASIK Outcomes

*First Author: Zain **KHATIB***
*Co-Author(s): Prerna **AHUJA**, Zelda **DADACHANJI**, Saurabh **DESHMUKH**, Krati **GUPTA**, Niha **KHATIB***

Purpose: To evaluate the outcomes of topography-guided LASIK using a new software-based algorithm (iSMART LASIK software) as compared to treating the manifest refraction alone, in cases of myopic astigmatism.

Methods: This was a single-centre prospective randomized trial of Contoura Topo-guided LASIK outcomes using 2 different methods. 90 eyes of 45 patients were recruited, where 1 eye of each patient underwent treatment using the conventional manifest refraction (MR group), while the 2nd eye was planned using the software, and the modified refraction given by the software was used (IC group). The eye that was assigned to a particular group was selected by simple randomization. Surgery was performed by a single surgeon using Femtosecond laser flap and Contoura LASIK.

Results: Post-operative assessment of outcomes was performed at 3 months following surgery. The mean age was 27 years, with 38% males and 62% females. There were no significant differences between the groups for pre-op sphere, cylinder and spherical equivalent. The mean visual acuity (decimal) was significantly better in the IC group (1.13) as compared to the MR group (1.05) (p=0.05). The percentage of eyes gaining 1 or more lines of uncorrected vision postoperatively was significantly better in the IC group (42%), as compared to 22% in the MR group (p=0.04). The percentage of eyes with a residual post-op cylinder within +/-0.5DC in the IC group was 100% compared to 89% in the MR group (p=0.02). Alpins vector analysis was also significantly better in the IC group as compared to the MR group (p=0.04).

Conclusions: Contoura topography-guided LASIK using the iSMART software yields superior outcomes as compared to treating with manifest refraction alone.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Implantation of Toric Implantable Collamer Lenses (ICLs) in Post-keratoplasty Pseudophakic Eyes for the Management of Residual Astigmatism

*First Author: Sanyukta **JOSHI***
*Co-Author(s): Bhupesh **SINGH***

Purpose: In this study, we will evaluate the outcomes of toric implantable collamer lenses (ICL) in the management of residual astigmatism in post-keratoplasty pseudophakic eyes.

Methods: Patients with post-keratoplasty residual astigmatism of -3.5 to -6 D were included. They underwent piggyback toric ICL implantation in that eye. Uncorrected distance visual acuity (UDVA), uncorrected near visual acuity (UNVA), Best corrected visual acuity (BCVA), contrast sensitivity, and Visual Function Index (VFI) were evaluated at 1 day, 1 week, 1 month, 3 months and 6 months postoperatively. Intraocular pressure (IOP), vault height, anterior chamber reaction and graft endothelial cell count were measured during each visit.

Results: Fifteen eyes of 15 patients were included in the study. The mean age was 62.66 years. The mean preoperative spherical equivalent was -6.11 D (-4.75 to -8 D), improving to -0.80 D postoperatively (0.25 to -1.5 D). The mean UDVA was 6/12P, and the mean UNVA was N8 in toric ICL-implanted eyes. The mean BCVA was 6/12. Contrast sensitivity was better with toric ICL than preoperatively with glasses. The mean IOP was 14.6 mm Hg on non-contact tonometry. 93.33% of patients were satisfied at 6 months postoperatively. No adverse effects like increased intraocular pressure, decreased endothelial count, decreased vault height or anterior chamber reaction were seen in follow-up period.

Conclusions: Toric ICLs were found to be safe and effective piggyback intraocular lenses (IOLs) in pseudophakic post-keratoplasty eyes for management of residual refractive error and astigmatism and show a good visual outcome for distance and near vision with good patient satisfaction.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

ReLEx SMILE for Mixed Astigmatism Laser Vision Correction

*First Author: Olesia **ZIIATDINOVA***

Purpose: To demonstrate the ability of the ReLEx SMILE procedure for hypermetropia and astigmatism laser vision correction. To present the ReLEx SMILE procedure with low-energy femtosecond laser parameters.

Methods: The study included 30 eyes. The range of hypermetropia was from +0.25 up to +2.25 diopters. The range of astigmatism was between 1.0 to 5.0 diopters. The ReLEx SMILE software allows the planning for laser vision correction only myopia and minus or plus astigmatism. We should convert hypermetropia and minus astigmatism into myopia and plus astigmatism. It is possible to do this with the transposition rule, where the mixed astigmatism is recalculated from minus to plus with 90-degree axis changes.

Results: For example, the refraction is sphere + 0.5 cylinder - 4.0 axis 10 degrees; for ReLex SMILE procedure, we can plan with laser software sphere - 3.5 cylinder + 4.0 axis 100 degrees. The laser energy parameters were 24 (120 nJ), and the point distance 4.5 microns. All eyes in our study after the ReLEx SMILE procedure achieved preoperative BCVA. Most of them (16 eyes) had one or two more lines in the Snellen chart compared to preoperative BCVA.

Conclusions: The ReLEx SMILE procedure is an effective laser vision correction for hypermetropia and astigmatism. The low energy laser parameters allow us to perform the ReLEx SMILE without any complication and improve the first postoperative day quality of vision and shorter the recovery time.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Structural and Functional Changes of Binocular Corneal Innervation and Ocular Surface Function After Unilateral SMILE and tPRK

*First Author: Liang **HU***
*Co-Author(s): Qianwen **GONG**, Kaiyan **HUANG**, Meng **LIN**, Fan **LU**, Zhiqiang **XU***

Purpose: To evaluate the bilateral changes in the sub-basal nerve plexus of the cornea and ocular surface function after unilateral small incision lenticule extraction (SMILE) and transepithelial photorefractive keratectomy (tPRK) procedures.

Methods: Thirty-four patients were enrolled in the study and underwent unilateral SMILE (21/34 patients) or unilateral tPRK (13/34 patients). Complete ophthalmic examinations, tear film function tests, and Cochet-Bonnet esthesiometry were conducted to assess the effects of the surgeries on the corneal nerves and tear function. Morphological changes were assessed using in vivo confocal microscopy to evaluate the corneal sub-basal nerve plexus and dendritic cells. An enzyme-linked immunosorbent assay was

used to measure the tear neuromediators. Clinical and morphological data at each follow-up point were compared with preoperative baseline values.

Results: All patients who underwent unilateral SMILE or tPRK procedures exhibited bilateral corneal nerve degenerative changes, decreased corneal sensitivity, worsening of dry eye symptoms, and changes in bilateral tear neuromediators. In the SMILE group, bilateral corneal sensitivity was positively correlated with corneal nerve fiber length and negatively correlated with dendritic cell area. The dry eye severity was negatively correlated with corneal sensitivity. Tear levels of substance P and nerve growth factor were positively correlated with mean dendritic cell area and dry eye severity, but negatively correlated with corneal sensitivity. In the tPRK group, bilateral corneal sensitivity was positively correlated with corneal nerve fiber density.

Conclusions: Unilateral refractive surgery may bilaterally affect the morphology and function of corneal nerves and ocular surface status postoperatively.

Feb 23, 2024 (Fri)
11:00 – 12:30
Venue: Uluwatu 7 (BNDCC1–GF)

Visual Outcomes and Spectacle Independence Employing Presbyond Principles With the Teleon MF15 Extended Depth of Focus Intraocular Lens

First Author: Lourens ***VAN ZYL***

Purpose: To report visual, refractive and spectacle independence outcomes in patients following the use of the TeleonMF15 extended depth of focus toric and non-toric intraocular lens in lens replacement and cataract patients. Pseudophakic Blended Vision, by using Presbyond principles, was used, to induce anisometropia with an aim of -1.0 diopters in the non-dominant eye.

Methods: Patients underwent standard phaco-emulsification surgery with the implantation of the MF15 extended depth of focus intraocular lens. In the non-dominant eye, anisometropia was induced closest to a -1.0 target, more than the industry-recommended -0.5D for EDOF lenses. Patients' visual outcomes were assessed. The binocular visual function and spectacle independence were assessed as the main outcome measures.

Results: The mean postoperative SE refraction of the dominant distance eyes was +0.18± 0.35D. Mean postoperative SE refraction of near eyes was -0.90 ± 0.44 D. 98% of patients achieved uncorrected logMar 0.0 or better binocular distance vision (mean 0.19 ± 0.18 logMAR) and 0.80 ± 0.26 logMAR mean near vision. Depth perception was minimally affected, with 85% achieving 100sec of arc or better stereoacuity. 100% of patients were regarded as spectacle independent.

Conclusions: The binocular use and induction of a -1.0 Diopter of anisometropia with the MF15 EDOF IOL intraocular lens provide excellent distance and near visual outcomes, with most patients achieving spectacle independence with minimal photopic phenomena and stereoacuity loss.

Retina (Medical)

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Aflibercept 8 mg for Diabetic Macular Edema: 96-Week Results From the Phase 2/3 PHOTON Trial

First Author: Tien-yin ***WONG***

Purpose: Evaluate aflibercept 8mg vs 2mg efficacy and safety in DME.

Methods: PHOTON (NCT04429503) was a double-masked, 96-week, Phase 2/3, non-inferiority trial in which patients with DME were randomized to receive aflibercept 8mg every 12 or 16 weeks after 3 monthly doses (8q12 [n=328] or 8q16 [n=163]) or aflibercept 2mg every 8 weeks after 5 monthly doses (2q8; n=167). The dosing interval for patients in the 8q12 and 8q16 groups could be shortened from Week 16 and extended from Week 52 based on protocol criteria. Exploratory endpoints included mean change from baseline in best-corrected visual acuity (BCVA) at Week 96 and the proportion of patients with ≥12- and ≥16-week dosing intervals through Week 96.

Results: Mean BCVA change from baseline at Week 96 was +8.4 (2q8), +8.8 (8q12), and +7.5 (8q16) letters (least squares mean difference: non-inferiority 8q12 vs 2q8: [nominal P<0.0001]; 8q16 vs 2q8: [nominal P=0.0044]). Through Week 96, 88% (8q12) and 84% (8q16) of patients maintained ≥12- and ≥16-week dosing intervals, respectively. Of the patients receiving aflibercept 8 mg (the combined 8q12 and 8q16 treatment groups), 44% had assigned dosing intervals of ≥20 weeks at Week 96. Of these patients, 27% had assigned dosing interval of 24 weeks at Week 96. Aflibercept 8mg and 2mg safety outcomes were similar through Week 96.

Conclusions: Aflibercept 8mg maintained non-inferior BCVA gains vs 2mg, with no new safety signals through 96 weeks. Most patients maintained extended dosing intervals of ≥12 weeks (88% in 8q12) and ≥16 weeks (84% in 8q16).

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Anatomical and Functional Outcome of Single Low-Dose Suprachoroidal Triamcinolone Acetonide in Macular Edema Secondary to Non-infectious Uveitis

*First Author: Abhishek **ANAND***

Purpose: To study the anatomical and functional outcome following single low-dose suprachoroidal triamcinolone acetonide (LD-SCTA) (2mg) injection in non-infectious posterior uveitis.

Methods: Eleven patients with macular edema of more than 300 microns secondary to non-infectious uveitis were included in the study. A single LD-SCTA (0.5 ml) injection was performed in the study eye with the help of a novel suprachoroidal microneedle (Pricon, IsconSurgicals, Jodhpur, India). The study parameters were noted at 4 and 12 weeks post LD-SCTA injection.

Results: Ten of eleven patients had a significant decrease in central macular thickness (CMT). The mean CMT measurement at baseline was 513.6±191.73 µm for the ten patients who responded to the treatment, reduced significantly to 265.1±34.72 µm ($p<0.003$) and 260.6±34.72 µm ($p<0.002$) at 4 weeks and 12 weeks respectively. The mean best corrected visual acuity at baseline was 0.84±0.41 logmar unit, which improved to 0.52±0.33 ($p<0.001$) and 0.25±0.22 ($p<0.000$) at weeks 4 and 12, respectively. The mean IOP at baseline recorded was 16.36±2.97 mm of Hg, 19.45±4.80 mm of Hg ($p=0.06$) at 4 weeks, and 17.27±2.53 mm of Hg ($p=0.35$) at 12 weeks. One eye which did not respond to LD-SCTA was a case of recurrent Vogt-Koyanagi-Harada disease.

Conclusions: Single LD-SCTA injection is efficacious in reducing CMT in macular edema, improving BCVA and controlling the inflammation in non-infectious posterior uveitis. LD-SCTA can be used as a first-line therapy in non-infectious uveitis over other routes of steroid administration with a favorable outcome and safety profile.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Biomarkers for Vascular Stability Demonstrate the Benefit of Dual Ang-2/VEGF-A Inhibition With Faricimab in Phase 3 Trials in DME

*First Author: Simon **SZETO***
*Co-Author(s): Andreas **MAUNZ**, Katie **PATEL**, Tracey **WANG**, Jeffrey R. **WILLS**, Esther **VON SCHULTHESS***

Purpose: In diabetic macular edema (DME), hyperreflective foci (HRF) and epiretinal membrane (ERM) formation are potential biomarkers for vascular stability. In post hoc analyses, we evaluated whether dual angiopoietin-2 (Ang-2)/ vascular endothelial growth factor-A (VEGF-A) inhibition with faricimab reduced HRF volume and ERM formation over VEGF inhibition alone with aflibercept.

Methods: In YOSEMITE/RHINE (NCT03622580/ NCT03622593), patients with DME received faricimab 6.0 mg every 8 weeks (Q8W), faricimab 6.0 mg treat-and-extend (T&E), or aflibercept 2.0 mg Q8W. HRF volume and ERM frequencies are reported.

Results: HRF volume reductions (Week 0-48) were greater for faricimab Q8W and faricimab T&E vs aflibercept in both the inner and outer retina. For the inner retina, reductions in 1-mm diameter were: faricimab Q8W (–118.29 pL) and faricimab T&E (–130.05 pL) vs aflibercept (–58.67 pL; nominal $P = 0.0006$ and $P < 0.0001$, respectively), and reduction in 3-mm diameter: faricimab Q8W (–406.76 pL) and faricimab T&E (–533.01 pL) vs aflibercept (–397.67 pL; nominal $P = 0.0142$ and $P = 0.0034$, respectively). Over 2 years, ERMs developed in 23/602 (3.8%), 31/608 (5.1%), and 45/590 (7.6%) of faricimab Q8W, faricimab T&E, and aflibercept eyes, respectively. At week 100, ERM formation risk was lower for faricimab Q8W vs aflibercept (OR 0.48; 95% CI 0.29, 0.81; nominal $P = 0.0055$), and for T&E patients vs aflibercept (OR 0.65; 95% CI 0.41, 1.05; nominal $P = 0.0783$).

Conclusions: Greater reductions in HRF volume and frequency of ERM formation were achieved with faricimab compared with aflibercept in patients with DME.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Clinical Outcome of Intracystic Hyperreflective Material and Its Association With OCT Markers and Metabolic Parameters in Centre Involving Diabetic Macular Oedema

*First Author: Sandeep **KUMAR***
*Co-Author(s): Charu **GUPTA**, Daraius **SHROFF***

Purpose: To report the clinical outcome, the predictive value of intracystic hyperreflective material (ICHRM) and its association with metabolic parameters in the centre involving diabetic macular oedema (CI-DME).

Methods: A retrospective case-controlled, single-centre study was done on treatment naïve patients with CI-DME in cases of moderate and severe NPDR. The study included patients between June 2021 to December 2022. ICHRM was defined as a hyperreflective clump in the cystoid pockets with no back shadowing on OCT. Group A included 28 eyes of CI-DME with ICHRM, while B included demographically matched 28 eyes of CI-DME without ICHRM. The patients were evaluated for

pre- and post-treatment best-corrected visual acuity and the number of anti-VEGF/dexamethasone implants required. Patients were evaluated for correlation with deranged serum creatinine, HBA1C and triglycerides levels. Group A patients were also evaluated for the presence of suspended particles in motion (SSPIM) and large oval-shaped microaneurysms on SSOCTA.

Results: The mean post-op visual acuity was poorer in group A Log 0.36 (0.27). SSPIM and large microaneurysms were present in 89.3 % ICHRM patients. Hard exudates, hyperreflective dots, hyperreflective choroidal foci and subfoveal neurosensory detachments were seen in 71.4%, 89.3 %,25% and 7.1% of group A. In ICHRM, needed a statistically significant increase in the number of injections of Ranibizumab (p value 0.025) and dexamethasone implant (p value 0.004). 50% of ICHRM patients had a deranged kidney function.

Conclusions: ICHRM can be used as a biomarker for predicting visual and clinical outcomes. Our study suggests CI-DME with ICHRM can be more responsive to dexamethasone steroid implants and is associated with deranged kidney function.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Clinical Profile and Demographic Distribution of Branch Retinal Vein Occlusion: An Electronic Medical Record-Driven Big Data Analytics From a Multitier Eye Care Network

*First Author: David **AGGARWAL***
*Co-Author(s): Raja **NARAYANAN**, Brijesh **TAKKAR***

Purpose: To describe the demographics, clinical profile, and visual outcomes of Branch retinal vein occlusion (BRVO) in patients presenting to a multi-tier ophthalmology hospital network in India.

Methods: This cross-sectional hospital-based study included 2,834,616 new patients between August 2010 and June 2021. Patients with a clinical diagnosis of BRVO in at least one eye were included in the study.

Results: Overall, 13667 (0.48%) patients were diagnosed with BRVO. Most were male (57.80%), and had unilateral (93.31%) affliction. The most common presentation was during the sixth (31.35%) and seventh (31.57%) decade of life. The overall prevalence was higher in patients from an upper socioeconomic status (0.788%) presenting from the urban geography (0.597%) and in retired individuals (2.22%). In most of the eyes (47.94%), there was mild or no visual impairment (>20/70). 26.29% of eyes had moderate visual impairment (>20/70 to 20/200). Hypertension was documented in 2617 (19.15%) patients and diabetes mellitus in 2238 (16.38%) patients. The most commonly associated ocular co-morbidity was a cataract in 2712 (18.60%) eyes, vitreous hemorrhage in 805 (5.52%) eyes, and glaucoma in 690 (4.73%). Among the surgical interventions performed, 3741 (25.66%) of the eyes received injections, 489 (3.35%) eyes underwent VR surgery and 50 (0.34%) eyes underwent glaucoma surgery.

Conclusions: BRVO more commonly affects middle-old males. Not all patients require active therapy, with about one-fourth of cases needing to receive intravitreal injections.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Comparison of Different Topical Anaesthetics for Intravitreal Injections: A Randomised Crossover Clinical Trial

*First Author: Jeffrey **LO***
*Co-Author(s): Nicholas **FUNG**, Christopher **GO**, Wai Ching **LAM**, Veronica **LY***

Purpose: To evaluate the analgesic effect of topical proparacaine applied in a droplet form versus a pledget form in patients undergoing intravitreal injections (IVI).

Methods: This is a single-centre, prospective, randomised, double-blind crossover study. 60 patients were included. Patients were randomised in a 1:1 ratio to receive 0.5% proparacaine soaked pledget, or placebo with normal saline soaked pledget. The patients would later be crossed over to receive the alternative intervention. Pain was assessed with a visual analog scale and questionnaire immediately afterwards, 10-minutes and 20-minutes after injection.

Results: Pain intensity as assessed on the visual analogue scale was lower for the droplet group compared to the pledget group immediately (2.24cm vs. 2.60cm), 10-minutes (1.57cm vs. 2.03cm) and 20-minutes (1.08cm vs 1.60cm) after injection, however this was not statistically significant (p=0.48, p=0.43, p=0.24 respectively).

Conclusions: Topical proparacaine applied in a pledget form does not enhance anaesthesia compared to a droplet form for IVI.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Efficacy, Durability and Safety of Faricimab in DME: 1-Year Results From China Subpopulation of Phase 3 RHINE Trial

*First Author: Xiaorong **LI***
*Co-Author(s): Oluwatobi **IDOWU**, Qin **JIANG**, Ruyuan **LIU**, Xiaodong **SUN**, Yannan **TANG***

Purpose: This RHINE (NCT03622593) subpopulation analysis compared faricimab Q8W (every 8 weeks) or a personalised T&E (treat-and-extend)-based regimen, with aflibercept Q8W, in patients with DME (diabetic macular edema) from mainland China, Hong Kong and Taiwan.

Methods: Patients were randomised 1:1:1 to faricimab 6.0 mg Q8W after 6 initial Q4W doses (n=51), faricimab 6.0 mg T&E after 4 initial Q4W doses (n=49), or aflibercept 2.0 mg Q8W after 5 initial Q4W doses (n=52). The T&E regimen (Q4W up to Q16W) used pre-specified BCVA (best-corrected visual acuity)/CST (central subfield thickness) criteria to adjust dosing. Primary endpoint: BCVA change from baseline at 1 year, averaged over weeks 48/52/56. Other endpoints were assessed through week 56.

Results: Adjusted mean BCVA gains from baseline at 1 year were 13.2, 11.5 and 9.2 Early Treatment of Diabetic Retinopathy Study letters for faricimab Q8W, T&E and aflibercept Q8W, respectively. Adjusted mean letter differences (95% CI) were 4.0 (0.7, 7.2) and 2.3 (-0.9, 5.6) for faricimab Q8W and faricimab T&E vs aflibercept, respectively. Adjusted mean CST change from baseline was -266, 257 and 217 µm at 1 year for faricimab Q8W, faricimab T&E and aflibercept Q8W, respectively. Adjusted mean differences (95% CI) were -49 (-82, 16) and -40 µm (-72, -7) for faricimab Q8W and T&E vs aflibercept, respectively. The proportion of faricimab T&E-arm patients on ≥Q12W or Q16W dosing at week 52: 75% and 50%, respectively. Faricimab was well tolerated, with an acceptable safety profile.

Conclusions: Efficacy, durability and safety of faricimab in the China subpopulation were consistent with global RHINE results.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Efficacy, Durability and Safety of Faricimab in nAMD: 48-Week Results From the China Subpopulation of Phase 3 LUCERNE

*First Author: Youxin **CHEN***
*Co-Author(s): Sijing **LI**, Ruyuan **LIU**, Shriji **PATEL**, Dawei **SUN**, Ming **ZHANG***

Purpose: This LUCERNE (NCT03823300) subpopulation analysis evaluated faricimab in patients with nAMD (neovascular age-related macular degeneration) from mainland China, Hong Kong and Taiwan.

Methods: Patients were randomised 1:1 to faricimab (n=59) or aflibercept (n=60). After 4 initial doses Q4W (every 4 weeks), faricimab-treated patients were dosed Q8W, Q12W or Q16W based on protocol-defined CST (central subfield thickness) and BCVA (best-corrected visual acuity) at weeks 20 or 24. These criteria were designed to reflect clinical practice. Aflibercept-treated patients received 2.0 mg Q8W after 3 initial Q4W doses. Primary endpoint: mean change from baseline in BCVA averaged over weeks 40/44/48. Other efficacy/safety outcomes were assessed through week 48.

Results: Baseline characteristics were well balanced across arms in the China subpopulation. Adjusted mean (95% CI) BCVA gains from baseline at week 40/44/48 were 9.7 (7.3, 12.0) and 9.8 (7.5, 12.1) Early Treatment of Diabetic Retinopathy Study letters for faricimab (up to Q16W) and aflibercept Q8W, respectively. This corresponded to an adjusted mean difference (95% CI) of -0.1 (-3.4, 3.2) letters. Adjusted mean CST change from baseline was -145.4 (-156.2, -134.6) and -156.5 (-167.3, -145.7) µm at week 40/44/48 in the faricimab and aflibercept arms, respectively. This corresponded to an adjusted mean difference (95% CI) of 11.1 (-4.3, 26.4) µm. The proportions of patients on faricimab ≥Q12W or Q16W dosing at week 48 were 87.3% and 67.3%, respectively. Faricimab was well tolerated with a safety profile comparable to aflibercept.

Conclusions: The efficacy, durability and safety of faricimab in the China subpopulation were consistent with global LUCERNE population results.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Evaluation of Caspase-3 and VEGF Expression in Retinopathy and Nephropathy Diabetic Rats: An Experimental Study

*First Author: Habibah **MUHIDDIN***
*Co-Author(s): Budu, Andi Muhammad **ICHSAN**, Itzar **ISLAM**, Fadhlullah **LATAMA***

Purpose: This study aimed to examine caspase-3 and VEGF expression in retinal and kidney cells of a diabetic rat model.

Methods: This study investigated 28 adult male Wistar rats who were given 60 mg/BW streptozotocin (STZ) intravenously. The animal models were terminated after 0-6 weeks on a regular basis. All experimental animals' retinal and kidney tissues were immunohistochemically examined for VEGF and Caspese-3 markers. The results were qualitatively examined using the Kruskal-Wallis test and observed using the post-hoc Mann-WhitneyU test (sig. $p<0.05$). Furthermore, a one-way ANOVA test was used for retinal cell apoptosis (sig. $p<0.05$).

Results: Significant variations in VEGF and caspase 3 expression, as well as apoptosis, were identified between groups in retinal tissue. The greatest VEGF value was achieved with moderate-severe degrees at week 6. While apoptosis began in the third week and peaked in the fifth. The density of photoreceptor cells fell from 549.20 ±90.42 cells in week 1 to 389.00 ±46.73 cells in week 3 ($p = 0.039$), whereas the density of retinal ganglion cells declined from 21.92 ±3.48 cells to 16.125± 2.07 cells ($p = 0.112$). Moreover, VEGF expression in kidney tissue was not significant in any group ($p>0.05$), although apoptosis started in the fourth week and peaked in the fifth week, particularly in tubular tissue (p0.001).

Conclusions: The results showed that apoptosis and possible neovascularization occurred faster in retinal tissue with a higher level of VEGF and Cas-3 expression than in the renal tissue.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Extended Interval Treatment Outcomes and the Potential for Q20W Dosing for the Treatment of Neovascular Age-Related Macular Degeneration With Faricimab: A Post Hoc Analysis of the TENAYA/LUCERNE Trials

*First Author: Anna **TAN***
*Co-Author(s): Lauren **HILL**, Aachal **KOTECHA**, Philippe **MARGARON**, Michael **SINGER***

Purpose: To assess outcomes of eyes with nAMD (neovascular age-related macular degeneration) treated with faricimab at extended intervals (>Q12W) and to determine how many patients potentially could have extended to Q20W dosing.

Methods: This was a post hoc analysis of TENAYA/LUCERNE (NCT03823287/NCT03823300) nAMD trials. Patients received either faricimab 6.0 mg up to Q16W after 4 Q4W doses or aflibercept 2.0 mg Q8W after 3 Q4W doses. Following disease activity assessments at weeks 20/24, faricimab-treated patients received fixed dosing until week 60, then a T&E (treat-and-extend)–based regimen. Analysis was performed on a subset of faricimab-treated patients: Group 1) always on >Q12W dosing; Group 2) always on Q16W dosing. T&E criteria were applied to patients on Q16W dosing who received ≥1 dose during the T&E phase to assess if they met the criteria for Q20W extension.

Results: At year 2 (averaged over weeks 104–112), both groups maintained best-corrected visual acuity gains (mean [SD]; Group 1, +6.6 [12.9] letters; Group 2, +7.5 [11.8] letters; Overall faricimab arm, +4.7 [14.9] letters) and a robust anatomical response from baseline (mean central subfield thickness reduction [SD]; Group 1, -142.8 [112.7] µm; Group 2, -145.3 [110.8] µm; Overall faricimab arm, -147.1 [125.7] µm). 56% (329/591) of faricimab-treated patients who received ≥1 dose during the T&E phase potentially could have extended to Q20W.

Conclusions: Patients always on extended faricimab dosing maintained vision and anatomic outcomes throughout 2 years. Additionally, >50% of faricimab-treated patients potentially could have extended to Q20W. Hence faricimab, with dual angiopoietin-2/VEGF-A inhibition, showed durable efficacy as a novel therapeutic agent.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Faricimab Treatment Outcomes With Extended Dosing and Potential for Q20W Intervals in DME: A Post Hoc Analysis of the Phase 3 YOSEMITE/RHINE Trials

*First Author: Andrew **CHANG***
*Co-Author(s): Kara **GIBSON**, Lauren **HILL**, Oluwatobi **IDOWU**, Jennifer **LIM**, Michael **SINGER***

Purpose: A post hoc analysis of the YOSEMITE/RHINE (NCT03622580/NCT03622593) DME trials to assess the efficacy of extended faricimab dosing (≥Q12W; every-12-weeks) and evaluate how many patients potentially could have extended to Q20W dosing.

Methods: Patients received faricimab 6.0 mg T&E (treat-and-extend), faricimab 6.0 mg Q8W, or aflibercept 2.0 mg Q8W through week 100 (N=1891). For T&E, treatment intervals were adjusted (Q4W–Q16W) based on prespecified CST (central subfield thickness) and best-corrected visual acuity (BCVA) criteria. Efficacy outcomes were evaluated for T&E patients ending the study on Q12W and Q16W. In addition, extension criteria were applied to T&E patients on Q16W to assess if they met the criteria for Q20W extension.

Results: Among patients in the T&E arm at week 96 (N=557), 62% achieved Q16W and 78% achieved ≥Q12W. Mean (SE) BCVA at week 96 for T&E patients ending the study on Q12W and Q16W was 73.6 (1.1) and 75.4 (0.6) letters, respectively, and 73.3 (0.5) letters for T&E arm overall. Mean (SE) CST at week 96 for T&E patients ending on Q12W, Q16W and for T&E arm overall was 278.1 µm (8.6), 258.3 µm (2.1) and 275.7 µm (3.3), respectively. Among T&E patients with dosing interval data up to week 48 (N=598), 56% met extension criteria and potentially could have extended to Q20W.

Conclusions: Patients extended to faricimab Q12W and Q16W dosing demonstrated robust and stable improvements in vision and anatomic outcomes through year 2. Among T&E patients, >50% potentially could have achieved Q20W, supporting faricimab as a novel therapeutic approach leading to durable efficacy.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Hydrogen Sulfide (H2S) as a Potential Biomarker in Diabetic Retinopathy: A Comparative Analysis With Vascular Endothelial Growth Factor (VEGF) and Their Correlation With Systemic Factors

*First Author: Manabjyoti **BARMAN***
*Co-Author(s): Harsha **BHATTACHARJEE***

Purpose: To compare the H2S and VEGF levels in the systemic and vitreous humor of DR of varied severity and age-matched controls, and to analyze their systemic associations.

Methods: A total of 150 patients (50- PDR, 50- NPDR, 50- non-diabetic) were enrolled in this prospective study. H2S level was estimated in vitreous and serum by spectrophotometry and VEGF by ELISA test. Systemic parameters analyzed were - FBS, HbA1C, Hb%, lipid profile, serum creatinine blood pressure and smoking habit.

Results: H2S levels in vitreous were 55.26± 3.41, 55.52±2.78, 57.05±4.04, 61.03±3.01 and 64.51±4.97; H2S levels in serum were 54.13±3.31, 54.47±2.02, 55.63±3.26, 57.83±3.20 and 61.96±4.67- in control, mild NPDR, moderate NPDR, severe NPDR & PDR respectively. VEGF levels in serum were 154.26 ± 10.78, 163.43 ± 4.64, 170.93 ± 9, 201.42 ± 19.9, 321.6 ± 70.24 and in vitreous were 165.65 ± 11.24, 177.06 ± 8.6, 228 ± 31.4, 453.36 ± 86.6, 819.8 ± 119.4 in controls, mild NPDR, moderate NPDR, severe NPDR & PDR respectively.

Conclusions: H2S and VEGF levels in vitreous and serum show a strong association with FBS and HbA1C levels, whereas a weak association with serum cholesterol level.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2-GF)

Intravitreal Anti-vascular Endothelial Growth Factor (VEGF) Injection Practices Among Indonesian Vitreoretinal Specialist: A Real-world Survey

*First Author: Andrea **SILITONGA***

Purpose: To report technique preferences for intravitreal anti-VEGF injections among vitreoretinal specialists in Indonesia.

Methods: Cross-sectional survey. Selected active members of the Indonesia Vitreoretina Association, were contacted through email to answer an online survey consisting of 44 items regarding their intravitreal injection technique.

Results: A total of 116 vitreoretinal specialists participated (response rate 82.8%). Bevacizumab was the most frequently used anti-VEGF (73.3%). Half of the participants (53.4%) evaluated systemic and cardiac risk factors; 74.1% did not use a prophylactic topical antibiotic, 92.2% applied injection in the main operating room, in the supine position (96.5%), and used tetracaine drops (94%). The majority (78.4%) never did a bilateral same-day injection. Around 60.9% used the single puncture technique for preparing bevacizumab injection, and 57.3% kept the opened bevacizumab vial from less than a week (27.5%) up to one month (24.6%). During the COVID-19 pandemic, masks were used by surgeons, assistants and patients (100%). All participants used sterile gloves and lid speculum, and 98.3% used sterile ophthalmic drape. All participants utilized povidone-iodine for antisepsis. Injection site was measured by caliper (69.8%), injection administered using 30G needle (94.8%), in superotemporal quadrant (70.7%). Only 35.3% displace the conjunctiva prior to injection and 75% prevent vitreous reflux using cotton swab compression. Post-injection counting finger visual acuity was verified by 34.5% of participants. The majority (95.7%) gave post-injection antibiotic drops for several days. Endophthalmitis is the most common complication found after intravitreal injections (20.7%).

Conclusions: The majority of Indonesian vitreoretinal specialists perform intravitreal anti-VEGF injections similarly with only slight differences. There is no uniform protocol for bevacizumab preparation.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

OCT Features in Patients Switching to Brolucizumab With Recalcitrant Age-Related Macular Degeneration

*First Author: Christopher **GO***
*Co-Author(s): Rachel **CHEUNG**, Nicholas **FUNG**, Jeffrey **LO**, Jason **PANG**, Stephanie **WU***

Purpose: To investigate optical coherence tomography (OCT) features in patients with recalcitrant neovascular age-related macular degeneration (nAMD) switching to Brolucizumab.

Methods: A post hoc analysis of OCT images in the SWITCH study cohort was conducted at the University of Hong Kong Retina Clinical Trials Centre, Hong Kong. A single-centre, prospective, randomised study of patients who had recalcitrant nAMD with persistent subretinal (SRF) or intraretinal fluid (IRF) or had a recurrence of SRF / IRF less than 8 weeks treatment interval on treat and extend (T&E). OCT features assessed include central macular thickness (CMT), volume, subretinal and intraretinal fluid width and height, hyperreflective dots, nature and size of pigment epithelial detachment (PED).

Results: Thirty-four patients were recruited into the SWITCH study, with 30 patients completing the study. There were 19 males and the mean age was 75.1 years. Prior to switching to Brolucizumab, the patients received a mean of 18.8 injections. At baseline, the mean CMT was 399.3µm, 27 patients had SRF with a mean height of 142.9µm and 9 patients had IRF. All patients had PEDs with an average height of 238.1µm. Mean SRF height was 57.3µm after the first Brolucizumab injection with complete resolution of SRF in 12 patients (42.9%). After the third injection, 6 patients (21.4%) remained fluid-free, 16 patients (53%) had a reduction in SRF compared to baseline, and the mean SRF height was reduced to 87.2µm.

Conclusions: Brolucizimab had some anatomical improvement on OCT in patients with recalcitrant nAMD, however, complete resolution was uncommon in this cohort following a switch in treatment.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Ocular Morbidity in Patients With Diabetes Mellitus

*First Author: Kabina **SHRESTHA***

Purpose: To analyze the ocular morbidity in patients with Diabetes Mellitus.

Methods: It is a prospective hospital-based, observational study done in a tertiary eye hospital, Retina Clinic, from 1st March 2012 to 1st March 2013. Patients were recruited in the study according to the inclusion and exclusion criteria set for the study. A convenient sampling procedure was used. A complete ophthalmic history was recorded using a questionnaire and verbal interview. A detailed ophthalmic evaluation of each eye was done. Patients were sent for blood and urine investigations. The numerical data obtained from the study were analyzed and computed including database development done by the SPSS version 11.5 program.

Results: Data from 87 patients were analyzed. Dry eye and cataract were the prominent findings in the anterior segment. Cranial neuropathies were seen in 2.3% of the patients. On posterior segment evaluation, diabetic retinopathy was the prominent finding. Other findings include Vitreous hemorrhage, Diabetic maculopathy, clinically significant macular edema, diabetic papillopathy and glaucoma suspects. Significant visual impairment was seen in diabetic patients with cataract, vitreous hemorrhage, diabetic retinopathy, maculopathy, CSME, neuropathy.

Conclusions: The study points out that there are other significant ocular non-retinal manifestations of diabetes

as well, apart from diabetic retinopathy. Duration of diabetes mellitus, the presence of microalbuminuria, the modality of treatment and gender had no association with the presence or absence of ocular morbidity of diabetes mellitus. However, the level of HbA1C (p=0.027) and good control of diabetes had an association with the presence or absence of ocular morbidity.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Prediction of Vitreomacular Traction Syndrome Outcomes With Deep Learning: A Pilot Study

*First Author: Eiman **USMANI***

Purpose: To investigate the potential of an Optical Coherence Tomography (OCT) based Deep-Learning (DL) model in the prediction of Vitreomacular Traction (VMT) syndrome outcomes.

Methods: A single-centre retrospective review. Records of consecutive adult patients attending the Royal Adelaide Hospital vitreoretinal clinic with evidence of spontaneous VMT were reviewed from January 2019 until May 2022. All patients with evidence of causes of cystoid macular oedema or secondary causes of VMT were excluded. OCT scans and outcome data obtained from patient records were used to train, test, and then validate the models.

Results: Ninety-five patient files were identified from the OCT (SPECTRALIS system; Heidelberg Engineering, Heidelberg, Germany) records. 25% of the patients spontaneously improved, 48% remained stable and 27% had progression of their disease. The final longitudinal model was able to predict 'improved' or 'stable' disease with a positive predictive value of 0.72 and 0.79, respectively. The accuracy of the model was greater than 50%.

Conclusions: Deep-learning models may be utilised in real-world settings to predict the outcomes of VMT. This approach requires further investigation as it may improve patient outcomes by aiding ophthalmologists in cross-checking management decisions and reducing the need for unnecessary interventions or delays.

Feb 22, 2024 (Thu)
11:00 – 12:30
Venue: Mengwi 1,2 (BNDCC2–GF)

Single Nucleotide Polymorphism in RAGE Gene: A Paradigm Shift in Causation of Diabetic Retinopathy

*First Author: Pragya **AHUJA***

Purpose: Diabetic retinopathy is a growing burden of blindness in the world. Genomic medicine is being increasingly applied to the study of diabetic retinopathy in the last few decades. Genetic studies like linkage analysis and genome-wide association studies (GWAS) have identified over 65 genes associated with diabetic retinopathy, but the involvement of specific genes and genetic variants has remained elusive. As the evidence of the RAGE gene in the pathogenesis of DR is increasing, we have focused our attention on single nucleotide polymorphism in diabetic retinopathy.

Methods: A case-control study was conducted on 90 participants in north India who were divided into three categories of 30 subjects each i.e. healthy controls, diabetes without retinopathy, and diabetes with retinopathy. All subjects were tested for -374T/A healthy controls, while only diabetic subjects with and without retinopathy were tested for -429T/C. Genomic DNA extraction of the collected samples was done followed by PCR. The PCR products were digested with specific restriction endonucleases and electrophoresis bands on agarose gel were analysed to identify specific polymorphisms.

Results: The study subjects were predominantly females with an average age of 53 years. All study subjects -374T/A (rs1800624) polymorphism was associated with diabetic retinopathy (p-value: 0.0121). -429T/C (rs1800625) was not associated with diabetic retinopathy (p=0.2640).

Conclusions: This pilot study should bring funding for determining the genetic causation of diabetic retinopathy and tackle the growing burden of blindness due to diabetic retinopathy.

Feb 23, 2024 (Fri)
16:30 – 18:00
Venue: Uluwatu 4 (BNDCC1–GF)

Varied Manifestations of Tuberculous Choroiditis and Its Differentiation From Infective Retinitis

*First Author: Abhishek **JAIN***
*Co-Author(s): Manju **VERMA***

Purpose: To show varied manifestations of tuberculous choroiditis in India - multifocal choroiditis, solitary granuloma, SLC. What can be diagnostic dilemmas and challenges? Solitary lesions can have a close resemblance to infective retinitis (like toxoplasmosis), and how we can differentiate these lesions.

Methods: Varied manifestations of tuberculous choroiditis in India - multifocal choroiditis, solitary granuloma, SLC, and occlusive vasculitis are discussed. What can be diagnostic dilemmas and challenges? Solitary lesions can have a close resemblance to infective retinitis, and how we can differentiate these lesions. treatment protocol according to COTS guidelines is discussed.

Results: Solitary TB granuloma lesions can have a close resemblance to infective retinitis, and OCT can be a great diagnostic tool to differentiate the two entities, in addition to the importance of immunological tests.

Conclusions: It is important to see and recognize various manifestations of tuberculous choroiditis across the globe. Tb is a presumptive diagnosis and thus the importance of recognizing the varied presentations. it is also important to differentiate it from certain infective retinitis as the treatment protocol changes in total.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

A Perplexing Case of Recurrent Choroiditis With a Diagnostic Surprise

*First Author: Chitransha **JALUTHARIYA***
*Co-Author(s): Atul **ARORA**, Vishali **GUPTA***

Purpose: To explore a perplexing diagnostic dilemma and management challenge presented by a patient exhibiting recurrent instances of choroiditis, despite negative laboratory tests.

Methods: A 25-year-old Asian Indian female presented with acute onset diminution of vision in her left eye for 1 month. She gave a history of similar episodes of decreased vision in the past and was diagnosed with relentless placoid choroiditis 4 years back elsewhere after ruling out other etiologies, including tuberculosis. She was treated with oral steroids and immunosuppressants (methotrexate and azathioprine) but continued to have episodes of recurrence despite treatment. Multimodal imaging comprising fundus photography, fluorescein angiography (FA), indocyanine green angiography (ICG), swept-source optical coherence tomography (SS-OCT) and detailed systemic and laboratory work-up was performed.

Results: FA showed a corresponding hypo-fluorescent lesion, which became hyper-fluorescent in later phases of the angiogram, while the lesion remained hypo-fluorescent on ICG. SSOCT confirmed the presence of granuloma. Repeat laboratory tests, including Mantoux, chest computed tomography scan, interferon-gamma release assay, and serology for syphilis and human immunodeficiency virus, were negative. A Positron Emission Tomography Scan showed a hot-foci in the parotid gland. Fine Needle Aspiration Cytology from the parotid lesion showed granulomatous inflammation consistent with tuberculosis. The patient responded to treatment with intravitreal dexamethasone implant (Ozurdex) and anti-tubercular therapy. At last follow up, 6 months following the initial presentation, vision improved to counting fingers at 3 metres with resolution of choroidal granuloma.

Conclusions: This case highlights the challenging nature of diagnosing recurrent choroiditis episodes with negative laboratory results, emphasising the importance of innovative strategies and a thorough clinical assessment.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Aflibercept 8 mg in Patients With Neovascular Age-Related Macular Degeneration: Phase 3 PULSAR Trial 96-Week Results

*First Author: Srinivas **SADDA***

Purpose: Evaluate aflibercept 8 mg versus aflibercept 2 mg in patients with treatment-naïve neovascular age-related macular degeneration (nAMD).

Methods: PULSAR (NCT04423718) was a double-masked, 96-week, Phase 3 trial: patients were randomized 1:1:1 to receive aflibercept 8 mg every 12 or 16 weeks (8q12 [n=335] or 8q16 [n=338]) or aflibercept 2 mg every 8 weeks (2q8 [n=336]), each after 3 monthly injections. The dosing intervals for patients in the aflibercept 8q12 and 8q16 groups could be shortened from Week 16 and extended from Week 52 based on protocol criteria.

Results: LS mean (SE) best corrected visual acuity (BCVA) change from baseline at Week 96 (exploratory endpoint) was +6.6 (0.73), +5.6 (0.77), and +5.5 (0.75) Early Treatment Diabetic Retinopathy Study letters with aflibercept 2q8, 8q12, and 8q16, respectively (non-inferiority at 4-letter margin 8q12 vs 2q8: p=0.0006; 8q16 vs 2q8: p=0.0007 [p-values are nominal]). Through Week 96, 75% (8q12) and 70% (8q16) of patients maintained ≥12- and ≥16-week dosing intervals. Among all patients receiving aflibercept 8 mg (8q12 and 8q16 combined), 47% had planned dosing intervals of ≥20 weeks at Week 96; 28% had planned 24-week dosing intervals at Week 96. No new safety signals were identified.

Conclusions: Aflibercept 8 mg maintained comparable BCVA gains versus aflibercept 2 mg and had similar safety through Week 96.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

Agreement Between Non-specialist Graders for Diabetic Retinopathy Screening Between Smartphone-Based Retinal Camera Device and Traditional Fundus Camera: A Prospective Study From Pakistan

*First Author: Rehman **SIDDIQUI***
*Co-Author(s): Arshad **MEHMOOD**, Danish **SHABBIR**, Rida **SHAHZAD***

Purpose: Diabetic retinopathy (DR) is one of the leading causes of blindness worldwide. The gold standard for DR screening is stereoscopic fundus photography with desktop cameras. VistaView is a smartphone-based retinal camera which offers mydriatic retinal imaging. This study compares the agreement between graders for DR screening between VistaView images and traditional desk-mounted fundus camera (Triton Topcon) images.

Methods: This prospective study took place between December 2021 and June 2022. Consecutive diabetic patients were imaged following mydriasis using both VistaView and Topcon cameras at the same sitting. All images were graded independently by two graders based on the International Classification of Diabetic Retinopathy criteria. Individual grades were assigned for the severity of DR and maculopathy in each image.

Results: A total of 1428 images were available from 371 patients with both cameras. A total of 1231 images were graded. For VistaView, the ICC of DR grades was 78% (95% CI, 75-82%) between the two graders, while that of maculopathy grades was 66% (95% CI, 59-71%). The Cohen's kappa for retinopathy grades of VistaView images was 0.61 (95% CI, 0.55-0.67, p<0.001), while that for maculopathy grades was 0.49 (95% CI 0.42-0.57, p<0.001). For images from the desktop camera, the ICC of DR grades was 85% (95% CI, 83-87%), while that of maculopathy grades was 79% (95% CI, 75-82%). The Cohen's kappa for retinopathy grades of desktop images was 0.68 (95% CI, 0.63-0.74, p<0.001), while that for maculopathy grades was 0.65 (95% CI, 0.58-0.72, p<0.001).

Conclusions: Agreement levels between graders using both fundus cameras are comparable.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

Analysis of Imaging Techniques in Early Detection of HCQ Retinopathy

*First Author: Ayshwaria **BASKER***
*Co-Author(s): Miriam **CLEMENT**, Vaishnavi R **IYYAPPAN***

Purpose: The purpose of this study is to emphasize the importance of early screening for hydroxychloroquine maculopathy in order to prevent permanent retinal damage, utilizing advanced imaging techniques like SD-OCT and OCTA.

Methods: Fifty patients were included in the study. Divided into two groups: the HCQ group, comprising 50 eyes of 25 patients treated with HCQ, and the control group, comprising 50 eyes of 25 healthy individuals. Average, minimum, and sectoral macular GCC thickness and photoreceptor layer (PL) integrity, vascular density values, superficial whole thickness, superficial parafoveal thickness, superficial perifoveal thickness, deep whole thickness, deep parafoveal thickness, and deep perifoveal thickness were compared between the two groups.

Results: Groups showed no significant differences in average, minimum, and sectoral macular GCC thickness. However, PL integrity differed significantly between groups. PL integrity's correlation with average GCC thickness was highest, followed by HCQ treatment duration and uncorrected visual acuity. Vascular density values were similar between the control and treatment groups ($p > 0.05$). Nonetheless, the treatment group exhibited thinner measurements in superficial and deep thickness parameters compared to the control group ($p < 0.05$ for all).

Conclusions: SD-OCT findings uniquely identify early HCQ retinopathy and could serve as a supplementary objective screening tool. Vascular density was similar in the control and treatment groups, but retinal thickness was lower in the treatment group.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Association of Retinal Artery Occlusion and Acute Coronary Syndrome: A Systematic Review and Meta-analysis

*First Author: El **ANDINI***
*Co-Author(s): Herman, Astri **AVIANTY**, Abdul **CHOLIQ**, Raditya **DEWANGGA***

Purpose: Retinal artery occlusion (RAO) is suggested to be associated with acute coronary syndrome (ACS) since they share the same pathophysiology. The objective of this study was to assess the relationship

between RAO and ACS and estimate the prevalence of ACS in RAO.

Methods: We systematically searched the articles on PubMed, Science Direct, and Cochrane from inception to August 2023 to identify studies that reported the association between RAO and ACS. The combined data from selected studies were subjected to meta-analysis using a random effect model.

Results: A total of 17 studies were included in the systematic review. People who have RAO were more likely to develop ACS (OR: 2.01; 95%CI: 1.84 to 2.20; I2: 0%), with the prevalence of ACS following RAO events was 3.4% (95% CI: 2.2% to 4.6%). However, there was no significant association between preceding ACS and RAO (OR: 1.30; 95% CI 0.67 to 2.53; I2: 95%).

Conclusions: Our study indicated patients with RAO had a higher risk of developing ACS than those without RAO. Therefore, adequate evaluation, treatment, and prevention are necessary to reduce morbidity.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1-GF)

Central Obesity and Its Association With Retinal Age Gap: Insights From the UK Biobank Study

*First Author: Ruiye **CHEN***
*Co-Author(s): Mingguang **HE**, Lisa **ZHU***

Purpose: Conflicting evidence exists on the association between ageing and obesity. Retinal age derived from fundus images has been validated as a novel biomarker of ageing. In this study, we aim to investigate the association between different anthropometric phenotypes based on body mass index (BMI) and waist circumference (WC) and the retinal age gap (retinal age minus chronological age).

Methods: A total of 35,550 participants with BMI, WC and qualified retinal imaging data available were included to investigate the association between anthropometric groups and retinal ageing. Participants were stratified into 7 different body composition groups based on BMI and WC. Linear regression models were fitted to investigate the association between the seven anthropometric groups and the retinal age gap.

Results: A total of 35,550 participants (55.6% females) with a mean age of 56.8 ± 8.04 years were included in the study. Individuals in the Overweight/High WC, Mild obesity/High WC and Severe obesity/High WC groups were associated with an increase in the retinal age gap, compared with those in the Normal Weight/Normal WC group (β = 0.264, 95% CI: 0.105-0.424, P =0.001; β = 0.226, 95% CI: 0.082-0.371, P = 0.002; β = 0.273, 95% CI: 0.081-0.465, P = 0.005; respectively) in fully adjusted models.

Conclusions: A significant positive association exists between central obesity and accelerated ageing indexed by retinal age gaps, highlighting the significance of maintaining a healthy body shape.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Cystoid Macular Edema in Peripheral Exudative Hemorrhagic Chorioretinopathy

*First Author: Minal **SHARMA***
*Co-Author(s): Ritesh **NARULA**, Cyrus **SHROFF**, Daraius **SHROFF***

Purpose: To highlight cystoid macular edema in cases of peripheral exudative hemorrhagic chorioretinopathy.

Methods: A retrospective, consecutive, interventional case series. All patients with PEHCR lesions in the mid and/or far periphery who presented with or developed cystoid macular edema (CME) during the course of the disease without any other underlying macular pathology like CNVM, IPCV or advanced AMD were included in the study. All patients underwent complete ophthalmic evaluation with multimodal imaging. Treatment included intravitreal anti-VEGF injections in 9 eyes, and an ozurdex injection in one eye.

Results: Ten eyes of 9 patients were included. Two (22.2%) were male and 7 (77.8%) were female. The mean age of patients was 78.2±5.2 years (range 70-84 years). 5 were phakic at presentation and 5 were pseudophakic. The cataract surgery was done more than 6 months before presentation in all 5 cases. The mean BCVA of 10 eyes was 0.68±0.60 logMAR (Snellen equivalent 20/100) at presentation. The mean central macular thickness was 461±145.3 microns at presentation. Our cases received an average of 10±6 injections per eye. The mean final central macular thickness was 331±100.3 microns. The mean final BCVA was 0.33±0.19 logMAR (Snellen Equivalent 20/40) with a mean follow-up of 44.6±23.3 months.

Conclusions: PEHCR should be considered as a differential diagnosis of CME in the elderly. Elderly patients presenting with cystoid macular edema should have a thorough peripheral retina check-up to look for peripheral hemorrhagic mounds which could be the cause of the oedema. Correct diagnosis and management seemed to be associated with favourable outcomes.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Dyslipidemia and Upregulated Circulating Levels of Cytokines Contribute to Diabetic Retinal and Renal Microvasculopathy

*First Author: Xinyuan **ZHANG***
*Co-Author(s): Zhizhong **GONG***

Purpose: To investigate the mechanisms underlying the correlations between diabetic retinopathy (DR) and diabetic kidney disease (DKD) and examine whether circulating cytokines and dyslipidemia contribute to both DR and DKD in patients with 2 diabetes mellitus (T2DM).

Methods: A total of one hundred and twenty-one patients with T2DM were enrolled and categorized into the DM group (without no DR and DKD), DR group [non-proliferative DR (NPDR), and proliferative DR (PDR)] with no DKD), DR complicated with DKD groups (DR+DKD group). The biochemical profile and lipid profile were estimated. Plasma inflammatory and angiogenic cytokines [monocyte chemoattractant protein-1, interleukin (IL)-6, IL-8, VEGF-A, C, D, and placental growth factor (PlGF)] were analyzed by protein microarrays.

Results: Albumin-to-creatinine ratio (uACR) ($p=0.003$) was an independent risk factor for DR with DKD. Grades of A1, A2, and A3 of albuminuria increased with the severity of DR. Severity of DR (DM, NPDR, and PDR) increased with higher albuminuria grades. Kendall's tau-b correlation coefficient analysis revealed that FBG ($p=0.019$), circulating level of PlGF ($p=0.002$), and VEGF-D ($p=0.008$) were significantly positively correlated with the grades of uACR ($p<0.001$), and uACR grades were significantly correlated with DR severity ($p<0.001$).

Conclusions: The occurrence and severity of DR are closely correlated with kidney dysfunction. UACR was the better indicator of DR severity and progression among the three kidney functional parameters. The link between diabetic retinal and renal microvasculopathy was associated with dyslipidemia and upregulated circulating levels of angiogenic cytokines.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Exploring the Interplay of Genotype, Phenotype, and Optical Coherence Tomography Characteristics in Bestrophinopathy

*First Author: Areeba **SHAKEEL***
*Co-Author(s): Darshan **BHATT**, Muna **BHENDE***

Purpose: To describe genotype, phenotype and optical coherence tomography features in bestrophinopathy patients.

Methods: Review of case records, imaging (color fundus photographs, optical coherence tomography (OCT), fundus autofluorescence), electrophysiologic and genetic tests records were collected retrospectively.

Results: Twelve eyes of 6 genetically confirmed cases of bestrophinopathy were evaluated. Best corrected visual acuity remained the same (6 eyes) or worsened (5 eyes). Only one case showed improvement over follow-up. BEST 1/Exon 4 mutation was seen in 3 cases, while Exon 2,7 and 3 in others. Deletion is seen in Exon 7 and a missense mutation in other exons. Patient A had sporadic inheritance, B had isolated, E was autosomal dominant and C, D, F were autosomal recessive. Patients C and D had a positive history of consanguineous marriage and glaucoma in the family. Patient C had primary angle closure glaucoma (PACG), and Patient D was a primary angle closure suspect (PACS). Multifocal vitelliform subretinal deposits were the most common fundus finding. Baseline OCT showed subfoveal subretinal exudates, subretinal fluid (SRF), intraretinal cystic spaces, outer retinal layer disruption, thickened retinal pigment epithelium and verhoeff's membrane. Subsequent OCT showed improvement but complete resolution of SRF did not occur. Patient A showed focal choroidal excavation (FCE) and abnormal vasculature in OCT at the final follow-up. A severe reduction in the electrooculogram light peak-to-dark trough ratio was found, while electroretinography was normal.

Conclusions: Bestrophinopathy has varied genotypes and phenotypes. OCT is a non-invasive tool for monitoring. Genetic counseling and testing of other family members should be facilitated.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Fleck Retinopathy – What to Do Next? Decoding the Phenotype to a Definitive Diagnosis

First Author: Debolina ***DEB***
Co-Author(s): Puja ***MAITRA****, Anand* ***RAJENDRAN***

Purpose: Flecks are multiple yellowish-white lesions of various sizes and configurations and are not specific to any phenotype. The purpose of this study was to understand the importance of multimodal imaging for the diagnosis of these cases.

Methods: Fifteen cases were presented to our tertiary eye care center between March – August 2023, aged between 4- 48 years with complaints of either difficulty in dim/ bright light, or both, or detected to have these findings on routine ophthalmic evaluation. 11 out of 15 patients had a reasonably good vision (Snellen chart BCVA >6/12). The fundus had flecks or fleck-like lesions with varying distribution, either at the posterior pole or the mid-periphery or pan-retinal, with or without other fundus findings. Phenotypic documentation was done in all cases using widefield colour fundus imaging with autofluorescence, optical coherence tomography, as well as electrophysiological tests for diagnosis.

Results: Our diagnosis included Benign flecks (n= 3), Retinitis punctata albiscens (n=3), fundus albipunctatus (n=1), fundus flavimaculatus (n=2), enhanced S cone syndrome (n=1), severe early onset cone rod dystrophy (n=3) and Bietti's crystalline dystrophy (n=2).

Conclusions: A definitive diagnosis helped us customize our treatment, predict the prognosis and determine possible risks to siblings/offspring. From our observations we were able to arrive at an algorithmic approach to diagnose flecks disorders based on multimodal imaging, enable family screening wherever required and predict the visual prognosis over the years.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

Impact of Age and Sex on the Host Immune Response in Patients With Infectious Endophthalmitis

First Author: Joveeta ***JOSEPH***
Co-Author(s): Vivek ***DAVE***

Purpose: Endophthalmitis is a severe inflammatory disease following ocular surgery, or penetrating trauma and is associated with irreversible vision loss. Despite acknowledging the impact of biological variables along with the antibiotic susceptibility profile of the infecting agent on various diseases, its effect on human endophthalmitis is not fully elucidated. We therefore studied the impact of age and sex on cytokine production in patients with culture proven bacterial endophthalmitis.

Methods: In this cross-sectional study, a total of 93 patients were stratified into three groups according to their age: A (0-30 years), B (31-54 years), and C (>55 years), and 20 patients with non-infectious retinal disorders as controls were included. Expression of IL-6, IL-10, IL-1β, IL-8, IL-17, TNF-α and LCN-2 were analysed in the vitreous fluids of these patients by multiplex immunoassay (MILLIPLEX, Merck) and correlated with clinical demographics.

Results: Patients in Group B, aged between 31-54 years, exhibited higher IL-6, TNF-α, IL-17. On the contrary, Group A showed higher levels of IL-1β ($p < 0.05$), IL-10 ($p= 0.04$) and IL-8. LCN-2 was found to be higher ($p= 0.01$) in the older age group (Group C) only. Although IL-1β, IL-6 and IL-10 levels were comparatively higher in female patients, only IL-8 was found to be statistically significant ($p =0.009$). Notably, patients infected with antibiotic-resistant pathogens exhibited higher IL-1β, IL-8 and TNF-α ($p < 0.05$) compared to the antibiotic-susceptible group, indicating higher inflammatory response irrespective of age and sex.

Conclusions: Immunosenescence plays a pivotal role in the outcome of bacterial endophthalmitis and suggests the need for adjuvant immunotherapeutics in aging.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Improvement in Visual Acuity and QoL After Ranibizumab Treatment in Patients With Age-Related Macular Degeneration in a Tertiary Hospital in Indonesia

First Author: Citra ***MAHARANI***
Co-Author(s): Christina ***ARITONA****, Rozalina* ***LOEBIS****, Wimbo* ***SASONO****, Indri* ***WAHYUNI****, Ima* ***YUSTIARINI***

Purpose: To correlate between the improvement of BCVA and Quality of Life (QoL) changes after Ranibizumab treatment in patients with AMD.

Methods: This study is a prospective analytic study by measuring BCVA and QoL of AMD patients before and after Ranibizumab treatment in a tertiary hospital in Surabaya, Indonesia. The NEI-VFQ 25 questionnaire in Bahasa Indonesia version to measure QoL was conducted at baseline and 1 month after receiving Ranibizumab treatment. All the data were statistically analyzed using the Prism GraphPad 9 application.

Results: There were 40 samples consisting of 52.5% men and 47.5% women with a mean age of 65.05 + 9.13 (range 50-84 years). Based on eye laterality, 25% of the samples were found with bilateral neovascular AMD.

The mean BCVA was 1,253 + 0.66 pre-injection and improved significantly to 1,143 + 0.74 post-injection (p 0.04). The mean QoL composite score was 59.57 + 16.34 pre-injection and 68.55 + 16.24 post-injection of ranibizumab (p < 0.001). There was a significant difference in QoL subscales pre and post-injection (p<0.50) and there was a correlation between BCVA and subscales of general vision, near activities, distance activities, mental health, and role difficulties (p<0.05).

Conclusions: The administration of Ranibizumab intravitreal is beneficial in improving BCVA and QoL in patients with neovascular AMD patients. There is a significant correlation between BCVA and QoL in neovascular AMD patients.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Intravitreal Aflibercept 8 mg Injection in Patients With Neovascular Age-Related Macular Degeneration: 48-Week Results From Asian Patients in the Phase 3 PULSAR Trial

*First Author: Shih Jen **CHEN***
*Co-Author(s): Sergio **LEAL**, Andrea **SCHULZE**, Xin **ZHANG**, Min **ZHAO***

Purpose: Determine the efficacy and safety of aflibercept 8 mg versus aflibercept 2 mg in Asian patients with neovascular age-related macular degeneration (nAMD).

Methods: PULSAR (NCT04423718) was a double-masked, 96-week, Phase 3 trial. Patients were randomized 1:1:1 to receive aflibercept 8 mg every 12 or 16 weeks (8q12 [n=335] or 8q16 [n=338]) or aflibercept 2 mg every 8 weeks (2q8 [n=336]), each after three monthly injections.

Results: Overall, 1009 patients were treated, including 234 Asian patients (8q12: n=74; 8q16: n=77; 2q8: n=83). Baseline best-corrected visual acuity (BCVA) was consistent across Asian subgroups. At Week 48, aflibercept 8q12 and 8q16 demonstrated non-inferior (margin of four letters) BCVA gains versus aflibercept 2q8 in the total cohort (8q12 vs 2q8: p=0.0009; 8q16 vs 2q8: p=0.0011) and among Asian patients (8q12 vs 2q8: nominal p=0.0015; 8q16 vs 2q8: nominal p=0.0011). For Asian patients, least-squares mean (±SE) change from baseline in BCVA at Week 48 was +9.8±1.5, +9.0±1.0, and +7.5±1.5 letters with 8q12, 8q16, and 2q8, respectively. For Asian patients, 82% (8q12) and 87% (8q16) maintained 12-week and 16-week dosing intervals; 89% of patients receiving aflibercept 8 mg maintained ≥12-week dosing intervals in Year 1. Aflibercept 8 mg and aflibercept 2 mg had similar safety profiles. Week 96 overall and Asian subgroup data from the PULSAR study will be presented.

Conclusions: In Asian patients with nAMD, similar to the overall population, aflibercept 8 mg demonstrated comparable BCVA gains versus aflibercept 2 mg, with fewer overall doses and no new safety signals through Week 48.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Intravitreal Aflibercept 8 mg in Patients With Polypoidal Choroidal Vasculopathy: A Phase 3 PULSAR Trial Subgroup Analysis

*First Author: Won Ki **LEE***
*Co-Author(s): Sergio **LEAL**, Tobias **MACHEWITZ**, Andrea **SCHULZE**, Tien-yin **WONG**, Xin **ZHANG***

Purpose: Demonstrate the efficacy of aflibercept 8 mg in patients with neovascular age-related macular degeneration (nAMD) and polypoidal choroidal vasculopathy (PCV).

Methods: PULSAR (NCT04423718) was a double-masked, 96-week, Phase 3 trial: nAMD patients aged ≥50 years were randomly assigned 1:1:1 to receive aflibercept 8 mg every 12 or 16 weeks (8q12, 8q16) or 2 mg every 8 weeks (2q8). The primary endpoint was a best-corrected visual acuity (BCVA) change from baseline to Week 48 (4-letter non-inferiority margin). PCV was confirmed by the central reading center: indocyanine green angiography (ICGA) was optional.

Results: Overall, 1,009 patients were evaluated. The primary endpoint was met with aflibercept 8q12 and 8q16 vs 2q8. Observed mean±SD BCVA change from baseline was +6.7±12.6 (8q12), +6.2±11.7 (8q16), and +7.6±12.2 (2q8) letters (baseline: 59.9±13.4, 60.0±12.4, and 58.8±14.0, respectively). PCV was present in 139/292 patients who underwent ICGA (8q12: n=44; 8q16: n=41; 2q8: n=54). Among PCV patients, observed mean±SD BCVA change from baseline was similar with 8q12, 8q16, and 2q8: +9.5±13.0, +7.5±7.6, and +9.3±11.1 letters, respectively (baseline: 56.3±13.3, 60.0±11.5, and 57.6±15.4, respectively). Among PCV patients, 32/40 (80.0%) in the 8q12 group maintained 12-week dosing intervals, 32/37 (86.5%) in the 8q16 group maintained 16-week dosing intervals, and 67/77 (87.0%) receiving 8 mg maintained ≥ 12-week dosing intervals. Aflibercept had a similar safety profile in patients with PCV and the overall nAMD population. Data through Week 96 from PULSAR will be presented.

Conclusions: In patients with PCV, aflibercept 8 mg demonstrated comparable improvements in BCVA at Week 48 versus aflibercept 2q8, without safety concerns.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1-GF)

Is Kidney Function Associated With Age-Related Macular Degeneration? Findings From the Asian Eye Epidemiology Consortium

*First Author: Ralene **SIM***

Purpose: Age-related macular degeneration (AMD) is a leading cause of irreversible blindness in Asia and worldwide. Chronic kidney disease (CKD), shares pathophysiological mechanisms and common risk factors and also shares common susceptibility genes. We aim to examine the association between CKD or kidney function and AMD.

Methods: We analysed cross-sectional data from 10 population-based studies conducted in China, Hong Kong, India, Japan and Singapore from the Asian Eye Epidemiology Consortium (AEEC) network. Multivariable logistic regression models with generalised estimating equation (GEE) were used to account for correlations between both eyes. Model 1 was adjusted for age, gender and study group. Model 2 was further adjusted for hypertension, diabetes, total cholesterol, BMI and smoking status.

Results: A total of 60,685 participants (117,929 eyes) were included. The mean age was 53.6 years, 32,946 (56.0%) were females, 4,646 (9.6 %) had CKD. 6,971 eyes (69.0%) had AMD of any form; of which, 6,443 eyes were early AMD. Lower eGFR (per 10 ml/min/1.73m2) was significantly associated with increased odds of late AMD in both model 1 (odds ratio [OR]= 1.10; 95% CI, 1.03 to 1.17, p = 0.004) and in model 2 (OR = 1.11; 95% CI, 1.04 to 1.18, p= 0.002). CKD was significantly associated with increased odds of late AMD in both model 1 (odds ratio [OR]= 1.41; 95% CI, 1.07 to 1.84 p = 0.014) and model 2 (OR = 1.38; 95% CI, 1.04 to 1.82, p= 0.025).

Conclusions: In this largest meta-analysis to date, we observed poorer kidney function to be associated with early AMD.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1-GF)

KCNV2-Associated Retinopathy Natural History and Biomarkers

*First Author: Dhimas **SAKTI***
*Co-Author(s): Haipha **ALI**, Elisa **CORNISH**, John **GRIGG**, Robyn **JAMIESON***

Purpose: KCNV2-associated retinopathy is an autosomal recessive inherited retinal disease that is classically called cone dystrophy with supernormal rod response (CDSRR). This study was to find the best biomarker for evaluating the disease.

Methods: Retrospective review of 8 patients from 7 families with genetically confirmed KCNV2-associated retinopathy. The data included best corrected visual acuity (BCVA), full-field electroretinogram (ffERG), pattern ERG (pERG), fundus imaging: retinal photo and fundus autofluorescence (FAF), and optical coherence tomography (OCT).

Results: We found 7 distinct allelic changes which had been previously reported, including Ala259Thr, Ala261Asp, Gln109X, Arg320Cys, Gly461X, Trp188X, and complete gene deletion. Legal blindness was reached before the age of 25. Bull's eye maculopathy was prominent in FAF. Variable disruption of the fovea was apparent in all patients. Patients 3 and 6 had above-normal b-wave amplitude, while other patients showed an upper range of normal. The b:a wave ratio was above the normal range or in the upper normal range. B-wave latency was delayed in dimmer stimuli, becoming (upper) normal in the brighter ones except in 2 oldest patients. A-wave latency was consistently delayed in all stimuli.

Conclusions: No specific phenotype can be associated with a specific variant. The window of therapy is in the first 3 decades of life. Disproportionate increase of b-wave amplitude with light intensities is the "supernormal" rod response. Delayed a- & b-wave latency are common in KCNV2-associated retinopathy and may serve as specific biomarkers.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2-GF)

Knowledge, Attitude, and Practice (KAP) on Diabetes Mellitus (DM) and Diabetic Retinopathy (DR) Amongst People Visiting a Tertiary Eye-Care-Centre in South India

*First Author: Hari Bhadari **ANAND***
*Co-Author(s): Rajvinder **BHATTI**, Manavi **DEOKRISHNA SINDAL**, Bholesh **RATNA***

Purpose: To assess KAP scores on DM/DR among study participants.

Methods: In this observational, cross-sectional study – 1440 visitors were split into 4 equal groups (Gp1 – No DM/DR, Gp2 – DM+/DR-, Gp3 – New DR, Gp4 – DR on treatment) and were administered a validated questionnaire.

Results: KAP scores were higher in Gp4 than any other on DM/DR. Knowledge was poor for DM in Gp1 (93.6%), while for DR Gps 1,2 & 3 had poor knowledge (91-99%). In Gp4 54.7% & 41.6% had good knowledge about DM & DR. Gps 1 & 2 had positive attitude of 57% for DM, but only 4% & 21% for DR. Attitude in Gp3 & Gp4 was positive in 59%/66%, and 50%/71% for DM/DR. A good practice pattern for DM was seen in Gp2-59%, Gp3-48%, and Gp4-66%. Good practice for DR was 1%

in Gp2 & Gp3, and 50% in Gp4. A multivariate logistic regression analysis revealed good knowledge correlates with good attitude and practice in DM/DR (p<0.001).

Conclusions: DM/DR is a pressing health concern. The KAP analysis shows that awareness is low in unaffected individuals, with the highest risk of developing DM/DR later. Awareness measures need emphasis to reach the general public, and the affected who are still largely unaware.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

Patients' Perception of Robot-Driven Technology in the Management of Retinal Diseases

*First Author: Kah **AW***
*Co-Author(s): Shyamanga **BOROOAH**, Alison **BRUCE**, Peter **CACKETT**, Aryelly **RODRIGUEZ**, Sirindhra **SUEPIANTHAM***

Purpose: There is increasing application of robots and other artificial intelligence (AI)-driven technologies in the management of retinal disease. However, there is currently a lack of understanding of patients' attitudes towards the use of robots in ophthalmology. This study investigates patients' attitudes towards robot-led management of retinal disease.

Methods: Questionnaires were distributed to 177 patients attending IVT at the Princess Alexandra Eye Pavilion, Edinburgh for 3 months. The questionnaire collected information on age, sex, diagnosis and postcode. In the questionnaire, patients responded to questions about their attitudes towards robot-led diagnosis, treatment decisions and IVT injections. Responses were collected using a 5-category Likert scale which was analysed using ordinal logistic regression with adjustments for age, sex and deprivation status.

Results: Those from affluent socioeconomic backgrounds were significantly (p<0.001) more accepting of robots diagnosing and deciding on treatment. Furthermore, there was an increased proportion of patients who would accept robots if the robot made fewer mistakes than doctors, if the robot reduced waiting or appointment time and if the robot was able to communicate well and have empathy. Lastly, 116 patients (65.5%) would not be happy if IVT injections were performed by a robot. This was more likely the case if the patient was female (p=0.04) or from a more deprived socioeconomic background (p<0.001).

Conclusions: Attitudes towards robot involvement in the diagnosis and management of retinal disease are significantly associated with socioeconomic backgrounds and sex. Additional studies are required to further investigate these determinants of robot receptiveness to ensure acceptance and compliance with treatment with these new technologies.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

Performance of "Treat-and-Extend" Anti-VEGF Therapies (Aflibercept, Ranibizumab) Used for Diabetic Macular Oedema at 1 Year

*First Author: Shi Pei **LOO***
*Co-Author(s): Soma **CHAKRABARTI**, Manish **GUPTA**, Jonathan **NAIRN**, Lorraine **SHIELDS**, Graeme **WILLIAMS***

Purpose: To compare visual acuity (BCVA) and central macular thickness (CMT) outcomes of anti-vascular endothelial growth factor (anti-VEGF) therapies subgroups prescribed as "treat-and-extend."

Methods: We identified 94 eyes; the median age was 63.7 years (range 44.3 - 83.3). The sample comprised 3 subgroups based on original prescribed loading doses; 33 eyes were prescribed Aflibercept monthly for 4 months (A4), 29 eyes Aflibercept for 3 months (A3), and 14 eyes Ranibizumab for 3 months (R3). All groups subsequently received an average of 3 further injections.

Results: The A4 subgroup reports a + 13.8 letter BCVA and -99.4 micron CMT reduction at 1 year compared to baseline. The A3 subgroup reports a + 6.7 letter BCVA and -63.9 micron CMT improvement. R3 subgroup reports a + 9.3 letter BCVA and -93.6 micron CMT improvement. Subgroups A4 & R3 maintain BCVA between treat-and-extend decision and 1 year (+8.8 letters, + 6.4 letters respectively). Subgroup R3 reports a vision loss (-7.1 letters BCVA) between treat-and-extend and 1 year. All groups report an anatomical increase in CMT between the treat-and-extend decision and 1 year.

Conclusions: There is no national or local consensus locally when prescribing first-time intravitreal (IVT) injections for centre–involving diabetic macular oedema. Variation and clinical uncertainty exist between guidance from governing bodies, manufacturers' recommendations, European societies and clinical studies. Our sample demonstrates superior functional and anatomical outcomes at 1 year from loading with 4 monthly Aflibercept injections, then extending with 3 further injections. The BCVA results compare favourably to the DRAKO study at 1 year.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Prospective Analysis of Retinal Nerve Fiber Layer and Macular Thickness as Early Neurodegenerative Indicators in Systemic Lupus Erythematosus Patients

*First Author: Muhammad Fadhil **RAHMADIANSYAH***
*Co-Author(s): Weni **HELVINDA**, Muhammad **HIDAYAT***

Purpose: Retinal nerve fiber layer (RNFL) and/or macular thickness as neuronal unit system representation, which is received by spectral domain-optical coherence (SD-OCT), is now a well-established biomarker of neurodegenerative disorders such as multiple sclerosis, Alzheimer's, and Parkinson's disease. Limited studies have explored the SD-OCT's role as an SLE-associated neurodegeneration biomarker, yielding inconsistent results. This study aimed to detect early neurodegeneration indicators by comparing RNFL and macular layer thickness between SLE patients without ocular symptoms and healthy controls.

Methods: This is a cross-sectional study. All participants underwent comprehensive ophthalmologic evaluations, including SD-OCT tomography for retinal segmentation analysis. Patients with SLE also yielded specific data such as disease duration and received treatments. For RNFL and macular layers thickness, the average RNFL thickness and thickness average cube were determined. An independent T-test analysis was performed to assess the effect of the disease compared with healthy controls' data.

Results: Twenty-three eyes of 23 patients with SLE and 23 eyes of 23 healthy controls were considered. The mean age of SLE samples was 28,9 years, and the majority were females (91,31%). All patients had no ophthalmology manifestation and received hydroxychloroquine and steroid treatment with a median value disease duration of 3 years. The average RNFL thickness and macular thickness were significantly thinner in the SLE group ($p<0,05$), which indicated a neurodegeneration process prior to any ocular manifestation.

Conclusions: Patients with SLE present early indicators of retinal neurodegeneration, as observed by a decrease in both the photoreceptor layer of macular and RNFL.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

Quantification of Vascular Changes in Macular Telangiectasia Type 2 With the AngioTool Software

*First Author: Yeshwanth **KUMAR H S***
*Co-Author(s): Dr Indu **GOVINDARAJ**, Maanasi **MAHALINGAM**, Dr Uma **MAHESHWARI S**, Anand **RAJENDRAN**, Dr Vishnu **SUBRAMANIAN***

Purpose: To assess the retinal vascular parameters with AngioTool (AT) and to correlate the changes with BCVA and Simple Mactel classification (SMC).

Methods: A total of 120 eyes of 60 MacTel2 and 60 eyes of 30 age-matched control were included in the study. Spectral-domain OCTA (SDOCTA) images of superficial vascular plexus (SVP) and deep capillary plexus (DCP) were exported into Fiji j software and AT. The vessel area (VA), vessel percentage area (VPA), total number of junctions (TNJ), junction density (JD), total vessel length (TVL), average vessel length (AVL), total number of endpoints (TNE) and mean E lacunarity (MEL) were studied.

Results: All the parameters were significantly different between the two groups except the TNE in the SVP. In the DCP, there is statistical significance in VA, TNJ, JD, TVL, MEL between grade 0 and grade 3, and in MEL between grade 0 and grade 6. In the SVP, there is statistical significance in TNJ, JD, AVL between grade 1 and grade 3. The VA, VPA and TVL in the SVP had a significant positive correlation with BCVA. Parameters in the DVC did not correlate with BCVA.

Conclusions: AT, along with OCTA, may provide quantitative markers to measure disease progression.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Quantifying Vitreous Haziness in Uveitic Patients using Optical Coherence Tomography: Make it count!

*First Author: Annisa **PERMADI***
*Co-Author(s): Ari **DJATIKUSUMO**, Lukman **EDWAR***

Purpose: To measure vitreous haziness quantitatively using optical coherence tomography as one of the important clinical endpoints for disease evaluation and treatment monitoring in intermediate, posterior uveitis and panuveitis.

Methods: A prospective, cross-sectional study was conducted to obtain quantitative measurement of vitreous haziness using optical coherence tomography (OCT) with Image J compared to the qualitative Nussenblatt Scale. Clinical and demographic

characteristics of uveitic and healthy controls were recorded in this study. OCT macula and fundus photographs were obtained and graded by two independent graders.

Results: A total of 29 uveitic eyes and 29 healthy controls were included in this study. More than half of recruited patients had panuveitis (59.6%), with toxoplasma as the most common etiology (27.6%). Median of Vitreous/Retinal Pigment Epithelium (RPE) relative intensity (VRI) as the OCT-derived measurement showed higher in uveitic patients compared to healthy controls (0.265; 0.168-0.605 and 0.175;0.152-0.199 respectively). Intra-rater of two methods showed excellent result with grader 1 was 0.975 (0.958, 0.985) ; grader 2 was 1.00 (0.999, 1.000) for VRI, and grader 1 was 0.920 (0.829, 0.962) and grader 2 was 0.908 (0.804, 0.957) for Nussenblatt Scale. VRI had higher inter-rater agreement compared to the Nussenblatt scale (0.998; 0.996 - 0.999 and 0.717; 0.696 - 0.737, $p<0.001$). A strong positive correlation was found between VRI and the Nussenblatt scale (rho= 0.713, $p<0.001$).

Conclusions: VRI had near-perfect inter-rater agreement and excellent intra-rater agreement with a strong positive correlation with the Nussenblatt scale, making VRI a more objective method compared to the gold standard.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Real World Efficacy, Durability and Safety of Faricimab in Diabetic Macular Edema: The TAHOE Study

*First Author: Michael **SINGER***
*Co-Author(s): Aamir **AZIZ**, Hanah **KAHN**, Arshad **KHANANI***

Purpose: Faricimab was approved by the FDA in late January 2022 for the sustained treatment of diabetic macular edema (DME). Current anti-VEGF agents drastically improved patient outcomes, but real-world patients showed a decline in visual acuity due to frequent injections and high treatment burden. This real-world multi-center retrospective study collected and analyzed the efficacy, safety, and durability of the bispecific farcical in patients diagnosed with DME.

Methods: A retrospective chart review of patients treated with faricimab for DME was conducted. Demographics, treatment history, visual acuity (VA), and changes in central subfield thickness (CST) were collected. If applicable, the faricimab treatment interval was compared to previous anti-VEGF treatment intervals to investigate durability. VA and CST improvements were evaluated as averages, and the presence of retinal fluid was reported as binary. Adverse events were collected and reported.

Results: A total of 141 eyes of 108 patients are available. The data collection is ongoing from 20 sites across the US. The average age was 69.95 years, and 50.0% were female. All eyes after one injection of faricimab (n=75 eyes) demonstrated a BCVA increase of +1.34 letters (p=0.4336) and a CST decrease of -13.92 µm (p=0.4713). No cases of faricimab-related inflammation or vasculitis have been reported.

Conclusions: Maintenance of VA and anatomy after treatment with faricimab has been noted after just one injection. This study will look into the long-term efficacy, safety, and durability of faricimab. Updated data from several hundred patients will be available at the time of the presentation for this presentation of the TAHOE study results at APAO 2024.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Risk of Clinical and Subclinical Radiation-Induced Retinopathy Following High-Dose Irradiation in Chinese Patients With Nasopharyngeal Carcinoma: A Case-Control Study

*First Author: Mary **HO***
*Co-Author(s): Noel **CHAN**, Ling **LI**, Chun Yue, Andrew **MAK**, Ho Ming **WONG***

Purpose: To evaluate changes in vascular parameters following high-dose intensity-modulated radiation therapy (IMRT) for nasopharyngeal carcinoma (NPC).

Methods: This retrospective case-control study recruited NPC patients receiving high-dose IMRT (>54 Gy) and age-/sex- matched healthy controls, to compare their clinical and OCT-Angiography imaging findings. The relationship between microvascular parameters and radiation dose received by eyeball, optic nerve and optic chiasm was evaluated.

Results: This study included 18 NPC patients who received IMRT from 2010 to 2016 with a mean follow-up of 6.9 years. The average age was 59.0 ± 13.4 years. None developed clinically observable radiation retinopathy. However, compared to the 34 healthy controls, the irradiated eyes exhibited significantly lower microvascular parameters at both the superficial and deep capillary plexus, including lower vessel density (VD) (p=0.003 for deep plexus), a larger foveal avascular zone (FAZ) area (p=0.047 for superficial and p=0.027 for deep plexus), reduced fractal dimension (FD) (p=0.011 for superficial and $p<0.001$ for deep plexus), and decreased vessel density index (VDI) (p=0.004 for superficial and deep ($p<0.001$ for deep plexus). The radiation dose to eyeball (both maximum [Dmax] and mean dose [Dmean]) was significantly correlated with visual acuity and microvascular parameters, including non-perfused area, VD, FD, and VDI.

Conclusions: Though clinically observable radiation is rare, this study revealed significantly decreased microvascular parameters in eyes receiving IMRT during a long-term follow-up. The significant correlation between radiation dose to eyeball and vascular parameters highlighted the importance of close monitoring of radiation dose, and early identification of patients-at-risk.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1-GF)

Role of Cystatin C in the Detection of Sight-Threatening Diabetic Retinopathy in Asian Indians With Type 2 Diabetes

*First Author: Ramachandran **RAJALAKSHMI***

Purpose: To study the association between cystatin C and sight-threatening diabetic retinopathy (DR) in Asian Indians with type 2 diabetes (T2DM).

Methods: In a cross-sectional observational study carried out at two tertiary centres (a diabetes-care centre and an eye-care centre) in south India in 2022, individuals with T2DM undergoing ophthalmic assessment, underwent estimation of serum cystatin C in addition to other clinical and biochemical assessments. The grading of DR was done by medical retina specialists. Sight-threatening DR (STDR) was defined by the presence of severe non-proliferative DR (NPDR), proliferative DR (PDR) and/or diabetic macular edema. Regression analysis was done, and receiver operating characteristic (ROC) curves were used to identify cystatin C cut-off values for detecting STDR.

Results: Among 420 individuals with T2DM (mean age 56 ± 9 years; mean duration of diabetes 14.5±7.9 years), 121 (24.1%) had No-DR, 119 (28.3%) had No-STDR and 200 (49.6%) had STDR. The mean cystatin C level was higher in individuals with STDR compared to those with no-STDR and No-DR (1.34 vs 1.06 vs 0.93 mg/L, p<0.001). Serum cystatin C was associated with higher odds for STDR [Odds ratio (OR) 3.78, 95% Confidence-interval (CI) 2.21-6.47, p<0.001] after adjusting for co-variates. The ROC curves showed that cystatin C cut-off value ≥ 1.11 mg/L had AUC= 0.944 (95%CI: 0.909-0.968, p<0.001), 96.8 % sensitivity and 78.2% specificity for detection of STDR.

Conclusions: Elevated levels of serum cystatin C were strongly associated with STDR and could possibly be used as a biomarker to triage individuals to be screened for sight-threatening DR.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1-GF)

Safety and Efficacy of Brolucizumab in the Treatment of Diabetic Macular Edema and Diabetic Retinopathy: A Systematic Review and Meta-analysis

*First Author: Hashem **ABU SERHAN***
*Co-Author(s): Qusai Faisal **ABU SALIM**, Leen **ABU SERHAN**, Mohammad T. **ABUAWWAD**, Ayman G **ELNAHRY**, Mohammad J.J. **TAHA***

Purpose: To investigate the efficacy and safety of brolucizumab in diabetic macular edema (DME) and diabetic retinopathy (DR).

Methods: In this systematic review and meta-analysis, an electronic search was done to acquire all articles describing brolucizumab use in patients with DME and DR. The review was prospectively registered on PROSPERO (CRD42022382625). Collected articles were filtered through two stages by independent reviewers. Data were extracted from the included articles and then analyzed accordingly.

Results: Brolucizumab induced significant improvement in best-corrected visual acuity and was either better or non-inferior to other types of anti-VEGF (MD -0.64 mu, 95% CI [-1.15, -0.13], P=0.01); the same observation was noted with regards to central subfield macular thickness (CSMT) (MD -138.6 mu, 95% CI [-151.9, -125.3], P=0.00001). Brolucizumab was reported to be relatively safe for use in diabetic patients, with few adverse events observed, with a higher frequency of adverse events in relation to the 3 mg dose compared to the 6 mg dose.

Conclusions: Brolucizumab is a new drug that has potential advantages in efficacy over other anti-VEGF agents in the treatment of DME and DR. It showed significant improvement in BCVA and CSMT with the possibility of a lower dosing schedule compared to other agents. Although observed in low frequency, sight-threatening adverse effects appear to occur more frequently compared to other anti-VEGF agents. The main observed adverse event was retinal vasculitis which was seen more commonly with the 3 mg dose versus the 6 mg dose.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

Serum Vitamin D Level Alterations in Retinal Vascular Occlusions

First Author: Ashok ***KUMAR***
Co-Author(s): Vikas ***AMBIYA****, Rohit* ***BHANOT****, Sandeep* ***SHANKAR***

Purpose: To evaluate serum vitamin D levels in sub-types of retinal vascular occlusion and compare the levels in ischemic and non-ischemic presentations.

Methods: This study included 50 patients of retinal vascular occlusions comprising central retinal vein occlusion, branch retinal vein occlusion, central retinal artery occlusion, branch retinal artery occlusion (study group) diagnosed on the basis of clinical characteristics, investigations and an age, gender-matched healthy group (control group). The study group was further classified into ischemic and non-ischemic subtypes and serum vitamin D levels were analysed and compared.

Results: There were 50 patients of various sub-types of retinal vascular occlusions comprising 13 cases of CRVO, 30 cases of BRVO, 05 cases of CRAO, 02 cases of BRAO, and 50 age and sex-matched controls. The mean BCVA and CMT in RVO patients were +1.12, 346.72± 27.93µm, while in the control group was +0.37, 236.22±23.71µm which were statistically significant (p=0.004;p=0.002). The mean serum vitamin D in the study group was 18.39 ng/dl as compared to 32.31ng/dl in the control group, which was statistically significant (p=0.001). The difference in the baseline vitamin D value between the ischemic and non-ischemic subgroups among total vascular occlusion was statistically significant (p= 0.010).

Conclusions: A high prevalence of low serum vitamin D levels is observed in retinal vascular occlusion spectrum diseases. Moreover, ischemic retinal vascular occlusion has significantly lower serum vitamin D levels as compared to non–ischemic. Therefore, vitamin D supplements may be considered as possible future targeted therapy in optimizing the severity of disease.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

Systemic Risk Factors of Retinopathy in Patients With Systemic Lupus Erythematosus

First Author: Lihui ***MENG***
Co-Author(s): Youxin ***CHEN****, Qianyi* ***YU***

Purpose: To analyze the risk factors of lupus retinopathy (LR), specifically for different categories of LR.

Methods: This is a retrospective, cross-sectional study. LR patients admitted at a tertiary, multi-specialty referral hospital from June 2013 to April 2023 were reviewed. Age- and gender-matched SLE without LR patients were selected as controls. Medical records, including clinical manifestations, laboratory data, and ophthalmic examination were collected. Univariate and multivariate logistic regression analyses were used to identify risk factors for LR.

Results: A total of 112 LR patients (198 eyes) were included, with 12 cases (14 eyes) presenting with retinal macrovascular obstruction, and 100 cases (184 eyes) only exhibiting microvasculopathy. Univariate analysis showed significant correlations between LR and concurrent hemolytic anemia, adjusted Systemic Lupus Erythematosus Disease Activity Index 2000 (a-SLEDAI-2K) score, short SLE duration, positive anti-SSA antibodies, elevated erythrocyte sedimentation rate and C-reactive protein, decreased complement, white blood cell, platelet and hemoglobin (HGB) levels ($P<0.05$). In multivariate analysis, LR was associated with hemolytic anemia, decreased HGB, and so was microvasculopathy, while macrovascular obstruction was associated with secondary antiphospholipid syndrome (APS) ($P<0.05$). LR also had a significantly inverse association with anti-SSA antibodies. The ROC curve suggested the combination of a-SLEDAI-2K and hemolytic anemia could diagnose LR with an AUC value of 0.75 ($P<0.001$).

Conclusions: LR was related to hemolytic anemia and decreased HGB levels, and inversely to anti-SSA antibody. Most LR were retinal microvasculopathy. Macrovasculature obstructions were rare and associated with secondary APS. Early ophthalmic screening is recommended, especially for patients with high disease activity or hemolytic anemia.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

The Aspects of Diagnosis and Treatment of Pediatric Retinal Disease

First Author: Tsengelmaa ***CHULUUNBAT***

Purpose: To describe the utility of RetCam in pediatric retinal diseases in Mongolia.

Methods: A total of 354 patients (683 eyes) were done fundus imaging by RetCam portable Clarity medical system, Pleasanton, CA, USA by trained pediatric ophthalmologist and nurse. A retrospective chart review was carried out in 249 eyes of 137 pediatric patients who were detected ROP and diagnosed or suspected to have retinal diseases in children at the National Center for Maternal and Children Health in Mongolia for 2 years. RETCAM was carried out using the 130-degree lens of RetCam portable. Treatment

(intravitreal injection, laser/cryotherapy) was carried out wherever required.

Results: RetCam was helpful in establishing a diagnosis in 137 (38.3%) patients. Diseases studied included - retinopathy of prematurity was done in 206 eyes of 103 (75.1%) prematurity babies. Retinoblastoma was done in 22 eyes of 19 (13.8%) patients, and Coats' disease was done in 3 eyes of 3 (2.1%) patients, optic nerve coloboma was 5 eyes of 3 (2.1%) patients, optic nerve hypoplasia was 6 eyes of 3 (2.1%) patients, glory morning syndrome was 3 eyes of 3 (2.1%) patients, congenital retinal folds and persistent fetal vasculature was 2 eyes of 2 (1.4%) patients and familial exudative vitreoretinopathy was 2 eyes of one patients.

Conclusions: RetCam is extremely useful to document in pediatric patients and helps to establish a diagnosis and therapeutic decision.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

The Real-world Efficacy and Safety of Faricimab in Neovascular Age-Related Macular Degeneration: The Truckee Study

*First Author: Michael **SINGER***
*Co-Author(s): Aamir **AZIZ**, Hanah **KAHN**, Arshad **KHANANI***

Purpose: This multi-center, prospective study evaluates the safety and efficacy of faricimab in real-world patients diagnosed with nAMD.

Methods: Treatment-naïve and patients switched to faricimab from other anti-VEGF agents were studied. Demographics, treatment history, best-corrected visual acuity (BCVA), central subfield thickness (CST), macular volume, and presence of subretinal or intraretinal fluid (SRF or IRF) were evaluated. Snellen visual acuity was converted to the Early Treatment Diabetic Retinopathy Study (ETDRS).

Results: A total of 1,537 eyes across 1,222 patients were recorded. Average age was 80.49 years, 58.8% were female. 1,265 eyes had follow-up, 55.1% switched from aflibercept. After one injection of faricimab (n=1,077) had BCVA increase of +0.84 letters (p=0.119) and CST decrease of -64.7µm (p<0.001). Eyes switched from aflibercept post one injection of faricimab (n=696) had a BCVA increase of +0.66 letters (p=0.262), a CST decrease of -20.55µm (p<0.001), and SRF/IRF resolution rates 53.4% and 55.2%, respectively. Eyes switched from any anti-VEGF post six injections of faricimab (n=108) had a BCVA increase of +2.87 letters (p=0.023) and a CST decrease of -63.58µm (p<0.001). Eyes switched from aflibercept post six injections of faricimab (n=77) had a BCVA increase of +2.79 letters (p=0.094) and a CST decrease of -66.50µm (p<0.001). Of the 5,941 injections, no cases of faricimab-related vasculitis or retinal artery occlusion.

Conclusions: Faricimab has demonstrated efficacy via anatomic and visual parameters, in both treatment-naïve and previously treated patients. Safety is comparable to current agents, with no faricimab-related vasculitis or retinal artery occlusion. Results will be updated at APAO 2024.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

To Evaluate Role of Oral Eplerenone in Central Serous ChorioRetinopathy in a Tertiary Care Hospital in India

*First Author: Abhyuday **SAXENA***
*Co-Author(s): Indranil **SAHA***

Purpose: To evaluate the visual and anatomical recovery using Eplerenone in patients with Central Serous ChorioRetinopathy (CSCR).

Methods: Retrospective analysis of Electronic Medical Records of CSCR patients between 1st November 2022 and 30th April 2023 was done. All patients with CSCR were divided into 2 groups: Group 1 received standard therapy in the form of topical NSAIDs and oral multivitamins along with oral eplerenone 50 mg BD; Group 2 received standard therapy only. Patients were evaluated at presentation and 90 days after starting treatment.

Results: A total of 83 patient records were analysed, with 43 in Group 1 and 40 in Group 2. Both groups showed significant improvement from baseline to day 90 in vision (0.57 +/- 0.34 to 0.12+/- 0.24 vs 0.60 +/- 0.64 to 0.17 +/- 0.15; p<0.01 for both); decrease in neurosensory detachment (NSD) (315 +/- 144.93 to 5.76 +/- 12.03 vs 284.23 +/- 175.39 to 13 +/- 14.7; p<0.01 for both) and choroidal thickness (CT) (340.25 +/- 32.77 to 264.18 +/- 31.71 vs 332.28 +/- 49.93 to 266.2 +/- 23.92; p<0.01 for both). At baseline, there was no significant difference in any of the parameters between the two groups. At day 90, NSD was significantly lesser in Group 1 as compared to Group 2 (p<0.01). Although Group 1 showed better BCVA and lower CT compared to Group 2, it was not statistically significant (p=0.31, p=0.89).

Conclusions: Our study shows eplerenone, along with standard therapy, improved visual and anatomical recovery compared to standard therapy alone, though prospective studies are needed to provide conclusive evidence.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

To Relate Fundus Changes Associated With Diabetes With Different Stages Of Nephropathy

*First Author: Saloni **GUPTA***
*Co-Author(s): Shailender **CHAUDHARY***

Purpose: The current study aimed to investigate whether microalbuminuria or moderately decreased glomerular filtration rate (GFR) is a better predictor for the development and progression of retinopathy in type 2 diabetic patients.

Methods: Type 2 diabetic patients without cardiovascular diseases, malignancy, pregnancy, and acute intercurrent illness were enrolled between 1 August 2001 and 31 December 2002. All participants provided their detailed medical history and underwent an eye fundus examination. They were followed up in outpatient clinics, and serum creatinine, urinary albumin-to-creatinine ratio (UACR), and retinal photographs were followed up annually until 31 December 2009. The primary outcomes were the development and progression of diabetic retinopathy and nephropathy. The secondary outcomes were cardiovascular events and all-cause mortality.

Results: Among 487 participants, 81 subjects had normoalbuminuria and moderate renal impairment (baseline eGFR 30–59.9 mL/min/1.73 m2), and 106 subjects had microalbuminuria and baseline eGFR 60 mL/min/1.73 m2. Patients with microalbuminuria and eGFR $60 mL/ min/1.73 m2 had a significantly greater risk for the development and progression of diabetic retinopathy (HR 3.34 [95% CI 1.04–10.70]) compared with those with moderate renal impairment and normoalbuminuria after multivariate adjustment. Risks for renal outcome, cardiovascular events, and all-cause mortality were not significantly different between the two groups.

Conclusions: Microalbuminuria has a greater impact on predicting the development and progression of diabetic retinopathy compared with a moderate decline in GFR among type 2 diabetic patients.

Feb 24, 2024 (Sat)
16:30 – 18:00
Venue: Mengwi 3,5 (BNDCC2–GF)

Topical Dorzolamide for Macular Holes: Randomised Controlled Clinical Trial

*First Author: Yong Min **LEE***
*Co-Author(s): Bobak **BAHRAMI**, Robert **CASSON**, Wengonn **CHAN**, Shane **DURKIN**, David **SIA***

Purpose: Full-thickness idiopathic macular holes (MH) are neurosensory retinal separations at the central fovea causing central visual disturbances. Conventional treatment involves vitrectomy with inner limiting membrane (ILM) peel. Carbonic anhydrase inhibitors have been explored for dehydrating the retina and promoting MH closure. We aimed to assess topical dorozlamide's efficacy in treating MH versus placebo.

Methods: A randomised (1:1 ratio), double-blinded, placebo-controlled clinical trial was conducted at the Royal Adelaide Hospital involving 32 patients with small idiopathic holes. Inclusion criteria involved: patients over 18, MH < 400 microns on OCT, no previous vitrectomy or other intraocular surgery within 2 months and no contraindications to dorzolamide. Participants in both arms used topical dorzolamide 2% or saline thrice daily for eight weeks with monthly OCTs. Persisting MH proceeded with surgical intervention. The primary outcome was the rate of MH closure at the end of treatment.

Results: Between 6 March 2020 and 16 June 2023, 32 eligible patients were enrolled; 16 participants in each arm. At the final visit, three patients in the topical dorzolamide group demonstrated closure whilst two patients with placebo had MH closure. Statistical analysis using chi-squared t-tests yielded a p-value of 0.626 for dorzolamide versus placebo MH closure rates. No serious adverse events occurred in both groups.

Conclusions: Topical dorzolamide was safe but not superior to placebo in the closure of full thickness MH. Exploration of alternative conservative treatments for this condition is recommended to avoid the risks of surgery.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

Variable Expression in Filipino Siblings With Autosomal Recessive Bestrophinopathy (ARB)

*First Author: Raphael **GUMAFELIX***
*Co-Author(s): Kristine **CORPUS**, Manuel Benjamin **IBANEZ***

Purpose: The purpose of this report is to highlight the heterogeneity of BEST1 by describing and comparing the ophthalmologic and multimodal imaging findings of two siblings with different clinical features yet the same pathogenic bi-allelic mutation. To our knowledge, this is the first genetically confirmed case of ARB in the Philippines.

Methods: Two siblings, a 26-year-old female and a 24-year-old male, initially came in for refractive surgery screening. Both siblings presented with slow, progressive, and painless bilateral blurring of vision associated with symptoms of dry eye syndrome. Refraction revealed the sister to be myopic with a best-corrected visual acuity (BCVA) of 20/20, while her brother is hyperopic with a BCVA of 20/25 for both eyes. On examination, anterior segments

and intraocular pressure were normal for both. A dilated retinal exam showed a symmetrical yellowish large placoid lesion with yellow spotty patches in the posterior pole involving the fovea, which was more demarcated in the sister. Fluorescein angiography revealed symmetrical, ill-defined granular hyperfluorescence of the placoid lesion without evidence of choroidal neovascularization. Macular-OCT reported symmetrical focal thickening of the ellipsoid zone with minimal subretinal fluid and absence for both siblings.

Results: An inherited retinal dystrophy panel targeting 330 genes was requested. Two pathogenic variants, c.584C>T (p.Ala195Val) and c.508C>T (p.GIn170*), were identified in BEST1 for both siblings.

Conclusions: This report highlights the significance of genetic testing in diagnosing atypical presentations of common retinal disorders. These observations emphasize the importance of considering the heterogeneity of BEST1-related disorders when diagnosing and managing patients, as different phenotypes may require tailored treatment approaches.

Feb 24, 2024 (Sat)
14:30 – 16:00
Venue: Uluwatu 6 (BNDCC1–GF)

Visual Function of a Non-diffractive Extended-Depth-of-Focus Intraocular Lens According to the Various Stages of Epiretinal Membrane

*First Author: Sohee **JEON***

Purpose: To evaluate the clinical outcomes of a non-diffractive extended-depth-of-focus (EDoF) intraocular lens in eyes with various epiretinal membrane (ERM) stages.

Methods: Clinical records of 289 eyes with AcrySof® IQ Vivity™ implantation were reviewed. Eyes were grouped according to the ERM stages as no ERM (n = 228), stage 1 (n = 29), stage 2 (n = 20), and stage 3 (n = 12) ERM. Corrected and uncorrected distant visual acuity (CDVA and UDVA), uncorrected intermediate and near visual acuity (UIVA and UNVA), contrast sensitivity detected by the area under the log contrast sensitivity function (AULCSF), Strehl ratio, area ratio, and intraocular aberration were compared.

Results: There was no difference in the UDVA, UIVA, UNVA, and CDVA between groups (P =0.639, P =0.871, P =0.963, and P =0.051, respectively). There was no significant difference in the Strehl ratio (P =0.208), Area ratio at 4 mm (P =0.434), Area ratio at 5 mm (P =0.511), or ocular aberrations (P = 0.311 for total aberration). The AULCSF showed significant differences in both day condition (1.48 ± 0.21, 1.41 ± 0.18, 1.33 ± 0.17, and 1.31 ± 0.19 for no ERM, stage 1, stage 2, and stage 3 ERM; P =0.036) and night condition (1.21 ± 0.21, 1.22 ± 0.12, 1.02 ± 0.20, and 1.08 ± 0.10 for no ERM, stage 1, stage 2, and stage 3 ERM; P =0.027).

Conclusions: Eyes with stage 3 ERM that do not have outer retinal involvement may benefit from EDoF technology when timely membrane removal is accompanied.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Correlation of Biomarkers of Central Serous Chorioretinopathy on Optical Coherence Tomography Angiography (OCT-A) With Clinical Course of Disease

*First Author: Shivangi **SINGH***
*Co-Author(s): Vinod **SINGH***

Purpose: To identify the predictive biomarkers in patients affected by CSCR on OCT-A and its correlation with the clinical course of the disease.

Methods: It was a prospective study. Inclusion criteria: Patients with a clinical history of acute CSCR with the presence of SRF involving the fovea on structural OCT. Exclusion criteria: The presence of any other retinal disorder potentially confounding the clinical assessment, and any previous treatment for CSCR. Patients underwent a complete ophthalmic examination. A total of 26 eyes of 25 patients (2 females, 23 Males) were included in this study. The mean CSCR duration at baseline was 10 weeks +/- 4 weeks.

Results: Out of 25 patients, 22 had dark areas, 5 had dark spots and 12 had abnormal vessels. Even after the resolution of subretinal fluid, dark areas persisted in 19, dark spots persisted in 5, and abnormal vessels persisted in 9.OCT-A showed 3 main anomalies at the choriocapillaries: the presence of dark areas, dark spots, which were frequently associated and the presence of abnormal choroidal vessels. After a treatment of 10 weeks +/- 4 weeks, mean central macular thickness significantly reduced (P < 0.05), and mean BCVA improved (P < 0.05).

Conclusions: CSCR represents the fourth most common nonsurgical chorioretinopathy that has significant morbidity in certain populations. OCTA appears to be a promising technique because it avoids the burden of intravenous injections of dye. Persistence of biomarkers during the clinical course of the disease and even after the resolution of SRF improves our understanding of the disease pathophysiology.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2-GF)

Demographic and Clinical Characteristics of a Series of Patients With Presumed Occult Macular Dystrophy: Experience From Eastern India

*First Author: Jinal **GORE***
*Co-Author(s): Tapas **PADHI**, Miloni **SHAH***

Purpose: To report demographic and clinical characteristics of patients with presumed occult macular dystrophy (OMD).

Methods: In a Retrospective study, we analysed the clinical profile of patients with presumed OMD diagnosed by subnormal vision with no/minimal fundus changes that could not account for visual loss, normal or minimally affected Full-field Electroretinogram (ERG) but objective evidence of foveal cone involvement in multifocal ERG with or without corresponding changes in Humphrey visual field (HVF) and Optical Coherence Tomography (OCT) suggestive of a foveal pathology.

Results: We included 15 patients (30 eyes) aged 8-60 (mean-24.56) years with sudden vision loss in the majority, missing letters and mild photoaversion in some. None of the cases were suspected to have OMD during the previous evaluation. There was a rapid decline in vision followed by stabilisation or mild improvement in all. OCT showed outer nuclear layer thinning, photoreceptor layer changes of various degrees, outer retinal layer cavitation and normal anatomy in some. Multifocal ERG showed hypovoltaged waves from central 5-10 degrees in all, with a wider zone of involvement in some. Autofluorescence (AF) changes ranged from no to central hyper or hypofluorescence or both. We had 3 patients (6 eyes) with more than 10 years of follow-up who showed stabilisation/mild improvement in vision despite progressive foveal thinning on OCT.

Conclusions: The subjects in this series had findings similar as well as different from the published literature on OMD. In the absence of familial clustering in the majority and genetic confirmation, we termed them as presumed OMD. The disease shows a relatively stable course after an initial rapid decline.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2-GF)

FGF1ΔHBS Suppress Retinal Microglial Activation and Ameliorates Neuroinflammation in Type 2 Diabetes Mouse Model

*First Author: Ding **CHEN***

Purpose: To study the effect of FGF1ΔHBS on microglial-mediated inflammatory response and neuroprotection in T2D mouse model.

Methods: Intravietrous injection of FGF1ΔHBS was administrated every week for one month in db/db mice which are genetically predisposed to develop T2D and early retinopathy. Changes in retinal function and structure of animal models were detected by electrophysiology (ERG) and optical tomography coherence (OCT) analysis. Microglia activation and retinal inflammation were analyzed by immuno-fluorescence, western blot and real time qPCR.

Results: In the retina of T2D (db/db) mice, FGF1 was significantly downregulated while FGFR1 was upregulated (both $p<0.05$). Microglia activation biomarker TSPO and retinal inflammatory factors were all upregulated. TSPO and FGFR1 were co-stain in activated microglia. After FGF1ΔHBS treatment, ERG showed that the total amplitude of dark-adapted b-wave and oscillating potential OPs was significantly improved, and OCT showed the thickness of the retinal nerve fiber layer was significantly preserved in T2D mice (all $p<0.05$). The microglia activation was significantly suppressed by FGF1ΔHBS as TSPO was significantly downregulated. The activation of NF-κB p65, and the expression of inflammatory factors such as TNF-α, IL-1β, IL-6, COX-2, MIP-1α and iNOS were all significantly down regulated (all $p<0.05$).

Conclusions: Intravitreous FGF1ΔHBS treatment can effectively suppress microglial activation and inhibit retinal neuroinflammation to preserve retinal function and structure in T2D mouse model. FGF1ΔHBS may have potential therapeutic value in neuroprotection in early DR.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Greater Reduction in Macular Leakage in Diabetic Macular Edema With Faricimab vs Aflibercept

*First Author: Gavin **TAN***
*Co-Author(s): Roger **GOLDBERG**, Florie **MAR**, Eric **NUDLEMAN**, Sobha **SIVAPRASAD**, Tracey **WANG***

Purpose: Increased vascular permeability is a hallmark feature of DME (diabetic macular edema). Ang-2 (angiopoietin-2)/VEGF-A (vascular endothelial growth factor-A) synergistically affect vascular instability. This post hoc analysis evaluated whether dual Ang-2/VEGF-A inhibition with faricimab improves macular leakage, a biomarker of vascular stability, vs VEGF inhibition with aflibercept in patients with DME.

Methods: In the identical phase 3 YOSEMITE/RHINE (NCT03622580/NCT03622593) trials, patients were randomised to faricimab Q8W (every 8 weeks), faricimab as a personalised T&E (treat-and-extend)–based regimen, or aflibercept Q8W. Data were gathered from the head-to-head dosing period (first 16 weeks) of the trials after all patients had received 4 loading doses of faricimab or aflibercept Q4W. Faricimab Q8W and faricimab T&E data were pooled for this analysis (faricimab total, n=1216; aflibercept, n=593). Macular leakage area on fluorescein angiography and the proportion of patients with resolution of macular leakage (0–1 mm^2) were evaluated.

Results: The baseline median (95% CI) macular leakage area was similar in the faricimab (24.58 [23.24, 25.93] mm^2) and aflibercept arms (25.64 [23.12, 27.34] mm^2; nominal P=0.7072). At week 16, the median (95% CI) macular leakage area was lower with faricimab vs aflibercept (3.59 [3.18, 4.11] vs 7.62 [6.29, 9.30] mm^2; nominal P<0.0001). A greater proportion of patients showed resolution of macular leakage at week 16 with faricimab (28.4%) vs aflibercept (15.2%; nominal P<0.0001).

Conclusions: In patients with DME, dual Ang-2/VEGF-A inhibition with faricimab resulted in a greater reduction in macular leakage with a larger proportion of patients achieving resolution of macular leakage vs VEGF inhibition with aflibercept after 4 loading doses.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Greater Reduction in Pigment Epithelial Detachment Size With Faricimab vs Aflibercept During Head-to-Head Dosing in Eyes With Neovascular Age-Related Macular Degeneration

*First Author: Voraporn **CHAIKITMONGKOL***
*Co-Author(s): Arshad **KHANANI**, Philippe **MARGARON**, Shriji **PATEL**, Audrey **SOUVERAIN***

Purpose: The purpose of this posthoc analysis was to assess whether faricimab improves pigment epithelial detachment (PED) vs aflibercept in eyes with neovascular age-related macular degeneration during the initial head-to-head dosing period.

Methods: In TENAYA/LUCERNE (NCT03823287/NCT03823300), treatment-naïve eyes (pooled N=1329) were randomised 1:1 to receive faricimab 6.0 mg up to every 16 weeks (Q16W; n=665) after 4 initial monthly loading doses or aflibercept 2.0 mg Q8W (n=664) after 3 initial monthly loading doses. We performed a post-hoc analysis of the TENAYA/LUCERNE trials evaluating baseline PED characteristics and anatomic changes during the initial head-to-head dosing period through week 12. PED was defined as retinal pigment epithelium elevation with a width of ≥ 350 µm. PED was graded as predominantly serous or purely serous (serous PED) or fibrovascular PED.

Results: Baseline PED characteristics were similar between treatment arms. At week 4, there was a rapid decrease from baseline in maximum PED thickness for both arms. The decrease from baseline in maximum PED thickness at week 12 was greater with faricimab vs aflibercept (all PED, –87.9 vs –74.5 µm [nominal P=0.0067]; serous, –136.1 vs –108.2 µm [nominal P=0.0147]). In eyes with baseline serous PED, a smaller proportion of faricimab-treated patients had the presence of serous PED vs aflibercept (3.9% vs 12.3%; nominal P=0.0258).

Conclusions: Dual angiopoietin-2/vascular endothelial growth factor inhibition with faricimab was associated with greater improvements in PED outcomes vs aflibercept in the head-to-head dosing period of TENAYA/LUCERNE and was consistent with the greater drying of retinal fluid seen with faricimab during the head-to-head dosing period.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Long-term Efficacy and Safety of the Port Delivery System With Ranibizumab (PDS) in Patients With Neovascular Age-Related Macular Degeneration (nAMD): Results From the Portal 5-Year Subgroup Analysis

*First Author: De-kuang **HWANG***
*Co-Author(s): Melina **CAVICHINI CORDEIRO**, Gemmy **CHEUNG CHUI MING**, Natasha **SINGH**, James **HOWARD**, Jared **NIELSEN***

Purpose: To present the long-term efficacy and safety data of the PDS for the subgroup of Portal (NCT03683251) patients from Ladder (NCT02510794) treated with PDS for ≥5 years.

Methods: Patients in the phase 2 Ladder trial received the PDS (10, 40, or 100 mg/mL refills as needed) or monthly intravitreal ranibizumab 0.5 mg injections. Once rolled over to the phase 3 Portal trial, patients received PDS 100 mg/mL with fixed refill-exchanges every 24 weeks from day 1. Efficacy outcomes were assessed for Ladder-to-Portal patients treated with PDS 100 mg/mL for ≥5 years. Long-term safety data were pooled to include any patient in the 10, 40, and 100 mg/mL groups of Ladder who had the PDS for ≥5 years.

Results: In Ladder-to-Portal patients, best-corrected visual acuity remained stable for 60 months from the Ladder baseline visit in the prior PDS 100 mg/mL as-needed treatment arm (n = 46; patients received a mean of 2.9 intravitreal injections before randomisation in Ladder); mean (95% confidence interval [CI]) change from baseline at month 60 was –1.8 (–8.1, 4.4; n = 17) Early Treatment Diabetic Retinopathy Study letters. Centre point thickness and central subfield thickness were also overall stable, with mean (95% CI) changes from baseline of –17.5 µm (–52.1, 17.0) and –7.8 µm (–32.9, 17.3), respectively, at month 60.

Conclusions: Results from Portal suggest that vision and anatomical outcomes with PDS 100 mg/mL are generally stable over 60 months. The PDS was generally well tolerated ≥5 years.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Neuroretinitis: Etiology and Treatment Outcomes in a Tertiary Care Uveitis Centre

*First Author: Pallavi **GOEL***

Purpose: To determine the etiology and treatment outcomes in patients diagnosed with infectious and inflammatory neuroretinitis in a tertiary care uveitis center.

Methods: The study included all the patients visiting the outpatient department of a hospital with a clinical presentation of optic disc edema and macular star. All patients underwent basic systemic workup for diagnosing the etiology.

Results: The study included 75 eyes of 59 patients. The mean age of onset of neuroretinitis in our study was 31.72 ±12.7years. 37 patients were male.43 patients had bilateral involvement. The most common presentation was painless diminution of vision (in 100% of patients) with associated metamorphopsia. 35.6% of patients had a history of fever prior to the onset of symptoms. All patients had optic disc edema. 89.3% of eyes had a macular star. 85.3% of eyes had vitritis of varying grades. The most common etiology of infectious neuroretinitis were tuberculosis and toxoplasmosis. Recurrences were reported. Corticosteroids were the mainstay of treatment. Immunosuppressants were used in eyes with recurrences. Targeted antibiotics were used in cases with suspected infectious etiologies. The overall best corrected visual acuity on presentation was 0.88 log MAR ± 0.70 SD, and at 6-month follow-up visit was 0.40 log MAR ± 0.69 SD (p = 0.0000005).

Conclusions: Neuroretinitis has a plethora of infectious and inflammatory causes. Our index study revealed tuberculosis to be a major cause of infectious neuroretinitis in India. On comparing the final visual outcome between the two groups of study viz; infectious group versus inflammatory, the p-value (0.675) was non-significant. Early initiation of treatment, results in better visual outcomes.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Outcomes of Neovascular Age-Related Macular Degeneration Following Treat-and-Extend Regimen Discontinuation

*First Author: Jose Carlo **ARTIAGA***
*Co-Author(s): Pankaja **DHOBLE**, Swetha **KUMAR**, Deepthy **MENON**, Luke **NICHOLSON**, Shiao **WONG***

Purpose: To describe reactivation features of neovascular age-related macular degeneration (AMD) following successful regular treatment with intravitreal anti-VEGF therapy.

Methods: Patients attending the stable AMD clinic from November 1, 2019 to January 31, 2020 were included. Patients who did not require treatment over a period of 6 months from their last injection were monitored in the stable AMD clinic. Patients with macular neovascularization other than from AMD, and patients with incomplete data were excluded. Baseline demographics such as age, sex, race, laterality, cause of macular neovascularization, drug, number of injections, and duration of treatment were recorded. Reactivation

data collected included date, setting, symptoms, and time to retreatment.

Results: Medical records of 286 patients who attended the stable AMD clinic were included. Patients were mostly female (64.3%) and white (68.18%). Most patients were receiving aflibercept monotherapy (55.2%). Mean number of injections at baseline is 17.79 +/- 11.74 (Range 3-62). The mean duration of treatment is 39.47 +/- 30.68 months (Range 2-139). Reactivation was identified in 32.2% of cases; the most common symptom was blurring of vision in 44.6%; 39.1% were asymptomatic. 87% of recurrences were identified via scheduled visits. Mean time to retreatment was 29.37 +/- 22.40 months (Range 5-104), with 20.7%, 73.9% and 88.04% of these patients requiring retreatment within 1 year, 3 years, and 5 years, respectively.

Conclusions: Despite prior treatment with no reactivation in 6 months, 32.2% reactivate, 73.9% of which within 3 years. A significant proportion, 39.1% reactivated without symptoms necessitating regular monitoring in the first 5 years.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

PEDF Prevents Mitochondrial Function Decay and ER Stress Induced by Rotenone in Aging RPE Cells

*First Author: Ruixue **ZHANG***

Purpose: Neurodegenerative diseases, including AMD, may be linked to mitochondrial dysfunction and ER stress. We examined whether PEDF could prevent changes in the structure and function of these organelles by accelerating by ROT, a mitochondrial inhibitor, in human RPE cells of chronological age.

Methods: RPE cells from 9–20, 50–55, 60–70, and > 70-year-old donors were isolated, grown as primary cultures, harvested, and treated with ROT and PEDF for EM, western blot analysis, and PCR. ROS and [Ca2+]c and [Ca2+]m levels were measured by flow cytometry and ATP levels were measured using a luciferin/luciferase-based assay. Mitochondrial membrane potential (ΔΨm) was detected using JC-1, and susceptibility of the cells to ROT toxicity and PEDF-protective effect was determined by PI staining and LDH assay. The expression of ER stress-related genes was detected using RT-PCR.

Results: We observed lower [Ca2+]c, higher ROS and [Ca2+]m levels, decreased ΔΨm after ROT treatment, and greater susceptibility to ROT toxicity in aged RPE cells. PEDF can protect the cristae and integrity of the mitochondrial membrane, increase ATP levels and ΔΨm, and lower ROS, [Ca2+]c, and [Ca2+]m in aged RPE cells induced by ROT. In addition, there was an increase in RDH expression in RPE cells with increasing age after PEDF treatment. Similarly, PEDF decreased the expression of ROT-induced ER stress-related genes.

Conclusions: Our study provides evidence that PEDF can reduce bioenergetic deficiencies, mitochondrial decay, and ER stress in aging RPE, a condition that may trigger the onset of retinal diseases such as AMD.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Port Delivery System With Ranibizumab (PDS) for Continuous Treatment in Diabetic Macular Edema (DME) and Diabetic Retinopathy (DR): Results From the Phase 3 Pagoda and Pavilion Trials

*First Author: Min **SAGONG***
*Co-Author(s): Andres **EMANUELLI**, Dominic **HEINRICH**, Nancy **HOLEKAMP**, Dante **PIERAMICI***

Purpose: To evaluate continuous delivery of customised ranibizumab 100 mg/mL via the PDS with refill-exchanges every 24 weeks (PDS Q24W) or every 36 weeks (PDS Q36W) in DME (Pagoda) and DR (Pavilion), respectively.

Methods: Pagoda (NCT04108156) arms: PDS Q24W vs intravitreal ranibizumab 0.5 mg every 4 weeks (RBZ Q4W). Pavilion (NCT04503551) arms: PDS Q36W vs control (clinical monitoring). Pagoda primary endpoint (PE): PDS Q24W noninferiority based on change from baseline (CFB) in best-corrected visual acuity (BCVA) averaged over weeks (w) 60/64. Pavilion PE: PDS Q36W superiority based on ≥2-step Diabetic Retinopathy Severity Score (DRSS) improvement from baseline at w52.

Results: Pagoda PE was met: PDS Q24W (n=381) was non-inferior to RBZ Q4W (n=253) in BCVA CFB averaged over w60/64 (+9.6 vs +9.4 letters, respectively; difference [95% CI], 0.2 [–1.2, 1.6]). Central subfield thickness CFB at w64: –203.5µm (PDS Q24W) vs –199.7µm (RBZ Q4W). Pavilion PE was met: PDS Q36W (n=106) was superior to control (n=68) in a proportion of patients with ≥2-step DRSS improvement from baseline at w52 (80.1% vs 9.0%, respectively; difference [95% CI], 71.1 [61.0, 81.2]; P=<0.0001). Rate of patients developing anterior segment neovascularisation, proliferative DR, or centre-involved DME through w52: 7.1% (PDS Q36W) vs 47.0% (control). PDS was generally well tolerated through these primary analyses. Additional endpoints will be presented.

Conclusions: Pagoda and Pavilion met their primary endpoints. PDS, the first continuous delivery treatment platform for diabetic eye disease, has the potential to provide functional and anatomical benefits, and prevent disease progression, with 1–2 refill-exchanges per year.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Relationship Between Vortex Vein Anastomoses and Choroidal Vascular Hyperpermeability in Central Serous Chorioretinopathy

*First Author: Yasunori **MIYARA***
*Co-Author(s): Naoya **IMANAGA**, Hideki **KOIZUMI**, Nobuhiro **TERAO***

Purpose: To investigate the relationship between vortex vein anastomoses in the macula and choroidal vascular hyperpermeability (CVH) in eyes with central serous chorioretinopathy (CSC).

Methods: One hundred eighteen eyes of 107 CSC patients underwent a widefield OCT and were classified into the watershed zone (WZ) (+) group and the watershed (-) group. In the WZ (+) group, the horizontal watershed zone was clearly identified. In the WZ (-) group, the horizontal watershed zone was ill-defined due to significant vortex vein anastomoses. In the eyes with the WZ (+) group, the fundus area was further divided into the dominant vortex vein side and the non-dominant vortex vein side. The frequency and localization of CVH seen on indocyanine green angiography were evaluated and compared between the groups.

Results: The 118 CSC eyes were classified into 81 eyes with the WZ (+) group and 37 eyes with the WZ (-) group. The WZ (-) group had significantly more CVH than the WZ (+) group (4.95 vs. 2.43 per eye, $P < 0.001$). In WZ (+) group, more CVH was found in the dominant vortex vein side than in the non-dominant vortex vein side (1.96 vs. 0.46 per eye, $P < 0.001$). CVH was most frequently located near the anastomoses in the WZ (+) group, while CVH tended to scatter in various locations throughout the fundus.

Conclusions: The development of vortex vein anastomoses may alter the frequency and localization of CVH in CSC eyes.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Renal Adverse Events in Patients With Diabetic Macular Edema Receiving Intravitreal Vascular Endothelial Growth Factors Inhibitors

*First Author: Wan-ju annabelle **LEE***
*Co-Author(s): Edward Chia-cheng **LAI**, Tzu-chi **LIAO**, Swu-jane **LIN**, Shih-chieh **SHAO***

Purpose: To assess and compare the risk of adverse renal events among patients with diabetic macular edema (DME) who were treated with either ranibizumab or aflibercept in Taiwan.

Methods: This is a population-based retrospective cohort study. Adult patients aged 20 years and older who were diagnosed with DME and received treatment with either intravitreal aflibercept or ranibizumab. We employed a target trial emulation framework using Taiwan's National Health Insurance Database from 2011 to 2018. Propensity score methods were utilized to ensure balance in the baseline characteristics between the two treatment groups. Adverse renal events, specifically acute renal injury and hospitalization due to renal events. We employed Cox proportional hazards models to estimate the hazard ratios (HRs) associated with these outcomes.

Results: A total of 6,330 patients receiving ranibizumab and 1,258 patients receiving aflibercept were included in this study. The incidence rates of adverse renal events were 102.2 and 138.7 per 1000 person-years for ranibizumab and aflibercept, respectively. Patients treated with intravitreal aflibercept had a significantly higher risk of experiencing a composite of adverse renal events (HR: 1.42; 95% CI: 1.24-1.63), compared to those treated with ranibizumab, and specifically also a higher risk of acute kidney injury (HR: 1.32; 95% CI: 1.08-1.63) and hospitalization due to renal events (HR: 1.43; 95% CI: 1.25-1.64).

Conclusions: In comparison to ranibizumab, the use of aflibercept was associated with a greater risk of adverse renal events. These findings provide a solid foundation for future studies to validate these results further.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Scleral Thickness Determines the Severity of Central Serous Chorioretinopathy

*First Author: Naoya **IMANAGA***
*Co-Author(s): Hideki **KOIZUMI**, Yasunori **MIYARA**, Shota **SAWAGUCHI**, Nobuhiro **TERAO**, Sorako **WAKUGAWA***

Purpose: To clarify the relationship between the scleral thickness and disease severity of central serous chorioretinopathy (CSC).

Methods: Two hundred seventeen patients with CSC were divided into simple or complex types based on a newly developed multimodal imaging-based classification system. Age, gender, visual acuity, intraocular pressure, axial length, bilaterality, subfoveal choroidal thickness (SCT), presence of loculation of fluid (LOF), presence of ciliochoroidal effusion (CE), and scleral thickness were compared between the two types. Scleral thickness was measured 6 mm posterior to the scleral spur in four directions using an anterior-segment optical coherence tomography.

Results: Of the 217 eyes, 167 eyes were classified as simple type and 50 eyes as complex type. The complex type showed older age, higher male ratio, higher bilaterality, greater SCT, and higher rate of LOF and CE than the simple type. The complex type had significantly greater scleral thickness at the superior, temporal, inferior, and nasal points (448.4 vs. 403.6 µm, 466.8 vs. 422.0 µm, 482.1 vs. 439.7 µm, 479.2 vs. 423.6 µm, respectively, P < 0.001) compared to the simple type. Multivariable analyses revealed older age (odds ratio [OR] 1.054, 95% CI 1.013-1.097, P < 0.001), male gender (OR 10.445, 95% CI 1.151-94.778, P < 0.001), bilaterality (OR 7.641, 95% CI 3.316-17.607, P < 0.001), and the mean value of scleral thicknesses (OR 1.022, 95% CI 1.012-1.032, P < 0.001) were significantly associated with the complex type.

Conclusions: Scleral thickness seemed to determine the severity of CSC.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Solitary Punctate Chorioretinitis — A Unique Subtype of Punctate Inner Choroidopathy

*First Author: Yuhong **GAN***

Purpose: To describe a case series of a special subtype of punctate inner choroidopathy with solitary lesions in the macular area and named solitary punctate chorioretinitis.

Methods: This retrospective observational study clinically evaluated 12 eyes from 12 patients with punctate inner choroidopathy with solitary lesions. Demographic data and multimodal imaging features were analyzed for the included patients.

Results: All the included patients were Chinese and of Han ethnicity. The median age of the included patients was 29.5 years (range: 25–40 years). Most patients (11/12, 91.67%) were myopic, with median refraction errors of 24.4 diopters (D) (range: 28.5 to 0 D). Solitary chorioretinitis lesions were yellow–white and appeared hyperfluorescent during the entire phase of fundus fluorescein angiography without leakage (75%, 9/12) and hypofluorescent on indocyanine green angiography (100%, 11/11). On spectral domain optical coherence tomography, active inflammatory lesions appeared as isolated, heterogeneous, moderately reflective material at the outer retina (10/12, 83.33%) in the fovea or parafoveal region with disruption of the outer retinal layers. When the inflammatory lesions regressed, the moderately reflective materials in the outer retina were absorbed or regressed with outer retinal tissue loss. Additional sequelae of lesion regression included focal choroidal excavation and intraretinal cystoid space. Secondary choroidal neovascularization was noticed in 2 eyes (2/12, 16.67%).

Conclusions: Solitary punctate chorioretinitis is a rare and unique subtype of punctate inner choroidopathy. Solitary punctate chorioretinitis may also be an unrecognized etiology of some forms of focal choroidal excavation and idiopathic choroidal neovascularization.

Feb 25, 2024 (Sun)
11:00 – 12:30
Venue: Mengwi 3,5 (BNDCC2–GF)

Variability of Foveal Avascular Zone Measurements Among Filipino Healthcare Worker Eyes Using Optical Coherence Tomography Angiography: A Single Center Study

*First Author: Roberto Luis **FRANCO***
*Co-Author(s): Carlo **NASOL***

Purpose: To define the foveal avascular zone (FAZ) measurements and thickness among adult healthy Filipino eyes.

Methods: One hundred and eighty-six subjects aged 20 – 49 years old were recruited. The FAZ area, perimeter, circularity, vascular density, and perfusion in the superficial FAZ were recognized as the Angio plex metrics, using the Zeiss Cirrus 5000 HD-OCT.

Results: The mean FAZ area was 0.297 ± 0.112 mm^2, the mean circularity was 0.667 ± 0.080, and the mean Perimeter was 2.316 ± 0.80 mm, which was all larger in the female population (p = <0.001, p = 0.043 and p = <0.001). FAZ area and perimeter do not vary with age in Filipino eyes, but circularity does decrease (p = 0.002). The mean vessel density and vessel perfusion central were 9.767 ± 3.470 mm/mm^2 and 17.008 ± 6.457 % respectively. Both were significantly lower in the female population (p = 0.005, p = 0.003). The mean CMT was 245.895 ± 20.769 µm, which was noted to be larger in the male population (p = <0.001). the CMT increases with age (p = 0.024).

Conclusions: In Filipino eyes, the FAZ area, perimeter and circularity are larger in females than in males. Females also have a thinner CMT than males. The vessel density and perfusion in the center are also significantly lower in females than in males. The FAZ area and Perimeter do not vary with age in Filipino eyes, but circularity does decrease. CMT increases with age.

Retina (Surgical)

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

A Common Surgery to an Uncommon Problem: Surgical Management of Myopic Traction Maculopathy

*First Author: Wai Yan **LAM***
*Co-Author(s): Nicholas **FUNG**, Qing **LI**, Wai-ching **LAM***

Purpose: To review the outcome of vitrectomy with membrane peeling in patients with Myopic Traction Maculopathy (MTM).

Methods: Patients who met the inclusion criteria of MTM with vitrectomy and membrane peeling done between 2018-2022 (5 years) in a tertiary centre were included. Baseline demographics, visual acuity (VA), lens status, axial length and OCT features were extracted. The primary outcome was to analyze factors associated with anatomical success. The secondary outcome was to analyze factors associated with VA improvement.

Results: A total of 80 eyes (of 71 patients) were included. 34 eyes had myopic foveoschisis-only, 31 had macular holes and 34 had macular detachment. 70.6% of myopic foveoschisis-only eyes showed post-op improvement in central retinal thickness (CRT). The median %CRT improvement was 25%. 52.9% had VA improvement (median 7.5-letter gain). The outer-schisis group had a median 61% CRT improvement, compared to no improvement in the inner-schisis-only group (p=0.0047). Eyes without lamellar-hole had a greater %CRT improvement, median of 45% versus no improvement in the lamellar-hole group (p=0.046) and VA improvement, median 15-letter gain versus no gain in the lamellar-hole-group (p=0.0067) 42% of macular holes and 53% of macular detachments achieved primary anatomical success. For the latter, the presence of a macula hole was associated with a reduced chance of anatomical success (p=0.0006, odds-ratio=18.2). The final anatomical success rate was 51.7% for macula holes and 55.9% for macular detachment cases. A better baseline VA was associated with VA improvement (median: pre-VA=1.0 logMAR, 7.5-letter-gain).

Conclusions: Vitrectomy with membrane peeling is effective in the management of MTM, especially those with myopic foveoschisis-only. Although macular detachment and macula hole are both poor prognostic factors, the final anatomic success is >50%.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

Clinical Characteristics and Outcomes of Retinectomy Management in Recurrent Retinal Detachment Cases

*First Author: Sandi **MUSLIM***

Purpose: To find out the characteristics and the success rate of the management of recurrent retinal detachment (re-RD) with retinectomy.

Methods: Medical records of all patients with re-RD, who underwent vitrectomy with retinectomy, were reviewed. Data collected include age, sex, number of vitrectomy surgery history, retinectomy area, laterality, best-corrected visual acuity (BCVA) at initial and at least 6 months postoperatively, preoperative tonometry and at least 6 months postoperatively, grading of PVR, timing of re-RD after primary vitrectomy surgery.

Results: The majority of the patients were in the 51-60 years age group, with 28 patients (30.77%). Most cases involved the right eye, which were 52 cases (57.14%), and with phakic lens status of 65 cases (71.42%). The postoperative period of primary surgery with the greatest number of re-RD occurred in the 0-4 week period. Most cases had multiple tears (27.47%). Condition of unattached macular presented in 94.60% of patients. The main cause of the occurrence of re-RD was Proliferative Vitreoretinopathy (40.65%). The area or magnitude of the retinectomy procedure in this research ranged between 91º- and 180º (62.63%). The tamponade that was most frequently installed in the re-vitrectomy procedure was silicon oil 2000cst (95.60%). Post-operative complications due to silicon oil tamponade were 67 cases. The rate of anatomical success from vitrectomy with retinectomy was 74.72% of the total 91 patients. total number of patients who experienced visual acuity improvement and ability to maintain their visual acuity was about 72%.

Conclusions: The anatomical success rate of vitrectomy with retinectomy was 74.72%, and about 47% of eyes experienced visual acuity improvement.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

Comparison of Clinical Outcomes of 10,000 Versus 20,000 Cuts-per-Minute, 25-Gauge, Beveled-Tip Vitrectomy Probes

*First Author: Harvey **UY***

Purpose: To compare the clinical outcomes, surgical efficiency and instrument performance of 10,000 versus 20,000 cuts-per-minute (cpm), 25-gauge,

beveled tip vitrectomy cutter probes among eyes undergoing pars plana vitrectomy.

Methods: We compared data sets of two similar groups of eyes that prospectively underwent pars plana vitrectomy (PPV), by the same set of surgeons, using cutter probes of similar size but different cutting speeds. The main parameters compared included: rate of surgical success, number of surgical steps, total operative times (TOT), change in corrected distance visual acuity (CDVA) at 3 months, use of ancillary instruments, and adverse events (AE).

Results: PPV was performed in 50 eyes using 10,000 cpm and in 55 eyes using 20,000 cpm instrumentation. The surgical objectives were attained in all eyes from both groups. The mean number of surgical steps (P=0.542), total operative time (P=0.605) and 3-month change in CDVA (P=0.670) were similar in both groups. Fewer ancillary instruments (P<0.001) were utilized and fewer AE (P=0.044) were observed in the 20,000 cpm group.

Conclusions: Both 10,000 and 20,000 cpm cutter probe systems were effective and safe when performing VR surgery for various indications. The potential advantages of the higher cut rate system include reduced usage of ancillary instrumentation and lower AE rates.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

Congenital Retinoschisis (RS) in Children: Influence of Presenting Age on the Anatomical and Visual Outcomes

*First Author: Anjali **MAHESHWARI***
*Co-Author(s): Akash **BELENJE**, Subhadra **JALALI***

Purpose: To evaluate differences in the anatomical and visual outcomes of RS in children who present early (<5 years of age) versus later (6-18 years of age).

Methods: Retrospective analysis of 38 subjects (n=73 eyes) with Congenital RS were included. They were categorised into Group A (<5 years, 15 subjects, n=30 eyes) and Group B (6-18 years, 23 subjects, n= 43 eyes) based on age at presentation.

Results: The mean age at presentation for Groups A and B were 2.88±1.43 and 9.6±4.03 years, respectively. Gradual blurring of vision was the primary symptom in 33.33% of eyes of Group A and 58.4% of Group B. Initial BCVA for Groups A and B was1.2±0.42 log MAR and 1.18±0.75 log MAR (p=0.93), respectively. Retinal Detachment was seen in 14 and 19 in Group A and Group B, respectively, of which 18 eyes in Group A and 19 eyes in Group B underwent surgery. There was no significant difference in the final anatomical outcomes between the groups, with Group A having good outcomes in 16 eyes and Group B in 17 eyes. Topical dorzolamide was prescribed for 13 eyes in Group A and 10 eyes in Group B. At one year follow-up, there was a notable difference in visual outcomes in the two groups (p=0.04) but not at 3 years.

Conclusions: The younger children (≤5 years) underwent surgical intervention more frequently; hence, proper dilated fundus evaluation in non-verbal children is critical to detect RS in asymptomatic eyes. These results emphasize the need for early diagnosis and management and will help in parental counselling regarding outcomes.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

Discrepancy Between Retinal Pigment Epithelium Degeneration and Visual Field Loss in Bietti Crystalline Dystrophy

*First Author: Daiki **SAKAI***
*Co-Author(s): Yasuhiko **HIRAMI**, Yasuo **KURIMOTO**, Tadao **MAEDA**, Michiko **MANDAI**, Masayo **TAKAHASHI***

Purpose: This study aimed to explore the potential benefits of retinal pigment epithelium (RPE) replacement therapy for patients with CYP4V2-associated Bietti crystalline dystrophy (BCD) by assessing the relationship between RPE degeneration and visual field (VF) defect.

Methods: We retrospectively reviewed fundus autofluorescence images and results of Goldmann perimetry and calculated RPE degeneration and VF defect areas by image analyses. Sixteen eyes from 16 patients with CYP4V2-associated BCD and 16 eyes from 16 patients with RHO-associated retinitis pigmentosa (RP) were included.

Results: The median RPE degeneration areas in patients with BCD and RHO-associated RP were at similar levels (98.5% and 98.4%, respectively). The median VF defect area in patients with BCD (57.5%) was smaller than that in patients with RHO-associated RP (95.0%). The discrepancy between RPE degeneration and VF defect areas ([RPE degeneration area] − [VF defect area]) was significantly greater in CYP4V2-associated BCD than in RHO-associated RP ($p < 0.001$). The greater discrepancy value suggests a greater number of remaining functional photoreceptors on the degenerated RPE.

Conclusions: Patients with CYP4V2-associated BCD have significant discrepancies between RPE degeneration and VF defect and appear to be good candidates for RPE replacement therapy.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

Five Years Anatomical and Functional Outcome of Amniotic Membrane Graft in Macular Hole Surgery

First Author: Sameera ***NAYAK***
Co-Author(s): David ***AGGARWAL****, Niroj* ***SAHOO***

Purpose: To demonstrate the five-year anatomical and functional outcome of amniotic membrane graft in macular hole surgery.

Methods: Retrospective analyses of prospectively collected data on refractory macular hole eyes, which received an amniotic membrane graft for hole closure with at least five years of follow-up and adequate imaging. The best corrected visual acuity (BCVA), optical coherence tomography (OCT), graft integration, fundus autofluorescence characteristics, subretinal fibrosis, retinal pigment epithelium reactivation at 1, 3, 6, 12, and 60 months post amniotic membrane grafting were analysed.

Results: Of 14 eyes of 14 participants, 8 were females and 9 eyes had left eye involvement. For analysis, 10 eyes of 10 participants were included. The median age was 63.5 years (range 44-82). All had closure of holes at 1, 3, 6, 24, and 60 months post-grafting. Median hole size (base) was 1470 micron (SD 821.65, Range 1100-2542) with median hole duration 24 months (SD 31.11, Range, 1-48 months); Median BCVA at presentation was 0.08 (SD 0.007; Range: 0.05-0.16); and at five year follow up was 0.1 (SD 0.017; range: 0.1-0.2). Graft integration was noticed in all 10 eyes based on OCT characteristics, sub-retinal fibrosis was not found, and 2 eyes developed RPE hyperplasia at the end of 5 years. Fundus autofluorescence showed characteristic hypo autofluorescence in all follow-up visits. There was no significant change in BCVA over the years.

Conclusions: Amniotic membrane grafting for refractory macular holes is effective in the closure of the hole, improvement of vision, and graft integration without any subretinal fibrosis at a five-year follow-up period.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

Managing Retained Sub-foveal Perfluorocarbon Liquid (PFCL)- Outcomes and Challenges

First Author: Ananya ***GOSWAMI***
Co-Author(s): Naresh ***KANNAN****, Vallinayagam* ***KRISHNAN***

Purpose: To study the outcomes of surgical removal of retained PFCL in a series of subjects with subfoveal PFCL following pars plana vitrectomy.

Methods: Retrospective non-comparative observational case series of subjects with retained sub-foveal PFCL following pars plana vitrectomy. Sub-foveal PFCL was removed using 41G parafoveal retinotomy. Patient demography, baseline visual acuity, indication for the primary surgery, location, number and duration of the retained PFCL bubbles were recorded. Post-operative changes in visual acuity and complications were recorded and followed up for 6 months. Fundus photography and optical coherence tomography (OCT) were reviewed.

Results: Nineteen eyes of 19 subjects were evaluated with a mean age 54.9±13.2 years. 78.9% were operated for Rhegmatogenous and 21.1% for Tractional Retinal detachment. Median duration of retained PFCL 3 days (range 1-50 days). 68.4% had single and 31.6% had multiple bubbles. There was an improvement of median corrected distance visual acuity (CDVA) from 1.8 logMAR (range 1.1-2) at baseline to 0.8 logMAR at 6 months ($p< 0.001$) along with morphological restoration of foveal contour in 89.5%. Macular hole and submacular hemorrhage were noted in 1 subject each. Parafoveal minute residual bubbles were noted in 2 subjects.

Conclusions: Though surgically challenging, removal of retained subfoveal PFCL leads to near normal restoration of foveal contour and gratifying functional outcome.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1–GF)

Outcome of the Management of Aggressive Retinopathy of Prematurity

First Author: Tanzina ***ISLAM***

Purpose: To compare the efficacy and safety between laser therapy and anti-vascular endothelial growth factor (VEGF) agents for aggressive retinopathy of prematurity (A-ROP).

Methods: A comparative study for laser, anti-VEGF with laser, and anti-VEGF monotherapy for A-ROP

treatment. The study period was from 2016 to 2020 at BIRDEM General Hospital. We included fifteen A-ROP babies with thirty eyes. Ten eyes were treated with laser, ten eyes were treated with anti-VEGF with laser, and ten eyes were treated with anti-VEGF. We used Bevacizumab as an anti-VEGF. We compared efficacy, safety, complication, and retreatment between these three groups.

Results: Complication incidences were significantly higher in the laser therapy group. 20% of infants needed retreatments with laser therapy of more than two sessions. In the anti-VEGF and laser therapy group, 6.7% of infants needed retreatment, and in the anti-VEGF group-1, 3.3% of infants needed retreatment. The P-value was 0.005, which was significant. Development of myopia is significantly higher in the laser therapy group (Group 3). About 100% of infants developed myopia. In Group 2, 30% of infants developed myopia. In Group 1, no infants developed myopia. The P-value was highly significant at 0.01.

Conclusions: This analysis outcome indicates that anti-VEGF agents are as effective as laser treatment and safer than laser. The degree of myopia in A-ROP in the laser group is higher than in the anti-VEGF mono therapy group. The decreased incidence of early unfavorable refractive and functional outcomes in the IVB group compared with the laser group showed a potential benefit for patients treated with Intravitreal Bevacizumab (IVB).

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1-GF)

Predictive Biomarker on Optical Coherence Tomography for Closure in Traumatic Macular Hole: A Comparative Study of Surgical vs. Observational Intervention

*First Author: Rohan **KAPOOR***
*Co-Author(s): Mudit **TYAGI***

Purpose: This study was conducted to get clarity about adequate management of Traumatic Macular Hole (TMH); whether early surgical intervention or observation gives better anatomical or functional outcomes in TMH. Also, optical coherence tomography (OCT) findings of TMH were studied to find the biomarker for the prediction of closure of TMH.

Methods: All patients diagnosed with TMH who had more than one follow-up visit at our institute were included. The decision to observe or intervene surgically was left at the discretion of the treating surgeon. The duration between trauma and surgery and the time taken for the hole to close post-observation or surgery was recorded. OCT scans were taken through the macula, and minimal linear diameter (MLD) and base linear diameter (BLD) were calculated. The presence or absence of hyperreflective dots (HRD) at the base of the macular hole was noted at the presentation.

Results: We had 170 patients of TMH, out of which 99 underwent surgery while 71 were observed for spontaneous closure. No significant difference was found between the two groups when they were compared for hole closure and change in visual acuity. Holes with the absence of HRD at baseline had a three times higher chance of remaining open with either surgery or observation as compared to those with the presence of HRD.

Conclusions: Observation for 6 months remains the treatment of choice for patients with TMH. We propose the presence or absence of HRD at the base of TMH at presentation as a biomarker for predicting the closure of the hole.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1-GF)

Selective Micropulse Individual Retinal Therapy on Serial Laser Systems

*First Author: Elena **IVANOVA***
*Co-Author(s): Pavel **VOLODIN***

Purpose: To develop a selective micropulse individual retinal therapy (SMIRT) for serial laser systems without preliminary testing with a different combination of parameters and to assess clinical efficacy in treating central serous chorioretinopathy (CSCR).

Methods: A total of 180 patients (age 30-65), 1-4 type on the Fitzpatrick scale with acute CSCR were included in this prospective study. In the first group (97 patients) the testing of the micropulse mode (50-200µs, 0.5-5%, 10-50ms, 100µm, 1.0-2.0W) was performed. A logistic regression function based on probability damage detection (PDD) of the 4685 laser spots using the autofluorescence method (488 nm) from power, time duration, number of pulses, age, and type on the Fitzpatrick scale was constructed. The second group (83 patients) was divided into 4 subgroups. Groups 2.1, 2.2, and 2.3 were treated using the Iridex IQ 577 laser. The parameters for Groups 2.1, 2.2, and 2.3 were obtained with the inverse PDD function, so that PDD was 50%, 70% and 90%, respectively. Control group 2.4 went without treatment.

Results: Formulas for the calculate combinations of parameters of the micropulse mode were obtained with the inverse PDD function. In Groups 2.1-2.3, complete resorption of subretinal fluid was observed three months after CSCR treatment in 38.89% (P<0.29), 61.90% (P<0.011) and 91.67% eyes (P<0.00000146) respectively. Low level of damage to the adjacent structures was determined for all treatment options according computer modeling.

Conclusions: The selection of parameters for SMIRT can be made for any laser systems with similar micropulse modes.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1-GF)

The Effect of Internal Limiting Membrane Peel Size on Functional and Anatomical Outcomes for Idiopathic Full Thickness Macular Holes: An Individual Participant Data Review

*First Author: Boon Lin **TEH***
*Co-Author(s): Varun **CHAUDHARY**, Yanda **LI**, Keean **NANJI**, Mark **PHILLIPS**, David H **STEEL***

Purpose: Pars plana vitrectomy (PPV) with internal limiting membrane (ILM) peel is successful in closing idiopathic full-thickness macular holes (iFTMH) and improving vision. We aimed to investigate the effect of ILM peel size on the anatomical and functional outcomes.

Methods: A systematic literature search was performed to identify randomised controlled trials (RCTs) which had performed standard PPV with ILM peeling at two or more sizes in adults with iFTMH. Individual participant data were requested from corresponding authors. ILM peel sizes were divided up into "small" (1-disc diameter [DD] in radius or less) and "large" (>1-DD in radius). We analysed the effect of different ILM peel sizes on primary macular hole closure and postoperative best corrected visual acuity (BCVA).

Results: Five RCTs with 370 eyes were included. The median minimum linear diameter (MLD) was 493µm and preoperative BCVA was 1.0 logMAR. Primary hole closure was achieved in 74.7% of eyes in the small ILM peel group compared to 84.8% in the large peel group (p=0.016). A significantly higher closure rate was found in the large peel group for iFTMH >400µm (p=0.001) but not for those <400µm (p=0.767). Postoperative median BCVA was similar at 0.5 logMAR (p=0.953). Multilevel logistic regression showed a peel radius of greater than 1-DD increased the occurrence of primary hole closure with an odds ratio of 1.20, but was not associated with visual outcome.

Conclusions: Performing ILM peel of more than 1-DD radius improved closure rates for iFTMH. The effect was clinically significant for holes >400µm in MLD. The size of the ILM peel had no significant effect on postoperative visual outcomes.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1-GF)

The Efficacy and Safety of Macular Hole Repair by Pars Plana Vitrectomy Without Endotamponade

*First Author: Amy Hiu Ying **YU***
*Co-Author(s): Shaheeda **MOHAMED**, Simon **SZETO**, Chi-wai **TSANG***

Purpose: To describe the efficacy and safety of macular hole (MH) repair by pars plana vitrectomy (PPV) without endotamponade.

Methods: A retrospective consecutive interventional case series of 22 eyes with macular holes who underwent PPV without intraocular gas as endotamponade. This surgical technique involves the creation of a semi-circular temporal internal limiting membrane flap over the MH, which was stabilised with viscoelastics. The average follow-up duration was 6 months (shortest 1 week, longest 1 year). Post-operative MH closure rate, best corrected visual acuity (BCVA) and complications rates were reported.

Results: MH closure on optical coherence tomography (OCT) was achieved in 22 eyes (100%), and no patients had persistent macula holes requiring further surgery. Pre-operative mean BCVA in logMAR was 0.95±0.4 (standard deviation) and post-operative BCVA was 0.48±0.27. 81% of patients achieved at least Snellen equivalent 1-line gain in VA at their latest follow-up. A statistically significant improvement in mean BCVA was observed with a P-value <0.05. Post-operative nasal ERM proliferation was observed but did not affect the final VA outcome.

Conclusions: In this pilot study, we provided encouraging results on the efficacy and safety of PPV without gas endotamponade as a novel surgical technique to close MH. The omission of intraocular gas alleviates the need for postoperative positioning without compromising the surgical success rate. Our data warrants future studies and registry to determine the long-term efficacy and safety of this novel surgical technique.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1-GF)

Transplantation of Allogeneic iPS Cell-Derived Retinal Pigment Epithelial Cell Strips for Retinal Pigment Epithelial Impaired Diseases

*First Author: Yasuo **KURIMOTO***
*Co-Author(s): Yasuhiko **HIRAMI**, Tadao **MAEDA**, Michiko **MANDAI**, Masayo **TAKAHASHI**, Satoshi **YOKOTA***

Purpose: While there is no established treatment for retinal pigment epithelium (RPE) impaired disease, transplantation of induced pluripotent stem (iPS) cell-derived RPE can be a curative treatment. Although subretinal injection of RPE cell suspension is minimally invasive, leakage of the cells into the vitreous cavity is inevitable, and it is difficult to control and confirm the transplantation site. We have established a minimally invasive method of transplanting RPE after a quick aggregation of these cells into a thin strip form, thereby preventing cell leakage. We report the surgical procedure in our current clinical study using iPS cell-derived RPE strips.

Methods: The subjects were three patients with advanced RPE-impaired diseases. Transplantation of up to two RPE strips derived from allogeneic iPS cells was planned.

Results: The surgical procedure includes a conventional vitrectomy with a posterior vitreous detachment, and the creation of an artificial retinal detachment at the planned transplant site where one or two RPE strips were injected using a 31G cannula, followed by silicone oil tamponade. The procedure was successfully completed in all three patients without any complications of note. The engrafted RPE strips under the retina were visible immediately after transplantation, and the RPE strips were observed to spread flat over time. As a postoperative complication, the third patient developed an epiretinal membrane around 2 months after surgery.

Conclusions: In three eyes with advanced retinal degeneration due to RPE impairment, iPS cell-derived RPE cells were successfully transplanted subretinally through 31G retinal puncture by aggregating the iPS cell-derived RPE into a strip shape.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 7 (BNDCC1-GF)

Visual and Anatomical Outcomes of Macular Hole Surgery- Comparison of Complete and Partial Internal Limiting Membrane Peel With Inverted Flap Techniques

*First Author: Anita **MANIAM***
*Co-Author(s): Zabri **BIN KAMARUDIN**, Kiet-phang **LING**, Francesca **VENDARGON***

Purpose: To evaluate the outcomes of the complete internal limiting membrane (ILM) peeling versus partial ILM peeling with inverted flap techniques in primary large macular hole (PLMH) surgeries.

Methods: This is a retrospective cohort study whereby patients that fulfilled inclusion criteria with PLMH of 400 micrometers or larger underwent either pars plana vitrectomy with complete ILM peeling (Group C) or partial ILM peeling with inverted flap technique (Group P) from March 2018 till March 2022 were recruited from two tertiary centers.

Results: A total of 89 patients underwent surgery whereby 44 patients had complete ILM peeling (group C) and 45 patients had partial ILM peeling (group P) with an inverted flap. The hole closure rates at 1, 3, and 6 months post-operative were 88.6% for group C and 97.8% for group P (p= 0.110). For ellipsoid zone (EZ) restoration, there was no significant difference observed between the groups at one month post-operative. However, a higher proportion of restored EZ was observed among group P eyes at three and six months post-operatively (p= 0.026). For best corrected visual acuity (BCVA), no significant difference was observed at baseline (p= 0.315), one month (p= 0.076), and three months post-operatively (p= 0.050), as well as the change in BCVA at one month (p= 0.599), three months (p= 0.633) and six months post-operatively (p= 0.360). However, Group P patients had significantly better final BCVA than Group C six months post-op (p= 0.013).

Conclusions: Partial ILM peeling with an inverted flap is a more effective technique for treating PLMHs as it achieves better anatomy from three months and function at six months.

Translational Research in Ophthalmology

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Association of Serum Gamma Glutamyl Transferase As Biomarker of Oxidative Stress in Type II Diabetics With and Without Diabetic Retinopathy

First Author: Muhammad Aneeq ***HAROON***

Purpose: To find the association of serum GGT (gamma glutamyl transferase) with diabetic retinopathy and to determine its correlation with blood HbA1C (glycated haemoglobin).

Methods: This cross-sectional study was conducted from February 2019 to January 2020. Three hundred subjects participated in the study who were divided into groups. Retina was examined for lesions of diabetic retinopathy and blood HbA1c was measured for glycaemic control. Serum GGT was estimated by enzymatic colorimetric method. ANOVA was used to find any significant difference in serum GGT between groups and Chi square was used to find association between serum GGT and diabetic retinopathy. Pearson correlation te was used to find correlation between serum GGT and blood HbA1C.

Results: Out of three hundred, 149 (49.7%) were males and 151 (50.3%) were females. The average age of the non-diabetic group was 55±13years, the diabetic group without diabetic retinopathy was 52±16 years, and the diabetic group with diabetic retinopathy was 53±13years. Serum GGT concentration was significantly high in patients of type-II diabetes as compared to non-diabetics, further it was higher in diabetics with diabetic retinopathy than without diabetic retinopathy ($p<0.05$), indicating a strong association of elevated serum GGT levels and oxidative stress in type II diabetics. A significant positive correlation between raised serum GGT and HbA1C levels ($r=0.66$) was also noted.

Conclusions: Serum GGT has strong association with oxidative stress leading to diabetic retinopathy. A significant positive correlation was observed between serum GGT and glycaemic levels i.e. blood HbA1c. Hence, serum GGT can prove to be a promising biomarker for monitoring of diabetic retinopathy.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Association of eNOS Polymorphism in Babies Developing Retinopathy of Prematurity

First Author: Debolina ***DEB***
Co-Author(s): M ***MUTHIAH****, Suhas* ***PRABHAKAR***

Purpose: Nitric oxide synthase is found in the endothelium of retinal vessels and is essential for the normal vasculature development in babies. It is influenced by endothelial nitric oxide synthase (eNOS) gene- eNOS 786 and 894 single nucleotide polymorphisms (SNPs). The purpose of our study was to analyse the polymorphisms eNOS 786 and eNOS 894 on preterm babies developing Retinopathy of prematurity (ROP).

Methods: We conducted a prospective study in a tertiary care centre in South India over 1 year. We collected the buccal swab DNA samples from 100 preterm babies (GA < 34 weeks and Birth weight < 1750 grams) on the first week of their life. We studied 2 SNPs extracted from these samples- eNOS 786 and eNOS 894. The babies were routinely screened for ROP from the third week of their life and followed up till the retina matured or ROP was detected and treated till it regressed.

Results: Twenty-four babies from the cohort developed ROP, out of which 9.8% required treatment. On genetic analysis, we found preterm babies developing ROP had a greater Odd's ratio with TT genotype as well as T allele for eNOS 894 SNP ($p=0.013$ and $p=0.02$ respectively). We also analysed the eNOS 786 SNP and found T allele to have a greater association with babies developing ROP ($p=0.002$).

Conclusions: This study on eNOS SNP is the first of its kind in South India. It gives us a better understanding of the pathogenesis of ROP and directs us toward novel treatment abiding by this mechanism.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Automated Visual Acuity Test for Community Eye Screening in Singapore

First Author: Muhammad Azri ***BIN RAZALI***
Co-Author(s): Victor Teck Chang ***KOH****, Quek* ***LYNN****, Lyana* ***SHAFFIEE****, Adrian* ***TAY****, Tan* ***WEE HIAN***

Purpose: Eye screening in the community promotes early detection of visual impairment. We aim to evaluate the Automated Visual Acuity Test (AVAT), a compact, automated solution that occupies only one-third of the space compared to the standard Snellen test.

Methods: We included 250 participants aged 60 and above in a community-based clinic in Singapore. In total, 53% were females and 95% were Chinese. AVAT employed afocal optics which allows the patient's head to move within 60cm forwards and backwards while only affecting the optotype size by 5%. It utilizes a touchscreen with instructions for visual acuity self-testing. All participants also took the Snellen test at 6 meters on the same day.

Results: AVAT exhibited a strong correlation with Snellen ($r = 0.79$, 95% CI [0.75, 0.82], $p < 0.00001$). Both AVAT and Snellen demonstrated consistent outcomes (mean and standard deviations were 0.17±0.21 and 0.22±0.21, respectively). Bland-Altman analysis highlighted a mean difference of -0.05 between AVAT and Snellen scores, with limits of agreement spanning ±0.27. There were 36 patients (14.4%) referred to an ophthalmologist due to reduced visual acuity of worse than 6/12.

Conclusions: AVAT showed an acceptable correlation with the Snellen test in a community-based setting for eye screening. The automated and compact design can potentially enhance early access to eye care.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Biomarker Enabled Specific Targeted Therapy in Ocular Surface Disease

*First Author: Pooja **KHAMAR***
*Co-Author(s): Arkasubhra **GHOSH**, Swaminathan **SETHU**, Rohit **SHETTY***

Purpose: To Evaluate specific biomarkers (BM) in ocular surface disease (OSD) by using a tailored biomarker kit and to evaluate outcomes of targeted therapy.

Methods: A total of 3,500 OSD eyes and 7,500 control eyes were recruited for the study. Tear samples were collected using Schirmer's strip. Selected biomarkers (MMP-9, IL-6, IL-1b, I- CAM-1, IL-10, IL-17a, TNF-α, VEGF-A) were analyzed from tear samples using a customized ELISA-based biomarker kit. Based on the normative database generated, elevated levels of target biomarkers were identified, and specific targeted therapy against these biomarkers based on their severity was instituted. Reassessment of the clinical findings, patient satisfaction, quality of life (QoL), and biomarker levels was performed 6 months after commencement of therapy.

Results: 60% of the OSD eyes demonstrated high levels of MMP-9. Of these, Of these, 12% had 1 fold rise, 18 % had 2 fold rise and 30% had 3-fold rise in MMP-9 compared to normal. Eyes with 1-fold rise received immunomodulator therapy. Those with 2- fold rise or higher, received combined vector pulsation/intense pulsed light therapy along with immunomodulators. 10% of eyes showed high levels of ICAM-1, and were treated with lifitegrast. 20% of eyes had high TNF-α and IL-17a, and were treated with steroids and lubricants. Post-treatment eyes had significantly reduced symptoms and signs, decreased levels of targeted biomarkers, shorter drug response time, improved QoL and lower treatment failure rate.

Conclusions: A tailored approach to OSD therapy was achieved by targeting aberrant BM. Economical management by avoiding multiple drugs and drug response monitoring by quantifying results analysed.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Clinical Validation of the Use of a Suite of Novel Devices for General Eye Screening Within Primary Care Settings

*First Author: Lynn **QUEK***
*Co-Author(s): Muhammad Azri **BIN RAZALI**, Rayven **CHUA**, Samantha **SAMANTHA**, Rubin **YONG***

Purpose: To validate the performance of a suite of novel medical devices, as compared to the gold standard devices, for the purposes of screening for chronic eye conditions within a community-based setting.

Methods: This is a prospective study involving elder participants (age >60 years) who have not consulted an ophthalmologist in the past 1 year. They underwent eye screening tests, including visual acuity tests, intra-ocular pressure (IOP) measurement, visual field tests, and fundus imaging. The tests were conducted using a suite of novel and portable medical devices and conventional gold-standard devices. Thereafter, ophthalmologists asynchronously review the test results and provide follow-up recommendations. Standardized questionnaires were used to assess the participant acceptance of this community-based eye screening model.

Results: Out of 270 participants, 132 (48.9%) screened positive and were referred to ophthalmologists. Of these, 6 (4.5%) required urgent referral within a week; referral rates for 1 month, 1-3 months, 3-6 months and beyond 6 months were 15 (11.4%), 45 (34.1%), 58 (43.9%), 8 (6.1%) respectively. The novel devices displayed a good clinical concordance rate of 85.9% (Cohen's Kappa = 0.711) with the gold standard devices, showing 85.6% sensitivity and 86.2% specificity. Up to 94% of participants showed acceptance of a community-based eye screening model which includes the use of the novel medical devices.

Conclusions: This study showed a high acceptance rate regarding the use of a suite of novel medical devices for eye screenings in a community-based setting. Moreover, the novel medical devices have shown a

good correlation with the conventional gold-standard devices.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Development of High-Performance Point-of-Care Aqueous VEGF Detection System and Proof-of-Concept Validation in RVO Patients

*First Author: Chan **ZHAO***

Purpose: To develop a sensitive point-of-care (POCT) aqueous vascular endothelial growth factor (VEGF) detection system, and assess its role in predicting the response to anti-VEGF treatment in macular edema secondary to retinal vein occlusion (RVO-ME) patients.

Methods: An automatic point-of-care aqueous humor Magnetic Particle Chemiluminescence Enzyme Immuno-Assay (MPCLEIA) VEGF detection system was developed. The predictive values of aqueous cytokine levels, in combination with imaging parameters, on anatomical treatment response (ATR, the relative central macular thickness change (ΔCMT/bl-CMT)) were analyzed.

Results: The automatic MPCLEIA system was able to provide results in 45 minutes with only 20 µl sample. Among the 57 eyes with available pre- and post-treatment evaluation, ATR significantly correlated with levels of interleukin (IL)-6, IL-8, monocyte chemoattractant protein-1 (MCP-1) and VEGF measured by Luminex xMAP platform, and VEGF measured by MPCLEIA. Optimal cut-off values for these biomarkers were 13.26 pg/ml, 23.57 pg/ml, 1110.12 pg/ml, 105.52 pg/ml, and 85.39 pg/ml, respectively. Univariate analysis showed significant associations between ATR category (good response if ATR≤-25% or poor response otherwise) and IL-6, IL-8, MCP-1, VEGF-xMAP, and VEGF-MPCLEIA ($P<0.05$). Multivariate logistic regression revealed that ATR category was significantly associated with aqueous VEGF-MPCLEIA ($P=0.006$) and baseline (bl)-CMT ($P=0.008$). Receiver operating characteristics analysis yielded an AUC of 0.959 for the regression model combining VEGF-MPCLEIA and bl-CMT, for predicting ATR category.

Conclusions: Our novel MPCLEIA-based automatic VEGF detection system enables accurate POCT of aqueous VEGF, which shows promise in predicting the treatment response of RVO-ME to anti-VEGF agents when combined with bl-CMT.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Driving the Differentiation of Transition Zone Cells Into Corneal Endothelial-Like Cells

*First Author: Jie **ZHANG***
*Co-Author(s): Sandi **BOWLES***

Purpose: In vitro expansion of corneal endothelial cells (CEC) is a promising alternative to donor tissue for corneal endothelial regeneration. The objective of this study was to direct the differentiation of transition zone (TZ) cells into CEC-like cells.

Methods: TZ cells were subjected to eight different treatments to drive their differentiation into CECs. Assessments include morphology analysis, protein expression levels of stem cell and CEC markers by Western blotting, and gene expression by real-time polymerase chain reaction.

Results: The combination treatment of ROCK inhibitor Y-27632 and TGF-beta inhibitor SB431542 produced maximum morphological change towards a CEC phenotype, followed by Y-27632 alone, SB431542 alone, and Y-27632 and DKK-2. Some treatments increased the protein expression level of CEC markers. Seven treatments reduced the expression of neural crest markers as expected. Protein levels of CEC markers ZO-1, Na+/K+ ATPase and CD166 were maximally increased by 3 combination treatments including Y- 27632 + SB431542. Protein expression of the neural crest stem cell marker Nestin was maximally decreased by 3 groups including Y-27632 + SB431542. Single treatment with Y-27632 produced the largest increases in gene expression of CDH2, COL8A1, AQP1, and TJP1.

Conclusions: The combination treatment of Y-27632 + SB431542 was the best for inducing cell shape and protein expression changes towards a CEC-like phenotype, whereas Y-27632 alone was the best for inducing gene expression changes.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Evisceration With Primary Orbital Implant in Endophthalmitis/Panophthalmitis

*First Author: Syeed **KADIR***
*Co-Author(s): Farzana **AFZAL**, Narayon **BHOWMIK**, Md.Azizur **RAHMAN**, Sadia **SULTANA***

Purpose: Describe the outcome of Evisceration with the primary orbital implant in non-seeing eyes with and without ocular infection (endophthalmitis/ panophthalmitis).

Methods: A prospective, nonrandomized comparative case series research was performed from 1999 to 2022. Patients with the least postoperative follow-up of 6 months were included in the study. One seventy-three eyes of one seventy-three patients were included. Group A involved the infective patients, and Group B included all noninfective blind eyes. Nonporous PMMA implants were used for all cases, and the main outcome measure was the successful retention of the primary implant. All types of complications and satisfactory prosthesis fitting were also observed.

Results: The mean (±SD) age was 45.689 ± 11.34 years, with males (53.2%) predominant. All except 11 cases could retain the primary implant successfully. Primary orbital implants were exposed in nine (5.2%) cases (four in Group A and five in Group B), and Extrusion of the primary orbital implant occurred in two (1.1%) cases, and all extrusion occurred in Group A. One hundred fifty-six (90.2%) patients underwent successful prosthesis fitting with better cosmesis. The difference in major complications like implant exposure and implant extrusion between the groups was not statistically significant (P value equals 0.0879, Fisher exact test).

Conclusions: Evisceration with a primary orbital implant is feasible in both infective (endophthalmitis/panophthalmitis) and noninfective blind eyes. It provides a better postoperative cosmesis to the anophthalmic socket.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Localized Immune Response and Long-term Survival of Human Retinal Pigment Epithelium Monolayers in Immunocompetent Monkey Retinas

*First Author: Zengping **LIU***
*Co-Author(s): Veluchamy Amutha **BARATHI**, Lingam **GOPAL**, Kah Leong **LIM**, Xin Yi **SU***

Purpose: The purpose of this study was to investigate the immune response and long-term survival of human induced pluripotent stem cell-derived retinal pigment epithelium (iPSC-RPE) monolayers transplanted in healthy and diseased monkey retinas without the use of systemic immunosuppression.

Methods: The iPSC-RPE monolayers were generated and transplanted into the subretinal space of healthy and micropulse laser-induced diseased retinas in monkeys. The xenografts were closely monitored for 12 months using multimodal ophthalmic imaging and histological analysis to detect any signs of rejection or inflammation.

Results: The xeno-RPE monolayers caused delayed localized inflammation and immune rejection in the healthy monkey retinas. The immune response was observed to occur earlier in cases where the outer retinal-blood barrier (RPE layer) was disrupted by micropulse laser. Interestingly, the immune rejection and inflammation were limited to the area surrounding the transplanted grafts, and not relevant to the surgical sequence in both eyes of the same non-human primate. Despite gradual pigmentation loss, the xeno-transplanted cells achieved long-term survival in the subretinal space, as confirmed by histological assessments.

Conclusions: Our findings provide valuable insights into the immune response of RPE cell therapy in clinical trials. Although the iPSC-RPE monolayers caused delayed inflammation and immune rejection, the xeno-transplanted cells still achieved long-term survival. These results suggest that the successful modulation of the immune response may improve the efficacy and safety of RPE cell therapy, offering a potential treatment for retinal degenerative diseases, and ultimately improving patient outcomes.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

M1-Like Macrophages Modulate Fibrosis and Inflammation of Orbital Fibroblasts in Graves' Orbitopathy: Potential Relevance to Soluble Interleukin-6 Receptor

*First Author: Sijie **FANG***
*Co-Author(s): Yi **LU**, Jing **SUN**, Yi **WANG**, Huifang **ZHOU***

Purpose: In this case-control study, we sought to determine the pathophysiology of macrophages in Graves' orbitopathy (GO).

Methods: Orbital connective tissues from 40 GO patients and 20 healthy controls were immunohistochemically stained for cytokines and macrophage cell surface antigens. Orbital-infiltrating macrophages were examined by flow cytometry and immunofluorescence. Effects of interleukin (IL)-6 combined with soluble IL-6 receptor (sIL-6R) on the proliferation, differentiation, and inflammation of different orbital fibroblast (OF) subsets were examined by CCK-8, Western blotting, and Luminex assays, respectively. The antigen-presenting abilities of OF subsets under IL-6/sIL-6R signaling were studied by proteomics.

Results: GO orbital connective tissues displayed increased IL-6, sIL-6R, STAT3, and IL-17A levels. CD86+M1-like macrophages were predominant in active GO patients whilst stable GO patients tended to have more CD163+M2-like macrophages. The expression of IL-6 was higher in M1-like macrophages and the expression of transforming growth factor-β was higher in M2-like macrophages both in GO orbital connective tissues in situ and in cell culture systems.

The IL-6/sIL-6R stimulation promoted the fibrosis of both CD34+ and CD34-OFs. Monocyte chemoattractant protein-1 expression was also induced by IL-6/sIL-6R stimulation in both OF subsets. IL-6/sIL-6R stimulation enhanced antigen processing of CD34+OFs via up-regulating the intact major histocompatibility complex I and antigen transporters. However, the protein expressions of thyroid-stimulating hormone receptors and insulin-like growth factor 1 receptors could not be directly increased by IL-6/sIL-6R stimulation in CD34+OFs.

Conclusions: Our study demonstrated that orbital-infiltrating macrophages may activate OFs depending on the IL-6/sIL-6R signaling, implicating the molecular rationale for blocking sIL-6R as a promising therapeutic agent for GO.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Oct-Angiographic Changes of Optic Nerve Head After 25g Ultrasonic Vitrectomy

*First Author: Tagir **DIBAEV***
*Co-Author(s): Bulat **AZNABAEV**, Timur **MUKHAMADEEV***

Purpose: To compare vessel density of optic nerve head (ONH) in patients who underwent 25G ultrasonic and pneumatic guillotine vitrectomy.

Methods: Vitrectomy was performed in 85 patients with macular holes, and epiretinal membrane in the main group (n=43) using a new 25G ultrasonic vitrector (32 kHz, 100 µm max amplitude) in the control group (n=42) – with a pneumatic vitrector (6000 cuts/min). OCT angiography was performed before and at days 7, 30, months 3, 6, and 12 after surgery on Optovue Avanti XR, using the “whole image small vessels” parameter (% of ONH and peripapillary area, occupied by vessels except magistral artery and vein).

Results: In both groups, similar dynamics of microcirculation parameters were registered. Before surgery, vessel density was 48,83±4,05% in the main, 44,97±5,25% in the control group. At day 7 there was a decrease (43,17±4,43% in main, 42,49±4,18% in control, p=0,72), then from month 1 to month 6 vessel density increased (46,46±3,87% in main, 42,28±5,27% in control, p=0,053); at month 12 again slightly decreased (43,58±5,01% in main, 38,84±7,14% in control, p=0,54). There were no specific changes in density, peripapillary vessel, and retinal microstructure in the ultrasonic vitrectomy group.

Conclusions: ONH microcirculation changes can be explained by the influence of various factors during and after vitrectomy surgery, including ischemia, traction of neuroepithelial layers, changes in intraocular pressure and somatic pathology. It seems unlikely that there are specific negative effects of ultrasound on the microcirculation of the optic disc during ultrasonic vitrectomy.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Ocular Pharmacokinetics of Extemporaneously Prepared Tazobactum-Piperacillin Eye Drops: Rationalizing Its Treatment Modality

*First Author: Madhu **NATH***
*Co-Author(s): Ujjwal K **DAS**, Nabanita **HALDER**, Velpandian **THIRUMURTHY***

Purpose: Topical Piperacillin (10%)-tazobactam (1.25%) (PT) could be used for resistant Pseudomonas aeruginosa keratitis. However, the pharmacokinetic profile of Tazobactum has not been studied yet. Therefore, this study evaluated its ocular pharmacokinetics profile to rationalize its treatment modality.

Methods: The PT was prepared extemporaneously in either water for injection (WFI) or carboxymethyl cellulose (CMC), and was assessed for its physical parameters and drug stability over 21 days. After obtaining the ethical clearance, the single and multiple dose (1-hourly & 2-hourly) tear kinetics was performed on the healthy volunteers (n=10). The transcorneal penetration of PT eyedrop in aqueous humor was also assessed in patients undergoing routine cataract surgeries at various time points after a single PT application (n=8). The drug content was analyzed using LC-MS/MS. The pharmacokinetic assessment was performed using PKSolver and ModVizPop.

Results: The PT eye drop was stable for up to 14 days at 4°C. Following single PT administration, the drug concentration was found to be highest at 10 minutes. A rapid decline of the drug in the tear film was observed at 30 minutes. The concentration of tazobactum was found to be 3.44 and 4.36 µg/ml in the 1- and 2-hourly groups, respectively. The CMC formulation had 10 times more concentration in pre-corneal fluid compared to WFI-PT. The PT could penetrate the cornea, and was found highest at 5 minutes in the aqueous humor.

Conclusions: The extemporaneously prepared PT eye drops one- and two-hourly drug instillation regimen was comparable, while the physical parameters and drug content remained in acceptable pharmaceutical limits until 2 weeks.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1-GF)

Orbital Immune Profiling Defines Inflammatory Cell Signatures Underlying Thyroid Eye Disease Establishment and Type

*First Author: Sijie **FANG***
*Co-Author(s): Xianqun **FAN**, Yazhuo **HUANG**, Jing **SUN**, Huifang **ZHOU***

Purpose: Mechanisms underlying different immunophenotypes in thyroid eye disease (TED) subtypes remain unclear. To address this issue, we conducted a single-cell transcriptome study based on clinical types.

Methods: Orbital connective tissues (OCTs) from type I TED with orbital fat expansion (Adipo), type II TED with extraocular muscle enlargement (Myo), and healthy controls were investigated by single-cell sequencing. A large follow-up cohort of TED patients and healthy controls were recruited to prove at the translation level the transcriptionally identified heterogeneous cell composition by multi-color flow cytometry analysis.

Results: Our data showed that TED OCTs were composed of nine cell types: T cells, B cells, plasma cells, myeloid cells, natural killer cells, orbital fibroblasts, myofibroblasts, endothelial cells, and epithelial cells. T cells were more enriched in OCTs from Myo TED compared with Adipo TED. The transformation of Th17 cells into other CD4+T cell clusters was the main characteristic of Myo TED. Additionally, IgM-producing naïve B cells were significantly increased in OCTs from Myo TED, while CD38+CD27+plasma cells were significantly elevated in OCTs from Adipo TED. Both Myo TED and Adipo TED had higher levels of cytokine-producing inflammatory M1-like macrophages, which could not tell TED disease types. Furthermore, the CD45-stromal cells, such as orbital fibroblasts and endothelial cells from both Myo TED and Adipo TED, appeared in inflammatory states via secreting interleukin-6.

Conclusions: We demonstrated a cytokine-leaning phenotype in Myo TED and an antibody-leaning phenotype in Adipo TED, which may help to unravel TED pathogenesis and to create targeted therapies for different TED subtypes in the future.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1-GF)

SPVN06: Gene-Independent Gene Therapies for Patients with Rod-Cone Dystrophy

*First Author: Daniel **CHUNG***
*Co-Author(s): Isabelle **AUDO**, Laure **BLOUIN**, Anne **CELLE**, Alice **LEMEUR**, Nelle **MESSECA***

Purpose: Rod-cone dystrophy (RCD) is a rare inherited retinal disorder with a diverse genetic etiology, for which a high unmet medical need exists. Most gene therapies target the genetic variant responsible for retinal degeneration. However, clinical development of gene-dependent therapies will not be possible for all causative genes, so gene-independent therapeutic approaches could represent a broader treatment option.

Methods: SPVN06 is an innovative gene therapy aiming at slowing down the progression of vision loss in patients with RCD, regardless of the underlying gene variant causing the disease. The viral vector encodes two transgenes expressing a neurotrophic factor called rod-derived cone viability factor (RdCVF) and a thioredoxin called RdCVFL (long isoform of RdCVF). The first-in-human clinical trial (PRODYGY, NCT05748873) is currently ongoing and will assess the safety and tolerability of SPVN06 in patients with advanced RCD. This multicenter Phase I/II study includes an open-label dose-escalation phase (Step 1) and a three-arm, controlled, double-masked, randomized extension phase (Step 2).

Results: Safety results of the first cohort of 3 patients treated at the low dose showed a good safety profile after one month of follow-up, with a reported 4 procedure-related mild adverse events that resolved without additional treatment. The data safety monitoring board approved the trial to proceed to the next cohort of 3 patients to receive the medium dose.

Conclusions: SPVN06 program advances the clinical development of gene-independent gene therapies holding the promise of vision loss treatment for patients with RCD, regardless of the causative gene defect.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

The Effect of Palm Oil-Derived Tocotrienol-Rich Fraction in Preserving Normal Retinal Vascular Diameter in Streptozotocin-Induced Diabetic Rats

*First Author: Nurliyana Ain **ABDUL GHANI***
*Co-Author(s): Norlina **RAMLI***

Purpose: Angiogenesis in diabetic retinopathy (DR) is associated with increased retinal expression of angiopoietin-2 (Ang-2) and protein kinase C (PKC). Tocotrienol-rich fraction (TRF) has been shown to reduce the expression of vascular endothelial growth factor (VEGF) in several experimental models. However, its effect against other angiogenic markers, such as Ang-2 and PKC in rat models of diabetes, remains unknown. Therefore, we investigated the effect of TRF on the retinal vascular changes and Ang-2 and PKC expressions in rats with streptozotocin (STZ)-induced DR.

Methods: Sprague–Dawley rats were divided into normal control rats (N), which received vehicle, and diabetic rats, which either received vehicle (DV) or 100 mg/kg of TRF (DT). Diabetes was induced with intraperitoneal injection of STZ (60 mg/ kg body weight). Treatments were given orally, once daily, for 12 weeks after confirmation of hyperglycaemia. Fundus photographs were captured at baseline, 6- and 12-week post-STZ injection, and the average diameters of retinal veins and arteries were measured. At 12-week post-STZ injection, rats were euthanised, and retinae were collected for measurement of Ang-2 and PKC gene and protein expressions.

Results: Retinal venous and arterial diameters were significantly greater in DV compared to DT at week 12 post-STZ injection ($p < 0.001$ and < 0.05, respectively). The vessel diameter measurements in DT were comparable to N and this effect of TRF was associated with significantly lower Ang-2 and PKC gene and protein expressions compared to DV.

Conclusions: Oral TRF reduces the expression of retinal angiogenic markers and preserves the retinal vascular diameter of rats with STZ-induced DR.

Feb 24, 2024 (Sat)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Unique Phenotypes, Novel Genotypes and Functional Evaluation in Stargardt Families From South India

*First Author: Poornachandra **BALUGHATTA***
*Co-Author(s): Sharath **BABU**, Arka **GHOSH**, Rohit **SHETTY***

Purpose: To evaluate the variations in disease presentation, progression, patient counselling and explore newer potential therapies.

Methods: 50 affected and 94 unaffected family members of 39 families were studied. Visual and retinal assessment, imaging, whole exome sequencing and functional categorization of mutations were performed. Families sub-classified according to Fishman's grading. Electrophysiological tests were done based on clinical indication. A set of mutations were cloned and studied for expression in HEK293T cells. Functional analysis of mutations and therapeutic potentials tested in vitro. Sub-retinal delivery modality was developed in rodent models using novel dual Adeno-associated vectors (AAV) for gene therapy.

Results: A spectrum of abnormalities were observed. Clinical variations within the family with the same mutation, multiple novel mutations, newer genes and rare inheritance patterns were detected. Fishman classification accommodated 41 subjects, while non-classical presentations were observed in 9 subjects. Of these, ABCA4 mutation was seen in 1 case, while novel genotypes were found in 8 cases. Overall, 44 mutations in 10 genes were identified in this study. Expression of 8 mutant ABCA4 proteins in HEK293T cells showed instability of varying degrees compared to wild type ABCA4 protein. Compared to trans-membrane domain mutants, instability was more prominent in extracellular domain mutants. Phenotypic variations among probands were partly explained by these observations. AAV dual vectors appeared to show promising efficacy. This technique harnesses intracellular recombination and splicing mechanisms.

Conclusions: Stargardt disease can present with phenotypic variations with complex genotypes. An evolving understanding of gene functions and in vivo methods of delivering therapeutics will improve the outlook for treating this disease.

Visual Sciences

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

Cortical and Sub-cortical Reorganization of Cerebral Networks Induced by Congenital Monocular Blindness: A Combined DTI and fMRI Study

*First Author: Jingwen **DING***

Purpose: Individuals with congenital monocular blindness are born without binocular vision and stereopsis, the effects of which on the brain function and microstructure are largely unknown. The purpose of our study is to investigate the spontaneous neural activities and microstructural characteristics of white matter tracts over the whole brain in congenital monocular blindness.

Methods: A total of 16 patients with unilateral congenital microphthalmia and 16 matched normally sighted controls were scanned at 3.0 Tesla using a protocol consisting of resting-state fMRI in combination with T1-weighted MRI and DTI.

Results: Compared with the control group, the altered amplitude of low-frequency fluctuations in brain regions of microphthalmic patients belonged to the visual network, somatomotor network, and default mode network. In addition, graph theory analysis revealed reduced regional network metrics in the middle occipital gyrus and left inferior temporal gyrus while enhanced those in the left supplementary motor area, right angular and supramarginal gyri. Taken together, patients with monocular blindness had widespread abnormal activities mostly within visual and language networks and language-related regions played a dominant role in their brain networks. On the other hand, extensive microstructural abnormalities of white matter ranged from sensory modalities to other cross-modal pathways involving language, execution, memory, emotion, fine movement, and interhemispheric communication as well.

Conclusions: This study provides novel evidence of large-scale cortical and subcortical involvement subsequent to prolonged loss of half visual inputs, which may be associated with developmental delay, compensatory neuroplasticity, and microstructural reorganization.

Feb 23, 2024 (Fri)
09:00 – 10:30
Venue: Uluwatu 2 (BNDCC1–GF)

RAD21 Deficiency Leads to Improper Neural Crest Migration and Corneal Keratocyte Differentiation

*First Author: Bi Ning **ZHANG***

Purpose: This study aims to uncover the mechanisms underlying sclerocornea caused by RAD21 mutation. Sclerocornea belongs to congenital corneal opacity characterized by blurred corneoscleral boundaries, and its pathogenesis remains poorly understood.

Methods: Transcriptome sequencing and chromatin conformation analysis were performed on primary cells from the sclerocornea pedigree. This aimed to identify genes under direct regulation by RAD21. The functional impact of RAD21 was further studied in Xenopus laevis, where overexpression of mutant rad21 was induced to observe its effects on craniofacial neural crest migration and corneal stromal development. Additionally, a differentiation model involving human embryonic stem cells-derived neural crest cells was established to examine the role of RAD21 in influencing keratocyte differentiation.

Results: Sequencing of patient-derived cells unveiled an upregulated expression of PCDHGC3, a gene crucial for early craniofacial neural crest migration and positioning, under direct RAD21 regulation. In Xenopus embryos, overexpressing mutant rad21 led to aberrant craniofacial neural crest migration, disorganized corneal stromal structure, and reduced corneal stromal diameter, mimicking sclerocornea characteristics. An interaction between RAD21 and PCDHGC3 was observed, with reduced RAD21 expression resulting in increased PCDHGC3 expression. Knockout of RAD21 or overexpression of PCDHGC3 disrupted neural crest migration and proliferation, ultimately influencing their differentiation fate. Transcriptome analysis revealed that altered RAD21 or PCDHGC3 expression shifted gene expression profiles towards scleral stromal characteristics, including elevated WNT9B expression.

Conclusions: RAD21 dysfunction plays a pivotal role in craniofacial neural crest migration and differentiation. Future interventions by modulating neural crest migration and differentiation can be explored to correct early corneal developmental anomalies.

POSTERS

AI, Digital Innovation and Virtual Health

Poster No.: PO-006

A New Path Towards Patient Counselling- an Innovative Approach!

*First Author: Apurva **NAGTODE***
*Co-Author(s): Saloni **JOSHI**, Shivraj **TAGARE***

Purpose: (1) To provide a holistic understanding of the disease pathology, risks, and treatment methods for patients with effective counseling. (2) To bring forth a unique approach to patient counseling via Quick Response (QR) codes. (3) To prevent misinterpretations among patients and boost their adherence to treatment.

Methods: We have employed the use of QR in four different ways in the most important aspects of the delivery of eye care. Those are pre-operative counseling for choosing the right intraocular lens (IOL), post-operative counseling and post-operative follow-up for cataract surgery, and safe and correct application of eyedrops. With the help of online generators for QR codes, a unique barcode was created online for its use in each of the above-mentioned areas. It was then linked to the URL of the video posted on our channel on YouTube.

Results: Pre-operative and post-operative patient counseling through QR codes became more efficient, ensuring that patients were well-informed and prepared for procedures. Empowered with ample knowledge, they had the freedom to choose their own IOLs. They also enabled remote follow-ups by integration in teleophthalmology, reducing unnecessary visits and thereby reducing the carbon footprint and inconvenience faced by the patients. Additionally, QR codes applied to eye drops enhanced medication adherence.

Conclusions: QR code-based innovations in ophthalmology have indeed revolutionized patient care. These innovations collectively improved patient engagement, streamlined healthcare processes, and ultimately improved overall ophthalmic care.

Poster No.: PO-018

AI Model Achieves High Accuracy in Detecting Diabetic Macula Edema From OCT Images for a Telemedicine Setting

*First Author: Brian **MADOW***

Purpose: The capabilities and the accuracy of screening platforms for diabetic retinopathy using color fundus images have improved very significantly, and it has been used widely. However, detecting treatable diabetic macula edema is very difficult to achieve from the two-dimensional color image modality. Therefore OCT imaging at the screening point aids in the early detection of increased retinal thickness, which is not a disease-specific parameter. We sought to develop a robust AI model that will detect the presence of diabetic macula edema at the point of screening and trigger a referral to an ophthalmologist.

Methods: We randomly selected and deidentified 1000 normal OCT retina macula image scans obtained with a Spectralis Heidelberg OCT imaging device. An additional 1000 images with diabetic macula edema were selected for training. Microsoft-developed AI platform that has been adapted for the use of medical images.

Results: Testing of the model was performed using a fast PC computer with 2 Xeon processors. The OCT images were selected from subjects with different stages of diabetic macula edema, age, gender, and a variety of demographic characteristics. After the training, the model achieved 100 % accuracy. Retesting yielded 100 % reliability. The algorithm output was achieved within 1 second.

Conclusions: A fast, reliable, highly accurate, and reproducible AI model has been tested and validated for the remote detection of diabetic macula edema. The very high accuracy will allow the model to be deployed at the primary care offices, to achieve prompt referral to an ophthalmologist.

Poster No.: PO-024

AI in Ophthalmology. A Paradigm Shift

*First Author: Noor **AIN***
*Co-Author(s): Tayyaba **MALIK***

Purpose: To design an AI model that can detect the presence of diabetic retinopathy based on the signs of exudates, microaneurysm, hemorrhages and neo-vessels in the fundus image and check its reliability.

Methods: An AI model was designed to detect the presence of DR based on the signs of exudates, microaneurysms, hemorrhages and neo-vessels on the fundus. It is a two-step study. In the first step, samples of 1000 fundus images were classified into DR or no DR by 2 -3 skilled ophthalmologists with clinical experience of more than 10 years. Out of the 1000 fundus images, we used 800 fundus images to train our AI model. Once the AI model was trained, the rest of the 200 subset was shown to the AI model to detect the presence or absence of DR. We found that our model had good results in the prediction of DR. The next step was to compare the results of AI with the optometrists and general practitioners to see if the AI model or the optometrists/GP (who were earlier trained) were more reliable in the detection of DR in the patients.

Results: The first step showed the high reliability of AI in the detection of normal fundus from abnormal diabetic fundus. The second step of comparison of AI with the optometrist to check the reliability is under process, and the results will be available within a month.

Conclusions: Due to the overburdened healthcare system, there's a delay in timely intervention. AI-based diagnostic systems can improve the situation. Early detection and timely intervention can save the vision.

Poster No.: PO-011

AI-Based Multilingual Natural Language Processing (NLP) Delivering Real-world Insights for Patient Unmet Needs: Digital Listening for Age-Related Macular Degeneration (AMD) Patients in the Republic of Korea

*First Author: Hyejung **YUN***
*Co-Author(s): Olga **CHERTKOVA**, Hyewon **JEON**, Yan Yoong **LIM**, Djoubeir **MAKHLOUF**, Yi Lin **NG***

Purpose: AMD is one of the leading causes of central vision loss in patients over 50. Understanding patients' perceptions is crucial for a successful treatment strategy. Our study aims to identify patient perceptions regarding treatments and outcomes utilizing AI-based digital listening technology.

Methods: AI-based semantic, NLP technology was used to analyze 133,857 Korean posts by 9,620 patients across open internet sources from 2003-2022 (54.8% from 2020-2022).

Results: Among 697 posts, 16.6% expressed fears specifically about intravitreal injections, making it the predominant concern, followed by concerns about AMD symptoms (12.3%), and blindness (10.5%). In 3,401 posts about treatment selection, the focus was on effectiveness (48%), then price/insurance (33%), and tolerability (10%). From those posts related to effectiveness, edema drainage (32%) and scotoma alleviation (27%) were the most highlighted outcomes. The main reason for treatment discontinuation, mentioned in 286 posts, was due to inefficiency (36%). However, 17.5% indicated patients ceased treatment after noticing certain symptom improvements. Treatment burden, mentioned in 942 posts, was mainly concerned with tolerability (27%), financial concerns (20%), and emotional burdens (14%). Among 180 posts on tolerability, 77.8% expressed a willingness to endure treatment, primarily driven by fear of blindness (40.6%).

Conclusions: This study highlighted the value of real-time Internet data analysis in understanding patients' concerns, unmet needs, and perceptions. Notably, due to the fear of intravitreal injections and the emphasis on treatment effectiveness by the patients, it is important to recognize these insights in refining approaches to patient-centric decisions and enhancing treatment outcomes.

Poster No.: PO-009

Application of Deep Learning Algorithm in Predicting Atropine Treatment Response in Children With Myopia Based on Fundus Images

*First Author: Kai Yuan **TEY***
*Co-Author(s): Marcus **ANG**, Joey **CHUNG**, Yong **LI**, Shu Wei **TING**, Angeline **TOH***

Purpose: To develop a deep learning model utilizing objective fundus imaging and/or clinical data in identifying children who would be good responders to atropine in myopia treatment.

Methods: Using two randomized controlled trials comprising 800 children in Singapore (aged 6–12 years old) who were treated with atropine 0.01%, 0.1%, 0.5%, and 1%, we trained and performed primary validation of the deep learning model using 1089 baseline fundus photos with clinical data (age, gender, race, baseline spherical equivalent, and baseline axial length). External validation was performed using two independent test datasets comprising 46 and 21 subjects from China, who were treated with atropine 0.01%. We derived two distinct models – to identify the good responders (eyes progress < 0.5 D/year) and poor responders (eye progress ≥ 0.5 D/year) to atropine treatment. Model performance was evaluated using the area under the receiver operating curve (AUC).

Results: Utilizing baseline fundus photos and/or clinical data, our deep learning models achieved acceptable performance with an AUC of 0.86 (95% CI 0.78-0.94) on the internal test dataset for identifying the poor responders, and AUC values of 0.70 (95% CI 0.57-0.83) and 0.65 (95% CI 0.53-0.76) on the internal and external test dataset, respectively, for identifying the good responders.

Conclusions: Our deep learning models enable the identification of possible atropine-responder in children

with myopia aged 6-12 years old. The prospective application of our models as a clinical adjunct tool for the prescription of atropine eyedrops in children could potentially improve the intervention precision for myopia.

Poster No.: PO-019

Assessment of Visual Fatigue by a Virtual Reality Application for Pediatric Amblyopia Therapy

*First Author: Yuichi **OKUMURA***
*Co-Author(s): Masakazu **HIROTA**, Takenori **INOMATA**, Shintaro **NAKAO**, Takashi **NEGISHI**, Eiji **OGAWA***

Purpose: This study aimed to evaluate subjective visual fatigue before and after performing visual tasks using the Virtual Reality application (VR-app) for pediatric amblyopia training.

Methods: The VR-app was developed based on Ken-dama, a Japanese cup-and-ball game that assesses motor control and balance. This study recruited 20 healthy subjects (25.4±6.1 years old) between February 2023 and June 2023. The participants played Ken-dama using the VR-app for 30 minutes. Participants were administered a 5-point fatigue questionnaire (Q1 eye fatigue, Q2 blurred vision and diplopia, Q3 eye dryness and heaviness of eyelids, Q4 shoulder stiffness, Q5 neck fatigue, Q6 headache, Q7 sleepiness, Q8 wrist and arm fatigue, and Q9 visually induced motion sickness (VIMS)).

Results: Subjective ocular symptoms (Q1-3) were not significantly different before and after playing the VR-app ($P > 0.083$). In subjective general symptoms (Q4-9), stiff shoulders (0.95 ± 0.59 vs. 1.90 ± 1.18 ; $P = 0.032$) and tired wrists and arms (0.30 ± 0.46 vs. 2.60 ± 1.11 ; $P < 0.001$) were significantly increased after playing the VR-app.

Conclusions: Playing the VR-app for 30 minutes or less was found to exacerbate shoulder stiffness and wrist and arm fatigue, but not increase subjective eye fatigue.

Poster No.: PO-020

Benchmarking Large Language Models' Performances for Myopia Care: A Comparative Analysis of ChatGPT-3.5, ChatGPT-4.0, and Google Bard

*First Author: Zhi Wei **LIM***
*Co-Author(s): Hsinsun **CHEN**, Yien **LAI**, Janice Sing Harn **LAM**, Krithi **PUSHPANATHAN**, Yih-chung **THAM***

Purpose: Large language models (LLMs) are garnering wide interest due to their human-like and contextually relevant responses. However, LLMs' accuracy across specific medical domains has yet to be thoroughly evaluated. Our study evaluated the performance of ChatGPT-3.5, ChatGPT-4.0, and Google Bard, in delivering accurate responses to myopia-related queries.

Methods: We curated thirty-one commonly asked myopia care-related questions, which were categorised into six domains – pathogenesis, risk factors, clinical presentation, diagnosis, treatment and prevention, and prognosis. Each question was posed to the LLMs, and their responses were independently graded by three consultant-level paediatric ophthalmologists on a three-point accuracy scale (poor, borderline, good). A majority consensus approach was used to determine the final rating. 'Good' responses were further evaluated for comprehensiveness on a five-point scale. 'Poor' responses were further prompted for self-correction and re-evaluated for accuracy.

Results: ChatGPT-4.0 demonstrated superior accuracy, with 80.6% of responses rated as 'good', compared to 61.3% in ChatGPT-3.5 and 54.8% in Google Bard (all $p\leq0.009$). All three LLM-Chatbots showed high mean comprehensiveness scores (Google Bard: 4.35; ChatGPT-4.0: 4.23; ChatGPT-3.5: 4.11, out of a maximum score of 5). All LLM-Chatbots demonstrated substantial self-correction capabilities: 66.7% of ChatGPT-4.0's, 40% of ChatGPT-3.5's, and 60% of Google Bard's responses improved after self-correction. The LLM-Chatbots performed consistently across domains, except for 'treatment and prevention'. Nonetheless, ChatGPT-4.0 still performed superiorly in this domain, receiving 70% 'good' ratings, compared to 40% in ChatGPT-3.5 and 45% in Google Bard (all $p\leq0.001$).

Conclusions: Our findings underscore the potential of LLMs, particularly ChatGPT-4.0, for delivering accurate and comprehensive responses to myopia-related queries.

Poster No.: PO-014

ChatGPT as a Virtual Educator: Evaluating its Efficacy in Amblyopia Patient Communication

*First Author: Kirandeep **KAUR***

Purpose: The study aimed to assess the accuracy and reliability of ChatGPT-generated responses by subjecting them to evaluation by two ophthalmologists.

Methods: A total of 14 commonly asked questions (definition, risk factors, etiology, classification, symptoms, signs, investigation, treatment, complication, prevention, and prognosis) related to amblyopia were posed to ChatGPT, and responses were generated twice for each question. These responses were then evaluated and scored from 1-5 by two experienced ophthalmologists, each with more than five years of experience. The evaluation criteria encompassed the accuracy of information provided, relevance to the question, clarity, and appropriateness for patient understanding.

Results: The median scores varied from 3-5, with 9 questions having a score of 4. While the first investigator found 20 questions, and the second found 19 questions to have good responses, they both felt 3 questions had acceptable responses. While some responses closely aligned with established medical knowledge and guidelines, others displayed minor inaccuracies or lacked the necessary depth required for comprehensive patient education. The evaluation revealed that ChatGPT responses scored higher in terms of relevance and clarity in the second session (mean score 4.2+/-0.5) compared to the first session (4.1+/-0.6), indicating a potential learning effect. The difference between the responses obtained was not significant (p-value 0.810).

Conclusions: In conclusion, this research sheds light on the promising role of ChatGPT in addressing patient queries about amblyopia. The evaluation process performed by experienced ophthalmologists provides valuable insights for optimizing AI-generated responses to meet the specific needs of patients seeking reliable and accurate information on their eye health.

Poster No.: PO-022

Collaborative Care Between Ophthalmology and Optometry in a Regional Town of Australia Since Introduction of Telehealth Public Funding for Optometry in 2015

First Author: Jeffrey Kai Chun ***MAK***
Co-Author(s): Angus ***TURNER***

Purpose: We aim to evaluate the public ophthalmology practice model and the significance of the collaboration with the optometry services in the Australian regional town of Albany since the introduction of telehealth Medicare funding for Optometry in 2015

Methods: All patients treated by the Ophthalmology visiting public service at Albany Regional Hospital from 2015 to 2022 were included in the audit. The areas analyzed include the proportion of Aboriginal and Torres Strait Islander (ATSI) patients versus non-ATSI patients, the proportion of telehealth versus hospital and vision van visits, and the proportion of various procedures conducted by consultants.

Results: A total of 10865 patient visits were identified on digital records since 2015. However, 8320 patient visits were included as the use of digital records for patients prior to 2017 were unreliable. Aboriginal and Torres Strait Islander visits accounted for 2.82% of total visits. Telehealth visits accounted for 56.5% of all non-procedural outpatient activity. The surgical case rate was 63.67%, representing occasions of service conducted in person by an ophthalmologist involving a specialist procedure.

Conclusions: The collaboration with local optometry services to facilitate teleophthalmology led to an efficient public visiting ophthalmology service model in Albany. Increasing demand has been sustained with a high surgical case rate enabled by streamlined outpatients following telehealth triage. This model of practice can be extended to regional areas internationally where a public Ophthalmology service is not readily available.

Poster No.: PO-023

Demographics, Clinical, Microbiological Profile and Treatment Outcomes of Traumatic Endophthalmitis in Paediatric Population in South India

First Author: R ***SUDARSHAN***

Purpose: The incidence of post-traumatic endophthalmitis in the pediatric population varies from 8 to 60%. They have an aggressive course and the microbiological profile of post-traumatic endophthalmitis in the pediatric population is distinctive from the adult population. We studied the clinical, microbiological and treatment outcomes of paediatric patients (<15 Years).

Methods: Pediatric patients (< 15 years) diagnosed with endophthalmitis secondary to trauma during 2021-2022 were included in the study. Retrospectively, all the data, including demographics, history, clinical evaluation, microbiological analysis, surgical intervention, and visual outcomes, were collected from electronic medical records.

Results: Sixteen eyes of 16 patients with traumatic endophthalmitis were included in the study. The mean age of presentation is 7.65 years (1 -14 years). 62.5%(11) of the patients were males. 43.75% (7) patients presented within 1 day post-trauma. Injury with a stick (31.25%) was the most common mode of injury. 50% of patients presented with a full-thickness corneal tear and underwent repair. On microbiological analysis, 50%(8) patients showed growth on culture with the most common species isolated being alpha-hemolytic streptococcus. 87.5%(14) patients underwent core vitrectomy with injection of intravitreal antibiotics. The mean duration of follow-up was 2.1 years (6 months-8 years). 50% of patients retained visual acuity better than 6/60 on their last follow-up. 18.75%(3) of eyes worsened to phthisis.

Conclusions: Successful anatomical and functional outcomes can be attained in children with post-traumatic endophthalmitis with prompt and aggressive treatment. The most common infective agent isolated on microbiological analysis was Alpha hemolytic streptococci- Streptococcus pneumoniae.

Poster No.: PO-005

Development and Validation of Data-Level Innovation Data Balancing Machine Learning Models for Predicting Optimal Implantable Collamer Lens Size and Postoperative Vault

*First Author: Tao **TANG***
*Co-Author(s): Kai **WANG**, Heng **ZHAO***

Purpose: To develop and validate innovative data-level data balancing machine learning-based models for predicting ICL size and postoperative vault.

Methods: The patients were randomly assigned to training and internal validation sets in accordance with a ratio of 4:1. Feature selection was performed using ANOVA and Kruskal-Wallis feature importance methods. Traditional linear regression models and machine learning-based models were used. The accuracy of models was assessed using the area under the curve (AUC) and confusion matrix.

Results: A total of 564 patients (1127 eyes) were eligible for this study, consisting of 808 eyes in the training set, 202 eyes in the internal validation set, and 117 eyes in the external validation set. Compared with the traditional linear regression method, the machine learning model, Bagging Tree, showed the best performance for ICL size selection, with an accuracy of 84.5% (95% CI, 83.2%-85.8%), and the AUC ranged from 0.88 to 0.99; the prediction accuracy of 12.1 mm and 13.7 mm ICL sizes were improved by 49% and 59%, respectively. The Bagging Tree model achieved the best accuracy (90.2% ((95% CI, 88.9%-91.5%))) for predicting the postoperative vault, and the AUC ranged from 0.90 to 0.94. The prediction accuracies of internal and external validation datasets for ICL sizing were 82.2% (95% CI, 81.1%-83.3%) and 82.1% (95% CI, 81.1%-83.1%), respectively.

Conclusions: The innovative data-level data balancing-based machine learning model can be used to predict ICL size and postoperative vault more accurately, which can assist surgeons in choosing optimal ICL size, thus reducing risks of postoperative complications and secondary surgery.

Poster No.: PO-008

Diagnostic Accuracy and Feasibility of Artificial Intelligence Based Diabetic Retinopathy Screening in Real-world Primary Care Settings

*First Author: Sanil **JOSEPH***
*Co-Author(s): Thulasiraj **RAVILLA**, Xianwen **SHANG***

Purpose: Early detection and timely management are critical to prevent vision loss due to Diabetic retinopathy (DR). Automated screening of patients with diabetes in non-eye care settings to detect referable DR is essential to achieve this goal. We investigated the diagnostic accuracy, feasibility, and end-user experiences of an artificial intelligence (AI)-based diabetic retinopathy (DR) screening model in real-world Australian primary care settings.

Methods: In a pragmatic trial conducted in primary care clinics, patients aged 18 years or older, with type 1 or type 2 diabetes underwent retinal imaging using an automated fundus camera. The AI algorithm integrated with the camera instantly screened the images for referable DR. Accuracy of the AI grading was assessed against human grading of the images.

Results: We enrolled 414 participants. The AI system showed a high level of accuracy for detecting referable DR with a sensitivity of 83.3% (95% CI: 58.6% - 96.4%), specificity of 97.2% (95.7% - 98.3%), and an area under the ROC curve of o.90 (0.81 – 0.99). Overall, 52 (12.6%) patients had referable DR. Most (78%) patients were satisfied with the screening system. Clinical staff noted that the AI system was useful and easy to use.

Conclusions: The real-world implementation of an AI-assisted DR screening model was accurate and acceptable by patients attending Australian primary care clinics. This model can be replicated to enhance early detection of DR among patients with diabetes, thereby preventing vision loss due to DR.

Poster No.: PO-021

Efficient Diabetic Retinopathy Classification With No-Code Automated Machine Learning Using Fundus Photographs and Imbalanced Data

*First Author: Jie **YAO***
*Co-Author(s): Kabilan **ELANGOVAN**, Liyuan **JIN**, Daniel **TING***

Purpose: The purpose of this study was to leverage automated machine learning (AutoML) for efficient classification of diabetic retinopathy (DR) using fundus images, specifically focusing on addressing the challenges posed by highly imbalanced datasets.

Methods: An AutoML solution (AWS Rekognition) was employed to train a multi-class image classifier with the EYEPACS dataset. The dataset comprised 17,918 images distributed across 5 classes based on the ETDRS scale: 12,052 No DR, 1,496 mild NPDR, 3,330 moderate NPDR, 574 severe NPDR, and 466 PDR. This dataset was divided into training and testing sets. Additionally, the Densenet-201 model was trained and tested with the same data distribution, using oversampling techniques to address data imbalances. Each severity grade had 100 images in the testing dataset for comparative analysis.

Results: The AutoML model outperformed the Densenet-201 model, achieving a higher overall F1 score (0.73 vs. 0.61), precision (0.68 vs. 0.64), and recall (0.80 vs. 0.61). Performance varied across DR severity levels for both models. AutoML's F1 scores ranged from 0.65 to 0.81, precision from 0.56 to 0.87,

and recall from 0.74 to 0.91. Densenet-201's F1 scores ranged from 0.52 to 0.68, precision from 0.53 to 0.85, and recall from 0.50 to 0.79.

Conclusions: The study highlights the remarkable capability of AutoML platforms to classify DR severity through retinal fundus images, even when dealing with imbalanced datasets. Moreover, the utilization of no-code solutions provides a user-friendly experience for clinicians without extensive technical expertise.

Poster No.: PO-012

Enhancing External Eye Photography for Ptosis Classification Through Generative Augmentation Techniques

*First Author: Gilbert **LIM***
*Co-Author(s): Kabilan **ELANGOVAN**, Yuan Yuh **LEONG**, Sunny **SHEN**, Licia **TAN**, Shu Wei **TING***

Purpose: Traditional methods for assessing ptosis include clinical measurement of marginal reflex distance (MRD1). This may be identified on external face photographs. Functionally significant ptosis may be demonstrated by superior visual field obstruction the Humphrey Visual Field (HVF). This study examines the use of an Xception deep learning model, towards scale-free classification of functionally significant ptosis based on external eye photographs.

Methods: A total of 771 individual eye images (N=639 with ptosis, N=132 without ptosis) were extracted from 398 masked external face photographs via segmentation with OpenFace, after registration onto a template facial atlas image. The classification of ptosis was based on clinician MRD1 measurements and the presence of significant HVF obstruction. Additional facial images were synthesized with the StyleGAN2 model from CelebFaces data, to obtain more examples of eyes without ptosis for training the Xception model.

Results: Using data exclusively from the original dataset, AUC=0.875 was achieved for the binary classification of ptosis, on 156 individual eye images in the test set (N=129 with ptosis, N=27 without ptosis). With the sampling of additional unique eye images from the StyleGAN2 model to obtain 1000 unique images without ptosis, which is then matched with 1000 oversampled images with ptosis, performance improved to AUC=0.908.

Conclusions: Scale-free binary classification of ptosis is tenable from external eye photographs and may be improved by careful sampling of synthetic facial image data. Facial photography may be an acceptable substitute for in-person diagnosis of functionally significant ptosis.

Poster No.: PO-004

Enhancing Procedural Coding Assignment in Ophthalmology With Open-Source Machine Learning and Natural Language Processing

*First Author: Yong Min **LEE***
*Co-Author(s): Stephen **BACCHI**, Robert **CASSON**, Carmelo **MACRI**, Yiran **TAN***

Purpose: Accurate procedural code assignment holds critical implications in medico-legal, academic, and economic spheres for healthcare providers. This necessitates detailed documentation and extensive manual effort to decipher complex surgical notes, particularly in the specialised field of ophthalmology. This study aimed to develop natural language processing (NLP) models, trained by medical professionals, to automate procedural code assignment based on surgical reports.

Methods: This study retrospectively analysed 1000 ophthalmological operation notes from two metropolitan hospitals over a 12-month period, applying the Medicare Benefits Schedule (MBS) procedural codes. Classification experiments involved creating XGBoost, decision tree, Bidirectional Encoder Representations from Transformers (BERT), and logistic regression models. These models were tested for multi-label and binary classification, with the most accurate model deployed on the hold-out dataset.

Results: The primary procedures were cataract surgery (374 cases), vitrectomy (298 cases), laser therapy (149 cases), trabeculectomy (56 cases), and intravitreal injections (49 cases). Across the dataset, current manual coding accuracy stood at 53.9%. The BERT model exhibited the highest accuracy (88.0%) in multi-label classification for these key procedures. The machine learning algorithm's total reimbursement amounted to $184,689.45 ($923.45 per case), compared to the gold standard of $214,527.50 ($1,072.64 per case).

Conclusions: This study demonstrates NLP-enabled precise classification of ophthalmic operation notes into MBS coding categories. The combined human-machine approach involves leveraging NLP for initial procedure coding, followed by human review for refinement. Expanding this technology through further research and application can facilitate accurate unit activity logging, leading to accurate reimbursements and can play a role in medical training and studying disease epidemiology.

Poster No.: PO-017

Evaluating the Novel Role of ChatGPT in Addressing Corneal Ulcer Queries: An Artificial Intelligence Powered Insight

*First Author: Bharat **GURNANI***
*Co-Author(s): Logesh **BALAKRISHNAN**, Kirandeep **KAUR***

Purpose: This research assessed the efficacy of ChatGPT in delivering precise and valuable insights when addressing inquiries related to corneal ulcers.

Methods: Twelve questions (general, risk factors, etiology, classification, symptom, sign, investigation, treatment, complication, prevention, prognosis, and future) were generated for this cross-sectional study. Each question was entered twice into fresh ChatGPT sessions. Four responses were evaluated by two ophthalmologists (BG and KK). The evaluators individually rated the accuracy and quality of responses on a Likert scale, where a higher score indicated greater quality of information (1: very poor; 2: poor; 3: acceptable; 4: good; 5: very good). The median scores and range for each question were estimated and compared between evaluators.

Results: ChatGPT delivered high-quality answers for 7 questions (median: 4.0), adequate for 2 (median: ≥3.0). and unsatisfactory for 3 questions (median: 2.0). Out of 48 evaluations, 1 answer (2.1%) received a "very good" rating, 48 answers (58.3%) were deemed "good, 9 answers (18.8%) were "acceptable." 10 answers (20.85%) were rated as "poor, " Cronbach's α value of 0.807 shows a strong agreement among the test items. The consistency among evaluators' ratings was also evident, with scores averaging 3.5 ± 0.2 compared to 3.4 ± 0.2. The differences in their scores were not statistically significant (Student's t-test, $p < 0.737$).

Conclusions: ChatGPT overall provides reliable information regarding corneal ulcers. However, instances of inaccuracies highlight the need for a thorough evaluation. It's essential to be aware of these constraints to prevent possible misunderstandings as ChatGPT's knowledge on treatment options is limited to data available up to 2021.

Poster No.: PO-001

Evaluating the Performance of No-Code Artificial Intelligence Solution to Segment Retinal Pathologies From Optical Coherence Tomography Images

*First Author: Laura **GUTIERREZ***
*Co-Author(s): Kabilan **ELANGOVAN**, Daniel **TING***

Purpose: Developing accurate optical coherence tomography (OCT) segmentation models is time-consuming and requires technical expertise and substantial data resources. The aim of this research is to evaluate the effectiveness of a code-free computer vision platform designed to streamline the segmentation of OCT images with a small dataset. Through this evaluation, the study seeks to prove the efficiency of a tool that could bridge the needs of medical doctors with no coding knowledge.

Methods: A computer vision model was engineered to segment the main layers of the retina OCTs with diabetic macular edema (DME) using publicly available OCT image dataset1. The dataset contained 8 images segmented images as the ground truth and testing was done with 10 images. The dataset was uploaded to LandingAI to train and test the segmentation model with no code needed.

Results: The computer vision model demonstrated high differentiation capability in accurately segmenting the respective retinal layers and the intra-retinal fluid. Achieved a precision of 97.2 and recall of 97 with an overall F1 of 97.1 with an assumed threshold of 0.6.

Conclusions: A computer vision model created without code can segment DME retinas with impressive accuracy using a small dataset. Future prospective studies can compare the performance of this model with the traditional deep learning system.

Poster No.: PO-013

Exploring Codeless Approaches in Artificial Intelligence: An Investigation into Transfer Learning and Automated Machine Learning (AML) in the Field of Ophthalmology

*First Author: Suklengmung **BURAGOHAIN***
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Purpose: To make a codeless artificial intelligence model using transfer learning for fundus and optical coherence tomography (OCT) image classification.

Methods: Publicly available datasets of over 400 fundus images and 572 OCT scans were utilised for training of machine learning models on AML platforms such as Apple's CreateML, Google's AutoML, Clarifai and Medicmind.

Results: Google's AutoML resulted in a model with an average accuracy of 0.979 with a precision and recall of 98.21%. Apple's CreateML showed an accuracy of 64%. The model trained on Clarifai showed an average accuracy of 0.951 with a precision of 0.72 and a recall of 0.56. The model trained on Medicmind for diabetic retinopathy grading with inceptionV3 architecture showed a receiver operating characteristic (ROC) area under the curve (AUC) of 0.75.

Conclusions: Utilizing a codeless approach or leveraging Automated Machine Learning (AML) in conjunction with transfer learning manifests the capacity to yield proficient artificial intelligence (AI) models. The strategic integration of transfer learning holds the potential to substantially curtail the time investment required for the training of AI models.

This facet also holds promising implications for AI research, particularly catering to clinicians devoid of programming expertise.

Poster No.: PO-015

Gradeability of Smartphone Fundus Photos in a Virtual Eye Clinic

*First Author: En Qi **TOH***
*Co-Author(s): Eunice **GOH**, Kelvin **LI**, Kok Yao **LOW**, Sumaya Khan **RANI**, Boon Peng **YAP***

Purpose: Smartphone fundus photography (SFP) represents a portable solution for images to be captured and analysed by an optometrist or ophthalmologist. As the success of this technology hinges on the gradability of these photos, this paper aims to explore the gradability of smartphone fundus photos and the causes of ungradable photos.

Methods: Paired bilateral fundus photos of outpatients seen at a virtual eye clinic were taken with a smartphone camera, and an ultra-widefield camera, with the brightness and contrast optimised with an image processing software. The fundus photos were graded according to established reading centre criteria. The causes for ungradable photos were recorded.

Results: SFP of 153 patients with diabetic retinopathy, cataracts, glaucoma or age-related macular degeneration were obtained. Overall, 67.1% of left eye and 64.5% of right eye fundus photos were gradable. Severe obscuration was the most common issue affecting 19.7% of the left and 25.0% of right fundus photos, followed by insufficient focus, particularly of third-order vessels affecting (Left: 12.5%, Right: 9.21%). Uncorrectable overexposure was more commonly seen than uncorrectable underexposure Incorrect positioning affected just 0.66% of photos. A modified grading criteria was used as all photos were ungradable when a criterion requiring a view of the fundus up to one disc diameter beyond the vascular arcade was included.

Conclusions: While smartphone fundus photography still faces issues common to image capture, more than half of the images are considered gradable.

Poster No.: PO-010

Impact of Pupillary Dilation on Retinal Image Quality and AI-Based Diabetic Retinopathy Detection Among Elderly Patients

*First Author: Sanil **JOSEPH***
*Co-Author(s): Mingguang **HE**, Kim **RAMASAMY**, Thulasiraj **RAVILLA**, Balagiri **SUNDAR***

Purpose: The capability of artificial intelligence (AI) to detect diabetic retinopathy (DR) from retinal images is known. However, elderly patients present challenges such as constricted pupils, cataracts, and diminished fixation cooperation. This study aimed to assess the impact of pupillary dilation on retinal image quality and the precision of AI-driven DR detection among elderly individuals.

Methods: We enrolled 100 patients, aged 65 years and older, from an Indian tertiary eye hospital. We used a clinically validated self-testing fundus camera integrated with AI technology. From each patient, we captured two images per eye – one without pupillary dilation and another with dilation achieved using 0.5% tropicamide +2.5% phenylephrine eye drops. We compared the proportion of ungradable images and the diagnostic accuracy of DR detection with and without dilation.

Results: We obtained 197 retinal images from 100 patients with a mean (SD) age of 70 (7.8) years, and 36% were women. The proportion of ungradable images decreased significantly from 33% (n=65) without pupillary dilation to 10% (n=19) with dilation ($p<0.0001$). The AI demonstrated a remarkable level of accuracy in DR detection compared to human grading by a retina specialist with a sensitivity of 87.0% (95% CI: 73.7–95.1), specificity of 88.7% (77.0–95.7), and an AUC of 0.878 (0.813–0.944).

Conclusions: Our findings offer compelling evidence that the utilization of pupillary dilation significantly enhances the gradability of fundus images captured using non-mydriatic fundus cameras among individuals aged 65 years and above. This advancement holds notable potential for the widespread use of this technology among elderly patients.

Poster No.: PO-002

Perception and Attitudes of Eye Patients and Families Towards the Use of Tele-Ophthalmology and Artificial Intelligence (AI)

*First Author: Kelvin **LI***
*Co-Author(s): Wan Xi **HO**, Lay Wai **KHIN**, Vanessa **LEE**, Catherine **YOO***

Purpose: Advancing technology has introduced transformative healthcare methods like telemedicine and AI, with the potential to improve eye care's accessibility and quality. This study aims to investigate patients' perceptions and attitudes towards tele-ophthalmology and AI in eye care.

Methods: Between May and July 2023, a questionnaire study was conducted at Tan Tock Seng Hospital Eye Clinic, assessing patient characteristics such as sociodemographics, technology proficiency, attitudes towards teleophthalmology and AI in healthcare. A 5-point Likert scale gauged participants' agreement with various statements.

Results: A total of 104 patients were surveyed. Telemedicine awareness: 60 participants (58.25%) are aware of telemedicine, with 27 (25.96%) having used it for medical consultations. Only one (1%) consulted an ophthalmologist using telemedicine

before. Telemedicine acceptance: Only 37 participants (35.58%) were willing to use tele-ophthalmology. Among barriers, 45 (43.69%) expressed tele-consults lacked immediate medication provision. AI awareness: 65 participants (63.11%) were familiar with AI, while only 37 (35.58%) recognized AI's implementation in healthcare. AI acceptance: Only 26 participants trusted AI diagnoses, with an equivalent number (25%, n=26) expressing doubts. Most (67.3%, n=70) preferred human doctor-generated outcomes, and a majority (68.26%, n=71) expressed concern about AI influencing doctors' impartial judgments.

Conclusions: While a notable portion of patients were familiar with telemedicine, fewer were acquainted with AI's role in healthcare. Less than half were receptive to tele-ophthalmology, and a similar proportion lacked confidence in AI-generated decisions.

Poster No.: PO-025

Tele-Ophthalmology Versus Face-to-Face Retinal Consultation for Assessment of Diabetic Retinopathy in Diabetes Care Centres in India: A Multicentre Cross-Sectional Study

*First Author: Ramachandran **RAJALAKSHMI***

Purpose: To evaluate the effectiveness of tele-ophthalmology (TO) versus face-to-face screening for diabetic retinopathy (DR) in diabetes care centres (DCC) across India.

Methods: This is a multicentre, cross-sectional study of DR screening for people with diabetes mellitus (PwDM) performed across 35 branches of a chain of DCC in 20 cities in India over one year. In 30 DCC, DR screening was performed by tele-ophthalmology, where retinal images obtained using Fundus on Phone camera were uploaded through the telemedicine network for centralised DR grading by eight retina specialists. In five DCC, DR screening was performed by fundus examination (FE) by the same retina specialists. The rate of detection of sight-threatening DR (STDR) (defined as the presence of proliferative DR and/ or diabetic macular edema) through the two modes was compared.

Results: A total of 58,612 PwDM were screened for DR in 2018; 25,316 by tele-ophthalmology and 33,296 by FE. The mean age of the PwDM screened by tele-ophthalmology was 55.8 ± 11.2 years and in PwDM screened by FE was 57.5 ±11.6 years respectively. Any DR was detected in 31.7% (95% CI 31.0-32.3) by tele-screening and in 38.5% (95% CI 37.9-39.0) PwDM by FE, while STDR was detected in 7.3% (95% CI 7.0-7.7) by tele-ophthalmology and in 10.5% (95% CI 10.2-10.9) PwDM by FE. Overall, 11.4% of PwDM in the tele-ophthalmology group, including 4.1% with ungradable images, were advised for referral to retina specialists for further management.

Conclusions: Screening for DR at DCC using tele-ophthalmology is feasible and effective for STDR detection in India and may be adopted throughout India.

Poster No.: PO-007

Towards Generalist Foundation Model AI in Ophthalmology

*First Author: Jian **WU***
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Purpose: Foundation models, or in other words, large artificial intelligence (AI) models, such as ChatGPT, are emerging with generalist intelligence that can solve various tasks with remarkable performance. Here, we aim to present VisionFM, a generalist AI foundation model pre-trained multiple model images, then provide a foundation to foster multiple ophthalmic applications, such as disease diagnosis, disease progression forecasting, lesion/biomarker segmentation and detection, and health indicator prediction.

Methods: Our model processes eight different ophthalmic modalities and solves 19 different tasks. It was developed by first pre-training with 3.4 million images from 560,457 individuals and then supervised fine-tuning on multiple ophthalmic tasks. A novel multi-modal alignment module was developed to learn the associations between different modalities to endow VisionFM with the same capability as ophthalmologists who, in clinical practices, would use multiple imaging modalities for decision-making.

Results: VisionFM demonstrates an overall 94.5% AUC for recognizing/grading 9 different ophthalmic diseases, and an accuracy of 78.6% for predicting diverse health indicators. VisionFM also shows generalist skills in segmenting different biomarkers and lesions from different ophthalmic imaging modalities. Experiments also show that using synthetic images is able to enhance model performance. In addition, we conducted visual Turing tests to examine the quality of synthetic images, and the results revealed that the synthetic images are barely distinguishable from real ones, even for trained clinicians.

Conclusions: We present the first AI foundation model for ophthalmology, i.e., VisionFM, which is able to process multiple ophthalmic imaging modalities to provide generalist ophthalmic diagnostics, tackling various downstream ophthalmic tasks and challenges.

Poster No.: PO-003

Translation of Color Fundus Photography Into High-Resolution Indocyanine Green Angiography Image Using Deep Learning for Age-Related Macular Degeneration Screening

*First Author: Danli **SHI***
*Co-Author(s): Mingguang **HE***

Purpose: To develop and validate a deep-learning model capable of generating realistic ICGA images from color fundus photography (CF).

Methods: We trained a generative adversarial network (GAN) using 99,002 paired images of CF and ICGA from early-phase, mid-phase, and late-phase in a tertiary center. The quality of generated ICGA images was evaluated objectively by common image generation metrics, and subjectively by two experienced ophthalmologists on 50 sets from internal and external datasets, respectively, graded on a scale of 1–5. Global similarity, the realism of anatomical structures, and fluorescence pathological lesions were considered. Moreover, we validated the clinical utility of the translated ICGA by calculating the area under the ROC curve (AUC) in classifying AMD on the Labelme dataset.

Results: The structural similarity scores of the translated ICGA images were approximately 0.6, and the subjective quality scores ranged from 1.46-2.74 on a five-point scale (1 refers to the image quality of the real ICGA image). Both ophthalmologists indicated similar quality scores with substantial agreement (kappas ranged from 0.79–0.84). Adding the generated ICGA on top of CF improved AMD classification in the Labelme dataset, with the AUC increasing from 0.94 to 0.97.

Conclusions: To the best of our knowledge, this is the first study to perform realistic CF-to-ICGA translation. Moreover, adding the translated ICGA images on top of CF improved the accuracy of AMD screening. Suggesting the potential of CF-to-ICGA as an effective add-on for large-scale AMD screening and a supplementary tool for the diagnosis of several chorioretinal diseases.

Poster No.: PO-016

Use of Accessible Apps on Smartphones Among People With Visual Impairment: A Hospital-Based Cross-Sectional Study

*First Author: Senjam **SINGH***
*Co-Author(s): Vivek **GUPTA**, Jeewan **TITIYAL**, Praveen **VASHIST***

Purpose: Background: Using smartphone-accessible applications among visually challenged people can help in many daily solutions. Aim: The present study aimed to assess the use of accessible applications on a smartphone among visually challenged patients attending the vision rehabilitation clinic (LVR) of a tertiary eyecare center.

Methods: Patients aged 18 years and above with visual disabilities were recruited consecutively in the LVR of a tertiary eye care center from January to March 2023. Information on the use of smartphones and different types of accessible applications was collected using semi-structured interviews. Apps were categorized as special apps (accessible) and mainstream apps.

Results: In total,115 patients with visual disabilities were interviewed in the study. The mean age was 26.3 years (SD 12.8). A total of 28 (24.6%) of respondents were dependent on family members to do daily routine activities. Of the 98 mobile users, 87 (88.8%) of them used smartphones, and 35 (40.2%) used a special app. Further, 28 (32.2%) of the participants did not know the operating system of smartphones. A total of 75 special apps were utilized. InstaReader (20%), KiBo (16%) apps for total blindness, and Visor (14.7%) for low vision were the most common. Younger age groups, higher education, and unmarried were significantly associated with special apps used. Communication, reading, reminders, and entertainment were the most common activities that employed special apps. 109 (95.4%) were interested in learning special app use.

Conclusions: Many visually challenged people are not able to get benefits from special apps, though these apps are widely available.

Academia, Research, Teaching and Education in Ophthalmology

Poster No.: PO-029

A Randomized Trial Comparing a Flipped Classroom Case Learning (FCCL) Module Versus a Traditional Lecture-Based (TLB) Module to Teach Ophthalmology in Medical School

*First Author: Poemen **CHAN***

Purpose: To evaluate the applicability of an FCCL module for a compulsory 5-day ophthalmology course in medical school.

Methods: We randomized final-year medical students to undergo a 5-day FCCL (consisting of the flipped classroom [FC], online gamified clinical cases [OGCC], and case-based learning [CBL]) or TLB ophthalmology module. Their subjective (student-rated anonymous Likert scale questionnaires [ALSQ] and course and teaching evaluation [CTE]) and objective outcomes (end-of-rotation and post-MBChB multiple-choice questions [MCQ]) were compared.

Results: A total of 216 students (108 in each group) completed the course, and outcomes were analyzed. For the ALSQ, the FCCL group scored higher for the clarity and helpfulness of the course materials for preparation and understanding (all P≤0.002). They felt more enthusiastic, more encouraged to ask questions, and communicated better among students and tutors (all P<0.001). The course assignment helped their learning (P<0.001). They gave higher ALSQ scores for instructional methods, course outcomes, course workload (P<0.001), and higher CTE scores to the tutors (5.7±0.6 vs. 5.0±1.0, P<0.001). The FCCL group scored higher than the TLB group for the end-of-rotation MCQ (53.6±3.1 vs. 51.8±2.8, P<0.001). Thirty-two FCCL students and 36 TLB students were reassessed after a mean of 21.3±6.7 and 19.5±6.7 weeks of the rotation, respectively (P=0.286); the FCCL group scored higher (40.3±9.1) than the TLB group (34.3±10.9, P=0.018).

Conclusions: Applying the FCCL module in ophthalmology teaching enhanced medical students' satisfaction, examination performance, and knowledge retention.

Poster No.: PO-036

Aqueous Penetration and Biological Activity of Original and Generic Moxifloxacin 0.5% Ophthalmic Solution in Cataract Surgery Patients

*First Author: Abhibol **INOBHAS***

Purpose: To evaluate the aqueous penetration and biological activity of original (Vigamox®) and generic products (Svoz®) of 0.5% moxifloxacin eye drop by measuring the perioperative aqueous concentration of moxifloxacin in cataract surgery patients.

Methods: A total of 114 eyes were recruited. Each eye was assigned to receive 0.5% moxifloxacin eye drops (original or generic) before surgery. Seventy aqueous samples were determined using the broth microdilution method, and 44 aqueous samples were determined using the high-performance liquid chromatography (HPLC) method. The biological activity of the aqueous specimen against S. epidermidis was evaluated. Bioequivalence was defined as the 90% confidence interval (CI) of the difference bounded by 0.8 - 1.25.

Results: In the broth microdilution method, all aqueous samples achieved the MICs for S. epidermidis, Enterococci sp., S. aureus, and S. pneumoniae. There was no significant difference in moxifloxacin concentration in the aqueous humor samples between the original and generic groups (P value = 0.951, 90% CI of difference: -0.19 - 0.20). Similarly, in the HPLC method, there were no significant differences in the concentration of moxifloxacin in all aqueous humor samples (P value = 0.538, 90% CI difference: 0.92 - 1.19).

Conclusions: There was no significant difference in the concentration of moxifloxacin in the aqueous samples from broth microdilution and the HLPC method between the original and generic groups.

Poster No.: PO-041

Association of VEGF-A Gene Polymorphisms With Response to Anti-VEGF Therapy in Age-Related Macular Degeneration

*First Author: Ariunzaya **ALTANKHUYAG***

Purpose: Therefore, we investigated the associations between the rs833061, rs1413711, rs2010963, rs144854329 and rs2146323 polymorphisms of vascular endothelial growth factor (VEGF) and AMD with its therapeutic results.

Methods: In this study, we used allele-specific PCR method for rs1413711, rs2010963, rs144854329, rs2146323 polymorphisms and detected rs833061 polymorphism by restriction fragment length polymorphism (RFLP) method. The control study included 161 people with AMD, of which 34 cases were treated out of 66 cases with wet AMD. Statistical analysis was performed by SNPalyze software.

Results: We did not find statistically significant differences in allele and genotype frequencies of the 5 polymorphisms of the VEGF-A gene between patients and controls. The haplotype analysis of five polymorphisms of VEGF-A gene was compared within groups suggesting that C-C-C-Ins-C haplotype (OR=0.10, 95% CI, 0.005-1.98, p=0.041) had protective effect on AMD. A comparative study of polymorphisms in therapeutic and non-therapeutic groups revealed statistically significant differences in the G/G groups of rs2010963 polymorphisms.

Conclusions: According to the above results, the C-C-C-Ins-C haplotype was identified in the study groups as having a protective effect on AMD. Also, people with the G/G genotype of rs2010963 polymorphism are more effective in treatment than people with other genotypes.

Poster No.: PO-027

Axial Elongation Trajectories in Chinese Children and Adults With High Myopia: An Eight-Year Prospective Cohort Study

*First Author: Shiran **ZHANG***
*Co-Author(s): Xiaotong **HAN**, Mingguang **HE***

Purpose: To evaluate the longitudinal axial elongation trajectories and related visual outcomes in highly myopic children and adults.

Methods: This was a prospective study. High myopes (spherical power ≤ -6.00 diopters) were followed up every other year for eight years, and those with available axial length (AL) measurement at baseline and

at least one follow-up visit were included. Partitioning clustering analysis was used to identify different AL elongation trajectories, and a linear mixed model was used to calculate AL progression rates.

Results: A total of 835 participants (median age: 17.7 [range: 6.75 to 69.7] years, 54% female) were included. Using PCA, three AL progression trajectories were identified, with the stable, moderate, and rapid progression trajectory having an AL elongation rate of -0.004 (95% CI: -0.01 to 0.004), 0.09 (95% CI: 0.07 to 0.10) and 0.37 (95% CI: 0.33 to 0.42) mm/y, respectively. Younger age, longer AL, the presence of pathological myopic macular degeneration (MMD, defined as Category 2 or above) at baseline, and family history of myopia were risk factors for being in a faster progression trajectory. The rapid progression trajectory was associated with a 9.8 times higher risk for pathological MMD (OR=10.8, 95% CI: 1.78 to 66.1, P=0.010) and worse best-corrected visual acuity (β=0.05, 95%CI=0.01 to 0.09, P=0.011) at the 8-year follow-up compared to the steady progression group.

Conclusions: Significant heterogeneity exists in axial elongation trajectories from childhood to late adulthood in high myopia. The rapid progression trajectory carries a higher risk of poor visual prognosis.

Poster No.: PO-042

Back to Basics – A Masquerade Syndrome

*First Author: Noor **UL AIN***
*Co-Author(s): Tayyaba **MALIK***

Purpose: To see the significance of history and clinical examination in patients of peripheral vision loss.

Methods: A 60-year-old lady presented with gradual constriction of peripheral vision in both eyes for 16 years. Her history dated back to 2006, when a trabeculectomy was done in her left eye and she was using anti-glaucoma drugs in her right eye irregularly. The patient presented to us in 2022 with 6/9 and 6/18 vision in the right and left respectively. Intra-ocular pressure was 16mm for the right eye and 18mm for the left eye. Central Corneal Thickness was normal. Gonioscopy showed grade 3 open angle in both eyes. Ophthalmoscopy showed peripheral circular patches of chorioretinal degeneration with RPE hyperpigmentation. Visual field defect in the right eye was more marked compared with her previous tests. The constriction of visual fields leading to tunnel vision along with an open angle, normal intraocular pressure, no increase in CD ratio, patches of chorioretinal degeneration with RPE hyperpigmentation brought us to the diagnosis of gyrate atrophy,

Results: The patient underwent glaucoma surgery only on the basis of periphreral visual field constriction and very cursory ocular examination. A detailed history and complete examination earlier of this patient could have prevented her from all the unnecessary investigations and unjustified trabeculectomy.

Conclusions: A detailed history and meticulous clinical examination are necessary for all patients with peripheral visual field constriction. All differentials should be ruled out on the basis of history, examination and investigations to reach a final diagnosis.

Poster No.: PO-026

Comparison of Complications and Outcomes of Pediatric Cataract Surgery After Early Versus Late Removal of 10–0 Nylon Sutures

*First Author: Abhilasha **KUMARI***
*Co-Author(s): Parul Chawla **GUPTA***

Purpose: To compare the complications and outcomes of early versus late removal of 10-0 nylon sutures in pediatric patients undergoing phacoemulsification for bilateral congenital or developmental cataract through a contralateral eye study.

Methods: This was a prospective, interventional, randomized controlled trial on 58 eyes of 29 patients. All children up to 8 years of age with bilateral congenital or developmental cataract underwent cataract surgery with a surgical incision closure by non-absorbable 10-0 nylon sutures followed by suture removal at 2 weeks (early group) after cataract surgery in their first eye and at 6 weeks (late group) after surgery in their second eye. The frequency of suture-related complications (vascularization near to suture, loosening of suture, mucus accumulation, early rupture, and infective keratitis, endophthalmitis) was noted for the two groups. ASOCT and Refraction were done to assess the structure of surgical incision, keratometry, and astigmatism for the two groups.

Results: All children were followed up until 6 weeks post-suture removal in the second eye. Between the two groups, the rate of suture-related complications was higher for patients with late removal as compared to those with early removal. ASOCT also shows comparable healing of surgical incision attributes like Endothelial gape, Descemet membrane detachment, Epithelial misalignment, Epithelial gape, and Stromal edema in both groups.

Conclusions: 10-0 Nylon suture, if removed early, is associated with lower rates of suture-related complications in pediatric cataract surgery. ASOCT study of surgical wound architecture shows acceptable healing of the same for suture removal in 2 weeks.

Poster No.: PO-037

Competency-Based Training on Eye Surgery Simulator

*First Author: Chetan **AHIWALAY***
*Co-Author(s): Ashish **BACCHAV**, Kimaya **CHAVAN***

Purpose: To investigate the progress of 35 trainees trained on an eye surgery simulator to understand their learning curve using the performance parameters and the reports generated by the simulator.

Methods: Training reports of 35 trainees were evaluated from the simulator for three key MSICS steps (Tunnel dissection, Capsulorrhexsis, and Cortex removal). Each trainee attempt on the simulator is given a Satisfactory/Unsatisfactory grade based on the outcomes measured using the various performance parameters for each step. The percentage of satisfactory attempts for each trainee is tracked through the practice sessions and at the end of the course assessments to study the trends in the improvement of skills.

Results: All 35 trainees reached the desired level of competency at the end of the training period, as demonstrated by their performance at the end of the course assessments on the simulator.

Conclusions: Competency-based training and objective assessment of surgical skills in cataract surgery are desirable for qualification and certification purposes. The performance evaluation matrix and scores from the Simulator provide a framework necessary to deliver competency-based training. Simulator, with its meaningful performance parameters, can make competency-based training a real possibility in ophthalmic surgical training.

Poster No.: PO-044

Continuous Curvilinear Capsulorhexis Using a Modified Bandage Contact Lens: A Sigh of Relief for First Year Post-graduate Residents?

*First Author: Shaibaan **MULLA***

Purpose: To define the utility of modified bandage contact lens as a guide marker for performing continuous curvilinear capsulorhexis (CCC) during phacoemulsification by a first-year postgraduate ophthalmology trainee.

Methods: The bandage contact lens (BCL) is trephined using a 6mm corneal trephine. The BCL used in this study was the Bausch + Lomb PureVision2 Balafilcon A (©2020 Bausch + Lomb, USA) with aspheric optics, base curve 8.6mm, lens diameter 14mm, optical zone 9.00mm @ −0.50D and central thickness 0.07mm for the optical zone. Intraoperatively, the anterior capsule was stained through the side port using 0.06% trypan blue. After topical or peribulbar block (as the case may be), the 6mm-guide-marker (trephined BCL) is placed on the cornea. The CCC is then completed using the edge of the contact lens as a guide for CCC.

Results: There is a paucity of simple, single-use, easily portable, cost-effective and affordable devices designed especially for performing CCCs in a safe and reproducible way. In our technique, the bandage contact lens (BCL) is trephined using a 6mm corneal trephine. After topical or peribulbar block (as the case may be), the 6mm-guide-marker (trephined BCL) is placed on the cornea. The CCC is then completed using the edge of the contact lens as a guide for CCC.

Conclusions: CCC with a contact lens guide marker is expected to yield better results in carrying out the procedure more accurately, being closer to the target in terms of size, circularity, and centration as compared to contact-lens-unassisted conventional CCC. This would eventually facilitate better surgical outcomes, and we recommend this to be applied as the standard protocol for first-year post-graduate ophthalmology residents performing the surgery.

Poster No.: PO-032

Digital Media on Health Education in Ophthalmic Disorders: Are We on the Right Track?

*First Author: Madhuwanthi **DISSANAYAKE***

Purpose: In a rapidly evolving digital landscape, the successful utilization of digital media plays a pivotal role as a transformative tool to enhance health education. This study was conducted to assess the feasibility and cost-effectiveness of the utilization of diverse digital platforms, including Zoom webinars, social media posts, and short videos, to disseminate awareness of ophthalmic disorders among medical students, junior doctors, and the public.

Methods: Zoom webinars, social media posts, and mobile phone recorded videos were developed and disseminated among doctors, medical students, and the public using several platforms.

Results: Zoom webinars emerged as a popular medium for facilitating interactive learning with a platform to exchange cutting-edge research and clinical insights for doctors as well as medical students, cultivating an environment conducive to continuous learning. Live participation was over 40 and more numbers had viewed it later. Concurrent use of social media platforms played a pivotal role in disseminating key health messages. Carefully designed posts, enriched with informative yet concise information, effectively penetrated a wider community. Videos were on common ophthalmic disorders. The widespread accessibility of these videos on personal devices facilitated self-paced learning. After publishing within the first 24 hours, there were more than 200 views, and the count is increasing. The cost involved was nominal for all the products with supportive collaborations.

Conclusions: This study highlights the transformative potential of digital media and the effectivity of symbiotic deployment of Zoom webinars, social media posts, and mobile phone-recorded videos in expanding the horizons of ophthalmic health education.

Poster No.: PO-031

Evaluation of YouTube Videos for Information and Education on Amblyopia

First Author: Hennaav ***DHILLON***
Co-Author(s): Itisha ***GOEL****, Parul* ***ICHHPUJANI****, Ujjwal Prakash* ***JHA****, Uday Pratap Singh* ***PARMAR***

Purpose: YouTube is a popular social media platform accessed by people to obtain relevant health and disease-related information. The purpose of this study was to evaluate YouTube videos as a source of information on Amblyopia.

Methods: In this prospective, cross-sectional study, a YouTube search was conducted using 3 keywords, "lazy eye", "amblyopia" and "lazy eye treatment", on 26th January, 2022. Video quality assessment was done using Modified DISCERN (mDISCERN), Global Quality Score and the Health on the Net Foundation Code of Conduct (HON code) scale. Video content was analysed as health professional and non-health professional, video length, release date, daily view count and Video Power Index. The relationship between the groups and video quality was evaluated.

Results: Of the 300 initial videos investigated for the study, 219 videos met the inclusion criteria and were subjected to statistical analysis. Nearly 50% of videos contained content related to medical education. More than half of the videos analysed (130; 59.36%) were uploaded by healthcare professionals (HCP). The mDISCERN mean ± SD score for the videos was 2.65 ± 1.24, for JAMA scoring was 2.37 ± 1.02 and for the HON code was 3.72 ± 1.75. All scoring systems were better for HCP as compared to non-healthcare professionals (NHCP).

Conclusions: A wide variety of information about Amblyopia is available on YouTube.™ Videos uploaded by NHCP had suboptimal flow as well as information of limited use to patients.

Poster No.: PO-039

Factors Empowering Women to Achieve Success in Academic Oculofacial Plastic Surgery

First Author: Tiffany ***HU***
Co-Author(s): Elaine ***DOWNIE****, Kendall* ***GOODYEAR****, Daniel* ***ROOTMAN****, Kelsey* ***ROELOFS***

Purpose: Although women have achieved greater representation in ophthalmology, gender inequalities still exist. The majority of research has focused on barriers faced by women. Comparatively few studies focused on qualities needed to achieve success. This study explores the definition of success and identifies characteristics empowering women to achieve success, with the goal of supporting the next generation of women.

Methods: A descriptive phenomenological qualitative study was designed. Female ASOPRS members were interviewed. Using an inductive approach to thematic analysis, the research team independently reviewed and coded interview transcripts. Themes were aggregated and agreed upon by consensus.

Results: Seven women in academic oculoplastic surgery participated. Their definition of success varied widely, from satisfaction, meaningful impact, achieving personal goals, to finding balance in life. Themes were mirrored between 'helper' and 'barrier' to success. The most ubiquitously discussed theme for empowering success was that of mentorship and role models: "finding good mentors was incredibly important" "…having gratitude, recognizing that you don't get anywhere by yourself." Participants discussed the importance of self-advocacy, capitalizing on strengths, and cross-roads where timing, luck, and opportunity collide with hard work and drive. Senior participants noted gender bias improved throughout their careers, while junior faculty reported: "My gender wasn't a barrier until I had children, then I was perceived as being less hard working."

Conclusions: This qualitative study revealed achieving a personally defined balance of life and career was perhaps the definition of success. Mentorship was the universally agreed upon 'helper' empowering women to achieve success in academic oculofacial plastic surgery.

Poster No.: PO-034

Head-Mounted Display (HMD) Assistive Technology for Low Vision and Vision Rehabilitation: An Expert Perspective

First Author: Senjam ***SINGH***
Co-Author(s): Sneha ***AGGARWAL****, Radhika* ***TANDON***

Purpose: In recent years, head-mounted display (HMD) assistive devices have gained global attention in terms of low vision and rehabilitation management. To date, HMD devices have become one of the most advanced electronic-based wearable assistive devices that can enhance the residual vision of people suffering from low vision.

Methods: Experts' perspective. Based on the low vision and rehabilitation experts, an overview of the current HMD devices is presented, supplemented with literature in the field.

Results: The incorporation of Augmented and Virtual Reality or mixed-reality computer technology helps image processing systems. the HMD devices provide magnification, contrast sensitivity enhancement,

illumination, increased field of view by minification process, color inversion, and auto-focus technology at all distances. The device augments to improve the person's visual function. Further, many such devices, but not all, also have built-in Optical Character Recognition software for text-to-speech output, Artificial intelligence for face recognition, and object identification. The application of HMD technology in low vision and rehabilitation practices will be a new opportunity to extend additional benefits to those individuals with low vision that may not be addressed by traditional assistive devices.

Conclusions: HMD technology, with more advanced computer technology and image processing and remapping strategies, can potentially provide a breakthrough in the management of individuals with low vision.

Poster No.: PO-040

Improving Undergraduate Ophthalmoscopy Education Using Novel Device Compared to Current Traditional Model (I-OPEN)

*First Author: Tina **SHEN***
*Co-Author(s): Yew Sen **YUEN***

Purpose: Medical students and physicians often report a lack of proficiency and self-confidence in performing direct ophthalmoscopy. The current training model comes with film inserts that are difficult to visualize for trainees. The aim of this study is to evaluate if direct ophthalmoscopy training is more effective with a new insert backlit with a light-emitting diode (LED) compared to a traditional insert using the EYE Examination Simulator®.

Methods: This prospective study included both undergraduate medical students and practising physicians recruited over 2 months. Each participant performed direct ophthalmoscopy with both the traditional and LED inserts in the same mannequin, and filled out a questionnaire assessing perceptions and the ability to visualise the fundus.

Results: 38 participants were recruited, including 15 medical students and 23 doctors. Visualisation of the optic disc and macula improved by 15.8% and 13.6%, respectively, with the LED insert. More participants could visualize the different parts of the retina with the LED insert as well. The mean confidence level improved significantly by 3.62 ± 2.34 ($P < 0.001$), with mean ease of viewing improving by 3.51 ± 2.77 ($P < 0.001$) and a reduction of the mean level of frustration by 4.46 ± 2.53 ($P < 0.001$). 21 out of 23 physicians felt the LED insert gave a closer approximation to the human fundus.

Conclusions: The LED inserts yielded positive results. Hence, they can be considered for incorporation into direct ophthalmoscopy training with the existing simulation model. Further study can be performed to evaluate its effectiveness in indirect ophthalmoscopy training as well.

Poster No.: PO-033

Mitochondrial Histidine Phosphatase LHPP Suppresses Uveal Melanoma Oncogenesis by Reducing Aconitase ACO2 Histidine Phosphorylation in TCA Cycle

*First Author: Zhi **YANG***
*Co-Author(s): Shengfang **GE***

Purpose: As the most common primary ocular malignancy in adults, uveal melanoma (UM) is closely related to canonical serine, threonine and tyrosine phosphorylation of proteins. However, the role of the hidden phosphoproteome, histidine phosphorylation (pHis), in uveal melanomagenesis remains unclear. This study aimed to demonstrate the function of pHis modification and the phosphatase LHPP in UM.

Methods: Clinical UM tissues and cell lines were used to detect global pHis level and LHPP expression pattern and for further prognosis analysis. Overexpression of LHPP by lentivirus was used to assess the potential therapeutical effect for both in vitro and in intraocular xenograft mouse. Transcriptomic scRNA-seq was performed to identify the metabolic role of LHPP in UM. Proteomic LC/MS, coimmunoprecipitation (co-IP), and AlphaFold-based protein docking were used for the screening and identification of the pHis substrate of LHPP. LHPP knockout mouse, transmission electron microscopy, and aconitase enzyme assay were used to evaluate the function of LHPP and pHis in the lipid metabolism process in the mitochondrion.

Results: (1) High histidine phosphorylation is a poor prognosis feature in uveal melanoma. (2) Reexpression of decreased histidine phosphatase LHPP inhibits UM growth. (3) LHPP is a mitochondrial protein correlated with lipid metabolism. (4) Identification of mitochondrial aconitase ACO2 as the substrate of LHPP. (5) pHis of ACO2 H73 site is enzymatic activity-involved and pathogenic in UM. 6)LHPP knockout mice exhibit lipid metabolism dysfunction in the eyes.

Conclusions: These findings indicate an oncogenic role of histidine phosphorylation and tumor suppressor role of mitochondrial LHPP in UM and provide novel metabolism-related insight into the noncanonical pHis modification in tumorigenesis.

Poster No.: PO-028

Myopia Progression in Children Wearing Multiple Segments Peripheral Defocus Spectacle Lenses

*First Author: Yangfei **PANG***
*Co-Author(s): Jinrong **LI**, Qingqing **YE**, Wentong **YU**, Yudan **ZHONG***

Purpose: To review myopia progression in children who wore multiple segments peripheral defocus spectacle lenses over 6 mouths, and to study the impact of frequent follow-up on the myopia progression.

Methods: This is a retrospective study that collected data from electronic medical records of 317 children aged 3 to 17 who wore multiple segments peripheral defocus spectacle lenses. Information such as age, gender, refraction, and visit time were included. The spherical equivalent (SE), determined by subjective refraction, was adopted to assess the myopia progression. Only the data from the right eyes was included. The data were categorized into subdatasets based on the follow-up intervals: 3-month (n=115), 6-month (n=159), 3-and 6-month (n=47), and 6-month only (n=109). A patient could belong to one or more sub-datasets depending on their participation in follow-up visits. Independent t-tests, Wilcoxon signed-rank tests, and Chi-square tests were employed to determine differences in myopia progression between the two groups.

Results: Myopia progression was -0.06±0.12 D (P<0.01) in the 3-month subdataset, and -0.14±0.23 D (P<0.01) in the 6-month subdataset. In the 3- and 6-month sub-dataset, 36.2% (17/47) experienced a progression of more than 0.00D in 6 months, while 43.1% (47/109) in the 6-month only sub-dataset progressed more than 0.00D in 6 months. However, there was no significant difference in myopia progression between the two groups (chi-square=0.655, p=0.418).

Conclusions: By comparing the progression of myopia wearing single vision spectacle lenses, multiple segments peripheral defocus spectacle lenses can moderately slow myopia progression. However, it is not yet proven whether frequent reviews have any impact on myopic progression.

Poster No.: PO-030

Objective Assessment of Simulated Surgical Outcomes Using an MSICS Virtual Reality Simulator

*First Author: Tony **KOSHY***
*Co-Author(s): Senthil **PRASAD**, Sankarananthan **R**, Madhu **SEKHAR***

Purpose: To evaluate the performance of trainees across 6 modules of a virtual reality simulator (VRS).

Methods: A retrospective study was done on 10 candidates who practiced Manual small incision cataract surgery (MSICS) on a VRS for 1 month. Six modules were assessed, which included scleral groove, sclero-corneal tunnel dissection, keratome entry, capsulorhexis, nucleus delivery, and IOL insertion. 30 attempts were evaluated for scleral groove, tunnel dissection, capsulorhexis, and 15 for AC entry.

Results: A mean satisfactory score of 3.1± 4.17, 6.8±5.75, 5.8±7.74 and 1.8±2.57 was achieved for scleral groove, sclero-corneal tunnel dissection, capsulorhexis, and keratome entry respectively but the dimensional aspects of the steps and complication rates had variable outcomes. The proportions of the sclero-corneal tunnel and keratome entry into the anterior chamber (AC) were generally superior in their dimensional aspects, but were fraught with complexities and architectural issues with perforation and laceration of tunnel lip during sclero-corneal tunnel dissection and endothelial touch during keratome entry being more common. Similarly, the dimensions of capsulorhexis in the VRS were adequate more often than the complication rates, resulting in a lower satisfactory score. Nucleus delivery (n=5) had iris pull, and IOL insertion (n=5) had lost IOL as major complications but had a better final satisfactory outcome.

Conclusions: A VR simulator is a useful tool for training surgeons and for objectively evaluating each step in MSICS and their associated complications, helping surgeons improve their surgical skills.

Poster No.: PO-035

Peer-Reviewed Publication of Abstracts Presented at the 44th Indonesian Ophthalmologists Association Annual Scientific Meeting

*First Author: Muhammad **IRFAN***

Purpose: More than half of the research findings that were presented as an abstract in ophthalmic scientific meetings were not published as full-text manuscripts in peer-reviewed journals within 2 years. More than 300 abstracts were presented annually at the Indonesian Ophthalmologists Association (IOA) annual scientific meeting. There are no data regarding publication rates from ophthalmic meetings in Indonesia yet. This study aimed to investigate the publication of scientific research presented at the 44th IOA Annual Scientific Meeting.

Methods: Abstracts submitted in the IOA annual scientific meeting were identified and retrieved from the IOA meeting proceeding book. A thorough literature search was conducted using PubMed, Google Scholar, and Google search engine. Author names, keywords, and titles of the abstract were used to match the IOA abstracts with published papers.

Results: A total of 352 abstracts presented were reviewed, and 17 (4,38%) abstracts were found to match the published paper in a peer-reviewed journal. Three of them (17,65%) were published in PubMed-indexed journals. The median publication time is 7 months. Title changes were found in four papers (23,53%), and author changes were found in eight papers (47,06%). Glaucoma subspecialty (14,71%) and experimental design study (10,42%) have the highest rate of publication.

Conclusions: Less than five percent of abstracts presented at the IOA annual scientific meeting culminated in publication in a peer-reviewed journal within one year after the submission. Author interest and motivation are possibly related to the lower publication rate. A short study period could also be subject to bias. Studies with longer periods of time and larger sample sizes may be required.

Poster No.: PO-038

Pioneering the Retina In-Service Exam for Retina Fellowship Trainees in the Philippines

*First Author: Jubaida **AQUINO***

Purpose: This project aimed to pioneer an in-training exam for fellows of the vitreo-retina fellowship training programs in the Philippines.

Methods: The Program Directors (PD) of the Vitreo-Retina Fellowship training institutions in the Philippines were convened to serve as the In-Service Exam Writing Committee. Construction of the exam was underway, and the exam was conducted using the ClassMarker online platform and Zoom Video-Conferencing. The percent correct for each examinee was noted. The mean for all examinees (overall mean), mean for each curriculum type and year level, and content domain were also determined. A post-test survey was also conducted.

Results: Seventeen out of 21 vitreo-retina fellows in the Philippines participated in the exam. Ten are from Year Level I, while 13 are under the separate medical and surgical retina curriculum. The overall mean (SD) was 51.12 (9.68), and the median (IQR) was 40 (44-56). The curriculum type subgroup analysis showed that fellows under the Simultaneous Curriculum scored slightly better than in the Separate Curriculum, while the year level subgroup analysis showed almost similar scores in both year levels. The exam was moderately difficult, with a mean Difficulty Index = 0.51. A post-test survey from examinees showed positive feedback, while the Program Directors believed that the exam contributed to the learning process of the fellows.

Conclusions: This is the first Retina In-Service Exam in the Philippines and because of the utility of the exam, the RISE Writing Committee decided to adopt the endeavor annually.

Poster No.: PO-045

Real-world Implementation of Deep Learning to Identify the Early Onset of Myopia in Children Using Fundus Imaging

*First Author: Yong **LI***
*Co-Author(s): Marcus **ANG**, Joey **CHUNG**, Daniel **TING**, Angeline **TOH***

Purpose: To identify the early onset of myopia in children for timely assessment and intervention, delaying myopia onset in childhood through the development and real-world implementation of deep learning models.

Methods: Using a school-based cohort in Singapore comprising 1979 children (aged 6–12 years old), we train and perform primary validation of the deep learning models using fundus images of 2513 eyes. An independent testing dataset, comprising 1000 fundus photos, was collected prospectively from a cohort of 500 children (aged 5-8 years old) in a real-world clinical setting. The models were trained to identify the early onset of myopia (≤ -0.50 D) in children. Model performance was evaluated using the area under the receiver operating curve (AUC). Different explainable AI (XAI) techniques were applied to identify the areas of interest in fundus photos.

Results: Based on fundus imaging only, our deep learning models achieved clinically acceptable performance in a real-world clinical setting with AUC of 0.86 (95% CI 0.81-0.91) in the internal validation dataset and 0.65 (95% CI 0.61-0.69) in the external validation dataset. We also successfully used different XAI techniques to highlight the areas of interest in fundus photos.

Conclusions: Our deep learning models enable the identification of the early onset of myopia in children in a real-world clinical setting. It has the potential to be used as a clinical assistive tool to identify young children “at-risk” of developing myopia with greater precision, which allows for early assessment and intervention to delay the onset of myopia.

Poster No.: PO-043

Responder of Sleep Apnea Treatment Can Be Classified by Ocular Microcirculation Using Laser Speckle Flowgraphy

*First Author: Mao **TAKAHASHI***

Purpose: Recently, obstructive sleep apnea (OSA) has been reported as a risk factor for atherosclerosis. But it is difficult to predict the responder of sleep apnea treatment for atherosclerosis. We examined whether there are differences in the effect of OSA treatment on atherosclerosis by ocular microcirculation.

Methods: Subjects were 109 patients with sleep apnea diagnosed with attended polysomnography in

Japan. Subjects were treated with continuous positive airway pressure (CPAP) for 1 year. All subjects had eye checks on ocular microcirculation using laser speckle flowgraphy before CPAP treatment. Ocular microcirculation was estimated by mean blow rate (MBR) and blow out time (BOT). The influence of CPAP treatment for atherosclerosis was defined by a change of intima-media thickness (IMT) using carotid ultrasonography.

Results: The mean IMT did not correlate to age, body mass index, and severity of OSA in the first health check data. The mean IMT was decreased significantly after 1 year of CPAP treatment (0.84±0.6 to 0.82±0.7 $p<0.05$). There was no relationship for change of mean IMT in age, blood pressure, and estimated glomerular filtration rate (eGFR) at the first health check. Correlating factors for change of mean IMT were high IMT, body mass index, Hba1c, BOT, and severity of OSA ($r=-0.38$, $r=0.25$, $r=0.43$, $r= 0.37$, $r=0.29$. $p<0.05$ respectively.) at first health check. Correlating factors for change of Max IMT were age, Hba1c, eGFR, and MBR at the first health check.

Conclusions: Change of IMT correlated to microcirculation before CPAP treatment for OSA. This result suggested that the responder of OSA treatment for atherosclerosis could be predicted by measuring ocular microcirculation shown by laser speckle flowgraphy.

Cataract

Poster No.: PO-062

A 24-Month Comparative Analysis of Corneal Endothelial Cell Loss in Three Different Regions Between Femtosecond Laser-Assisted Cataract Surgery and Conventional Phacoemulsification

*First Author: Enkhtuvshin **SHIRCHINJAV***
*Co-Author(s): Altantsetseg **ALTANSUKH**, Yu-chuan **KANG**, David **MA**, Kathleen Sheng-chuan **MA***

Purpose: To compare changes in endothelial cell count in three different regions at 24 months follow-up in eyes undergoing femtosecond laser-assisted cataract surgery (FLACS) and conventional phacoemulsification (CPS).

Methods: All patients underwent either FLACS or CPDS based on their preference and were followed up at 1, 3, 6, 12, and 24 months postoperatively. The endothelial cell count (ECC) and endothelial cell loss (ECL) were evaluated during each follow-up visit and compared between groups. Zone-1 is the corneal center, zone-2 is the zone nearest corneal main incision, and zone-3 is the farthest region on the opposite side of zone-2.

Results: (n =45 in CPS vs. n = 38 in FLACS) The corneal ECL in zone-1 was not significantly different at all time points by FLACS. In contrast, ECC was decreased from baseline at 1 month in the CPS group (5.3%, $p<0.001$). ECL was a significant difference in Zone 1 between the two groups at 1 month (128 ± 200 in CPS; 1.2 ± 300 in FLACS, $p=0.04$). In zone-2, ECL was declined by 12.6% ($p<0.05$) in FLACS and 16.2% in CPS at 6 months but it was not significant between both groups thereafter. ($p>0.05$) In zone-3, the decline of ECC did not change significantly throughout the study period in both groups. ($p>0.05$).

Conclusions: Both groups showed similar endothelial cell decline around the main corneal incision than other regions, which continued up to 6 months. However, in the FLACS group, less damage to the endothelium was noted in the corneal center compared to the CPS group.

Poster No.: PO-596

A Comparative Analysis of Biometry Measurements Using the Pentacam® AXL Versus the IOLMaster® 500 in Patients With Cataractous Lenses and Concurrent Dry Eye Disease

*First Author: Maria Isabela **DE GUIA***
*Co-Author(s): Victor **CAPARAS**, Keshia Lourdes **DUYONGCO**, Cristina **TAN***

Purpose: The proposed advantage of the Pentacam® AXL is that it offers a more reliable analysis of anterior segment structures, particularly in cases of ocular surface disease. This study attempted to test that claim against measurements made with the more widely utilized Zeiss IOLMaster® 500.

Methods: This is a monocenter, cross-sectional, investigator-driven study. The study population comprised consecutive cases for cataract surgery – men and women aged ≥60. The diagnosis of dry eye disease (DED) and cataract was initially made using the Asian Dry Eye Society criteria (symptom score, Tear Film Breakup Time) and Lens Opacities Classification System III, respectively. Diagnosis of DED was confirmed by two arbiters. All participants underwent biometry testing using the Pentacam® and IOLMaster®.

Results: A total of 192 eyes were analyzed. Of the 98 eyes diagnosed without DED, mean differences resulted in 0.139 for astigmatism ($p < 0.05$) and K2 values ($p < 0.05$). Of the 94 eyes diagnosed with DED, there is a mean difference of -0.013 for astigmatism ($p < 0.05$). Other Bland-Altman Analysis indicated that the IOLMaster® demonstrated less precise limits of agreement in DED eyes versus non-DED eyes.

Conclusions: In non-DED eyes, biometry results show a significant overestimation of astigmatism values compared to DED eyes. This overall affects the final intraocular lens results and calculations of

the emmetropic IOL, clinically significant in cataract procedures - particularly in cases involving special lenses. Comparative studies between pre- and post-treatment of DED need to be performed before the use of Pentacam can be recommended in cataractous patients with DED.

Poster No.: PO-595

A Comparative Analysis of the Visual Performance of Toric Versus Non-toric Wavefront Optimized Intraocular Lens After Cataract Surgery

*First Author: Maria Isabela **DE GUIA***
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Purpose: To evaluate the visual performance after bilateral implantation of the Extended Depth of Focus (EDOF) MiniWELL Toric Ready® intraocular lens versus the non-toric EDOF intraocular lens (IOL) MiniWELL Ready®.

Methods: A total of thirty-three patients underwent bilateral phacoemulsification cataract surgery. In Group 1, twenty-two patients (44 eyes) were implanted with a toric lens. In Group 2, twenty-one patients (42 eyes) were implanted with the non-toric lens. At 2-14 days (T1) and 60-105 days (T2) from surgery, monocular and binocular visual acuity (VA) were tested: uncorrected for distance (UDVA), intermediate (UIVA), near (UNVA); and best-corrected for distance (CDVA), intermediate (DCIVA), near (DCNVA). Defocus curve, contrast sensitivity (CS), haloes/glares, and quality of vision (QOV) were evaluated.

Results: T2 mean spherical equivalent (±SD) was -0.32 (±0.46) in Group 1, and 0.20 (±0.33) in Group 2. Mean (±SD) UDVA, UIVA, and UNVA were -0.12 (±0.12), 0.15 (±0.09), and 0.03 (±0.10) logMAR in Group1, and -0.10 (±0.07), 0.10 (±0.06) and 0.15 (±0.11) logMAR in Group 2. Mean (±SD) CDVA, DCIVA, and DCNVA were -0.17 (±0.10), 0.12 (±0.09), and 0.02 (±0.09) logMAR in Group 1, and 0.15 (±0.07), 0.09 (±0.05) and 0.10 (±0.09) logMAR in Group 2. The defocus curve showed a mean CDVA from +2D up to −3.5D in both Group 1 and Group 2. CS (far and near) was 1.71 (+0.13) logCS and 1.74 (+0.11) logCS in Group 1, and 1.75 (±0.11) logCS and 1.78 (±0.11) logCS in Group 1. Halo and glare sizes and intensities were all noted to be from 9-24/100 for both groups. The mean total QOV was 84.7 in Group 1 and 88.9 in Group 2.

Conclusions: Both toric and non-toric MiniWELL EDOF IOLs provide excellent postoperative vision for distance, intermediate, and near, along with good contrast sensitivity, minimal photic phenomena, and high overall quality of vision.

Poster No.: PO-066

A Prospective Study of Vivity & Vivity Toric IOL in Taiwan: Preliminary Results and Analysis

*First Author: Chen-cheng **CHAO***
*Co-Author(s): Chao-kai **CHANG***

Purpose: The aim of our study is to evaluate the quality of vision after bilateral Vivity or Vivity toric EDOF IOLs implantation in Taiwan.

Methods: Our study was a prospective, single-arm study. The inclusion criteria for this study were the presence of cataracts in both eyes who received bilateral Vivity IOL implantation after cataract surgery. Outcome measurements include binocular uncorrected and corrected far, intermediate (66cm) and near (40cm) visual acuity; visual quality measurement including International Reading Speed Test (IReST), Questionnaire for Visual Disturbances (QUVID), and Intraocular Lens Satisfaction (IOLSAT) questionnaire were performed before and after surgery for 3 months.

Results: There were 37 patients and 74 eyes included, with 26 patients targeting emmetropia and 11 patients targeting mini-monovision. The mean age was 60.8±9.2 years old, with female predominance (64%). The uncorrected binocular far, intermediate and near visual acuity were 0.04±0.05, 0.23±0.15 and 0.33±0.19 logMAR, respectively. Corrected binocular far visual acuity was 0.00±0.01 logMAR, while intermediate and near visual acuity were 0.16±0.22 and 0.20±0.19 logMAR. The postoperative reading speed was significantly improved compared to the preoperative reading speed. ($P<0.05$). For the subjective quality of vision questionnaire outcomes, only 12.5% of patients complained about halos and glares, and the other 12.5% complained about the need to wear reading spectacles for near visual tasks.

Conclusions: Vivity or Vivity toric IOL could achieve good far and intermediate vision, with acceptable near visual acuity. For possible photopic problems, there was less halo and glare was complained.

Poster No.: PO-070

Acute Retrobulbar Hemorrhage After Routine Ophthalmic Regional Block: An Ocular Emergency for Cataract Surgeon

*First Author: Suresh **RASAILY***

Purpose: Acute retrobulbar hemorrhage is a rare ocular emergency following a routine ophthalmic regional block. Failure to diagnose earlier can lead to optic nerve compression and permanent loss of sight. Prompt diagnosis and immediate lateral canthotomy and cantholysis must be performed. Immediate rescue operation, along with medical therapy, can prevent optic nerve compression. In this report, we aimed to

present a case with retrobulbar hemorrhage and its rescue intervention.

Methods: A 52-year-old woman was scheduled for routine Phacoemulsification and Intraocular lens implantation in the right eye under local anesthesia, but encountered a sight-threatening retrobulbar hemorrhage within 5 minutes of block. The operating surgeon promptly diagnosed the case based on clinical features suggestive of proptosis, tense globe, and fixed and dilated pupil with ophthalmoplegia. An immediate rescue operation lateral canthotomy and cantholysis were performed to decompress eyeballs and prevent optic nerve compression. After 4 weeks, Phacoemulsification with intraocular lens implantation was performed under topical anesthesia to regain sight.

Results: We were able to save the vision in the right eye even after a serious anesthetic block-related complication. After successful sight-saving rescue operation canthotomy and cantholysis, we could prevent the optic nerve compression, and after phacoemulsification under topical anesthetic drop 0.5% proparacaine, we could regain the sight to 6/6.

Conclusions: Prompt diagnosis and immediate lateral canthotomy and cantholysis are urgent surgical interventions to prevent permanent loss of vision in retrobulbar hemorrhage.

Poster No.: PO-050

Anterior Segment Imaging With Intraocular Lens (ASPI) for Early Diagnosis and Triaging in Cataract Camp Screening

First Author: Tasneem ***NEEMUCHWALA***
Co-Author(s): Aiman ***KHAN***

Purpose: To assess ASPI in early diagnosis and triaging of camp patients based on pre-operative findings.

Methods: Our do-it-yourself device, ASPI, was used with the aid of a smartphone to screen a total of 1322 cataract camp patients. Anterior segment videos were taken by ASPI at the campsite, and findings were documented. Subsequently, the patients were examined on a slit lamp at a tertiary hospital. Pre-operative findings of the grade of cataract, pseudoexfoliation, pupil size, phacodonesis, subluxation, and corneal opacities were documented, and patients were categorized into two sections. Grade 1 having simple cataracts and grade 2 patients with challenging cataracts. The documented findings of ASPI and slit lamp were compared.

Results: Diagnosis and triaging of cataract patients based on preoperative findings was similar between ASPI and slit lamp examination and was statistically significant.

Conclusions: ASPI can be considered a screening tool for early diagnosis and triaging of patients of cataract camp screening in a high-volume set-up.

Poster No.: PO-594

Claw Your Way Out or Hold On to the Sclera? Navigating Postoperative Aphakia With Iris Claw and Scleral-Fixated IOLs

First Author: Ayshwaria ***BASKER***
Co-Author(s): Venkat Meghana ***BHIMANADHAM****, Narayanan* ***BALAKRISHNAN***

Purpose: This study seeks to juxtapose the results of secondary procedures following cataract surgery using retropupillary iris claw IOL fixation and scleral-fixated IOL placement.

Methods: A retrospective scrutiny of 70 eyes that underwent iris-claw IOL and SFIOL surgeries between January 2021 and August 2022 was undertaken. The observation period extended beyond one year, and the choice between the two surgical techniques was governed by individual surgeon preferences. The examination focused on parameters including best-corrected distance visual acuity, past surgical history, procedural approach, and documented complications.

Results: Regarding iris-claw IOLs, they were more commonly employed concomitantly with cataract surgery, both as primary and secondary interventions, relative to SFIOLs. The secondary placement of iris-claw IOLs occurred notably earlier post-prior cataract surgery (median = 1 month). Eyes with iris-claw IOLs had more corneal edema during secondary placement. While iris-claw IOL recipients exhibited improved BCVA compared to SFIOL recipients at 1 month postoperatively, this variance waned by the 1-year follow-up. Notably, both groups experienced significant enhancement in uncorrected visual acuity (UCVA), with iris-claw IOL recipients progressing from 2/60 to 6/24 and SFIOL recipients from 1/60 to 6/36. BCVA of 6/12 or better was realized by 71% of eyes with iris-claw IOL and 57% with SFIOL. The rates of astigmatism post-op were significantly higher in the SFIOL group.

Conclusions: Retropupillary iris-claw IOL and sutureless SFIOL methods demonstrated favorable long-term visual acuity results. The choice between these techniques should be influenced by parameters like intraocular pressure dynamics and potential postoperative complications.

Poster No.: PO-061

Clinical Outcome Following Implantation of Extended Depth of Focus Intraocular Lens (Tecnis® Symfony® ZXR00 Lens) Implant in Axial Length Shorter Than 24mm

*First Author: Yuanfei **ZHU***
*Co-Author(s): Tieying **ZHAO**, Weihong **ZHAO***

Purpose: To evaluate the clinical outcomes following implantation of extended depth of focus (EDOF) intraocular lens (IOL) (Tecnis® Symfony® ZXR00 lens) implant in axial length shorter than 24mm.

Methods: All cases underwent phacoemulsification and implanted TECNIS Symfony EDOF IOL (ZXR00). Patients were followed up for 1 month. Uncorrected and corrected distance visual acuity (UDVA and CDVA), uncorrected intermediate and near visual acuity (UIVA and UNVA), spectacles independence and patient satisfaction were assessed.

Results: Thirty eyes of 17 patients (mean age 70.4 years, 70.6% female) were assessed. The mean preoperative axial length (AL) was 23.08 ± 1.43. The mean preoperative keratometry was 44.97 ±1.33. The mean diopter of implanted IOL was 22.56±0.61. The postoperatively calculated mean sphere was -0.22± 0.26D, respectively. The postoperative mean UDVA was 0.96 ± 0.13, mean CDVA was 0.99 ± 0.06, mean UIVA was 0.93 ± 0.16, mean UNVA was 0.82 ± 0.17. Spectacle independence and satisfaction were achieved in 16 patients (16/17, 94.1%). Three patients achieved an excellent near vision of putting the thread through a sewing need. Four patients (4/17, 23.5%) complained of tolerable glare and halo. One patient with mild cataract complained of a waxy view due to residue astigmatism and multiple reasons.

Conclusions: EDOF IOL achieves good full-range vision with tolerable glare and halo in eyes with AL shorter than 24mm.

Poster No.: PO-056

Comparing Intraocular Lens Stability in Combined Vitrectomy Patients: CLOVE Study

*First Author: Stephanie **WU***
*Co-Author(s): Nicholas **FUNG**, Christopher **GO**, Jeffrey **LO**, Mehnaz **QUDDUS**, Stephanie Wing Ki **YUK***

Purpose: This study compared the stability of Clareon® CNA0T0 IOL and TECNIS ZCB00® IOL in patients who underwent combined phacoemulsification with pars plana vitrectomy and membrane peel for epiretinal membrane.

Methods: Forty eyes were randomized into two groups in a 1:1 allocation ratio. Either Clareon® or ZCB00® was implanted in a simultaneous phacoemulsification and posterior vitrectomy and membrane peel surgery. Best corrected visual acuity (BCVA), horizontal and vertical optic tilt, anterior chamber distance, and horizontal and vertical decentration were assessed at 1 week, 1 month, and 6 months postoperatively.

Results: At baseline, the two groups did not differ in terms of age and BCVA. At 1 month, BCVA was similar at 0.63 vs 0.56 (p=0.459). Anterior chamber depth was similar in both groups and remained unchanged at 1 week (p=0.223) and 1 month postoperatively (p=0.743). At 1 month, the two IOLs had comparable mean horizontal and vertical optic tilt of 1.26 ± 4.03 and -0.92 ± 2.22 in the Clareon® IOL vs -2.00 ± 5.36 and -0.02 ± 1.76 in the ZCB00® IOL (p=0.087 and p=0.317). Mean horizontal and vertical decentration were similar at 1 month with 0.03± 0.08 mm and 0.03 ± 0.10 mm for Clareon® IOL vs 0.04 ± 0.08mm and -0.05 ± 0.10mm for ZCB00® IOL (P=0.819 and P=0.059). 6-month follow-up data is pending, and we are planning for a report at the conference.

Conclusions: The Clareon® IOL had a lower but not significantly different horizontal tilt compared to the ZCB00® IOL. Both offered similarly excellent lens stability and centration in simultaneous phacoemulsification and vitrectomy.

Poster No.: PO-063

Comparison of Biometry Measurements Between Two Swept-Source Optical Coherence Tomography Biometers

*First Author: Lin Ru **KOONG***
*Co-Author(s): Ye King **SEE**, Stephen **STEWART**, Tun Kuan **YEO***

Purpose: This study aimed to assess the agreement in measurements between two swept-source optical coherence tomography biometry devices: the IOLMaster 700 and Eyestar 900.

Methods: 217 eyes of 152 patients undergoing cataract surgery in a tertiary eye centre in Singapore were included in this retrospective comparative study. All patients were evaluated with the IOLMaster 700 (Carl Zeiss Meditec AG) and the Eyestar 900 (Haag-Streit Diagnostics). Axial length (AL), anterior chamber depth (ACD), lens thickness (LT), anterior and posterior keratometry (AK and PK), central corneal thickness (CCT) and white-to-white (WTW) were measured. Paired measurements were compared, and the correlation between them was assessed using Pearson's (parametric data) and Spearman's test (non-parametric data).

Results: There were statistically significant differences in AL, ACD, PK, CCT, WTW, LT ($p < 0.001$ for the above parameters) and Anterior Flat K ($p = 0.008$). There were strong correlations between parameters measured with the two devices (AL, $\rho = 0.971$; ACD, $r = 0.978$; anterior flat K, $\rho = 0.965$; anterior steep K, $\rho = 0.970$; CCT, $\rho = 0.966$; LT, $r = 0.980$). Centroid values for

anterior and posterior corneal astigmatism are similar for both biometers.

Conclusions: There is a strong correlation between parameters measured with the IOLMaster 700 and Eyestar 900. The weakest correlation is observed for Posterior Flat K, Posterior Steep K, and WTW values, with clinically significant differences in the magnitude of posterior keratometry values.

Poster No.: PO-048

Comparison of Intra Operative Phaco Energy and Post Op Endothelial Cell Density With and Without the Use of Miloop for Hard Cataracts

*First Author: Sanjita **MISHRA***
*Co-Author(s): Sheetal **BRAR**, Dr.Deepak **SWAMY***

Purpose: To compare the cumulative dissipated energy (CDE), Equivalent average ultrasound (US) time, and post-op endothelial cell density (ECD) with and without the use of mi-Loop for hard cataracts in eyes undergoing phacoemulsification (PHACO).

Methods: This prospective study included 40 eyes of 20 patients with nuclear sclerosis grade 4 and above undergoing cataract surgery with PHACO using the Centurion system (Alcon surgical). Eyes were randomized into two groups i.e phaco only and PHACO with miLoop, wherein miLoop was used to assist in fragmentation. All surgeries were performed by a single surgeon using the phaco parameters. The mean CDE value and US power were noted. Post op at day 1 and 6 months, the mean ECD was compared between both the groups.

Results: Both groups were matched in terms of mean age, cataract grade, and ECD ($p>0.05$. The phaco-only group had a mean CDE value and mean equivalent US power of 19.42 ±5.32, and 22.86±3.12 whereas the same for the miLoop group were 15.91±5.54 ($p=0.02$) and 20.82±3.41 ($p=0.02$) At 6 months, the mean ECD in phaco group was 2125±124 cells versus 2356±143 suggesting a significantly higher ECD loss in phaco group ($p=0.02$). No eye in either group had any complications such as PCR, ZD, or bag loss, or post-op issues such as irreversible corneal edema or endothelial decompensation.

Conclusions: miLoop may be a useful tool to assist in the management of hard brown cataracts and may result in less ultrasound usage and ECD loss compared to routine phacoemulsification in such cases.

Poster No.: PO-064

Fulminant Acute Postoperative Endophthalmitis Caused by Pseudomonas stutzeri in a Healthy Elderly Male

*First Author: George Michael **SOSUAN***
*Co-Author(s): Kevin Kenjee **DEE**, Darren Anthony **KHOW**, Jomel **LAPIDES**, Ruben **LIM BON SIONG**, David Marco **MAGPANTAY***

Purpose: To report a case of acute postoperative endophthalmitis following cataract surgery due to Pseudomonas stutzeri in a healthy elderly male.

Methods: Case report.

Results: A non-hypertensive, non-diabetic male patient in his late 60s consulted due to eye pain and blurring of vision after an uncomplicated extracapsular cataract extraction with posterior chamber intraocular lens implantation on his left eye 5 days prior. On examination, the visual acuity was light perception. Slit lamp examination showed ciliary injection and conjunctival congestion, mild corneal edema with Descemet membrane folds, hazy anterior chamber with fibrin and 2mm hypopyon, and the PCIOL was visible. IOP was 10 mmHg with no leak on Seidel's test, and a poor view of the fundus. B-scan ultrasonography showed findings consistent with endophthalmitis. He was given topical, intravitreal and systemic antibiotics, and an emergency vitrectomy was done. The vitreous sample culture revealed Pseudomonas stutzeri. Despite aggressive medical and surgical management, vision loss was not prevented.

Conclusions: Acute post-operative endophthalmitis from Pseudomonas stutzeri is rare, with devastating outcomes if not recognized and treated promptly. It may present with a fulminant course regardless of the associated risks for infection. Prevention, early recognition, and timely management can prevent unfavorable visual outcomes.

Poster No.: PO-047

Initial Experience Following the Bilateral Implantation of Eyecryl-Sert Advanced Monofocal Intraocular Lens (IOL)

*First Author: Sanjita **MISHRA***
*Co-Author(s): Shruti **REVANKAR***

Purpose: To evaluate the safety, efficacy, functional vision and patient satisfaction with the bilateral implantation of Eyecryl-Sert Advanced monofocal IOL.

Methods: In this prospective study, the main visual outcomes following the Eyecryl-Sert IOL were spherical equivalent (SE), binocular uncorrected distance visual acuity (UDVA), corrected distance visual acuity (DCVA), uncorrected intermediate visual acuity (UCIVA), distance corrected intermediate visual acuity (DCIVA) at 60 and 80 cm, uncorrected near visual acuity (UNVA)

and corrected near visual acuity (CNVA) at 40 cm, Defocus curve and patient satisfaction.

Results: Thirty eyes of 15 patients were followed up At 1 month, the SE of ±0.5D was achieved in 100% of the eyes. All the patients attained a binocular CDVA of 20/20 Snellen's equivalent & UDVA of >20/25. At 60 cm, a satisfactory UCIVA of 20/20 was seen in 13 patients, while 11 patients achieved a UCIVA of 20/25 at 80 cm. The UNVA performance at 40 cm of <0.4 LogMAR units was recorded in all the patients, out of which 2 patients achieved a UNVA of 0.2 LogMAR units. No patient reported any significant haloes, glare or bothersome dysphotopsia. All patients reported excellent satisfaction with their distance and intermediate vision, while 2 patients achieved complete satisfaction for all distances, including near.

Conclusions: The new Eyecryl-Sert Advanced Monofocal IOL with wavefront technology and optimized refractive zones appears to provide a continuous vision from distance to intermediate with an acceptable near vision, resulting in good patient satisfaction and minimal photic phenomenon.

Poster No.: PO-068

Intervention Strategy of Deprivation Amblyopia Caused by Congenital Cataracts

*First Author: Yaohong **LIU***

Purpose: The effects of any congenital or human intervention that occurs in the sensitive period of children's visual development can significantly change the long-term or even lifelong visual outcome. This article mainly summarizes the research progress of form deprivation amblyopia and its complications caused by congenital cataract, as well as the latest global surgery technique and postoperative prevention and intervention strategies.

Methods: We have searched Pubmed, Cochrane, Embase and other databases to screen out a large number of references and clinical guidelines from different countries for analysis.

Results: Our research found that monocular deprivation amblyopia caused by congenital cataract is usually more serious than that caused by strabismus or anisometropia. If the shape and grade of the congenital cataract are different, then the potential to cause amblyopia is also different. 6 weeks after birth was generally recognized as the golden period for surgical intervention for monocular congenital cataracts. For binocular congenital cataracts, the timing can be delayed to 8-14 weeks after birth. At present, phacoemulsification in the one-stage operation and intraocular lens implantation in the secondary operation are the preferred treatments for children suffering from congenital cataracts. Although cataract surgery in children has been a safe and effective intervention, a good visual outcome still requires long-term refractive correction, patching treatment, etc.

Conclusions: It is concluded that binocular congenital cataract, no nystagmus, strabismus or other complications, early surgical intervention and compliance of continuous amblyopia treatment are factors that support better postoperative visual quality.

Poster No.: PO-060

Intraocular Lens Power Adjustment for Pediatric Secondary Ciliary Sulcus Implantation

*First Author: Yingshi **ZOU***
*Co-Author(s): Yizhi **LIU**, Zhenzhen **LIU***

Purpose: To compare the effects of secondary in-the-bag versus ciliary sulcus intraocular lens (IOLs) implantation on the accuracy of IOL power calculation in pediatric eyes and propose an appropriate adjustment.

Methods: Prospective non-randomized interventional study. Pediatric aphakic eyes underwent either in-the-bag or ciliary sulcus secondary IOL implantation were included. The mean prediction error (PE), mean absolute error, median absolute error and percentages of eyes with PE within ±0.25 diopter (D), ±0.50D, ± 0.75 D, and ± 1.00 D were calculated and compared using SRK/T formula.

Results: One hundred fourteen eyes (38.26%) received in-the-bag IOL implantation and 184 (61.74%) underwent ciliary sulcus IOL implantation. Compared with the sulcus group, the capsular group displayed a statistically significant higher percentage of eyes within ±0.50 D of PE (40.40% vs. 14.29%, P<0.001). To reduce PE, when the predicted capsular IOL power was between 11.50-30.00D, the power of a sulcus implanted IOL should be reduced by 0.50-2.50D accordingly.

Conclusions: In-the-bag implantation yielded smaller PE in pediatric eyes undergoing secondary IOL implantation. Adjustment of IOL power for ciliary sulcus implantation is required to reduce PE, and the amount of adjustment is positively correlated with the IOL power predicted by the SRK/T formula.

Poster No.: PO-071

Iris-Registration Capsulotomy Marking Versus Digital Imaging and Manual Marking for Toric Intraocular Lens Alignment in Cataract Surgery

*First Author: Qingzhong **CHEN***

Purpose: To compare the accuracy of toric intraocular lens (IOL) alignment and visual outcomes using femtosecond laser–assisted capsulotomy marking (CM)

versus digital imaging marking (DIM) and conventional slit lamp-assisted manual marking (MM).

Methods: A total of 90 patients requiring cataract surgery and toric IOL implantation (Acrysof SN6AT3-T8) were assigned to the CM group (30 eyes), the DIM group (30 eyes), and the MM group (30 eyes). Uncorrected distant visual acuity (UCDVA), best corrected distant visual acuity (BCDVA), residual astigmatism (RA), IOL misalignment, and modulation transfer function (AR value) were measured one month and three months after surgery.

Results: Postoperative UCDVA (LogMAR) was significantly lower in the CM group and the DIM group than in the MM group ($P < 0.05$). Postoperative RA and IOL misalignment were significantly lower in the CM and DIM groups than in the MM group (both $P < 0.05$). No significant difference was found between the DIM group and the CM group for the UCDVA, RA, and IOL misalignment ($P > 0.05$). No significant difference between the groups was observed for BCDVA or AR value (both $P > 0.05$). UCDVA (LogMAR) was positively correlated with RA ($r = 0.428$; $P < 0.05$) and IOL misalignment ($r = 0.434$; $P < 0.05$) and negatively correlated to the AR value ($r = -0.332$; $P < 0.05$); RA was positively correlated with IOL misalignment ($r = 0.558$; $P < 0.05$).

Conclusions: The accuracy of the axis alignment was significantly higher in the CM group and DIM group, which resulted in lower residual astigmatism and better visual outcomes.

Poster No.: PO-052

Multifocal Intraocular Lens Implantation in Eyes After Macular Surgery

*First Author: Yuanfei **ZHU***
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Purpose: To report visual function, including uncorrected distant visual acuity (UDVA), uncorrected intermediate visual acuity (UIVA), and uncorrected near visual acuity (UNVA), spectacles independence and safety of multifocal intraocular lenses implanted in eyes after macular surgery.

Methods: The eyes enrolled received cataract surgery with mfIOLs implantation and good recovery from the macular hole/epiretinal membrane surgery. Analysis of visual records, subjective refractive outcomes, complications from patients record meeting eligibility criteria (Group M), compare them to healthy subjects (Group M) with matching mfIOLs implantation.UDVA, BCDVA, UIVA, UNVA, subjective refraction (sphere, cylinder, and spherical equivalent), defocus testing, Amsler grid test, surgical complications, and visual disturbances were documented.

Results: BCDVA postoperatively improved in both groups (P=0.000). UCDVA postoperatively improved in both groups (P=0.014 GroupM, 0.011 Group C). Mean preoperative BCDVA in Group M and Group C was 0.26 ± 0.07 and 0.47 ± 0.29 logMAR, respectively. Mean postoperative BCDVA in Group 1 and Group 2 improved to 0.000 ± 0.037 and -0.04 ± 0.047 logMAR, respectively. The mean postoperative UDVA, UIVA, UNVA in Group M was 0.017±0.037, 0.033±0.094, 0±0.1 logMAR, the mean postoperative UDVA, UIVA, UNVA in Group C was 0±0.1, -0.067±0.047, 0.0167±0.107 logMAR, no significant differences were detected (P=0.349, 0.060,0.255). All patients in both groups achieved spectacle independence in daily life activity. No intolerable visual disturbances complaint was received. Amsler grid test was negative in all cases.

Conclusions: MfIOLs implantation in eyes after macular surgery achieved similar visual function and spectacles independence to healthy eyes with careful preoperative assessment. Extra caution should be taken in post-vitrectomy eyes during phacoemulsification.

Poster No.: PO-069

Outcomes of Flanged Intrascleral Fixation Technique in a District Centre, a Case Series

*First Author: Xiao Wei **TING***

Purpose: To describe a case series of the flanged intrascleral fixation technique (Yamane technique) performed in a district centre in Borneo, Malaysia.

Methods: Retrospective review of case notes of patients who underwent scleral fixated intraocular lens (SFIOL) implantation using the Yamane technique in a single district centre from June 2022 to March 2023. Clinical profile, visual outcomes and complications were documented.

Results: A total of eight eyes were reviewed. There were seven male and one female patient. The indications were subluxated crystalline lens, subluxated primary intraocular lens, phacomorphic glaucoma and complicated cataract operation. Seven patients underwent secondary operations, while one patient had primary SFIOL implanted. Six patients achieved best corrected visual acuity (BCVA) of 6/15 or better at two months postoperatively. Only three patients had postoperative complications, which were transient high intraocular pressure, cystoid macula edema, and choroidal detachment.

Conclusions: The flanged intrascleral fixation technique has gained popularity in recent years, especially in cases where capsular support is inadequate. The majority of the patients were able to achieve good visual outcomes. It is a good technique to master, especially for ophthalmologists working in a district setting.

Poster No.: PO-046

Paracentral Acute Middle Maculopathy Following Capsular Bag Distension Syndrome: A Case Report and Literature Review

*First Author: Chia-yi **LEE***
*Co-Author(s): Yu-shiuan **LIN**, Chenghao **SUNG***

Purpose: Capsular bag distension syndrome is a rare post-cataract surgery complication and raises concerns due to its potential to induce secondary ocular hypertension and glaucoma. Despite this, reports highlighting its impact on visual prognosis are scarce, possibly leading to its underrecognition among ophthalmologists. In this context, we present a case who exhibited diminished visual acuity and elevated intraocular pressure in the left eye following cataract surgery.

Methods: Retrospective observational case report.

Results: A 66-year-old Asian female presented with a 1-month history of blurred vision and elevated IOP of the left eye after undergoing phacoemulsification at a local medical department. She presented with ‘‘patch-off’ blurred vision of the left eye the next day post cataract surgery. Upon ophthalmologic evaluation, she was found to have a refractive error of -5.75 Diopter Sphere in the left eye, demonstrating a myopic shift in the left eye. The posterior capsule was notable for being difficult to observe and appeared to be pushed away from the posterior surface of the IOL by a transparent fluid. Distension of capsular bag was then identified with the aid of ZEISS IOL Master® 700 which showed the IOL was shifted anteriorly with the posterior capsule convex towards the vitreous. Nd:YAG laser posterior capsulotomy was carried out on the scene. Unfortunately, OCT revealed paracentral acute middle maculopathy. There was persistent poor vision during the 24-month follow-up.

Conclusions: To the best of our knowledge, this is the first case discussing the PAMM following CBDS. The visual prognosis may be devastating if the CBDS is not recognized.

Poster No.: PO-058

Randomised Controlled Study Between Two Techniques of Capsular Opening in Intumescent Cataract- Tomy Rhexis and Mini Rhexis

*First Author: Apurva **NAGTODE***
*Co-Author(s): Fredrick **MOUTTAPA**, Josephine Christy **SUSAI***

Purpose: (1) To determine the rate of rhexis extension/ Argentinian flag sign in these two techniques. (2) To analyse the time taken to complete the rhexis in these two techniques. (3) To study the incidence of complications in both the techniques (4) To compare the incidence of complications between junior and senior surgeons.

Methods: A total of 120 patients with intumescent cataract were randomised into two groups to receive either a ‘Tomy’ rhexis or ‘Mini’ rhexis during phacoemulsification. Each group had two sets of surgeons: one pair with more than 10 years of experience and the other with 5 years of experience in cataract surgery. During the surgery, both techniques were evaluated on the basis of rhexis completion rate, complications, size and time taken for rhexis completion.

Results: 50% of patients were within 46-60 years age group and 10% belonged to the 30-35 years group. Females were 55% of the study population. 6 patients had rhexis extension, 2 of which were with tomy rhexis and 4 were while performing mini rhexis. All patients with rhexis extension had an anterior chamber depth of less than 3 mm. The average time duration for tomy/mini rhexis was 1.4/2.1 min in senior surgeons respectively and 2.4/2.7 min in junior surgeons. No complications like posterior capsular rent, nucleus drop, or conversion to SICS were noted.

Conclusions: Tomy Rhexis has lesser rates of capsular extensions and needs lesser time duration to perform when compared to mini rhexis in intumescent cataract, irrespective of surgeon experience. ACD can be a good guide to perform cautious capsulorhexis.

Poster No.: PO-059

Reading Speed Assessment in Presbyopes With Cataract After Bilateral PanOptix Implantation

*First Author: Yingjie **LIN***
*Co-Author(s): Yun **CHEN**, Xianjun **LIANG**, Yongchang **TAN**, Zheming **WU**, Yanxue **XU***

Purpose: To investigate the reading speed of presbyopes with cataract after bilateral PanOptix implantation through the Chinese validated version of the International Reading Speed Texts (IReST) with best distance correction.

Methods: A total of 14 cataract patients (28 eyes) with diffractive trifocal intraocular lenses (PanOptix) implanted in both eyes in our hospital were selected and followed up for 3 months. Reading speed at 40cm (International Reading Speed Test (IReST) Chinese version), UDVA, UIVA, UNVA, defocus curve and MTF, visual function index of life quality and spectacle independence were evaluated 3 months postoperatively. Data were analyzed using a paired t-test where the normality of the dataset was assumed; otherwise, the non-parametric Wilcoxon paired rank-sum test was applied.

Results: At 3 months postoperatively, the reading speed was 220 ±30 (characters/min). There was a significant improvement in UDVA, UIVA, and UNVA ($P<0.05$). 100%

of postoperative UDVA,96.4% of postoperative UNVA was better than 0.1 LogMAR;85.7% of postoperative UIVA were better than 0.1 LogMAR, 82.1% of postoperative UDVA, UIVA were better than 0.0 LogMAR, 95.7% of postoperative UNVA was better than 0.0 LogMAR The visual acuity of +0.5 D~-3.0 D defocus was better than the 0.1 LogMAR Monocular defocus curve. The 4mm area ratio (AR) under the modulation transfer function (MTF) curve was significantly better than that before surgery (Z = 0.036, P < 0.05). The Catquest-9SF questionnaire scored a perfect 36 points in binocular vision. 96.4% of the patients were completely independent of spectacles for far and near vision.

Conclusions: Patients achieved good reading speed, full range of vision, good visual quality, and spectacle independence by implantation of PanOptix.

Poster No.: PO-053

Serum Zinc Level and Plasma Sod Level Evaluation in Cataract Patients Under Oxidative Stress

*First Author: Sankha **CHAUDHURI***
*Co-Author(s): Madhurima **CHAUDHURI***

Purpose: In the present study, the role of serum zinc level and plasma SOD activity was analyzed in senile cataract patients showing significant oxidative stress.

Methods: A hospital-based case-control study. Thirty patients of more than 50 years of age having cataracts were selected in a simple random manner during the period of one year. Serum TBARS was measured by its reaction with thiobarbituric acid. Estimation of plasma SOD was done by the method of Kakkar et al. Serum zinc was measured with the method, based on the Nitro-PAPS method developed by Akita Abe and Sumiko Yiamashita.

Results: Serum TBARS, plasma SOD, and serum zinc levels were measured in 30 randomly selected cataract patients against properly matched controls. The analysis of means showed a significant increase in serum TBARS and a decrease in plasma SOD and serum zinc level in cases, but plasma SOD was found to be just significantly correlated (p = 0.05) with serum zinc only in the cases. The results of partial correlation studies and multiple regression analysis also showed only a significant correlation and predictable dependence between serum TBARS and plasma SOD, excluding the role of serum zinc.

Conclusions: The present study concludes that it is chiefly the plasma SOD activity, but not the serum zinc level, that determines the proneness of the patients for the development of senile cataracts.

Poster No.: PO-049

Systemic Factors, Intraocular Lens, and Ocular Abnormalities in Patients With Intraocular Lens Glistening at a Tertiary Hospital in Semarang

*First Author: Azmi **AZIZ***
*Co-Author(s): A Rizal **FANANY**, Wisnu **SADASIH***

Purpose: To describe systemic factors, intraocular lens (IOL), and ocular abnormalities in patients with IOL glistening at a tertiary hospital in Semarang.

Methods: A retrospective, with a descriptive approach on patients with IOL glistening who visited the eye clinic between August 2019 and June 2023.

Results: Twenty-five patients were examined, 11 patients (44%) had IOL glistening in their right eye, 4 patients (16%) in their left eye, and 10 patients (40%) in both eyes. The gender of patients consisted of 12 male patients (48%) and 13 female patients (52%). The median age of the patients was 68 years. The mean onset was 4.44 years after the first cataract surgery. Hypertension was found in 13 patients (52%), and diabetes was found in 9 patients (36%). Nine patients (36%) were identified with a foldable IOL with a closed loop design, and 1 patient (4%) with a PMMA IOL with an iris-fixated IOL design, while 15 other patients' IOL were unrecorded. Glaucoma was found in 3 patients (12%).

Conclusions: The result of this study showed that more than half of the patients were hypertensive, and some were glaucomatous, which had been discussed relevant in previous studies. Most IOL that could be identified was foldable IOL with a closed loop design. To our knowledge, the design of an IOL to glistening had never been explored. A longer study involving larger subjects is needed to better describe the systemic factors, IOL, and ocular abnormalities in patients with IOL glistening.

Poster No.: PO-051

The Veil of Snows – Delayed Presentation of Pupillary Membrane Following Cataract Surgery With Retained Cortical Fragments: A Case Report

*First Author: Shaira Haziera **SAMSU***
*Co-Author(s): Su Huan **CHONG**, Chong **YING JIUN***

Purpose: To report a case with retained cortical fragments and a pupillary membrane covering the visual axis, presented after four decades following initial cataract surgery.

Methods: Case report.

Results: A 51-year-old healthy lady presented with a gradual onset of right eye painless blurring of vision for the past two years. She had a history of bilateral cataract surgery done at the age of nine, which was left aphakic. Post-operatively, she maintained good vision

until the current presentation. Her best corrected visual acuity for her right and left eye were counting fingers and 6/18, respectively. Examination of the right eye revealed an aphakic eye with a quiet anterior chamber and the presence of a veil-like adherent densely pigmented membrane covering the pupil. There were also retained cortical fragments beneath the membrane, obscuring the fundus view. The B-scan of the right eye showed a flat retina with no echogenic focus or mass seen. The fellow eye was aphakic with a normal posterior segment. Systemic examination was unremarkable. She underwent right eye pars plana pupillary membranectomy and phacofragmentation. Histopathological examination of the membrane showed benign loose fibrocollagenous tissue with melanocytes and melanin pigments, consistent with features of normal iris tissue. Post-operatively, her right visual acuity improved to 6/18 with a normal fundus examination.

Conclusions: Post-operative pupillary membrane formation is a benign condition. Surgical removal of the membrane is indicated for thick membranes covering the visual axis, in an eye with considerably good visual prognosis.

Poster No.: PO-057

The Visual Acuity, Contrast Sensitivity, and Glare Perception Outcome of Enhanced Monofocal vs Extended-Depth-of-Focus Intraocular Lenses: A Systematic Review

*First Author: Anggita **OKTAVIANI***
*Co-Author(s): A Rizal **FANANY**, Wisnu **SADASIH***

Purpose: This study aims to compare the visual acuity, contrast sensitivity, and glare perception outcome of enhanced monofocal intraocular lenses (IOLs) and extended-depth-of-focus (EDOF) IOLs.

Methods: A systematic electronic literature search was performed using PubMed, Cochrane, Google Scholar, and Researchgate, under PRISMA guidelines.

Results: Data from four studies involving 438 eyes of 306 patients who underwent cataract surgery and received IOL implantation were included in the study. 228 eyes received enhanced monofocal IOLs while 210 eyes received EDOF IOLs. All of the studies showed no significant variance in contrast sensitivity and glare perception across both IOL types ($p>0.05$). Patients who received EDOF IOL implantation reported better uncorrected near visual acuity (UNVA) in all of the studies. One study discerned significantly better uncorrected intermediate visual acuity (UIVA) outcome attributed to EDOF. However, the majority of the included studies yielded no difference in UIVA outcome.

Conclusions: Enhanced monofocal IOLs provided similar results in terms of intermediate and distant visual acuity, contrast sensitivity and glare perception outcomes in comparison to EDOF IOL. Nonetheless, further rigorous clinical investigations are needed to elucidate the UIVA outcome comprehensively.

Poster No.: PO-067

Translation and Validation of Vision Disability Assessment (VDA) Questionnaire into Malay Language and Its Application to Assess the Functional Disability Among Cataract Patients in University Malaya Medical Centre (UMMC)

*First Author: Yi Wen **LIM***
*Co-Author(s): Tengku **KAMALDEN**, Nor Fadhilah **MOHAMAD**, Foong Ming **MOY***

Purpose: To test the reliability and validity of the translated and validated Malay-VDA and to assess the functional disability among cataract patients in UMMC using it.

Methods: This study was divided into two phases. Phase I tested the reliability and validity of the Malay-VDA using the intraclass correlation coefficient (ICC) and the content validity index (CVI). Phase II evaluated the visual function among cataract patients using Malay-VDA. In Phase II, a self-administered questionnaire was used to collect socio-demographic and visual-related quality of life (Malay-VDA).

Results: In Phase I, the overall CVI of the Malay-VDA was 0.95 and 0.91 respectively, showing great relevance and clarity. The ICC was 0.999 demonstrating great reliability. In Phase II, a total of 200 participants were recruited. There were more Chinese, females, who had completed primary education and aged between 70 to 79 years. The respondents had higher VDA scores in the distance domain with mean (SD) scores of 16.57 (5.11), showing the worst functional disability in distant activities, followed by difficulties in the mobility domain (mean (SD) scores of 10.15 (3.72)) and near domain (mean (SD) scores of 9.98 (2.76)). The mean score was found to be significantly higher in the poor vision group for all three domains. A positive correlation with moderate strength was found between the total VDA score and BCVA ($r=0.622$, $P < 0.001$).

Conclusions: The Malay-VDA was a reliable and valid tool to assess the visual function among cataract patients. The visual function should be considered as part of the preoperative assessment before the cataract operation.

Poster No.: PO-054

Two Different Approaches to Scleral Fixation for Repairing Recurrent Disenclavated Aphakic Iris-claw Lens

*First Author: Ludwig **TJOKROVONCO***
*Co-Author(s): Budiman **BUDIMAN**, Andrew **KNOCH**, Emmy **SUGIARTI***

Purpose: Disenclavated haptic is one of the complications of using the iris-claw intraocular lens and it is not a rare case. It can happen spontaneously or caused by trauma and possibly more than one time. This study aimed to describe two different scleral fixation approaches to fix recurrent disenclavated iris-claw lenses.

Methods: The first case was a 51-year-old man with a vitrectomized eye and disenclavated haptic of retropupillary iris-claw lens for the third time. This patient had undergone reenclavated haptic and also intraocular lens (IOL) exchange to the new iris-claw lens 2 months before. The second case was a 61-year-old man with a prior history of IOL exchange from retropupillary to pre-pupillary aphakic iris-claw lens because of an IOL drop to the posterior segment. After 5 months, he came up again with a sudden onset diminution of vision due to nasal disenclavation of the IOL. The IOL was hanging inferiorly and touching the corneal endothelium.

Results: In the first case, the patient underwent IOL exchange to scleral fixation using the Yamane technique, while in the second case, the double-flanged Canabrava technique was used. Visual acuity of both cases was improved from 1/60 to best corrected visual acuity of 0.63 (1st case) and 0.8 (2nd case). Both IOLs were well centered, confirmed by Scheimplug imaging, and no postoperative complications were found.

Conclusions: In some cases, IOL exchange to scleral fixated is more reliable than reenclavated or exchange to new iris-claw lens repeatedly. Both scleral fixation techniques have good outcomes and can be performed safely.

Poster No.: PO-065

Visual Outcome After High Volume Cataract Surgeries

*First Author: Ibtihal **ISKHANDAR***
*Co-Author(s): Nurhayati **ABDUL KADIR**, Yong Zheng **WAI**, Chiang **WAI SENG***

Purpose: To determine the visual outcomes and factors influencing them following a mass cataract surgery programme in a district hospital.

Methods: Retrospective study of data collected from the Ministry of Health Cataract Surgery Registry (MOH CSR) from January 2015 to December 2019 in Sabah. All cataract surgery types were included for analysis encompassing demographic data, preoperative ocular visual acuity, preexisting ocular comorbidities, intraoperative details, and postoperative visual outcomes.

Results: A total of 338 patients underwent cataract surgery, either phacoemulsification, extracapsular cataract extraction (ECCE) or intracapsular cataract extraction (ICCE) with intraocular implantation, totalling 433 eyes. Preoperatively, 276 eyes (64.5%) exhibited visual acuity (VA) below 3/60, 13 eyes (3.0%) between 6/60 and 3/60, and 132 eyes (30.8%) from 6/18 to 6/60. Postoperatively, 246 eyes (84%) achieved a best corrected visual acuity (BCVA) of 6/12 or better. 19 eyes (6.5%) between 6/12 and 6/18, 17 eyes (5.8%) ranging from 6/18 to 6/60, and 11 eyes (3.6%) less than 6/60. Moreover, 11 eyes (3.8%) were unable to take vision, and 129 eyes (29.7%) were lost to follow-up. Intraoperatively, 31 eyes (7.2%) had complications including posterior capsule rupture (16 eyes, 3.7%), vitreous loss (7 eyes,1.6%), zonular dehiscence (8 eyes, 1.8%), drop nucleus (1 eye, 0.2%) and central corneal oedema (1 eye, 0.2%). 11 eyes (2.5%) categorized as others which include choroidal detachment, high vitreous pressure, problems with phacoemulsification machine and floppy iris.

Conclusions: This study has demonstrated the feasibility of achieving positive outcomes through mass cataract surgeries. This initiative could serve as an effective strategy to address preventable blindness, particularly in rural regions.

Poster No.: PO-055

Visual and Anatomical Outcomes of Pars Plana Vitrectomy for Dropped Intraocular Lens

*First Author: Hussain **KHAQAN***

Purpose: To evaluate the visual and anatomical outcomes of pars plana vitrectomy (PPV) in patients with a dropped intraocular lens (IOL) following complicated phacoemulsification (PE).

Methods: The study included 51 patients (33 males and 18 females) between the ages of 35 and 85 years who were referred after a complicated phacoemulsification with a dropped intraocular lens. All the patients underwent 23-gauge pars plana vitrectomy, and removal of intraocular lens with IOL implantation. The range of follow-up was 02 months to 05 years.

Results: Scleral fixation of IOL was done in 30 (58.82%) eyes. In 27 out of 30 eyes at the time of PPV as primary, whereas in 03 eyes, it was performed at a later date. Anterior chamber IOL (AC/IOL) was implanted in 03 (5.89%) eyes; 02 as primary procedure and one as secondary. Out of 51, 38 (74.51%) patients attained final BCVA between 20/20-20/50 as compared to 12 (23.53%) patients who achieved BCVA in the range

20/60-20/200. The visual acuity remained the same in 01 (1.96%) eye with AC IOL due to bullous keratopathy.

Conclusions: Removal of dropped IOL via the pars plana approach offers the advantages of a closed system for vitrectomy and manipulation of the IOL, an improved view of the posterior segment, and facilitated recognition and management of intraoperative complications with better visual and anatomical outcomes with low rate of postoperative complications.

Cornea, Dry Eyes, External Eye Diseases and Eye Banking

Poster No.: PO-082

A New Perspective on Corneal Healing: Comparative Analysis of VEGF-A Levels and Neovascular Changes Following Alkaline Injury With and Without Topical Vitamin A

*First Author: Sandri **SANDRI***

Purpose: Alkaline chemical trauma to the cornea can cause the cornea to become infected, ulcerate, perforate, and form neovascularization. Neovascularization is considered unfavorable because it can disrupt the clarity of the cornea. Neovascularization can occur when there is an imbalance between proangiogenic and antiangiogenic factors. One of the angiogenic mediators in the cornea is Vascular Endothelial Growth Factor. The aim of this study is to analyze the effect of topical vitamin A on levels of Vascular Endothelial Growth Factor A (VEGF-A) and compare the histopathological features of rat corneal neovascularization due to alkaline chemical trauma.

Methods: This research is an experimental study, post-test only with a control group design, using the Wistar strain of white rats as research objects. 36 rats were divided into 2 treatment groups: the control group received alkaline chemical trauma and topical antibiotic for 7 days, and the treatment group received topical antibiotic and topical vitamin A for 7 days. VEGF levels and histopathology cornea were checked on the eighth day.

Results: This research found that VEGF-A levels decreased in the cornea of the treatment group on day 7. There was a decrease in neovascularization of corneal histopathology in the treatment group than in the control group as well.

Conclusions: Vitamin A can inhibit VEGF-A and activate thrombospondin 2 and improve conjunctival impression cytologic findings. Furthermore, vitamin A was found to promote corneal healing after an alkali burn in rats.

Poster No.: PO-124

A Temporary Artificial Cornea: An Innovative Cost-Effective Technique for Water-Tight Closure of Globe in a Large Corneal Perforation

*First Author: Asmita **PATNE***

Purpose: To achieve a water-tight closure of the eyeball in a large corneal perforation using a bandage contact lens as a temporary artificial cornea.

Methods: In a case of large corneal perforation awaiting therapeutic keratoplasty, the surrounding epithelium was scraped. A bandage contact lens was cut or trephined to a size a little bigger than the perforation. This BCL was then placed over the perforation. Cyanoacrylate glue was applied all around 360 degrees, partially over the BCL and partially over the host cornea. Another BCL was placed over the glue.

Results: Using this technique, a water-tight closure of the eyeball was achieved. The BCL was now the temporary cornea and a pseudo anterior chamber was formed. Intraocular pressure was maintained. Further, when taken up for therapeutic keratoplasty, it allowed the use of peribulbar anaesthesia without the risk of expulsion of intraocular contents.

Conclusions: This technique, by creating a water-tight closure of the globe, reduced the risk of exposure to infective organisms. The hypotony was corrected and prevented the complications like choroidal detachment. It allowed the use of local anaesthesia for the keratoplasty.

Poster No.: PO-102

Assessing the Variability in Keratoconus Diagnostic Devices

*First Author: Akilesh **GOKUL***
*Co-Author(s): Lize **ANGELO**, Mo **ZIAEI***

Purpose: To evaluate the repeatability and agreement of a placido disc-based videokeratoscope (Medmont-E300 topographer) typically used in primary care with spectral-domain optical coherence tomography (Revo-NX) and Scheimpflug corneal tomography (Pentacam-AXL) typically used in secondary-care.

Methods: A prospective study where one eye from each subject was randomized to have a central and thinnest corneal thickness (CCT, TCT) and maximum, mean, steep, and flat keratometry (Kmax, Kmean, Ksteep, and Kflat), measured with all three devices. Three measurements were completed per device to assess intra-observer repeatability.

Results: 110 eyes from 110 patients with keratoconus were analyzed. Repeatability was best with the Pentacam for CCT, Kmax, Kmean, Ksteep and Kflat parameters (precision=9.21,0.8,0.38,0.52,0.58). The Medmont had better repeatability than the Revo with Kmax, Kmean, Ksteep and Kflat (pre cision=1.41,1.35,1.43,1.59). Revo had the best repeatability with TCT (precision=3.81). The intraclass correlation coefficient was >0.94 for all parameters in all devices. The agreement was generally poor between devices. However, there was good agreement between Pentacam and Medmont Kflat measurements (p>0.05).

Conclusions: The repeatability of keratometry parameters with the Pentacam and Medmont were greater than the Revo, suggesting a lower threshold for change for anterior corneal changes. There was poor agreement between devices. The Revo had the greatest repeatability for TCT, suggesting a lower threshold for assessing thinning in disease progression and corneal-crosslinking safety. The Pentacam provided the best overall compromise between keratometry and pachymetry repeatability.

Poster No.: PO-080

Bandage Contact Lens Management Effect for Refractory Neurotrophic Keratitis After Corneal Perforation – A Case Report

*First Author: Ju-kuo **LIN***

Purpose: Neurotrophic keratitis is a degenerative corneal disease induced by impairment or loss of corneal sensory innervation. Corneal epithelial defects, ulcers, or even perforation are the common severe sequelae. We reported a 70-year-old male with neurotrophic keratitis, who presented with sudden vision loss owing to corneal perforation. He received bandage contact lenses regularly instead of emergent surgery repair of corneal perforation. Successful treatment with fair visual improvement was attended after 2 years of follow-up.

Methods: A retrospective case report and literature review.

Results: A 70-year-old male patient presented to our ward with a sudden loss of vision in the left eye. He is a patient with neurotrophic keratitis with long-term ophthalmic medical treatment and follow-up. Past history is pancreatic cancer and hepatoma with ongoing chemotherapy. No other systemic diseases were mentioned. After an ophthalmic examination, corneal perforation was found in his left eye. After repeated management with a bandage soft contact lens, vision was regained, and corneal perforation healed after 2 weeks.

Conclusions: Neurotrophic keratitis is one of the most challenging ocular diseases. The prognosis varies and depends on the cause and degree of corneal sensitivity impairment. In this case, we found successful management with a bandage soft contact lens to the patient's corneal perforation. After a 2-year follow-up, no recurrence of corneal perforation or other complications was noted. However, more cases and prospective research may be necessary to show the promise of this modality in the future.

Poster No.: PO-094

Bibliometric Analysis of Corneal Imaging Literature

*First Author: Mohd Asyraaf **ABDUL KADIR***
*Co-Author(s): Khairidzan **MOHD KAMAL**, Adzura **SALAM***

Purpose: Bibliometrics of corneal imaging literature was conducted to identify the most impactful papers and contributors in the field.

Methods: A search on the Scopus database was undertaken with the titles of papers on the identified corneal imaging-related papers. The 20 most highly cited papers were determined from the total list of 3222 papers found. Rank-order lists by count were tabulated for the 'top 20' contributors in each of four categories: authors, institutions, countries, and journals. A subject-specific corneal-imaging-related-h-index (hCI-index) was determined for each category to serve as a scientific measure of each respective impact factor. The top 10 contributors in each category were ranked according to hCI-index.

Results: The hCI-index of the corneal imaging is 121. The 3222 papers have been cited a total of 86 415 times. 9.93% of these papers have never been cited. "Corneal confocal microscopy: A non-invasive surrogate of nerve fibre damage and repair in diabetic patients" is the most cited paper. The author, Rayaz Ahmad Malik, is also the most impactful author in the field (hCI = 41). The University of Manchester in the United Kingdom (hCI = 41), the United States (hCI = 95), and the Investigative Ophthalmology And Visual Science (hCI = 54) were identified as the most impactful contributors in the corneal imaging field.

Conclusions: Highly cited papers and impactful authors, institutions, countries, and journals are identified in the corneal imaging field. Corneal imaging is a dynamic and versatile field with potential collaborations across different specialties for future advancement.

Poster No.: PO-074

Bilateral Simultaneous Stromal Microsporidiosis Masquerading As Peripheral Ulcerative Keratitis

*First Author: Krishnaja **MANDAVA***
*Co-Author(s): Nandini **CHINNAPAIAH**, Himanshu **MATALIA***

Purpose: Bilateral simultaneous stromal microsporidiosis is rare and is not yet reported in the

literature. Hence, we are reporting a case of bilateral simultaneous stromal microsporidiosis masquerading as peripheral ulcerative keratitis.

Methods: An 85-year-old gentleman presented to us with sudden onset blurring of vision since 2 months associated with pain, discharge, and redness. He was initially diagnosed with HSV immune stromal keratitis elsewhere, followed by bilateral peripheral ulcerative keratitis, and was on topical steroid; immunology workup was done and was normal. On examination, the patient had multiple anterior stromal infiltrates with diffuse deep stromal haze with a peripheral focal epithelial defect with stromal thinning in the inferonasal quadrant with anterior chamber reaction in both eyes. Since his vision deteriorated despite treatment and in view of clinical suspicion of stromal microsporidiosis, a complete microbiology workup was done. KOH/Calcofluor white staining showed plenty of microsporidia spores and was started on topical and systemic anti-microsporidial treatment for three weeks. Since the patient did not respond to maximum medical therapy, the patient underwent therapeutic penetrating keratoplasty in both eyes at a gap of 1 week.

Results: KOH/Calcofluor white staining and histopathological examination of both corneas revealed plenty of microsporidia. The patient has not had a recurrence of infiltrates in the graft so far. Clinical suspicion, along with microbiology and histopathology workup, aided in diagnosing bilateral simultaneous microsporidiosis.

Conclusions: Bilateral simultaneous stromal microsporidiosis is a rare entity but should be suspected in cases with non-responding, chronic microbial keratitis. Microbiology workup aids in diagnosis, and early therapeutic penetrating keratoplasty should be considered to salvage the eyes.

Poster No.: PO-131

Case Report: Primary Conjunctival Basal Cell Carcinoma Mimicking an OSSN in a Young Adult Filipino

*First Author: Lorenz Jacob **MANGAHAS***
*Co-Author(s): Richmond **SIAZON***

Purpose: To present a case of a primary conjunctival basal cell carcinoma (BCC) in a 37/M Filipino.

Methods: This study describes primary conjunctival BCC, its prevalence, demographic risk factors, histopathologic features, and treatment outcome.

Results: A 37/M with a three-year history of progressively enlarging, fleshy mass on the right eye. On examination, an 8.5mm x 8.0mm pedunculated, fleshy mass at the nasal limbus encroached on the cornea. Wide excision with no touch technique and Mitomycin-C 0.04% onlay for 2 minutes was done and then irrigated with NSS. The bare sclera was covered by apposing the conjunctival edges and securing with 10-0 nylon sutures. Postoperatively, 4 cycles of Mitomycin-C 0.02% QID was given. Histopathology showed basaloid cells with peripheral palisading most consistent with BCC. Confirmatory tests showed positivity for BCL-2 and CD10 markers, and neoplastic cells showed negative EMA and CEA expression immunohistochemically. Eight weeks postoperatively, there was a proliferation of fibrovascular tissue at the excision site, which may signify recurrence. Wide excision with rush frozen section (RFS) is contemplated.

Conclusions: Primary BCC of the conjunctiva is extremely rare, and can resemble OSSN and should be considered as part of the differential diagnoses. Asian ethnicity and a relatively early age of onset compared to conjunctival BCC reported in the literature added to the conundrums of the case. Wide excision with RFS may be sufficient in managing these cases.

Poster No.: PO-133

Changes in Ocular Surface Parameters After Instillation of 3% Diquafosol Ophthalmic Solution With Polyvinylpyrrolidone in Soft Contact Lens Wearers

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Purpose: Polyvinylpyrrolidone (PVP) is used for various purposes because of its lubricating properties on the ocular surface. This study aimed to investigate changes in ocular surface parameters after the instillation of 3% diquafosol ophthalmic solution (DQS) with PVP.

Methods: We enrolled 23 soft contact lens (SCL) wearers and evaluated 23 eyes in total (aged 25.3±4.4 years). One-day disposable silicone hydrogel lenses (narafilcon A) were used in this study. DQS or DQS with PVP (LX) was instilled without SCL or 7 hours after wearing SCL. Ocular surface temperature (OST), non-invasive tear break-up time (NIBUT), and tear meniscus height (TMH) before instillation, and 5, 15, 30, 60, 80, and 120 minutes after instillation were measured.

Results: Without SCL, the instillation of LX significantly increased the TMH for up to 120 minutes after instillation, and the NIBUT was significantly prolonged for up to 80 minutes after instillation ($P<0.05$, steel test). The OST varied depending on changes in tear fluid volume. With SCL, the instillation of LX or DQS significantly increased the TMH for up to 80 or 45 minutes after instillation, and the NIBUT was significantly prolonged for up to 30 or 15 minutes after instillation ($P<0.05$). The OST with SCL also varied depending on changes in tear fluid volume.

Conclusions: When wearing SCL, compared with DQS, LX was found to increase tear fluid volume and improve tear film stability for a longer period.

Poster No.: PO-125

Changes in Ocular Surface and Precorneal Tear Film in Tobacco Smokers

*First Author: Amina **KHALID***
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Purpose: To determine the changes in "ocular surface" and "pre-corneal tear film" in tobacco smokers.

Methods: A total of 84 patients (42 smokers and 42 non-smokers) were selected for ocular evaluation in this study. After taking consent, baseline features were documented on the proforma. After that, changes in "ocular surface" and "pre-corneal tear film" were assessed by "tear film break up time (TBUT)", "Schirmer test", "corneal punctate staining" and "corneal/conjunctival sensitivity" in both smokers and non-smokers. Data was analyzed by SPSS 21.

Results: A total of 84 patients in total (42 smokers and 42 non-smokers) were included who had a mean age of 36.07 ± 5.75 years. 76.2% of study participants were male, while 23.8% were females. In terms of age and gender, there was no statistically significant difference between smokers and non-smokers. In terms of TBUT ($p = 0.000$), corneal punctate staining ($p = 0.000$) and corneal/conjunctival sensitivity ($p = 0.000$) values were significantly lower in smokers as compared to non-smokers while in terms of "Schirmer test" there was no statistically significant difference between smokers and non-smokers (p-value of 0.827).

Conclusions: The use of cigarettes results in multiple adverse effects on the "ocular surface" and "pre-corneal tear film" including unstable tear film, dry eyes, and poor sensitivity of the cornea as well as the conjunctiva, making their eyes more prone to damage and disease.

Poster No.: PO-098

Characteristic of Keratoconus Patients Underwent Cross-Linking Post COVID-19 Pandemic in Kuantan, Pahang

*First Author: Mohd Asyraaf **ABDUL KADIR***
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Purpose: To investigate the topographical characteristics of keratoconus (KC) patients who underwent corneal cross-linking (CXL) treatment in two local eye centres in Kuantan, Pahang post COVID-19 pandemic.

Methods: A retrospective analysis of medical records from the two centres of patients who underwent CXL post-COVID-19 pandemic from year June 2021 till June 2023. All patients had corneal topography using ZEISS Atlas and central corneal thickness (CCT) assessment using KONAN Specular Microscopy.

Results: There were a total of 27 patients with 48 eyes. There were 18 right eyes and 20 left eyes and 14 females and 13 males. Mean uncorrected distance visual acuity was logMAR 1.03 + 0.42. The mean age was 22.96 + 7.67 years old [10 - 43]. The mean K1 was 47.44 + 5.25 dioptres (D) [41.71 – 67.77], mean K2 was 52.03 + 6.98 D [43.42 – 71.12], mean astigmatism was 4.58 + 3.10 D [0.59 – 13.27] and mean CCT was 467.67 + 48.05 mm [370 – 569]. According to the Amsler-Krumeich classification, there were 17 eyes with Stage 1, 11 eyes with Stage 2, and 5 eyes each for Stage 3 and 4.

Conclusions: Despite the challenges imposed by delayed diagnosis and intervention during the pandemic COVID 19, most patients who underwent CXL post-COVID-19 pandemic were KC Stage 1 and 2. Early awareness of visual distortion in young patients with risk factors for KC should be encouraged for earlier eye examinations. Timely CXL intervention in KC may slow the disease progression, minimise visual impairment and prevent potential sinister complications.

Poster No.: PO-128

Clinical Characteristics of Elizabethkingia Meningoseptica Ophthalmic Infections: A Case Series

*First Author: Kai Ching Peter **LEUNG***
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Purpose: Elizabethkingia is a Gram-negative, obligate aerobic, oxidase-positive bacillus that is known to cause a variety of nosocomial infections and has emerged as an important pathogen because of multiple anti-microbial resistance. We present the first case series of Elizabethkingia ophthalmic infections, with specific emphasis on its clinical spectrum, risk factors, treatment and outcome.

Methods: Microbiological specimens growing Elizabethkingia were reviewed retrospectively at a regional tertiary hospital from 2005 to 2019. Clinical manifestation, risk factors, treatment including types of antibiotics, treatment duration, and clinical outcome were documented.

Results: Ten cases of culture-positive Elizabethkingia ophthalmic infection were identified, which all cultured E. meningoseptica. Four cases of keratitis, three cases of conjunctivitis, two cases of blepharitis and one case of blepharitis-conjunctivitis were observed. Four cases were found to be associated with contact lens use and were discovered to colonize E. meningoseptica. One case of blepharitis was associated with an ocular prosthesis (scleral shell) in an eviscerated eye. Fluoroquinolone and chloramphenicol were the most commonly used topical antibiotics for treatment. The mean treatment duration for all infections was averaged at 6.5 weeks.

Conclusions: E. meningoseptica is the predominant species that causes ophthalmological-related Elizabethkingia infections and is found most frequently on the ocular surface. Contact lens use and ocular prosthesis appear to be risk factors for infection due to ocular surface barrier disruption and bacteria colonization. A combination of fluoroquinolone and chloramphenicol is a safe and effective treatment against Elizabethkingia ocular infections. Further studies are required to determine the susceptibility of commonly used topical anti-microbial agents to Elizabethkingia species.

Poster No.: PO-109

Clinical Outcomes of Minor Ipsilateral-Simple Limbal Epithelial Transplantation (Mini-SLET) Technique for the Treatment of Pterygium

*First Author: Ronak **SOLANKI***

Purpose: To assess the clinical outcomes in terms of recurrence rates, cosmetic outcomes, and complications of a relatively newer technique of pterygium management.

Methods: Thirty-four patients who presented to us with pterygium in September and October 2021 were evaluated in detail, and pterygium was graded based on the Tan et al grading system. Patients were then operated for the pterygium excision with Amniotic membrane, fibrin glue Reliseal (Reliance Industries, India) and mini-SLET tissue from the same eye. Postoperative evaluation was done on 1st day, 1 week, 1 month, 3 months and 6 months post operatively and outcomes were noted in the form of recurrences, complications and cosmetic appearance.

Results: Thirty-four (16 female and 18 male) patients with a mean age of 47.1 were operated on 15 right eyes and 19 left eyes. 41.17% (14/34) were grade 1, 47.05% (16/34) were grade 2, and 11.76% were grade 3 based on Tan et al grading. Recurrence 1 (2.94%) and graft displacement was seen in 1 (2.94%) patient. Similarly, 1 patient each developed glue cyst and dellen formation at the donor site as part of complications. Cosmetic outcomes were good on serial photographic evaluation. Two (5.88%) patients benefited more from this approach since they were diagnosed with glaucoma and were planned for a combined trabeculectomy and cataract surgery at a later date.

Conclusions: Mini-SLET procedure is a reproducible technique requiring much less tissue than conventional conjunctival autografts, having comparable rates of early recurrence and offers the advantages of epithelial stem cells and is justified for use in future glaucoma patients.

Poster No.: PO-110

Collagen Cross Linking for Microbial Keratitis-A Promising Treatment Modality

*First Author: Manmeet **SINGH***
*Co-Author(s): Sudhakar **POTTI***

Purpose: To evaluate the role of Adjuvant Collagen cross-linking (CXL) in the medical management of microbial keratitis.

Methods: Study design: Prospective randomised interventional study. Sample Size: 44 subjects (22 cases and controls). Sample Selection: All eligible patients attending OPD, consenting to the study, and satisfying inclusion & exclusion criteria were included. Inclusion criterion: Patients with proven bacterial and fungal keratitis (SMEAR/CULTURE) of ulcer size less than 6mm and involving less than 50% of the depth of cornea. Age > 18 years Patients willing to participate in the study. Exclusion criteria: Severe keratitis: limbal involvement, perforated ulcer, descemetocele, diameter >6mm and involving > 50% of the depth of cornea. Smear/culture negative, previous history of viral keratitis. Sero-positive patients, patients with uncontrolled diabetes mellitus, and patients on systemic immunosuppressants. The case group underwent CXL & and the control group was given antimicrobial therapy.

Results: We observed that in the cases immediately after CXL in the first week, there was a drastic reduction in the size of stromal infiltrate as compared to the controls. This could be attributed to the additional antimicrobial effect of CXL which was absent in controls. The cases healed in 3 weeks as compared to controls which took 5 weeks. At 12 weeks, vision change in cases group 0.18+- 0.78, in controls 0.76+- 0.74 and the P-value was 0.012.

Conclusions: CXL is a promising option as the primary adjuvant therapy to medical management of microbial keratitis (i.e. bacterial and fungal) <6mm in size and < 50% of the depth of cornea, in quickening the healing process / eradicating the causative pathogens.

Poster No.: PO-086

Combined Use of Therapeutic Hyper-CI Contact Lens and Insulin Eye Drops for the Treatment of Recalcitrant Neurotrophic Keratopathy

*First Author: Giuseppe **GIANNACCARE***
*Co-Author(s): Massimiliano **BORSELLI**, Giulia **COCO**, Costanza **ROSSI**, Vincenzo **SCORCIA***

Purpose: To report the successful outcome of two cases of refractory neurotrophic keratopathy (NK) treated with topical insulin (1 unit per mL) in conjunction with the wearing of therapeutic soft contact lens (CL) Hyper-CL™ able to increase the contact time between the drug and the corneal surface.

Methods: Report of two clinical cases.

Results: Case #1 - A 40-year-old man presented with a stage III NK (epithelial defect of 7x4 mm) that developed after receiving radiotherapy for the treatment of a nasosinusal carcinoma. Despite 3 months of treatments with bandage CL, lubricants and autologous serum, no improvements were observed. Therefore, insulin-based eye drops were prescribed 4 times daily and the Hyper-CL™ was applied. After 10 days, a reduction in the epithelial defect was observed (5x3 mm), while a complete healing was reached after 20 days of therapy. Case #2 - A 37-year-old woman with a history of deep anterior lamellar keratoplasty for keratoconus (2017) and repeated surgery (2019) presented with a stage II NK (epithelial defect of 1.5x1.5 mm) in the corneal graft. No improvements were registered after 4 months of treatments using bandage CL, lubricants and autologous serum. She started using insulin-based eye drops (4 times daily) and wearing Hyper-CL™. Serial follow-up visits were conducted every 10 days; a progressive improvement was noted up to the complete re-epithelialization reached after 50 days.

Conclusions: The combination of insulin eye drops and therapeutic soft CL Hyper-CL™ allowed the healing of recalcitrant NK not responsive to conventional treatment.

Poster No.: PO-130

Comparing Outcomes of Pterygium Surgery Using Bare Sclera With Mitomycin C Drops or Conjunctival Limbal Autograft in a Philippine Tertiary Eye Center

*First Author: Mary Ellaine **DIAZ***
*Co-Author(s): Lawrence Marlon **PE***

Purpose: Post-operative recurrence has been a problem in most surgical techniques for pterygium. Mitomycin C (MMC) has been a good adjunct in significantly decreasing the rates of recurrence. Conjunctival limbal autograft (CLAG) is a well-known technique that provides a lower rate of recurrence, however bare sclera resection with adjuvant MMC may still be an alternative in cases where CLAG cannot be done. In this study, we will compare outcomes of BSR with a lower dosage and duration of MMC 0.02% vs CLAG.

Methods: This is a retrospective cohort that reviewed patients with primary pterygium that underwent excision via bare sclera resection with topical Mitomycin C 0.02%, TID for 3 days (BSR w/ MMC), or conjunctival limbal autograft (CLAG) from January 2010 to December 2021.

Results: Among 201 eyes, 145 underwent BSR w/ MMC, while 56 had CLAG. The mean age was 49.8 years, median follow-up was 12 weeks. In the BSR w/ MMC group, 6.2% of eyes had a recurrence, while CLAG had none. Those who had recurrence were significantly younger ($p < 0.001$). CLAG was associated with a decreased risk of recurrence but was not statistically significant.

Conclusions: Despite the lower dosage, BSR w/ MMC 0.02% TID for 9 doses, still had similar outcomes with other regimens in terms of recurrence rate. Conjunctival limbal autograft had better outcomes, despite the lack of significant results.

Poster No.: PO-126

Comparison of Intralesional Triamcinolone Acetonide Injection Versus Surgical Intervention for Management of Primary Chalazion

*First Author: Hafiz Muhammad Jahan **ZAIB***
*Co-Author(s): Amina **KHALID***

Purpose: To compare the effectiveness of intralesional steroid injection versus Incision and curettage in the management of primary chalazion.

Methods: Eighty patients were divided into two groups of 40 each through consecutive sampling. Patients with primary chalazion of the size >5mm, age group 18 to 50 years and either gender were included. Patients with recurrent, multiple and infected chalazia were excluded. All patients underwent complete ocular examination. Group A underwent Incision and curettage, while in Group B a 28 gauge needle with a 1 ml syringe was used to inject 0.25 ml of 40 mg/ml Triamcinolone Acetonide into the chalazion via transcutaneous route. Success was defined as an 80% reduction in the size of the chalazion after one month. The chi-square test was used for the equivalence of treatment efficacy between the groups.

Results: The age range in this study was 18 to 50 years. The mean age was 34.10 ± 5.87 years in Group A and 35.975 ± 7.60 years in Group B. The procedure was successful in 31 (77.5%) individuals in Group A and 33 (82.5%) individuals in Group B ($P = 0.576$), which was statistically insignificant. Stratification with respect to gender and age also showed no statistically significant difference between the two groups ($p > 0.05$).

Conclusions: Intralesional steroid injection and incision/curettage are equally effective in the management of primary chalazion.

Poster No.: PO-103

Concomitant Bilateral Keratitis by Candida tropicalis in an HIV Seropositive Patient With Dry Eye

*First Author: Shilpa **TARINI***

Purpose: This case study presents a detailed description of the clinical features of bilateral keratitis

caused by Candida tropicalis in an HIV seropositive patient with dry eye.

Methods: A 48-year-old male diagnosed with HIV presented with complaints of painful eyes, excessive tearing, and photophobia that persisted for a month. He had previously been diagnosed with toxic keratitis and had been prescribed hourly topical steroids for four days before visiting our clinic. On presentation, his visual acuity was CF 1m in the RE and CFCF in the LE. On examination, there was a large epithelial defect in the inferior and central cornea with multiple dot-like, raised infiltrates in both eyes. Additionally, he had a poor ocular surface with reduced tear meniscus and Meibomian gland dysfunction. Corneal scraping revealed multiple budding yeast cells with pseudohyphae on smear examination. He was treated with frequent topical voriconazole, lubricants, and cycloplegics, along with oral ketoconazole. Later on, culture showed growth of Candida tropicalis, which was sensitive to Voriconazole.

Results: The right eye has shown improvement with medical management alone, and the left eye subsequently developed a secondary infection with Streptococcus pneumoniae followed by a perforation for which surgical intervention was done.

Conclusions: There have been no reports of concomitant bilateral keratitis caused by candida tropicalis in an HIV seropositive patient with dry eye and we report the same. This case report underscores the correlation between compromised ocular surface, immunocompromised state, and short-term use of frequent topical steroids, which potentially triggered the infection.

Poster No.: PO-083

Corneal Endothelial Cell Damage in Acanthamoeba Keratitis

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Purpose: Acanthamoeba keratitis (AK) is a challenging corneal infection with often unfavorable outcomes. We report the interrelation between 0.02% chlorhexidine eye drops and corneal endothelial cell density (ECD) changes.

Methods: We evaluated five eyes from four AK patients diagnosed at the National Center for Geriatrics and Gerontology, Japan, between January 2019 and March 2023. All had post-treatment measurable ECD. Patients' average age was 23.5±4.5. AK was confirmed by PCR and clinical features. ECD was analyzed using both contact and non-contact specular microscopy. We assessed the duration of 0.02% chlorhexidine use, best-corrected visual acuity (BCVA), and ECD.

Results: All were disposable soft contact lens users. Treatment started on average 50±6.6 days after infection onset. The mean pre-treatment BCVA was 0.4. While one eye had a post-treatment BCVA of 0.2, the other four eyes had BCVA better than 1.0. The 0.02% chlorhexidine treatment lasted an average of 71±16.7 (50~85) days, tapering off as symptoms improved. The mean corneal endothelial cell density after healing was1935±787 cells/mm^2 (1156~2900). A 50% or greater decrease in corneal endothelial cell density was observed in three eyes (75%). However, no significant correlation was found between the decrease in ECD and duration of use (p=0.20).

Conclusions: Utilizing 0.02% chlorhexidine for AK treatment led to notable ECD declines. Careful consideration of the drug's application and its inherent toxicity is crucial.

Poster No.: PO-129

Deep Sequencing Analysis of Clinical Samples From Patients With Acute Infectious Conjunctivitis in Khon Kaen, Thailand: A One-Year Prospective Case Series Study

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Purpose: Conjunctivitis outbreaks remain a major global public health problem with a limited understanding of the etiology. Determining the precise etiology may improve treatment and outcome. Our study aimed to determine the causative pathogen of infectious conjunctivitis.

Methods: This prospective study was conducted from June 2021 to June 2022 in Khon Kaen, Thailand. All outpatients presented with presumed infectious conjunctivitis with symptoms onset lasting 14 days or less were enrolled. Three samples were obtained from each participant: one nasal swab and two conjunctiva swabs (one from each eye). Samples were then processed for metagenomic RNA deep sequencing (RNA-seq).

Results: Samples from 10 participants were analyzed. The most common presenting symptom was tearing at 70% (95% confidence interval (95%CI): 35-93%). Itchiness and purulent discharge were equally reported at 50% (95%CI: 19-81%). The most common pathogen identified was Vittaforma corneae (30 %). Bacteria was identified in 2/10 (20%) of the patients. Those included Haemophilus parainfluenzae and Campylobacter ureolyticus. Viral etiology (Epstein-Barr virus and human adenovirus D) was identified in 2/10 (20%) patients. Thirty percent of the participants had codetection of more than one associated pathogen.

Conclusions: The pathogen profile for acute infectious conjunctivitis in Khon Kaen, Thailand, is diverse. While we predicted human adenovirus to be predominant, the fungus V. corneae was the most common pathogen identified. Continual enrollment in the coming years

will provide further resolution of the pathogen profile for the northeast region of Thailand.

Poster No.: PO-097

Diagnostic Significance of Atypical Crystalline Keratopathy in Smoldering Multiple Myeloma: A Case Report

*First Author: Mutsumi **KOYAMA***
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Purpose: To elucidate the diagnostic significance of atypical crystalline keratopathy as an early indicator for smoldering multiple myeloma (SMM), a less common ocular manifestation of systemic gammopathy.

Methods: A comprehensive ophthalmic examination was conducted on a 62-year-old male with bilateral blurry vision, who had no known history of systemic or ocular diseases except myopia. The evaluation comprised slit-lamp biomicroscopy, anterior segment optical coherence tomography (AS-OCT), and in vivo confocal microscopy (IVCM). Additionally, a complete hematological profile, including immunofixation, was undertaken to ascertain the underlying systemic condition.

Results: Although the best corrected visual acuity was 20/15 in both eyes, slit-lamp biomicroscopy showed bilateral diffuse superficial ground-glass haze, characterized by numerous refractile crystals, sparing the pupil area. Within the layer of corneal epithelium and anterior stroma, AS-OCT showed hazy opacity and IVCM confirmed hyperreflective spindle-shaped and granular crystals. The optic media and posterior segments were normal. Hematological analysis culminated in the diagnosis of IgG kappa SMM. Due to the absence of systemic symptoms, the patient has been chosen for regular hematological monitoring. A one-year follow-up revealed a gradual spread of corneal crystalline opacity over the pupil area, with a preserved visual acuity of 20/15 in both eyes.

Conclusions: SMM may be diagnosed late due to its asymptomatic nature. We present an unusual case of paraproteinemic keratopathy with a crystalline deposit in the superficial cornea that helped in the diagnosis of SMM. Corneal in vivo confocal microscopy examination may assist in the early diagnosis of SMM by non-invasively identifying the nature of corneal deposits.

Poster No.: PO-132

Dupilumab-Associated Ocular Manifestations: A Review of Clinical Presentations and Management

*First Author: Chris **LIM***

Purpose: Dupilumab is a first-in-class biologic approved for the treatment of a range of atopic conditions. Since gaining traction as an effective treatment modality in the treatment of moderate to severe atopic dermatitis, multiple reports have highlighted the occurrences of dupilumab-associated ocular side effects (DOSE). Some were severe enough to necessitate treatment discontinuation in these patients. It is crucial that ophthalmologists understand the spectrum of ophthalmic manifestations that may arise because of dupilumab initiation, and our collective experience in its management.

Methods: A systematic review of existing literature was performed to identify clinical studies that documented and characterised patients with DOSE, and their treatment outcomes.

Results: DOSE ranges from mild diseases such as conjunctivitis, dry eyes, and blepharitis, to more severe sight-threatening manifestations, which includes intraocular inflammation and cicatrising conjunctivitis. A range of treatment modalities have been proposed in the literature pertaining to the management of the spectrum of ocular manifestations encountered. We have evaluated these modalities and proposed a treatment algorithm for DOSE (Figure 1). This is practice-changing and has been instituted by colleagues both locally and overseas to supplement their management of patients who are on dupilumab.

Conclusions: This is the first comprehensive review which has systematically consolidated the full spectrum of DOSE and their respective treatment modalities. Despite increasing usage of dupilumab, DOSE is only starting to be recognised as a unique disease entity - our findings serve as an important reference for future studies to understand the pathophysiology underpinning these observations, better characterise these manifestations, and standardise management.

Poster No.: PO-134

Effects of Ranibizumab on Microvasculature, Oxidative Stress and Recurrence in Primary Pterygium Surgery

*First Author: Yap **JIN YI***
*Co-Author(s): Mohtar **IBRAHIM**, Salzihan **SALLEH**, Evelyn **TAI***

Purpose: Pterygium is a fibrovascular conjunctival growth which occurs in conditions of chronic ultraviolet radiation exposure. Although the mechanisms underlying recurrence post pterygium excision have not been fully elucidated, vascular endothelial growth factor and oxidative stress are hypothesized to play a pivotal role. This study aimed to evaluate the effects of pre-operative ranibizumab injection on microvascular density (MVD), 8-hydroxyguanosine (8-OHdG) and recurrence after surgical excision of primary pterygium.

Methods: This was a prospective cohort interventional study involving 52 patients with primary pterygium divided equally into control and intervention groups. The intervention group received 0.5mg ranibizumab

two weeks prior to pterygium excision surgery. All participants had pterygium excision with autologous conjunctival grafts under local anaesthesia. Excised pterygium tissues were evaluated for MVD and 8-OHdG. Each participant was monitored for recurrence up to two years after intervention. Pearson chi-square and Fisher exact tests were used to examine the differences between both groups.

Results: The intervention group had significantly lower MVD ($p < 0.001$) and frequency of recurrence ($p < 0.001$) than the control group. There was no significant difference in 8-OHdG scores between the groups ($p = 0.482$). Reduction in MVD was significantly associated with a lower frequency of pterygium recurrence ($p = 0.004$).

Conclusions: Pre-operative intralesional ranibizumab decreases pterygium recurrence rate after surgical excision via modulation of vascularity. Ranibizumab may be considered as an adjunctive treatment in pterygium surgery with a high risk of recurrence.

Poster No.: PO-100

Efficacy of Different Concentrations of Autologous Serum Eye Drops in he Treatment of Ocular Surface Diseases: A Systematic Literature Review

*First Author: Annisa **PERTIWI***

Purpose: To evaluate the efficacy of different autologous serum eye drops (ASED) concentrations in treating ocular surface diseases (OSD).

Methods: All articles assessing the efficacy of 20%, 50%, or 100% ASED were retrieved from PubMed, Cochrane, ScienceDirect, and EBSCO electronic databases and checked for applicability. Efficacy was evaluated in terms of the symptoms scoring, corneal staining, and tear film stability based on tear break-up time (TBUT) and the Schirmer test.

Results: Seven randomized clinical trials (RCTs), three cohort studies, and one prospective study were included in this review. All studies consistently reported improvement in ocular symptoms after applying 20%, 50%, and 100% ASED despite the different methods to measure participant-reported symptoms, with the duration of ASED administration varying between two weeks and one year. Significant improvement of TBUT and Schirmer test values in patients with Sjögren's syndromes (SS)-associated dry eyes treated with 20% or 50% ASED were inconsistent. Corneal fluorescein staining score was assessed in all studies, with a lower post-treatment score in 100% ASED compared to 50% ASED. The speed of epithelial closure was significantly faster in subjects receiving 100% ASED compared to 50% ASED, also in subjects receiving 50% ASED compared to conventional artificial tears.

Conclusions: ASED was effective in improving subjective ocular symptoms in various spectrums of OSD regardless of its concentration. The administration of 100% ASED is recommended to decrease ocular symptoms in SS patients and to increase the healing speed in cases of persistent epithelial defect. In non-SS-associated dry eye patients, 50% ASED is as effective as 100% ASED.

Poster No.: PO-123

Efficacy of Thermomechanical Ablation (Tixel C) in the Treatment of Meibomian Gland Dysfunction in Japan

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Purpose: Thermomechanical ablation (TMA®) is an innovative technique that transfers thermal energy from the skin surface to deeper tissues. This is achieved by briefly contacting the skin with a pyramid-shaped tip heated to 400°C. The efficacy of this technique in treating meibomian gland dysfunction (MGD) has been previously reported. In this study, we aimed to rigorously evaluate the effectiveness and safety of TMA® in patients diagnosed with MGD.

Methods: We recruited twenty MGD patients (4 males, 16 females; average age 53.6 ± 16.7) from four distinct facilities. All subjects underwent TMA® treatment (Tixel C, Novoxel). Treatments were administered three times, with each session separated by 2-week intervals. Parameters: 6 ms pulse width, 400µm depth (single pulse), 10 shots applied to both the upper and lower eyelids. Primary endpoint: tear film break-up time (BUT); secondary: subjective symptoms (OSDI). Safety was determined by adverse events incidence.

Results: Out of the initial 20 participants, three dropped out, leaving 17 for our analysis. BUT showed an improvement with a mean change of 2.470 seconds (confidence interval 1.386 - 3.555s) post the third treatment at the 4-week mark. The P-value was 0.0795 with a 1.5-second external reference. Subjective symptoms improved, with a mean change of -29.459 (CI -39.894 to -19.023) ($P < 0.0001$). No adverse events were reported during the follow-up.

Conclusions: Our findings suggest that TMA for MGD demonstrated promising efficacy and safety. As we progress, it's imperative to develop and refine protocols tailored for Asian MGD patients.

Poster No.: PO-115

Efficacy of a Novel Ophthalmic Cyclosporine a Gel in Moderate to Severe Dry Eye Disease: a Post-hoc Analysis of a Randomized Clinical Trial

*First Author: Shiyou **ZHOU***

Purpose: To confirm the efficacy of a novel ophthalmic cyclosporine A gel (CyclAGel, 0.05% CsA) in the

treatment of moderate-to-severe dry eye disease (DED) by demonstrating complete resolution of corneal staining using the modified Oxford grading scale.

Methods: This post hoc responder analysis was performed using data from the phase 3 COSMO study. which was a 12-week, prospective, double-masked, multicenter, placebo-controlled, randomized clinical trial that previously demonstrated the efficacy [reduction of the inferior corneal staining score (ICSS) ≥ 1 point] of CyclAGel in DED. Participants with positive corneal staining scores (modified Oxford score ≥1.0) at baseline were re-evaluated at D84. The percentage of patients with complete resolution of corneal staining (modified Oxford score=0, complete absence of staining) were identified, a logistic regression analysis of the proportion of participants with modified Oxford score=0 at day 84 was performed.

Results: In total, 551 participants (273 in the placebo and 278 in the CyclAGel group) were analyzed. 25.9%, (72/278) in the CyclaAGel group vs. 13.2% (36/273) in the placebo group exhibited complete corneal clearing (odds ratio range, 2.30 [95%CI, 1.48-3.58], p<0.001). These results were consistent with the study's original primary endpoint (the proportion of subjects with ≥1-point improvement in ICSS from baseline to day 84 [73.7% (232/315) in the CyclAGel group vs 53.2% (166/312) in the vehicle group (P<0.0001)].).

Conclusions: This post hoc finding suggests that ophthalmic cyclosporine A gel (CyclAGel, 0.05% CsA), treatment may be associated with a clinically meaningful and complete resolution of corneal epithelial staining in participants with moderate to severe DED.

Poster No.: PO-105

Ensuring Ocular Comfort and Sustaining Tear Film Stability: Insights From Transitioning to Verofilcon a Silicone Hydrogel Contact Lens

*First Author: Chen-hua **LIN***
*Co-Author(s): Hsiu-hui **HSIEH**, Kai-feng **HUNG**, Elizabeth **SHEN**, Yi-chen **SUN***

Purpose: To assess the comfort and satisfaction of individuals switching from Narafilcon A daily disposable silicone hydrogel (SiHy) contact lenses to Verofilcon A daily disposable SiHy lenses with advanced surface modification. The changes in non-invasive tear break-up time (NITBUT) throughout the day while wearing the Verofilcon A were also evaluated.

Methods: This is a prospective single-center study. Participants who were habitual wearers of Narafilcon A lenses switched to Verofilcon A lenses. Subjects wear Verofilcon A for at least 8 hours daily. After 7 days of wearing the new lenses, their comfort level was evaluated using a 100-point visual analogue scale (VAS) (1=poor to 100=excellent). Satisfaction questionnaires were also administered to gather feedback. NITBUT measurements were obtained 15 minutes and 6 hours after lens insertion using the Oculus Keratograph 5M.

Results: Seventy eyes of 35 patients were included in the study. The mean VAS rating was 84 points, indicating a high comfort level after switching to Verofilcon A lenses. At the 1-week follow-up, 87.1% agreed or strongly agreed that they were satisfied with the overall wear experience after switching to Verofilcon A. The average NITBUT values for pre-lens, 15 minutes and 6 hours post-insertion of Verofilcon A were 15.5±6.4 sec, 13.5±6.2 sec, and 13.3±4.6 sec, respectively.

Conclusions: The Smartsurface® technology, in conjunction with the silicone hydrogel core of Verofilcon A, offers a high level of comfort and satisfaction to lens wearers. Verofilcon A helps maintain a stable tear film throughout the day further enhancing the advantages of this unique design.

Poster No.: PO-135

Evaluating Factors Affecting Non-attendance in a Tertiary Keratoconus Clinic to Address Health Inequities

*First Author: Lize **ANGELO***
*Co-Author(s): Charles **MCGHEE**, Himanshu **WADHWA**, Mo **ZIAEI***

Purpose: Determine the barriers to gaining access to the crosslinking service in Auckland, particularly among indigenous Māori and Pacific Peoples.

Methods: Data from patient records at Auckland District Health Board was collected prospectively over 12 months. Parameters included age, gender, BMI, ethnicity, NZ Deprivation score of residence (NZDep; an area-based measure of socioeconomic status, 1=low deprivation - 10=high deprivation), disease severity (maximum keratometry and thinnest corneal thickness), attendance, distance traveled to the clinic, car ownership, employment, and visual outcomes.

Results: A total of 454 subjects with keratoconus had a mean age of 24.1±0.8years, a mean BMI of 33.0±9.7 and 43% were female. Pacific People consisted 40.2% of the population, Māori 27.2%, Europeans 21.2%, Asian 9.9% and MELAA 1.3%. The mean distance traveled was 12.5±9.5km, NZDep was 6.8±2.6, and attendance was 69.0±42.5%. The lowest attendance was in Pacific People, and the highest was in Asians (58.88% vs 90%, p=0.02). The mean worst-eye visual acuity at attendance was 0.75±0.47 logMAR (6/35). Māori and Pacific People had the highest NZDep (p<0.001), presented younger (p=0.02), had higher disease severity (p<0.001), and worse visual acuity (p<0.001).

Conclusions: A low rate of attendance was seen in this patient cohort attending a keratoconus clinic. Pacific People and Māori presented younger with worse disease severity and visual acuity but also had the

highest non-attendance rate. Our results suggest that deprivation, ethnicity, and unemployment were found to be active barriers to clinic attendance.

Poster No.: PO-079

Experimental and Lab Model of Potential Gene Therapy in Keratoconus

*First Author: Pooja **KHAMAR***

Purpose: Keratoconus is characterised by progressive stromal weakness and thinning. Levels of collagen crosslinking enzyme lysyl oxidase (LOX) are inversely related to the severity of keratoconus. This study explores the potential benefits of enhancing LOX expression in keratoconic tissues. We also aim to establish the safety and efficacy of recombinant AAV-mediated gene delivery of Lysyl oxidase (LOX) in corneal tissues as a potential therapy for keratoconus.

Methods: After ethical approval and due consent, human donor corneal lenticules were obtained from SMILE surgeries. LOX expressing AAV vectors were generated and purified. Human donor corneal lenticules and mouse corneas were transduced with AAV.LOX and AAV.GFP as controls. LOX, Collagen I, Collagen IV and MMP9 levels were measured in human ex-vivo tissues (4 weeks later) and mouse corneas (6 weeks later) by immunofluorescence (IF) and mRNA analysis.

Results: AAV transduction of corneal tissues was safe in mouse corneas with no haze/other ocular surface events on periodic examination. Gene therapy vectors effectively transduced corneal fibroblasts in both primary human and mouse corneas. Higher levels of LOX expression correlated with higher expression of collagens and ECM/fibrosis genes like Fibronectin and a-SMA, and lower basal levels of MMP9.

Conclusions: Recombinant AAV-mediated LOX therapy in ectatic corneas is safe and effective. LOX augmentation enhances the expression of collagens and reduces MMP9 levels, thus blocking the thinning processes and strengthening the cornea. Reduced MMP9 can alleviate the inflammatory milieu, hence treating keratoconus.

Poster No.: PO-602

Factors Causing Delayed Sterile Corneal Melting Post Collagen Cross Linking (C3R) With Riboflavin and UVA

*First Author: Chinmay **MAHATME***
*Co-Author(s): Revathi **RAJARAMAN**, Mangala **P***

Purpose: In this case series, we highlight a group of rare cases where delayed sterile corneal melting was seen even 7 to 12 years after C3R was performed for keratoconus. We also tried to evaluate the contributory factors that might have played a role in leading to such a presentation.

Methods: This was an observational study where 4 cases, with a history of C3R being done for keratoconus more than 7 years ago (range 7-12 years), presented to our outpatient department with signs and symptoms of corneal thinning or perforation. All cases underwent clinical and microbiological investigations before they were considered to be cases of delayed sterile corneal melting post-C3R. They were managed either medically or surgically. The history and clinical features of these patients were then evaluated to investigate the cause of this corneal melting.

Results: Two patients required a tectonic keratoplasty, whereas 2 patients were managed medically. All cases responded well to medical or surgical management. Dry eyes (25%), frequent eye rubbing and uncontrolled allergic conditions (75%) were identified as the probable causative factors for the delayed corneal melting in these cases.

Conclusions: Patients with keratoconus need a long-term follow-up even after performing C3R. Dry eyes and allergic conditions may lead to delayed complications as severe as corneal melt. These patients need good control of dry eye disease, allergic conditions, and other ocular surface abnormalities to ensure long-term safety and efficacy.

Poster No.: PO-099

Five-Year Outcomes Following High Intensity and High Energy Transepithelial Crosslinking

*First Author: Tiwini **HEMI***
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Purpose: This study aims to determine the effectiveness of high-intensity and high-energy transepithelial crosslinking in halting the progression of keratoconus over a five-year period.

Methods: Prospective study of 25 eyes from 25 patients with progressive keratoconus who received transepithelial (45mW/cm2,7.2J/cm2) Crosslinking. Visual and refractive data, including uncorrected visual acuity (UCVA), best corrected visual acuity (BCVA), and manifest refraction spherical equivalent (MRSE), as well as topographic indices, including Kmax and TCT, were collected at the time of procedure and five-year follow-up. Comparisons between these two time-points were performed.

Results: Preliminary results of 18 eyes from 18 patients five years following transepithelial Crosslinking. The average age of patients at the time of the procedure who received transepithelial crosslinking was 29.21± 7.93. When comparing data at five-year follow-up to the time of the procedure, there was no significant difference in UCVA (0.64 (6/26)± 0.36 vs 0.74 (6/33)±0.49, p= 0.21), BCVA (0.24 (6/10) +/- 0.52 vs 0.25 (6/10) +/- 0.20, p=0.92), MRSE (-5.44± 5.32 vs -5.58±5.07, p=0.91), Kmax (59.528±7.32 D vs 59.72±6.55 D, p=0.79), and TCT (423±36 µm vs 426±34

µm, p=0.35). No complications were encountered for all patients.

Conclusions: The lack of complications and significant change in all visual, refractive, and tomographic indices between the time of transepithelial crosslinking and five-year follow-up suggests that the procedure is safe and effective at halting the progression of keratoconus.

Poster No.: PO-073

Fluence Customised Titration of Ultraviolet Energy for Extremely Thin Keratoconic Corneas (<350 Microns) Using a Next Generation Cross-Linking Calculator

*First Author: Amulya **PUNATI***
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Purpose: To evaluate the performance of customised fluence in cross-linking protocols for thinner corneas of less than 350 microns thickness using the NXT (New generation CXL for Thin Cornea) UV-A calculator.

Methods: Fifty-four eyes with progressive keratoconus and mean thinnest corneal thickness (TCT) <350µm underwent personalized UV cross-linking. Pre-op and post-op evaluations included corneal tomography, specular microscopy and epithelial mapping. NXT calculator determined UV fluence times for UV powers of 9 and 3 mW/cm2 based on TCT. The structural integrity of collagen fibrils was studied using polarisation-sensitive optical coherence tomography (PS-OCT). Pre-operative and post-operative (36 months) topography and PS-OCT scans of 10 mm diameter were captured, and corneal fibril distribution images were generated using phase retardation (PR) maps. Follow-up at intervals up to 12 months.

Results: No visual loss or haze post-operatively. Reduced K1 and K2 values at 6 months with stable Kmax. Steady cell density on specular microscopy. 64% showed a demarcation line at 3 months. PS-OCT revealed stronger collagen post-op. PR maps showed birefringence stability up to 12 months.

Conclusions: Titration of UV “on” time-based on the corneal thickness, riboflavin concentration, and incident intensity broadens our horizon for offering corneal collagen crosslinking for the thinner cornea. This minimizes the need for a corneal transplant. The NXT Calculator thus provides an easy, quick, user-friendly approach to CXL in thin corneas, with no additional tools and no risk of corneal scarring.

Poster No.: PO-076

Fungal Graft Infection Masquerading As Urrets-Zavalia Syndrome

*First Author: Neha **KUMARI***
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Purpose: To describe atypical initial clinical presentation in patient of fungal graft infection post deep anterior lamellar keratoplasty.

Methods: A 24-year-old male patient underwent deep anterior lamellar keratoplasty for advanced keratoconus in his right eye. On the first day post-surgery, there was mild edema in the graft. The anterior chamber was irregular in depth, the pupil was fixed dilated, not reacting to light or accommodation, and was irregular in shape. There were 1+ cells in the anterior chamber, but no flare. Topical steroids were increased to 2 hourly in frequency and intravenous 2cc dexamethasone was injected. The next day the patient developed multiple round infiltrates at the interface, and keratic precipitates & moderate flare were noted. A culture report of a corneoscleral button was available by then, and reported candida microorganism. Topical steroids were stopped, and the patient was started on topical and systemic antifungals.

Results: The patient is currently in the resolving stage of graft infection. Vision has improved and inflammation is settling.

Conclusions: Fungal infection can present as Urrets-Zavalia in initial days. A high index of suspicion for infection should be kept in mind, and steroids should be used cautiously.

Poster No.: PO-111

Genetic Testing for Mutations in TGFBI in Thai Patients with Corneal Dystrophy

*First Author: Sarutaya **SOOKPARKOB***
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Purpose: Corneal dystrophy (CD) represents a cluster of rare, genetically heterogeneous eye disorders caused by genetic mutations. Epithelial-stromal CD is one type of corneal dystrophy caused by a mutation in the TGFBI. Previous studies have demonstrated the hotspot mutations in TGFBI in most patients with epithelial-stromal CD. Therefore, our study aimed to characterize the hotspot of corneal dystrophy in Thai patients.

Methods: All Thai patients diagnosed with TGFBI-induced CD by a corneal expert ophthalmologist through the examination were recruited. They were informed about the process of the study. Then a documented informed consent was obtained. Blood samples were collected, polymerase chain reaction and Sanger sequencing, specifically exon 4 and 12, were subsequently applied.

Results: Nine patients who were clinically diagnosed with TGFBI-induced CD were enrolled. Only one patient with the clinical granular type revealed the c.1663C>T (p.Arg555Trp), which is the hotspot mutation. Our result was quite surprising, as we could identify the common mutation in only 11% (one out of nine patients). This may not enhance our understanding of the genetic etiology of epithelial-stromal CD among the Thai population, but it highlights the importance of ethnic-specific genetic research.

Conclusions: These findings, however, are based on a small cohort, and further studies involving a larger sample size are encouraged to extend the understanding of epithelial-stromal CD in the Thai population. Further investigation, such as whole exome or whole genome sequencing, will be needed to identify the pathogenic variants.

Poster No.: PO-136

Intra-vitreal Anti Vascular Endothelial Growth Factor- It's Effects on Corneal Endothelial Cell Count and Central Corneal Thickness in Phakic and Pseudophakic Eyes

*First Author: Shaibaan **MULLA***

Purpose: To evaluate the effect of intravitreal anti-VEGF on corneal endothelial cell count and central corneal thickness, as well as to compare these in phakic and pseudophakic eyes.

Methods: The study was conducted in 102 eyes selected, as per selection criteria, over a time period of 18 months. At the first patient visit, the examination included: 1. Fundus examination. 2. Specular microscopy was done to look for endothelial cell count and Central corneal thickness. At the second visit, an Injection of 0.5 mg/0.05 ml of ranibizumab was administered. Visits at day 1, day 7 and 1 month were done for endothelial cell density and central corneal thickness was measured by a specular microscope.

Results: The mean CCT value in the pseudophakic group was 502.08 ± 19.91, 501.9 ± 20.31, and 501.72 ± 21.55 on days 1, 7, and 30, respectively. The mean CCT value in the phakic group was 506.53 ± 22.61, 505.96 ± 20.12, 505.92 ± 20.3, and 505.69 ± 21.47. The mean value of ECD in pseudophakic eyes on days 1, 7, and 30 were 2284.24 ± 299.86, 2281.39 ± 289.46, and 2284.06 ± 312.65 cells/mm^2, respectively. The mean value of ECD in phakic eyes on days 1, 7, and 30 were 2314.51 ± 212.08, 2313.92 ± 212.7, and 2313.63 ± 216.86 cells/mm^2, respectively.

Conclusions: There is no significant change in endothelial cell density, central corneal thickness, coefficient of variation, and intraocular pressure before and after intravitreal injection over one month of follow-up. The results are similar between phakic and pseudophakic eyes.

Poster No.: PO-072

Is Demodex blepharitis Connected with Lacrimal Duct Obstruction in Adults?

*First Author: Yimin **LI***
*Co-Author(s): Jin **CHEN***

Purpose: To determine whether there is an increased incidence of Demodex blepharitis among patients with lacrimal duct obstruction.

Methods: A prospective, noncomparative clinical study was conducted. A cohort of patients who were diagnosed with lacrimal duct stenosis or obstruction were examined for the presence of the Demodex mite, and their tears, symptoms, and signs of blepharitis were also investigated. During the following several months, patients received treatment with tea tree oil for Demodex blepharitis. And their lacrimal duct, tears, signs and symptoms were revalued as long as the demodex could not be detected.

Results: A total of 42 patients were included in the study (9 men and 33 women), with a mean age of 57.2 years (range 23-75). Demodex colonization was observed in 92.86% (39/42) of patients. The average OSDI scores of all the patients with Demodex obviously decreased from 40 to 26.18 (P=0.002). Their average Munk scores obviously decreased from 3.43 to 2.43 (P=0.004). Lacrimal duct stenosis or obstruction was relieved to patent in 15.38% (6/39) patients without operation treatment.

Conclusions: Demodex infestation may account for the development of lacrimal duct stenosis or obstruction. As a possible etiology, demodex blepharitis should be addressed at an early stage for patients with epiphora.

Poster No.: PO-138

Keratoconus Diagnosis and Referral in Community Optometry Practices

*First Author: Lize **ANGELO***
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Purpose: To identify therapeutic and diagnostic management of keratoconus in the community, by defining patterns of practice and referral criteria of optometrists within New Zealand.

Methods: Optometrists in New Zealand were invited to complete an anonymous online survey evaluating patterns of practice and referral criteria to ophthalmology. Optometrists were recruited through the New Zealand Association of Optometrists (NZAO) and the Cornea and Contact Lens Society of New Zealand (CCLSNZ), as well as private practices.

Results: Responses from 168 optometrists showed 47.6% had ≥15 years of experience, 21.7% prescribed soft and 6.4% prescribed rigid gas permeable (RGP) lenses daily. The main barriers to prescribing RGPs

were a suboptimal fitting experience, low demand, and patient discomfort. The majority (41.1%) referred to the progression of corneal parameters. Practice size or location was not associated with the number of newly diagnosed cases. Optometrists with greater experience were more likely to prescribe RGP lenses and co-manage patients with ophthalmologists. Topographic unit ownership suggested an increased likelihood of prescribing RGP lenses but did not alter referral patterns.

Conclusions: Our survey provides an indication of current practice and highlights the important role of optometrists in the diagnosis and management of patients with keratoconus. Our results identify substantial variability in diagnostic and referral patterns, and we propose that patients would benefit from the development of standardised guidelines for referral and co-management with ophthalmologists.

Poster No.: PO-089

Long-term Outcomes of Autologous Cultivated Oral Mucosal Epithelial Transplantation for Corneal Reconstruction in Patients With Severe Ocular Surface Disorders

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Purpose: To investigate the long-term clinical outcomes of cultured autologous oral mucosal epithelial cell transplantation (COMET) for corneal reconstruction in patients with severe ocular surface disorders (OSDs).

Methods: This study involved 17 eyes of 15 patients with severe OSDs who underwent COMET for corneal reconstruction between 2002 and 2010 and who were followed for more than 10 years postoperative. In all patients, pre - and postoperative visual acuity (VA) (logarithm of the minimum angle of resolution [logMAR]), Ocular Surface Grading Score (OSGS: conjunctivalization, neovascularization, opacification, keratinization, and symblepharon), and complications were examined.

Results: Of the 15 patients, there were 7 with Stevens-Johnson syndrome (n=9 eyes), 4 with ocular cicatricial pemphigoid (n=4 eyes), and 4 with other-type OSDs (n=4 eyes), and the average (mean ± standard deviation [SD]) follow-up was 153.1±30.7 months. Prior to surgery and at 24-weeks, 5-years, 10-years, and final follow-up post surgery, respectively, the average (mean±SD) logMAR VA was 2.26±0.48, 1.87±0.63, 2.11±0.60, 2.12±0.53, and 2.10±0.64, the average symblepharon was 1.9±0.5, 0.4±0.5, 0.8±0.5, 1.0±0.7, and 1.0±0.9, the average upper fornix shortening was 2.1±1.2, 0.3±0.5, 0.8±0.7, 1.2±0.7, and 1.1±0.9, and the average lower fornix shortening was 1.5±1.3, 0.1±0.3, 0.5±0.7, 0.8±0.9, and 0.7±0.9. At 24 weeks postoperative, significant improvement in almost all OSGS parameters was observed, with significant improvement in symblepharon scores observed for more than 10 years postoperative. No complications (e.g., intraocular pressure elevation requiring glaucoma surgery, serious infection, or tumor formation) were observed.

Conclusions: COMET for corneal reconstruction in patients with severe OSDs resulted in long-term improvement in VA and OSGS, with no serious complications.

Poster No.: PO-137

Meibomian Gland Dysfunction in a Patient With Brimonidine-Induced Conjunctivitis

*First Author: Nhi **NGUYEN***
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Purpose: Inflammatory disorders of the conjunctiva can affect the meibomian glands. In this report, we describe a case of brimonidine-induced conjunctivitis presented with significant meibomian gland dysfunction that may lead to misdiagnosis.

Methods: This is a case report.

Results: A 63-year-old man complained of redness, itching, irritation and frequent discharge in both eyes for 2 months. He had seen many different ophthalmologists without noticeable improvement. The patient had a history of open-angle glaucoma, diagnosed 6 months ago and had been treated with brimonidine tartrate 0.2%/timolol maleate 0.5% fixed combination since then. On examination, both eyes showed eyelid redness and edema, conjunctival hyperemia with follicular reaction. Furthermore, he had remarkable features of meibomian gland dysfunction, including eyelid margin telangiectasia, plugging of gland orifices and opaque meibum. The patient was initially treated with meibomian gland expression, fluorometholone 0.1%, artificial tears and oral doxycycline. After 3 weeks, he came back reporting mild improvement but the condition got worse after he stopped using fluorometholone. At this stage, the itching sensation and follicular reaction of the conjunctiva led to the suspicion of an allergic response to brimonidine and meibomian gland dysfunction could be its sequela. The patient was switched to timolol maleate 0.5% single therapy for his glaucoma. The allergic reaction resolved within 2 weeks with significant improvement in meibomian gland function and good IOP control.

Conclusions: Conjunctival inflammation can trigger meibomian gland alterations. If meibomian gland dysfunction together with follicular conjunctivitis develops in a patient using topical brimonidine, side effects related to the drug should be considered.

Poster No.: PO-092

Methicillin-Resistant Staphylococcus aureus Keratitis After Corneal Collagen Cross-Linking

*First Author: Rohit **DUREJA***

Purpose: To report a case of microbial keratitis following corneal collagen cross-linking (CXL) for progressive keratoconus.

Methods: Case report.

Results: A 17-year-old female presented with a large corneal ulcer in her right eye 3 days post-CXL procedure for progression of keratoconus. Microbiology revealed gram-positive cocci on smears and methicillin-resistant Staphylococcus aureus (MRSA) on culture. Fortified antibiotics eye drops were started initially. Microbial keratitis eventually worsened with medical therapy, and therapeutic penetrating keratoplasty with a 12-mm donor graft was done. Three months postoperatively, she had a clear graft with a best-corrected visual acuity of 20/25.

Conclusions: CXL has been widely used in the treatment of keratoconus. Infectious keratitis after CXL is a rare complication. Post-CXL microbial keratitis is predominately associated with gram-positive bacteria. MRSA-causing post-CXL keratitis is uncommon and should be identified early and treated aggressively with medical therapy or surgically if needed, as seen in our case, for good outcomes.

Poster No.: PO-122

Ocular Inflammation: The Elusive Complication of Boston Keratoprosthesis Surgery

*First Author: Cristina Erika **ELAZEGUI***
*Co-Author(s): Kathrina Therese **MENDOZA**, Reginald Robert **TAN***

Purpose: To present a case of ocular Steven Johnson syndrome who underwent Boston Keratoprosthesis Type I Implantation with Molteno Glaucoma Drainage Device who later presented with ocular inflammation manifested as a non-healing cornea, anterior chamber inflammation, optic neuritis, vitritis, hypotony and choroidal detachment. We discuss its presentation and management.

Methods: A 36-year-old female with Ocular Steven Johnson Syndrome of both eyes underwent implantation of Boston Keratoprosthesis Type I and Molteno Glaucoma Drainage Device. Post-operation visual acuity improved from hand movement to 20/200, with delayed healing of the cornea. Four months post-operation, visual acuity dropped from 20/200 to 20/400 with the development of a superior arcuate scotoma accompanied by anterior chamber inflammation, hyperemic optic disc with blurred disc borders, and soft eye on palpation. A B-Scan was done and showed vitritis and choroidal detachment. The patient was started on IV methylprednisolone 1g for 5 days and topical steroids.

Results: The patient's visual acuity improved from 20/400 to 20/70, with a subjective improvement of superior arcuate scotoma. The patient was maintained on 60 mg oral prednisone with slow, gradual tapering. Vision decreased to 20/100 and AC inflammation recurred while on 30 mg oral prednisone. The current plan is to shift to an immunosuppressant for the long-term management of inflammation.

Conclusions: Boston Keratoprosthesis allows visual restoration in those who are poor candidates for corneal transplantation, such as cases of Steven Johnson syndrome. Although it is a viable option to improve vision in these patients, it has potentially blinding secondary complications which require long-term monitoring and management.

Poster No.: PO-597

Ocular Manifestations in Hereditary Sensory Autonomic Neuropathy Type VIII With Homozygous Mutation in PRDM12 Gene: A Case Report

*First Author: Sushant **ADIGA***
*Co-Author(s): Barkha **GUPTA**, Chintan Singh **MALHOTRA***

Purpose: To describe the approach and management of a patient with HSAN- VIII with a homozygous missense mutation in the PRDM-12 gene.

Methods: Case report of a 3-year-old girl with insensitivity towards any painful stimulus noted since 6 months of age. Mutilation of the tongue, lips, and extremities were noted. Genetic evaluation revealed a homozygous missense mutation in the PRDM-12 gene. The patient presented with a neuropathic corneal ulcer in the right eye and central vascularized corneal opacity in the left eye. A multi-layered amniotic membrane transplant was done in the right eye which was later followed by bilateral lateral tarsorrhaphy.

Results: The ulcer in the right eye healed over one month. Her parents have been counseled regarding the disease and the need for long-term follow-up.

Conclusions: HSAN should be considered in the differential diagnosis of children presenting with persistent epithelial defects and neurotrophic keratitis. Interdisciplinary management, continuous vigilance, and the control of self-mutilating behavior are of utmost importance.

Poster No.: PO-116

Ocular Manifestations in a Rare Case of Congenital Lamellar Ichthyosis in an Infant

*First Author: Ashima **VARSHNEY***
*Co-Author(s): Abhyuday **SAXENA***

Purpose: To describe the ophthalmic manifestations in an infant with congenital lamellar ichthyosis. The clinical features and ophthalmic management over a period of 6 months were studied.

Methods: The case history of a 3-month-old infant presenting to the Ophthalmology department in a tertiary care hospital was reviewed. The infant was diagnosed with congenital lamellar ichthyosis under the care of the Dermatology department. Family history and pedigree analysis were performed to determine the mode of genetic inheritance. Ocular examination for visual acuity, eyelid and eyelash malposition, lid function, and closure was carried out. A corneal examination for exposure keratopathy was also done.

Results: The infant had eyelid position abnormalities and generalized skin scaling. Ocular examination revealed bilateral, spontaneous upward turning of upper lids, and lower lids were normal. Active lid closure was complete and there was no sign of corneal exposure. There was no clinical evidence of conjunctival or corneal involvement. After 6 months of conservative management, outward turning of the upper lid, as well as generalized body rash, was resolved by only conservative management.

Conclusions: Congenital lamellar ichthyosis is a rare autosomal recessive disorder with phenotypic variability. The finding in our case was a spontaneous outward turning of the upper eyelid, which improves with conservative management as the child grows. Ophthalmic examination in these patients is very important as it can have potentially blinding consequences.

Poster No.: PO-093

Ocular Surface Reconstruction as a Treatment Modality for Limbal Stem Cell Deficiency Following Trabeculectomy

*First Author: Mai **GOTO***
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Purpose: This retrospective case-series study aims to elucidate the therapeutic efficacy of ocular surface reconstruction (OSR) in managing partial limbal stem cell deficiency (LSCD), an insufficiently researched, late complication after trabeculectomy.

Methods: Four eyes from four patients (mean age 65.0±9.1 years) who underwent trabeculectomy in combination with mitomycin C were treated with OSR for partial LSCD. Intervention modalities included either amniotic membrane transplantation (AMT) or autologous limbal transplantation (LT). Comprehensive postoperative assessments included metrics on corneal epithelialization rates, improvements in visual function, and detailed histological evaluation of the resected epithelium.

Results: The mean interval between initial trabeculectomy and OSR was 19.4±6.4 years. Slit-lamp biomicroscopy revealed grayish abnormal epithelial invasion in the cornea superiorly from the conjunctival bleb, distinguishable through fluorescein staining. Three patients underwent superficial keratectomy (SK) coupled with AMT as temporary pathing, while one individual, who had experienced recurrent epithelial invasion after SK alone, underwent SK and LT using autograft prepared from another eye. Complete re-epithelialization was achieved within seven days postoperatively. Best-corrected visual acuity improved two or more lines in 75% of the cases. Surface irregularity confirmed using anterior segment optical coherence tomography was improved in all cases. Histological evaluation revealed nonkeratinized stratified conjunctival epithelium with goblet cells.

Conclusions: The study indicates that partial LSCD can manifest as a late postoperative complication following trabeculectomy. SK and AMT are effective treatments for LSCD, with LT offering an alternative for recurrent cases. The consistency between histological and clinical findings supports the therapeutic efficacy of the interventions.

Poster No.: PO-095

Post-COVID Necrotizing Scleritis: A Battle Not Won

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Purpose: The purpose of this study is to report the obstacles faced in managing an active-progressing ophthalmic manifestation of Wegener's granulomatosis exacerbated by COVID-19 infection.

Methods: A case report.

Results: A 59-year-old female with diabetes was treated for acute necrotizing scleritis secondary to Wegener's granulomatosis with cytoplasmic-antineutrophil cytoplasmic antibodies (c-ANCA) positive. She was stable for 5 months on oral steroid and azathioprine. Unfortunately, the disease was reactivated after contracting COVID-19 infection. A fast progression of the ocular involvement was noted, characterized by worsening inflammation and progressive scleral thinning despite having a maximum dose of azathioprine and steroid treatment. Therefore, she was planned for intravenous cyclophosphamide. However, it was not delivered as she developed a gluteal abscess

requiring surgical intervention and antibiotics. She also had uncontrolled diabetes mellitus with multiple other systemic infections, including recurrent sinusitis and otitis media, making the treatment more challenging. In view of active infections, her immunosuppressant and steroid had to be tapered down. Unfortunately, her necrotizing scleritis progressed rapidly, sparing the cornea. Eventually, she lost her vision and developed phthisis bulbi.

Conclusions: Necrotizing scleritis is known to cause significant morbidity and even blindness. This case highlights the importance of anticipating the rapid deterioration of the disease after COVID-19 infection and systemic infection.

Poster No.: PO-085

Posterior Dislocation of Descemet's Membrane Endothelial Keratoplasty Graft: A Rare Entity

*First Author: Rohit **DUREJA***

Purpose: To describe two cases of posterior dislocation of the Descemet's membrane endothelial keratoplasty (DMEK) graft.

Methods: Two eyes with pseudophakic bullous keratopathy were planned for DMEK. One eye had previously undergone pars plana lensectomy and vitrectomy with a sclera-fixed intraocular lens.

Results: In both cases, the DMEK graft was dislocated behind the iris (In case 1, the graft was dislocated subsequently into the vitreous cavity, and in case 2, the graft was retrieved intraoperatively). Both eyes underwent Descemet stripping automated endothelial keratoplasty (DSAEK) in the same sitting. One eye (case 1) needed to repeat DSAEK later due to a thicker and irregularly cut DSAEK graft. Case 1, with DMEK graft dislocation in the vitreous cavity, did not show any abnormal signs on posterior segment evaluation until the last follow-up at 6 months postoperatively.

Conclusions: The risk of posterior dislocation of the DMEK graft is much higher than that of the DSAEK graft, as the DMEK graft is very thin, folded, and needs more manipulation in the anterior chamber for unfolding. This risk is even greater in eyes with complex anatomy due to previous ocular surgeries. The types of posterior segment complications after the dislocation of DMEK grafts are still not known, but retrieval of a posteriorly dislocated graft is indicated when a dislocated DMEK graft starts showing fibrotic changes to prevent traction on the retina and retinal detachment, as reported with DSAEK graft.

Poster No.: PO-096

Ptosis Associated With Hard Contact Lens Wear in Keratoconic Eyes

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Purpose: To investigate ptosis in hard contact lens (HCL) wearers with keratoconic eyes.

Methods: The subjects were 26 eyes of 15 patients with keratoconus (average age 44.0 ± 18.7 years) who visited the International University of Health and Welfare Narita Hospital and were wearing HCL. They were divided into 3 groups: Group A: less than 10 years, Group B: 11 years or more 20 years. The eyelid margin distance, margin light reflex distance-1 (MRD-1), and levator palpebrae muscle function were measured using a distance meter, and MRD-1 was also measured using anterior segment optical coherence tomography (AS-OCT). Mann-Whitney U test (Bonferroni correction) was used for statistics.

Results: The eyelid margin distance was 8.31±1.00 in Group A, 8.06±0.94 in Group B, and 7.20±0.79 in Group C, showing no significant difference between groups. MRD-1 measured by distance meter was 3.56±0.50 in Group A, 3.50±0.53 in Group B, and 2.35±0.41 in Group C, which showed significant differences between the AC and BC groups ($p<0.01$). MRD-1 by AS-OCT was 3.21±0.92 in Group A, 3.35±1.23 in Group B, and 2.64±0.33 in Group C, which showed a significant difference between the BC groups ($P<0.05$). The levator muscle function was 14.6±1.64 in Group A, 14.2±1.36 in Group B, and 13.45±1.86 in Group C, showing no significant difference.

Conclusions: In keratoconic eyes, long-term HCL wear also showed low MRD-1 levels, suggesting that eyelid ptosis is likely to occur, but the degree of ptosis may be mild.

Poster No.: PO-084

Recalcitrant Acanthamoeba Sclerokeratitis Mixed With Pseudomonas Infection: Anterior Scleral Involvement and Limbal Necrosis

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Purpose: To present a case of Acanthamoeba sclerokeratitis mixed with Pseudomonas infection.

Methods: A case report.

Results: An 85-year-old male denied having any underlying diseases. He underwent a cataract surgery in his left eye, and CMV endotheliitis with persistent corneal edema had been noted for 10 months. This time, he presented with increased discharge in his left eye for 2 weeks. Moreover, he had a hot spring experience within the past 2 weeks. As his condition

deteriorated, he sought assistance at our outpatient clinic. The diagnosis of Acanthamoeba keratitis with Pseudomonas infection was confirmed quickly using smears and polymerase chain reaction (PCR). After receiving topical antibiotics and antiamoebic medication every hour and systemic intravenous antibiotics, his ocular condition slightly improved. However, the patient could not tolerate the discomfort and such intensive treatment. Consequently, he decided to undergo enucleation surgery on his left eye.

Conclusions: This case suggests that Acanthamoeba may live in hot springs. However, it poses a potential risk to vulnerable corneas, and limbal involvement is a poor prognostic indicator for acanthamoeba keratitis.

Poster No.: PO-118

Repetitive Corneal Erosion Induced by 5-FU 1% Solution

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Purpose: This study aims to report on the side effects of 5-FU 1% eyedrops, commonly used for treating ocular surface squamous neoplasia and conjunctival papilloma.

Methods: We report a case who underwent conjunctival papilloma excision 4 times, applied 5-FU 1% solution eyedrops 2 times a day, and developed corneal epithelial erosion 3 times.

Results: A 68-year-old man with a conjunctival tumor in his left eye was referred to our hospital in March 2018. The 1st excision and pathological evaluation revealed the conjunctival tumor was papilloma, but the papilloma repeatedly recurred. Additional excision with Mitomycin C took place 3 times; in June 2018, May 2021, and February 2023, and adjunctive chemotherapy was administered with 5-FU 1% solution eyedrops 2 times a day from April 2019. The left eye developed corneal epithelial erosion 3 times; May 2019, April 2020, and April 2023. We stopped the 5-FU 1% solution and covered the erosion with ofloxacin ointment or soft contact lens. Each erosion recovered within a month.

Conclusions: The corneal erosions occurred during 5-FU 1% application and were cured within 1months after quitting. 5-FU blocks DNA and RNA synthesis and can suppress the cell division of corneal epithelial basal cells. Common side effects of 5-FU solution eyedrops include pain and redness of ocular surfaces, eyelid swelling, conjunctival congestion, conjunctival erosion, and filamentary keratitis. The same pharmacological action can cause each of these repetitive corneal erosions and other side effects. We should consider the risks and benefits of the 5-FU 1% eyedrops when treating ocular surface tumors.

Poster No.: PO-090

Safety and Efficacy of Abnormal Epithelial Removal Using Impression Cytology

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Purpose: Corneal conjunctivalization is best understood in limbal stem cell deficiency (LSCD), including chemical burn and Stevens-Johnson syndrome. Basically, combined transplantation, including epithelial transplantation, is essential for ocular surface reconstruction for those diseases. Superficial abnormal conjunctival epithelia to the cornea are one phenotype of the corneal conjunctivae. However, removal methods have not been established. In this study, we analyzed the safety and efficacy of abnormal epithelial removal using the impression cytology technique.

Methods: We reviewed medical records for 12 eyes in 10 patients (4 men/6 women; mean age 65.7±11.1) diagnosed with abnormal epithelial invasion to the cornea. Abnormal epithelia were removed by shredded and autoclaved MF-Millipore sheets.

Results: The causes of abnormal epithelial invasion were idiopathic (3 cases), chemotherapy with TS-1TM (tegafur/gimeracil/oteracil) (2 cases), Salzmann's corneal degeneration (2 cases), and post vitreous injection (1 eye), post scleral buckling (1 eye), and post penetrating keratoplasty (1 eye). In all cases, abnormal conjunctival invasions were observed originating from the superior limbus. The defect left by the removed abnormal conjunctival epithelium was replaced by the progression of normal corneal epithelium, leading to healing. LogMAR best corrected visual acuity (BCVA) two weeks after the procedure was significantly improved from 0.6±0.56 to 0.34±0.33 after abnormal epithelial removal ($p<0.05$). All tissues removed by impression cytology were identified as conjunctival tissue, positive for cytokeratin 13 by immunohistochemistry. No adverse events, including keratitis after impression cytology, were observed.

Conclusions: Impression cytology was a safe and effective method for removing several layers of the superficial abnormal epithelium.

Poster No.: PO-108

Safety and Efficacy of Frequency Doubled Nd-Yag Laser Photocoagulation of Corneal Vascularization (NLPC)

*First Author: Ronak **SOLANKI***

Purpose: To evaluate the safety and efficacy of frequency-doubled Nd- Yag laser photocoagulation of corneal vascularisation (NLPC).

Methods: 30 quiet eyes of 28 cases with superficial/ mid stromal/ deep stromal corneal vascularisation

were subjected to laser photocoagulation, maximum twice. Resolution of vessels' corneal clarity & survival of subsequent corneal grafts was monitored for up to 3 months.

Results: 20 eyes (66.66%) had complete resolution of vascularisation with improved corneal clarity in 25% of cases. Superficial (92.86%) and mid-stromal vessels (75%) had a significant resolution, compared to deeper vessels (12.5%). 13 cases (43.33%) had ignorable flukes like minimal corneal burn (13.33%), iris holes (10%), anterior chamber bubbles (16.67%) & self-resolving intrastromal bleed (6.67%). Of 12 eyes with subsequent keratoplasty, 1 (8.33%) had graft host junctional ectasia at the lasered location.

Conclusions: NLPC is an effective non-contact method to deal with superficial and mid-stromal corneal vascularization with no risk of perforation, infectious keratitis, LSCD & induced astigmatism, especially in cases where a large vessel arborizes within the stroma.

Poster No.: PO-104

Safety and Efficacy of Hydroxypropyl Guar-Hyaluronic Acid Dual Polymer Lubricating Eye Drops in Indian Subjects With Dry Eye Disease: A Phase IV Multicenter Study

*First Author: Cathy **LIAO***
*Co-Author(s): Deborah **AWISI-GYAU**, Neha Verma **KAPUR**, Shreesha Kumar **KODAVOOR**, Rajesh **PAREKH**, Umesh **YEDDULA***

Purpose: Hydroxypropyl guar-hyaluronic acid (HPG-HA) dual polymer lubricating eye drops are indicated to temporarily relieve burning and irritation in dry eye disease (DED). This study evaluated the safety profile and efficacy of HPG-HA lubricating eye drops among Indian subjects with DED.

Methods: This prospective, single-arm, open-label, post-marketing study was conducted in India (June 2022-March 2023). Inclusion criteria: adults (18-65 years) with tear break-up time, ≤10 seconds (both eyes); best-corrected visual acuity, ≥20/40 (each eye); dry eye questionnaire score, ≥6; and average total ocular surface staining (TOSS) score, ≥4. On Day 1, subjects received the first dose of HPG-HA lubricant eye drops and self-administered 1-2 drops 4 times daily (each eye) for 90±5 days. Primary endpoints: frequency and characteristics of treatment-emergent adverse events (TEAEs) throughout the study and TOSS score (15-point Oxford grading) at Day 90.

Results: Of 175 subjects, (mean±SD age: 37.9±13.3 years), 36 (20.6%) reported ≥1 TEAE, and 27 (15.4%) had ≥1 mild drug-related TEAE (eye irritation, n=9; eye pruritus, n=8; vision blurred, n=6; lacrimation increased, n=4; ocular hyperaemia, n=3; ocular discomfort, n=1). There was one discontinuation due to TEAEs; no TEAEs resulted in drug interruptions. No serious adverse events were observed throughout the study. The mean±SD TOSS score decreased from 6.12±1.69 OU [both eyes] at screening/day 1 to 2.40±1.97 OU at visit 2/day 90.

Conclusions: Treatment with HPG-HA dual polymer lubricant eye drops was found to be safe and effective in reducing TOSS scores in Indian subjects with DED, over 90 days.

Poster No.: PO-119

Significant Contributing Factors for Computer Vision Syndromes Among High School Students During COVID-19 Lockdown in Malaysia

*First Author: Jacqueline **LIEW***
*Co-Author(s): Voon Pei **LOO**, Pui Theng **YONG***

Purpose: To determine the significant factors contributing to computer vision syndrome among high school students during the COVID-19 lockdown in Malaysia.

Methods: A cross-sectional survey was conducted to assess the symptoms of computer vision syndrome encountered by students and their electronic device usage behaviour before and during fully remote learning.

Results: A total of 145 subjects were involved. After fully remote learning took place, the average time spent by students on outdoor activities was reduced from one to two hours to less than an hour daily. The average time spent on entertainment activities using electronic devices increased from one to two hours to four hours and above. Time spent on school assignments using electronic devices increased from one to two hours to three to four hours and above daily. Increased frequency of students experiencing eye pain, fatigue, headache, eye itchiness, glare, dry eye, blurry vision, and double vision after fully remote learning began.

Conclusions: Reduction of time spent on outdoor activities, increased usage of electronic devices for entertainment activities, and completing school assignments were significant factors for computer vision syndrome among high school students during the COVID-19 lockdown.

Poster No.: PO-120

Stevens-Johnson Syndrome Associated With Oral Acetazolamide Intake in an Elderly Filipino Female With Increased Intraocular Pressure After a Complicated Phacoemulsification Surgery: A Case Report

*First Author: Angeline Edrielle **PACIO***
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Purpose: To present a case of SJS associated with acetazolamide intake for the management of increased intraocular pressure, the clinical and histopathologic findings, management and prevention of ocular sequelae, and review of related literature.

Methods: A 66-year-old diabetic and hypertensive Filipino female presented with an IOP of 32 mmHg one day after a complicated cataract surgery with sulcus fixed intraocular lens (IOL) and dropped cortical material. Management consisted of oral acetazolamide and steroids along with topical anti-glaucoma, steroids, and antibiotic medications. On the 4th post-operative week, the patient developed multiple bilateral erythematous periocular papules and difficulty breathing. Multiple diffused erythematous papules and patches on the face and trunk, along with oral mucosal blisters, were noted. This was accompanied by dysphagia, and odynophagia. Histopathologic studies of the mid-back patches were consistent with SJS.

Results: Oral acetazolamide was immediately discontinued, followed by prompt initiation of oral and topical cyclosporine. Improvement of mucocutaneous lesions and resolution of respiratory symptoms was observed 2 days after intervention.

Conclusions: Acetazolamide use may induce SJS in rare instances. Prompt detection and discontinuation of the offending drug coupled with appropriate management is necessary to prevent ocular and life-threatening sequelae.

Poster No.: PO-106

Subjective Comfort and Tear Film Performance of Long-Term Digital Device Contact Lens Users Transition From Habitual Silicon Hydrogel Lenses to New Material Contact Lenses

*First Author: Hanyin **SUN***

Purpose: To evaluate the subjective comfort rating and tear film stability of young Asian digital device users when transitioning from wearing somofilcon A daily disposable silicone hydrogel lenses to verofilcon A lenses.

Methods: Participants (n=58) aged 20-30 years, who reported daily digital device usage of ≥6 hours while wearing their usual contact lenses, were recruited. These participants displayed normal or mild dry eye conditions (OSDI scores < 22) and a best-corrected visual acuity (BCVA) greater than 20/25. The subjects underwent three sessions: a baseline session before the initial fitting, a second session after one day of wear, and a final session after seven days of wear (up to 12 hours). Each session involved assessing subjective comfort ratings and non-invasive tear breakup times (NITBUTs), with values analysis across lenses and sessions.

Results: On Day 1, wearing verofilcon A lenses led to higher end-of-day comfort, initial day satisfaction, and overall satisfaction compared to somofilcon A lenses ($p < 0.05$). By Day 7, verofilcon A lenses maintained elevated end-of-day comfort and visual quality. Median NITBUT significantly increased after 15 minutes of verofilcon A lens wear versus somofilcon A lenses ($p < 0.01$). After 7 days, median NITBUT notably improved from baseline with verofilcon A lenses ($p < 0.01$).

Conclusions: After 7 days, wearing verofilcon A lenses demonstrated an improvement NITBUT compared to baseline results, as well as compared to wearing somofilcon A lenses. Furthermore, verofilcon A lenses exhibited enhanced subjective comfort and satisfaction for young Asian adults who engage in prolonged digital device usage.

Poster No.: PO-127

Support of Posterior Limbal Mesenchymal Stem Cells for Transition Zone Cells: An Emerging Stem Cell Niche in the Posterior Limbus

*First Author: Yuting **XIAO***
*Co-Author(s): Jie **ZHANG***

Purpose: Stem cells for the corneal endothelium have been identified in the transition zone (TZ), but their functions and cellular interactions remain undefined. Posterior limbal mesenchymal stem cells (P-LMSCs) may support the stemness of TZ cells. This study aims to investigate the effect of P-LMSCs on TZ cells.

Methods: P-LMSCs were characterised by comparing with anterior limbal mesenchymal stem cells (A-LMSCs) via immunohistochemistry. Human P-LMSCs, A-LMSCs and TZ cells were isolated through explant culture. TZ cells were cocultured with P-LMSCs in a Transwell, with TZ cell + A-LMSC coculture and TZ cells only as control groups. The proliferation of TZ cells was evaluated by EdU assay, and wound healing speed by scratch wound assay. Colony forming assay from single cells, droplet digital PCR and western blot were used to compare the stemness and gene and protein expression profile of TZ cells.

Results: P-LMSCs were positive for mesenchymal marker Vimentin, stem cell markers TRA-1-60 and Oct3/4, and angiogenesis markers α-SMA and CD34. TZ cells cocultured with P-LMSCs had significantly

more proliferating cells, stronger healing capacity after wounding, and formed more colonies than those cocultured with A-LMSCs and without coculture. TZ cells supported by P-LMSCs expressed higher levels of neural crest markers Nestin and Sox9, periocular mesenchyme marker Pitx2 and less corneal endothelial marker Slc4a11 than the control groups.

Conclusions: The proliferation and stemness of TZ cells were enhanced by P-LMSCs. This could be achieved through a stem cell niche in the posterior limbus. Our study provides an innovative strategy for corneal endothelial rejuvenation.

Poster No.: PO-077

Sutureless Amniotic Membrane Transplant as Immediate Therapy for Various Cornea Disorders

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Purpose: Amnion membrane is a thin, semitransparent, and avascular tissue that has been proven to facilitate wound healing and improve pain management. Various disorders of the cornea can lead to pain and decreased vision that can disrupt daily activities.

Methods: Three patients were presented with complaints of decreased visual acuity and pain on the eye. One patient was diagnosed with left eye persistent epithelial defect (PED), with visual acuity (VA) of 20/160 and a numerical rating scale (NRS) score of 6/10. Other patients were diagnosed with right eye recurrent corneal erosion (RCE) and right eye corneal ulcer, with VA and NRS scores, respectively. Hand Movement (HM), NRS 5/10 and VA 20/100, NRS 6/10. A sutureless amniotic membrane transplant was applied at the polyclinic. On the first week after the transplant, all patients had no complaints of pain (NRS score 0/10). The visual acuity improved, with the best corrected visual acuity (BCVA) for the PED case being 20/20, 20/200 for the RCE case, and 20/20 for the corneal ulcer case.

Results: The structure of the cornea consists of high density of nerve endings. Any disturbance on the cornea, like PED, RCE, and corneal ulcer, can lead to pain and photophobia and affect visual acuity. Amnion membrane transplant proved to significantly reduce pain and promote wound healing. Sutureless technique makes the transplantation can be done in the clinic, out of the operating theatre, it provides simpler and faster transplantation.

Conclusions: A sutureless amniotic membrane transplant is one of the immediate solutions to the relief of symptoms caused by a disturbance in the cornea.

Poster No.: PO-114

Tear Film Stability and Customer Preference of Silicone Hydrogel Daily Disposable Contact Lens Wearing in Young Asian Adults

*First Author: Ren-yu **YANG***
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Purpose: To analyze tear film stability and patient satisfaction of verofilcon A lenses wearing in habitual silicone hydrogel (SiHy) daily disposable (DD) contact lens Asian adults.

Methods: Participants (n=54) aged 20 to 40 years, who had been wearing SiHy DD contact lenses in the past 6 months. All the recruited subjects wore somofilcon A lenses at the first week and shifted to verofilcon A lenses, for 7 ± 2 days. Non-invasive tear breakup time (NITBUT) was measured using the Keratograph M5. Patients' subjective preference was reported via visual analogue scale survey after 7 days of wearing.

Results: Thirty-six out of 54 subjects (66.67 %) reported subjectively that they preferred wearing verofilcon A SiHy DD lenses. The reasons why they preferred verofilcon A lenses were: comfort (52.8%), dryness (25.0%) and visual quality (16.7%). A longer NITBUT was also observed after wearing verofilcon A for 7 days compared to somofilcon A (18.67 ± 5.99s vs. 15.26 ± 4.91s, P =0.008). Additionally, a significant difference was also found in the first NITBUT after wearing verofilcon A for 7 days compared to somofilcon A (14.14 ± 9.03s vs. 9.34 ± 6.51s, P =0.012).

Conclusions: A significant difference was seen on NITBUT first and average after wearing for 7 days on verofilcon A lenses compared to somofilcon A lenses. This may indicate that tear film quality played an important role in the subjects' preference. In addition, the results revealed that comfort and dryness were the two key points for their contact lens preference.

Poster No.: PO-117

The Association of Dry Eye Disease With Functional Visual Acuity and Quality of Life

*First Author: Louis **TONG***
*Co-Author(s): Lydia Hui Peng **TAN***

Purpose: Dry eye disease (DED) is a common chronic condition with increasing prevalence in an aging society. Standard discriminative visual acuity is not reflective of real-world visual function in DED. We aim to determine if functional visual acuity (FVA) is reduced in severe dry eye and its correlation to quality of life.

Methods: Participants were recruited from a tertiary referral eye center and divided into 2 groups: severe DED (with significant, central staining) and comparison group with milder DED. FVA in both groups was assessed using the DryeyeKT mobile application and

the Impact of Vision Impairment (IVI) questionnaire was administered to assess quality of life.

Results: Among 78 participants (74.4% women), 30 (38.5%) had severe DED, and 48 (61.5%) had milder DED. In women, severe DED produced worse FVA [0.53 ± 0.20] compared to the comparison group [0.73 ± 0.30] (p = 0.0064). FVA decreased with increasing age, with a significant inverse correlation (r = -0.55). FVA below the median [=<0.6] was seen in older patients (68.2 years ± 7.68), and better FVA in younger (58.9 years ± 10.7), p <0.05. After adjusting for age, FVA was still 0.107 lower in the severe DED group than in comparison (p < 0.05). There was significant difficulty in performing specific daily activities in the severe DED group compared to the milder DED, and this relationship was still significant after adjusting for age, gender, and FVA.

Conclusions: FVA is reduced in severe DED and in older people. It is not the only reason for the compromise of health-related quality of life in severe dry eye.

Poster No.: PO-087

The Effect of Diquafosol on Tear Film Inflammatory Markers of Dry Eye Patients

*First Author: Raymund **TANCHULING***

Purpose: Diquafosol, a secretagogue for tear aqueous and mucin, has been shown to lower tear film cytokine levels in vivo. We aim to analyze the change in the levels of tear film proinflammatory cytokines before and after treatment with diquafosol sodium 3% ophthalmic solution.

Methods: This is a one-group pre and post-treatment study of forty (40) dry eye patients (satisfying Dry Eye Workshop II criteria) given diquafosol 3% eyedrops used six times per day for four weeks. Tear samples were collected prior to initiation and at the conclusion of treatment. Levels of interferon gamma (IFNγ), interleukin-1 beta (IL-1β), interleukin-6 (IL-6), and tumor necrosis factor alpha (TNFα) were measured simultaneously in tear film samples using MILLIPLEX® Map human cytokine magnetic bead panel and analyzed.

Results: IL-6 and TNFα were detected in all samples, while IFNγ and IL-1β were detected in only 96% and 8% of the samples, respectively. All of the measured inflammatory markers showed reductions in concentration compared to baselines. A response, determined to be a 25% reduction in cytokine concentration from baseline, was seen in 2 (4%), 25 (64.10%), 22 (56.41%), and 18 (46.15%) of eyes for IL-1 β, IL-6, TNFα, and IFNγ, respectively. TNFα showed a statistically significant decrease compared to pre-treatment levels (p= 0.020) using a paired T-test.

Conclusions: Topical diquafosol sodium 3% reduces proinflammatory cytokines in the tears of patients with dry eye disease after four weeks of treatment, indicating its possible role in modulating ocular surface inflammation.

Poster No.: PO-078

The Ex Vivo Modeling of Using Own Production Intrastromal Ring During Femtosecond Laser-Assisted Keratoplasty for Prevention of Post-keratoplastic Ametropia

*First Author: Valeriia **SUCHKOVA***
*Co-Author(s): Svetlana **IZMAILOVA***

Purpose: To invite a new technology with the help of our own production intrastromal ring for the prevention of post-keratoplastic ametropias.

Methods: We have proposed a new method for performing penetrating keratoplasty using a special 360-degree polymer intrastromal ring on 10 cadaver eyes. We use a femtosecond laser with a “mushroom” pattern, then an intrastromal ring is placed in the formed corneal hole, the disk of donor tissue is fixed with a continuous stitch. The intrastromal ring can be located directly on the formed step of the corneal tissue (technique No. 1), or placed in a specially formed corneal pocket (technique No. 2). We got patents on both techniques.

Results: According to the results of the histological examination, technique No. 2 showed complete corneal cleavage without the formation of tissue bridges and adhesions. According to the OCT, the intrastromal ring occupied a stable position at a given depth evenly throughout.

Conclusions: With the help of femtosecond technologies, the intrastromal polymer ring places the correct position around the entire circumference and remains fixed by the surrounding tissues in its lamellar pocket, which eliminates the need for extra suturing. Even after the removal of sutures, we did not face the ring’s dislocation.

Poster No.: PO-112

The Naive Use of Histoglob in VKC- a Pilot Study

*First Author: Manmeet **SINGH***
*Co-Author(s): Sudhakar **POTTI**, Jasneet Kaur **SODHI***

Purpose: As VKC is a chronic condition, which has its exacerbations with dusty environmental conditions or may even be there throughout the year. So, to address this, we found the use of this immunoglobulin use, as a safer modality which may prove to be a better treatment modality. The main purpose is to determine the naive use of Histoglob in patients of VKC & to understand the use of Histoglob as a game changer in the field of ophthalmology.

Methods: As it is a pilot study, we have planned to induct 15 patients in the first phase, out of which 9

have completed the study and follow-ups as of date. The recruited patients were administered 1 ml of histoglob subcutaneously over the forearm under observation with an emergency crash cart ready as standby, weekly for 3 consecutive weeks. Patients were given topical lubricants and low-potency steroids as rescue medications to be noted on the prescribed charts on a daily basis, and objective scoring was recorded during each visit.

Results: As per the objective assessment of the VKC score, the mean score was 6.22+-2.166 (pre-injection), 3.55+-1.42 (after 1st dose), 2.33+-1.5 (2nd dose), 1.55+-1.236 (3rd dose), the trend drastically got reduced giving us a newer positive scope of a drug for vkc. In addition, the use of low-potency steroids, also successively reduced from its mean value of 7.0 to 5.33 (post 1 month).

Conclusions: A newer horizon for an addition Inj histoglob provides both active and passive immunity, making it a newer promising modality for the treatment of vernal keratoconjunctivitis.

Poster No.: PO-121

Three-Dimensional Observation of Primary Cilia in the Corneal Endothelium of a Patient With Fuchs Endothelial Corneal Dystrophy by Confocal Laser Scanning Microscopy and Scanning Electron Microscopy on the Same Sample

First Author: Hidetoshi ***TANIOKA***
Co-Author(s): Hideto ***DEGUCHI****, Tsutomu* ***INATOMI****, Shigeru* ***KINOSHITA****, Chie* ***SOTOZONO***

Purpose: Few primary cilia are present in corneal endothelial cells (CECs) located in the central region of a healthy human cornea. However, we found that they are present in the CECs of Fuchs endothelial corneal dystrophy (FECD) patients. In this study, we examined in detail one corneal endothelium specimen obtained from an FECD patient via confocal laser scanning microscopy (CLSM) and scanning electron microscopy (SEM).

Methods: This study involved a Descemet's membrane (DM) specimen obtained from a 65-year-old male FECD patient during Descemet Stripping Automated Endothelial Keratoplasty. Immediately post-removal, the specimen was fixed and placed on a slide glass. For three-dimensional (3D) CLSM observation, it was immunostained with a 3-color stain including ARL13B antibody that recognizes primary cilia, DAPI for nuclei, and phalloidin for cytoplasm. For SEM observation, the cover glass was removed and the specimen was additionally fixed, dehydrated, and gold-coated to examine the surface of the CECs.

Results: CLSM revealed many uneven guttae protruding from the DM and CECs thinly covering the surface, and primary cilia of a hair-like structure on some CECs. SEM also revealed guttae formation and primary cilia protruding from the surface of some cells.

Conclusions: In in vivo corneal endothelial specular microscopy, FECD guttae are usually observed as areas without endothelial cells. However, CLSM and SEM revealed the 3D structures of the uneven guttae and hair-like primary cilia on the endothelial cell surface. The presence of primary cilia may somehow be related to the pathogenesis of FECD.

Poster No.: PO-081

Tick Tock Tick Tock: Time Is Essential for Acute Ocular Steven Johnson Syndrome Management

First Author: R ***KARTIWA***
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Purpose: To share the author's experience in the management of acute ocular Steven Johnson Syndrome.

Methods: A young adult female patient of 20 years of age experienced sudden ophthalmic symptoms caused by Steven Johnson Syndrome. Upon ophthalmic examination, her uncorrected visual acuity (UCVA) was found to be 0.2 (20/100) ph 0.4 (20/50) in the right eye and 0.4 (20/50) ph 0.6 (20/32) in the left eye. The examination also revealed severe conjunctival and corneal epithelial burns in both eyes and significant symblepharon. Our team treated her with a combination of topical and systemic medication. On the sixth day, we performed a debridement procedure using an amnion graft patch and symblepharectomy for both eyes.

Results: Following a period of 30 days, the patient's ocular condition exhibited a best-corrected visual acuity of 1.0 (20/20), accompanied by mild conjunctival inflammation and a peripheral corneal scar. The patient received both topical and systemic medication, which were continued throughout the duration of the treatment. Ultimately, the patient expressed satisfaction with the outcome of the treatment.

Conclusions: To effectively treat acute ocular Steven Johnson, it's crucial to manage it appropriately and at the right time.

Poster No.: PO-113

Treating Microsporidial Stromal Keratitis With Therapeutic Penetrating Keratoplasty in Vietnam

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Purpose: To assess the efficacy of therapeutic penetrating keratoplasty (TPK) in the treatment of microsporidial stromal keratitis.

Methods: A descriptive evaluation of all cases of microsporidial stromal keratitis who underwent TPK between January 2018 and December 2020. Eradication of infection, visual acuity, graft clarity, graft survival and surgical complications were used to assess the outcomes of TKP.

Results: Our study was conducted in 63 eyes from 62 patients with a mean age of 60.8±10.1 years (range 34-86 years), and female predominance (74.6%). The mean duration of symptoms was 10.1±9.7 months (mean 1.1±50.2 months). The indications for TPK included medical unresponsive keratitis in 43 eyes (68.3%), corneal perforation and impending corneal perforation in 6 eyes (9.6%). The percentage of eyeball conservation was 96.4%, the infection was controlled in 84.1% of eyes, and 36.7% of eyes had transparent corneal grafts. After 33 months of follow-up, the transparent and opaque grafts were 40% and 41.7%, respectively. Corneal neovascularization (63.5%), persistent epithelial healing (50.8%), graft rejection (39.7%), secondary glaucoma (38.1%), and graft infection (15.9%) were the most prevalent postoperative complications.

Conclusions: Penetrating keratoplasty is an effective procedure to treat Microsporidial keratitis, which is refractory to medical therapy.

Poster No.: PO-088

Twelve-Months Outcomes of Corneal Cross-Linking in Thin Corneas With Keratoconus: A Real-world Study Using the Save Sight Keratoconus Registry

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Purpose: To report the efficacy and safety of corneal cross-linking (CXL) in thin corneas (≤400µm) with keratoconus and compare the outcomes with thicker keratoconic corneas (>400µm) 12 months post-CXL.

Methods: Data from 27 practices in Australia, New Zealand, Italy and France entered in the Save Sight Keratoconus Registry up to 25 Aug 2023 were included. 162 eyes of 150 patients (mean age 27.9+10.8 years; male 69.3%) had thin corneas, and 1160 eyes (966 patients, 25.2±9.8 years; male 70.8%) had thick corneas. Outcome measures included changes in visual acuity, corneal curvature, and minimum corneal thickness (MCT), and frequency of adverse events. The outcomes were compared using paired t-test and Chi-squared test.

Results: In thin corneas, compared to baseline, the visual outcomes were better ($p < 0.05$), and the mean Kmax, K2, and MCT were unchanged (all $p>0.05$). The mean changes (95% CI) in visual and keratometry outcomes were similar (all $p>0.05$) for thin and thick corneas: visual acuity [6 (3 to 8.9) vs 3.5 (2.8 to 4.3) logMAR letters respectively], Kmax [-0.5 (-0.7 to -0.3) vs -0.5 (-1.1 to 0.1)D respectively], and K2 [-0.3 (-0.7 to 0.1) vs -0.4 (-0.6 to -0.3)D respectively]. Less corneal thinning occurred in thin corneas [mean change -3.1 (-10.5 to 4.2) vs -13.4 (-15.3 to -11.5)µm; $p = 0.008$]. The frequency of haze (thin 8.02%, thick 9.7%) and corneal scarring (thin 4.9%, thick 2.3%) within the 12-month follow-up were similar (both $p>0.05$).

Conclusions: CXL improved visual and stabilised keratometry outcomes in thin corneas. The thin corneas had less corneal thinning post-CXL than the thick corneas.

Poster No.: PO-101

Two-Year Follow-up After Application of Antihistamine-Releasing Contact Lenses on Severe Allergic Conjunctivitis

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Purpose: Previous reports showed how to apply Antihistamine-Releasing Contact Lenses (ARCLs) to CL users with allergic conjunctival disease (ACD), including keratoconjunctivitis. At this time, we are going to report the result of a 2-year follow-up after the application of ARCLs.

Methods: We applied ARCLs to 7 CL users with allergic conjunctival disease (ACD) in July 2021 and December 2021. They stopped wearing CLs and controlled allergic inflammation with steroid eyedrops and immunosuppressive eyedrops. Then, after confirming that allergic inflammation was well-controlled in aspects of symptoms and findings, we introduced ARCLs and allowed the CL users to use no eyedrops other than artificial tears.

Results: A teenage CL user with vernal keratoconjunctivitis got ocular-allergic symptoms worse a few hours after putting ARCLs on and the prescription was abandoned. Other 6 CL users with ACD, 3 of them with keratoconjunctivitis, maintained sufficient control of symptoms and findings of allergic inflammation after introducing ARCLs. A CL user with atopic keratoconjunctivitis preferred HCL to correct refractive error better after 1-year usage of ARCLs. The other 5 CL users have been keeping their ocular allergy well with ARCLs and artificial tears for over 2 years, although 1 among 5 experienced a 2-month suspending of ARCLs due to chalazion and blepharitis and resuming ARCLs use.

Conclusions: The follow-up revealed that the effect of ARCLs to control ocular allergic inflammation lasted at least 2 years if CL users achieved good control after ARCLs application. CL use can be compatible with the control of ACD by ARCLs.

Poster No.: PO-075

Understanding Vitamin D Receptors and Its Impact on Dry Eye Disease

*First Author: Sanjri **MALHOTRA***
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Purpose: To study the expression of Vit D Receptors (VDR) on the ocular surface and its association with the pathogenesis of dry eye disease.

Methods: Conjunctival impression cytology was taken from 11 controls and 15 eyes with DED to study osmotic stress by assessing the expression of TonEBP protein. The effect of CFTR activator (Genistein) and Vit D (Calcitriol) on HCE was studied.

Results: Higher expression of TonEBP, GLRX5, and lower expression of VDR were noted in eyes with DED, suggesting higher osmotic stress. Our team has demonstrated that 1,25 (OH)2D3 along with genistein reduced the TonEBP, inflammatory gene expression, and mitigated the VDR degradation. Invitro vitamin D treatment improved VDR, reduced TonEBP and also decreased VDR degradation in DED.

Conclusions: Our results suggest the critical role of VDR in DED. VDR activation by vitamin D supplementation can be explored as a novel strategy in DED management. This study highlights the importance of clinically harnessing vitamin D-mediated natural immuno-inflammatory modulation in combination with currently available standard-of-care strategies to reduce the morbidity and disease duration associated with ocular surface diseases.

Poster No.: PO-091

Visual Rehabilitation With Penetrating Keratoplasty After Autologous Simple Limbal Epithelial Transplant for Ocular Surface Reconstruction in Severe Ocular Chemical Injury

*First Author: Rohit **DUREJA***

Purpose: To report the outcome of a unilateral severe ocular chemical injury (grade V–VI Dua's classification) patient who underwent penetrating keratoplasty after ocular surface reconstruction twice with autologous simple limbal epithelial transplant for limbal stem cell deficiency.

Methods: Case report.

Results: A 27-Year-old male presented with severe ocular chemical injuries (grade V-VI Dua's classification) after exposure to ammonium vapour (alkali). He underwent tenonplasty and amniotic membrane graft (AMG) with lateral tarsorrhaphy as the primary globe-saving procedure. Three months after the acute injury, ocular surface reconstruction with autologous simple limbal epithelial transplant (SLET) was performed for 360-degree limbal stem cell deficiency (LSCD). Six months later, a repeat SLET was performed due to the recurrence of pannus formation. There was no recurrence of LSCD later. Six months after the second SLET, penetrating keratoplasty (PKP) with pupilloplasty with cataract extraction and intraocular lens placement with lateral tarsorrhaphy was performed. At the last, follow-up visit after 18 months of PKP, he had the best corrected visual acuity of 20/60 with clear cornea graft and no recurrence of LSCD.

Conclusions: Patients with severe ocular chemical injury can successfully be visually rehabilitated with penetrating keratoplasty after the ocular surface has been stabilized with a simple limbal epithelial transplant.

Glaucoma

Poster No.: PO-157

A Case Series of Topiramate Induced Angle Closure Glaucoma: Should We Alert Our Fellow Physicians?

*First Author: Arino **JOHN***

Purpose: To report and analyze a series of four cases of topiramate-induced angle closure attack.

Methods: Case 1: A 40-year-old female came with a history of bilateral eye pain and headache for 2 days. She was treated elsewhere for the same migraine but with no relief. Henceforth, she was referred to an ophthalmology clinic. She was diagnosed with bilateral angle closure glaucoma secondary to Topiramate intake. Case 2: A 25-year-old male came with complaints of sudden blurring of vision and an associated headache. His IOP was 48 mmHg OD and 34 mmHg OS with closed angles suggestive of angle closure attack. He was on migraine medication in the past 2 weeks. Case 3: A 67-year-old male patient with a complaint of eye pain and associated blurring of vision. He was on various medications which he was unaware of. On examination he was found to have bilateral angle closure with no KPs with high IOP. Further detailing revealed he was on Topiramate. Case 4: An 18-year-old hyperope came with a complaint of bilateral blurring of vision and headache. Her IOP was 28 and 38 mmHg in OD and OS mmHg, respectively, and myopic shift in the eye in refraction was highly suggestive of drug-induced angle closure.

Results: All four cases had a history of intake of topiramate within the past 2-3 weeks prescribed by their physicians for the symptom of headache.

Conclusions: There is a crucial need to alert our fellow physicians regarding the treatment of headaches and their associated ocular side effects due to topiramate.

Poster No.: PO-160

A Case of Tenon's Capsule Cyst After Glaucoma Implant Surgery

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Purpose: Tenon's capsule cyst is quite challenging to treat as they tend to recur. However, few reports about tenon's capsule cyst after glaucoma implant surgery are available in the literature. This paper aims to report the risk factors and management of a patient with Tenon's capsule cyst after glaucoma implant surgery.

Methods: To present a case report. A 35-year-old man with refractory glaucoma, defined as uncontrolled intraocular pressure (IOP) of more than 21 mmHg despite maximal antiglaucoma medication, previously failed trabeculectomy with 5-fluorouracil. He presented to us with pain, redness, and foreign body sensation in the right eye after undergoing glaucoma implant surgery one month ago. The visual acuity on the right eye was 2/60, with intraocular pressure (IOP) of 43 mmHg on 2 antiglaucoma eyedrops. A slit-lamp examination showed a large superotemporal Tenon's capsule cyst, measuring approximately 10 by 7 mm. Fundus examination showed a cup disc ratio of 0.8. The patient underwent bleb needling with 5-fluorouracil in the right eye.

Results: The main outcome measures were IOP. The intraocular pressure in this patient after the bleb needling remained stable in the range of 12-17 mmHg.

Conclusions: Bleb needling with 5-fluorouracil appears to be effective for controlling IOP in patients with Tenon's capsule cyst after glaucoma implant surgery. This case exhibits the importance of the glaucoma implant surgical technique and wound healing process that can reduce the occurrence of ocular complications.

Poster No.: PO-164

A Comprehensive Ophthalmologist's Early Experience With iStent Inject W in Australian Patients With Open-Angle Glaucoma

*First Author: Kenneth **OOI***

Purpose: iStent inject W is a straightforward, minimally invasive device and procedure to reduce intraocular pressure (IOP) in patients with mild to moderate open-angle glaucoma (OAG). This retrospective study reviewed up to postoperative 6-month (POM6) outcomes of the treatment combined with phacoemulsification (combined) or as a standalone (SA) procedure in all consecutive patients.

Methods: Age, IOP, medication counts, and adverse events were extracted from patient records from preoperative to postoperative day 1, week 1, month 1, month 3, and month 6. Endpoints included mean change in IOP and medications at follow-up time-points vs. preoperative with statistical analyses using Wilcoxon signed-rank test and multi-level mixed effects linear or Poisson regression modeling. The percentage of eyes medication-free, ≥1 medication reduction, and ≥1mmHg reduction were assessed at POM6. Safety events were captured.

Results: The combined group consisted of 16 eyes from 9 patients (mean 81±5 years old) with 88% primary OAG eyes; SA group had 15 eyes from 11 patients (mean 82±4 years old) with 100% primary OAG. Mean IOP change from POM6 to preoperative was -4.0mmHg (95% CI:-7.1, -0.9) and -1.8mmHg (95% CI:-4.0, 0.4) in combined and SA groups, respectively. Combined and SA groups had mean medication reductions of -1.3 (95% CI:-2.2, -0.4) and -0.6 (95% CI:-1.3, 0.1). The percentage of eyes with ≥1 medication reduction in combined and SA was 75% and 73%, respectively. Only 2 cases of small hyphema were observed in SA.

Conclusions: Initial experience with iStent inject W showed promising short-term results in IOP and medication reductions with an excellent safety profile.

Poster No.: PO-185

A Quest for Wipe-Out Phenomenon With Phaco-Trabeculectomy and Trabeculectomy With Small Incision Cataract Surgery in Patient With Split Fixations

*First Author: Techi **TARA***
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Purpose: To find wipe-out phenomenon associated with Phaco-Trabeculectomy (PT) and Trabeculectomy with small incision cataract surgery (TSICS) in patients with split fixations (SF).

Methods: Retrospective, non-randomized, non-comparative interventional study. The two groups were: group A (PT) and group B (TSICS). Patients with Split foveal fixation of ≥1 quadrant, pre-op best corrected visual acuity (BCVA) > 1/60, follow-up of ≥ 6 months & age ≥18 years were included. Pre-existing loss of central vision, neuroretinal disease & intraoperative complications were excluded from the study. Postoperative vision loss was considered permanent if the Snellen Visual acuity did not have a return of at least 3 lines within a 6-month follow-up.

Results: Group A had 79 & group B had 7 patients respectively. BCVA analysis done at the 3rd month and 6th month showed no patient with a decline in Visual acuity ≤3 lines from pre-op vision. Pre-op mean IOP in group A was 19.59 mmHg, which was reduced to 12.35mmHg at 6 months & 12.22mmHg at 3 years. In group B, pre-op mean IOP was 26.33 mmHg which was reduced to 11.21 mmHg at 6 months and 14 mmHg at 2 years. The probability of success Group A, at month 1 was 98.7%, month 6 and 3 year was 97.4%. For group B,

it was 83.3% up to 2 years. Four patients had choroidal detachment.

Conclusions: PT and TICS with mitomycin-C have good IOP control and visual outcomes, even in advanced glaucoma with SF. The wipe-out phenomenon is a rare complication of trabeculectomy surgery. It was not seen in any of our study participants.

Poster No.: PO-169

A Rare Association of X-Linked Retinoschisis With Anterior Segment Dysgenesis and Angle Closure Glaucoma

*First Author: Manasi **TRIPATHI***

Purpose: To describe clinical findings in a patient of XLRS with anterior segment dysgenesis and angle closure glaucoma.

Methods: A young male in his mid-30s presented to us with a diminution of vision in both eyes from the last 5 years. He had a history of trabeculectomy surgery done in his right eye (RE) 5 months back elsewhere. On examination, his best corrected visual acuity was hand motions close to his face in the RE and no perception of light in the left eye. The intraocular pressures were 28 mm Hg in the RE and unrecordable in the LE in view of corneal opacification.

Results: Anterior segment examination revealed anterior segment dysgenesis, flat bleb, 360 degrees peripheral anterior synechiae, and complete angle closure on gonioscopy in the RE, and phthisis bulbi in the LE. Fundus examination in the RE revealed near-total cupping with cystic changes at the fovea. Peripheral retinal examination revealed large outer retinal breaks. Optical coherence tomography (OCT) scan through the fovea revealed intraretinal splitting (retinoschisis), especially in the inner nuclear layer. OCT scan through the peripheral retina revealed multiple outer retinal breaks in the inferotemporal quadrant. Ultrasonography of the LE revealed a closed funnel retinal detachment. A diagnosis of X-linked retinoschisis (XLRS) with anterior segment dysgenesis and advanced angle closure glaucoma (ACG) was made in the RE. The patient was started on anti-glaucoma medications (e/d brimonidine 0.2%, e/d timolol 0.5% and e/d) dorzolamide 2%).

Conclusions: We present a rare case of anterior segment dysgenesis associated with XLRS and ACG.

Poster No.: PO-205

A Rare Fish in the Sea: A Case of Acute Angle Closure in Miller-Fisher Syndrome

*First Author: Anna Margarita **CUNA***
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Purpose: To present a case of 77 y/o patient with acute primary angle closure with Miller-Fisher syndrome.

Methods: This is a case report of a patient with Miller-Fisher syndrome who presented with acute angle closure. The patient had sudden onset dizziness, hand numbness, difficulty ambulating, voice change, and bilateral ptosis four days prior to the consult. Two days prior, the patient noted left eye pain, redness, frontal headache, and blurring of vision. IOP-lowering medications were given. Symptomatic treatment was advised by Neurology. The ocular geneticist confirmed the diagnosis of Miller-Fisher Syndrome and assured the family that the disease has no risk of inheritance.

Results: Ocular examination revealed BCVA of hand movement, 5mm pupil non-reactive to light, elevated IOP (40mmHg), closed angles, and a cup-to-disc ratio of 0.7 on the left eye. Neurologic examination showed ophthalmoplegia, ataxia, areflexia, bilateral ptosis, and hypernasality of voice. Anterior segment ocular coherence tomography revealed iridotrabecular contact on the affected eye. Axial biometry of the left eye revealed normal values.

Conclusions: Miller-Fisher syndrome is a rare variant of Guillane-Barre syndrome with 1 to 2 in 1,000,000 incidences. The clinical hallmark is a triad of acute ophthalmoplegia, areflexia, and ataxia, preceding bacterial or viral illness. This can cause pupillary mydriasis predisposing these patients to acute angle closure. Appropriate management must be facilitated in order to preserve the vision of these patients. A multidisciplinary approach is a must in order to improve quality of life. This is the first reported case of acute angle closure in Miller-Fisher syndrome in the Philippines.

Poster No.: PO-212

A Rare Presentation of Acute Angle Closure Glaucoma Secondary to Older Adult-Onset Retinoblastoma: A Case Report

*First Author: Serey Oudam **SAMRETH***
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Purpose: To report a rare presentation of a unilateral retinoblastoma case in an older adult who experienced acute attack angle closure.

Methods: A 56-year-old female patient came to our hospital with the chief complaint of severe headache, left eye pain, and rapid decrease of vision 10 days ago. Intraocular pressure at presentation was 40

mmHg. Upon slit lamp examination, the anterior chamber depth was very shallow compared to the fellow eye. Gonioscopy revealed a close angle at all 4 quadrants. A retinal mass arising near the optic disc was found. Patient visual acuity rapidly dropped from light perception to no light perception in 3 days despite medical glaucoma management. B scan results showed an intravitreal hyperechogenic nodular mass that correlated with the CT scan of the brain and the orbit; demonstrating an intraocular mass. The patient was presumptively diagnosed as having a malignant intraocular tumor due to the rapidly aggressive nature/deterioration of the clinical condition and characteristics of the lesion. She subsequently underwent enucleation, with a pathology assessment of the mass sent to two different pathologists.

Results: The gross section showed a well-capsulated chalky-white mass admixed with necrotic area. The microscopic examination showed small hyperchromatic cells with a high nuclear-to-cytoplasmic ratio. The Flexner-Wintersteiner rosettes and Homer-Wright rosettes were typically present, suggested as retinoblastoma. There was no evidence of capsular, choroid or optic nerve invasion.

Conclusions: Retinoblastoma in older adults is very rare, with only 45 cases reported worldwide. Our case report shows that careful examination of the patient is the key to early, accurate diagnosis and prompt management. Otherwise, severe, even life-threatening complications could occur.

Poster No.: PO-182

Angle-Based Minimally Invasive Glaucoma Surgery in Normal Tension Glaucoma – A Systematic Review and Meta-Analysis

*First Author: Bryan **ANG***
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Purpose: This systematic review and meta-analysis quantitatively examine the efficacy of angle-based minimally invasive glaucoma surgery (MIGS) in normal tension glaucoma (NTG).

Methods: A literature search was performed on Medline, Embase, PubMed, CINAHL and Cochrane Library from inception until 20 December 2022. Pilot, cohort, observational studies, and randomised controlled trials including at least 5 subjects undergoing angle-based MIGS (trabecular-bypass devices, excisional trabeculotomy, goniotomy and ab-interno canaloplasty) for NTG, with or without cataract surgery, were included for review. Meta-analysis of continuous outcome using the meta routine in R version 2022.12.0+353 was performed to determine the mean intraocular pressure (IOP) and anti-glaucoma medication (AGM) reduction post-operatively.

Results: Of the 848 studies initially identified, 15 studies with a pooled total of 367 eyes which underwent combined phacoemulsification and angle-based MIGS, were included for final meta-analysis. iStent outcomes were reported in 5 studies, iStent inject in 7 studies, Hydrus Microstent in 1 study, Kahook Dual Blade in 3 studies, and Trabectome in 2 studies. There was significant reduction in both IOP and AGM post-operatively at 6 months (2.44mmHg, 95%CI:1.83-3.06; 1.21 AGM, 95%CI:0.99-1.44), 12 months (2.28mmHg, 95%CI:1.71-2.84; 1.18 AGM, 95%CI:0.90-1.47), 24 months (2.10mmHg, 95%CI:1.51-2.68; 1.26 AGM, 95%CI:0.85-1.68), and 36 months (2.43mmHg, 95%CI:1.71-3.15, 0.87 AGM, 95%CI: 0.21-1.53) (all $p<0.05$). Subgroup analysis on combined phacoemulsification-iStent inject demonstrated a reduction in both IOP (2.31mmHg, 95%CI:1.07-3.56, $p<0.001$) and AGM (1.07 AGM, 95% CI: 0.86-1.29, $p<0.001$) 12 months after surgery.

Conclusions: Angle-based MIGS, in combination with phacoemulsification, is efficacious in reducing both IOP and AGM for eyes with NTG, up to 36 months after surgery.

Poster No.: PO-178

Anterior Chamber Depth and Angle and Associations in a Pediatric and Adult Population in Russia

*First Author: Mukharram M. **BIKBOV***
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Purpose: To investigate the normative data of anterior chamber depth (ACD) and angle (ACA) and their associations in multiethnic cohorts spanning three generations in Russia.

Methods: The study population consisted of populations of three population-based studies performed in urban and rural Bashkortostan/Russia: The Ural Eye and Medical Study (UEMS; age:40+ years), the Ural Children Eye Study (UCES; age:6-18 years), and the Ural Very Old Study (UVOS; age:85+ years). Using Scheimflug camera-based anterior chamber imaging, we measured ACD and ACA as part of a comprehensive ophthalmological and systemic examination. The exclusion criterion was previous cataract surgery.

Results: The study included 4869 (98.7%) children out of 4933 children of the UCES, 5426 (92.0%) out of 5899 UEMS participants, and 268 (16.3%) out of 1526 UVOS participants. In the UEMS, larger ACD (mean:3.14±0.37mm) correlated (multivariable analysis;r2=0.57) with younger age (beta:-0.08; $P<0.001$), taller body height (beta:0.03; $P=0.003$), longer axial length (beta:0.34; $P<0.001$), higher corneal volume (beta:0.06; $P<0.001$) and corneal refractive power (beta:0.12; $P<0.001$), thinner lens (beta:-0.09; $P<0.001$), lower IOP (beta:-0.03; $P=0.02$), lower prevalence of angle-closure glaucoma (beta:-

0.03; P=0.003) and higher prevalence of open-angle glaucoma (beta:0.03; P=0.007). Similar associations were found in the UCES (ACD mean:3.70±0.27mm) and UVOS (ACD mean:2.96±0.56mm).

Conclusions: In this population-based cohort of three generations from rural and urban Bashkortostan, ACD decreased from the children cohort (mean:3.70±0.27mm) to the adult cohort (mean:3.14±0.37mm) and to the very old cohort (2.96±0.56mm). Determinants of shallow ACD were older age and lower body height, in addition to the ocular biometric parameters of shorter axial length, lower corneal volume, corneal refractive power, and thinner lens thickness.

Poster No.: PO-209

Assessment of Photopic Negative Response (PhNR) Amplitude in Primary Glaucoma Using the RETeval Handheld ERG System - Indonesia Case Study

*First Author: Emma **RUSMAYANI***
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Purpose: This study evaluates the potential use of PhNR amplitude via handheld electroretinography (RETeval system, LKC Technologies, Inc., Gaithersburg, MD, USA) to detect primary glaucoma in different disease severity in comparison to the normal with and without cataract.

Methods: Patients were categorized into primary open-angle (POAG) and closed-angle glaucoma (PACG), normal with and without cataract groups. Patients with primary glaucoma were classified into early, moderate, severe, and advanced stages based on disease severity. The normal groups comprised patients exhibiting normal intraocular pressure (IOP), absence of retinal nerve fiber layer (RNFL) thinning, and normal visual fields. The RETeval system asserted its capability to record flicker ERG without the need for mydriasis agents, using non-invasive skin electrodes. The PhNR protocol utilized a stimulus frequency of 3.4Hz and 200 flashes for the extended protocol.

Results: The study group consists of 73 subjects without cataract, 98 subjects with cataract, and 205 glaucoma patients (47 early stage, 45 moderate stage, 41 advanced stage, 72 severe stage). The PhNR and PhNR 72 ms normal group (P=0.00) and cataract group (P=0.00) were both significantly higher compared to glaucoma groups. PhNR 72ms amplitude in all glaucoma groups was significantly lower compared to PhNR amplitude. POAG groups in all disease severity showed lower PhNR 72ms amplitude compared to the PACG groups.

Conclusions: The handheld ERG system RETeval using PhNR 72ms was effective in distinguishing glaucoma patients from normal and cataract patients. The PhNR 72ms amplitude is a valuable tool for analyzing the effect on the inner layer of retina ganglion cells damaged by glaucoma.

Poster No.: PO-217

Association Between Glaucoma Genetic Risk Score and Brain Structure

*First Author: Wenyi **HU***
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Purpose: To investigate the association of glaucoma genetic risk score (GRS) with brain structure in the UK Biobank study.

Methods: The blood samples collected from participants at baseline were used for whole-genome genotyping. A glaucoma GRS was generated based on 127 loci associated with primary open-angle glaucoma. Thirteen image-derived phenotypes of brain volumes were defined from T1-weighted magnetic resonance imaging, including total grey and white matter, grey matter, white matter, cerebrospinal fluid, brain stem, thalamus, caudate, putamen, pallidum, hippocampus, amygdala, accumbens, and white matter hyperintensities. Multivariable linear regression models and logistic regression models were used to estimate the association of GRS with volumes of brain regions.

Results: A total of 35,692 participants with genome data and normalised brain MRI data were included. After multiple testing corrections (P<0.004), glaucoma GRS was negatively associated with the volume of grey matter (β=-0.014, 95% CI: -0.020 to -0.009, P <0.001). Compared to the individuals with GRS in the first quartile (Q1), participants with a GRS in Q4 showed decreased grey matter volume (β=-0.022, 95% CI: -0.032 to -0.013, P<0.001). Glaucoma GRS was associated with an increased volume of white matter (β =0.009, 95% CI: 0.003 to 0.014, P =0.001). Compared to the individuals with GRS in Q1, those with GRS in Q4 had an increased volume of white matter (β=0.013, 95% CI: 0.005 to 0.022, P=0.002).

Conclusions: Our findings suggested the genetic predisposition to glaucoma was significantly associated with decreased total grey matter volume and increased white matter volume.

Poster No.: PO-167

Bilateral Lens Subluxation and Unilateral Secondary Glaucoma in a Patient With Marfan's Syndrome: A Case Report

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Purpose: To present the management of lens subluxation and its complications in a patient with Marfan's Syndrome.

Methods: A 24-year-old female complained of blurred vision in both eyes that had progressively worsened. The visual acuity (VA) was 6/75 in the right eye and 2/60 in the left eye. A family history of the same disease was noted in her mother. A slit lamp examination revealed lens subluxation in both eyes, and funduscopy showed a bilateral flat retina. Lens extraction and secondary lens implantation were planned for both eyes, beginning with the left eye.

Results: Lens extraction and implantation in the left eye were successfully performed. The VA in the patient's left eye improved from 2/60 to 6/48 with a correction of S -3.00. During the post-procedure follow-up, the patient complained of pain in her left eye. The intraocular pressure (IOP) in the left eye was 51.3 mmHg, leading to the diagnosis of secondary glaucoma due to pupillary block. This was treated with Laser Peripheral Iridotomy (LPI), reducing the IOP to 9 mmHg. The patient later reported seeing shadows. A slit lamp examination revealed IOL lens decentration, which was then corrected by repositioning the IOL.

Conclusions: Refractive errors in Marfan's syndrome can arise from a shift in the lens and extended axial length. Prevalence of lens subluxation is 50-80% in Marfan's syndrome patients and typically affects both eyes. Surgical intervention includes IOL implantations that have various potential side effects that require thorough consideration. Therefore, a comprehensive postoperative follow-up is essential.

Poster No.: PO-180

Bilateral Posner-Schlossman Syndrome: A Case Report

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Purpose: Posner-Schlossman Syndrome (PSS) was considered to be a benign disease. However, it can progress to significant optic nerve damage if management during each episode cannot control the intraocular pressure (IOP) and inflammation. The purpose of this case report is to present clinical features and management of patients with bilateral PSS.

Methods: A case report of a 52-year-old female patient with bilateral PSS. The IOP and clinical presentation were monitored.

Results: A 52-year-old female patient came with complaints of sudden decreased vision in both eyes with photophobia, halo, and bilateral ocular pain. She had experienced the same condition 1 month ago and had medication. In between attacks, the patient was symptom-free. Examination revealed decreasing visual acuity and high IOP of both eyes with anterior chamber reaction of fine, gray-color discrete, non-granulomatous keratic precipitate. The cornea was clear, and the gonioscopy showed an open angle without any peripheral anterior synechiae. No atrophy iris was found, and the optic disc appeared normal. There was no structural abnormality of the optic disc in Optical Coherence Tomography. Anti-Cytomegalovirus Immunology-G examination obtained positive titer. The clinical presentation is highly predictive of aqueous humor infection of CMV and can be confirmed by PCR testing. Initial treatment for PSS is a combination regimen of anti-inflammatory and anti-glaucoma drugs.

Conclusions: PSS diagnosis is inherently difficult because some acute episodes may go unnoticed due to the mild nature of anterior uveitis. Currently, treatment of PSS is aimed at controlling inflammation and reducing IOP, but treatment of the etiology is important to improve PSS control.

Poster No.: PO-203

Can Baseline Parapapillary Atrophy Morphology Predict Future Glaucoma Progression? – An OCT Glaucoma Imaging Study

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*Co-Author(s): Yoon **JEONG**, Jin Wook **JEOUNG**, Jaekyoung **LEE**, Ki Ho **PARK**, Young-in **SHIN***

Purpose: To investigate the glaucoma progression based on OCT Guided Progression Analysis (GPA) according to the baseline parapapillary atrophy (PPA) morphology in glaucoma patients.

Methods: This study included POAG patients with a minimum of 5 years of follow-up. We quantitatively measured the baseline PPA parameters and analyzed the corresponding GPA progression of the retinal nerve fiber layer. The PPA morphology was classified into 4 types (Crescent type 1, Crescent type 2, Solar-eclipse type 1, Solar-eclipse type 2) based on the PPA parameters and morphology, and the progression was subsequently analyzed.

Results: This study enrolled 210 patients with POAG, with a mean age of 53.8 years. The mean follow-up period was 9.8 years, and the average value of baseline mean deviation was -2.48 dB. Longer radial extent and larger angular extent were significantly associated with progression on GPA and the presence of disc hemorrhage during the course was associated with progression. Among the 4 classified PPA morphologies, the Solar-eclipse type 2 group showed the highest progression. Kaplan-Meier survival analysis demonstrated significant differences among the 4 types.

Conclusions: The larger the radial extent and angular extent of the PPA, the more progression was shown in the OCT GPA. Furthermore, there were significant differences in progression according to the type of PPA morphology. Our findings suggest that baseline PPA parameters and morphology will be valuable in predicting the future progression of glaucoma.

Poster No.: PO-220

Characteristic Differences Between Normotensive and Hypertensive Pseudoexfoliative Glaucoma

*First Author: Da Young **SHIN***
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Purpose: To investigate the characteristics of normotensive glaucoma (NTG) in the fellow eye of patients with unilateral pseudoexfoliation syndrome (PXS).

Methods: Data from 86 hypertensive PXG eyes and 80 normotensive PXG eyes were included. Hypertensive PXG was defined as PXG with IOP ≥ 22 mmHg and normotensive PXG was defined as with IOP ≤ 21 mmHg). Central corneal thickness (CCT) was measured by ultrasound pachymetry. Lamina cribrosa thickness (LT) was evaluated using swept-source optical coherence tomography.

Results: No significant differences were observed between hypertensive and normotensive PXG in terms of age, gender, axial length, hypertension, or diabetes. Normotensive PXG eyes had thinner CCT than hypertensive PXG eyes (p = 0.02). The visual field (VF) mean deviation (MD) was worse and the rate of MD progression was significantly increased in the hypertensive PXG group compared with the normotensive PXG group (p<0.001, p=0.04, respectively). To compare LT, sub-analysis was performed after matching age, VF MD and retinal nerve fiber layer thickness. The normotensive PXG group (n = 32) demonstrated significantly thinner LT compared with the hypertensive PXG group (n = 32) at similar ages and levels of glaucoma severity (p < 0.001).

Conclusions: Eyes with normotensive PXG demonstrated thinner CCT and LT compared with those with hypertensive PXG, suggesting structural vulnerability to glaucoma.

Poster No.: PO-214

Ciliary Body Size in Chronic Angle-closure Glaucoma

*First Author: Songhomitra **PANDA-JONAS***
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Purpose: To examine the size of the ciliary body stroma (CBS) in dependence on the morphology of the anterior chamber angle in enucleated human eyes.

Methods: Using light microscopy, we histomorphometrically examined human enucleated eyes.

Results: The study included 107 eyes (with a mean axial length of 25.1±2.8 mm (range:21.0-36.0 mm). The anterior chamber angle was open in 68 eyes, and it was closed and endothelialized in 39 eyes. The maximal CBS width (541±210µm versus 59±179µm; P<0.001) and the minimal CBS width (214±107µm versus 17±55µm; P<0.001) and maximal ciliary muscle height (593±557µm versus 293±111µm; P=0.001) were significantly smaller in the angle-closure group than in the open-angle group. Maximal CBS width increased with the presence of an open anterior chamber angle (beta:0.82; B:517;95%CI:435,599; P<0.001) and longer axial length (beta:0.17; B:18.2;95%CI:4.2,32.2; P=0.01). Minimal CBS width increased with the presence of an open anterior chamber angle (beta:0.65; B:177;95%CI:140,213; P<0.001) and a larger maximal ciliary muscle height (beta:0.23; B:0.06;95%CI:0.03,0.10; P=0.001). Maximal ciliary muscle height correlated with the maximal CBS height (beta:0.43; B:1.54;95%CI:0.92,2.17; P<0.001).

Conclusions: The CBS size is markedly smaller in eyes with a chronically closed endothelialized anterior chamber angle than in eyes with open angles. The tightening of the angle in eyes with angle-closure may prevent the access of aqueous humor not only to the trabecular meshwork but also to the ciliary body and may reduce the uveoscleral or uveovortex outflow pathway.

Poster No.: PO-189

Clinical Analysis of Nanophthalmos in Central China: Two novel MFRP Mutations in a Family

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Purpose: The demographic and clinical presentation of nanophthalmos and genotype-phenotype correlation within a family and mutations in membrane-type frizzled-related protein gene (MFRP).

Methods: Retrospectively reviewed consecutive nanophthalmos eyes at the Henan Eye Hospital from JAN 2017 to March 2023. Demographic and clinical data were collected, such as intraocular pressure, best-corrected visual acuity, axial length (AL), corneal, anterior chamber, retinal nerve fiber (RNFL) and visual function parameters. The mutated genes were identified by whole exome sequencing. Sanger sequencing was used to verify family segregation. American College of Medical Genetics and Genomics standards and guidelines and different silico analysis were applied to predict the effect of those variants.

Results: A total of 46 patients (71 eyes) were included. The mean age was 33.91 ± 16.79 years. The most common sign was a shallow anterior chamber (76.67%). Mean AL was 17.84 ± 1.76 mm, corneal diameter was 8.51 ± 0.87 m and lens thickness was 4.63 ± 0.31 mm. The average retinal RNFL thickness was 136 ± 37 µm. 33.80% of eyes had multiple operations. Lens surgery (50.70%) and anti-glaucomatous surgery (42.25%) were the most common. Whole exome sequencing (WES) revealed two novel mutations: MFRP (c.1435-

1437delinsCAA), MFRP (c.1610delC) in the proband. The bioinformatic analysis showed the two variants were disease-causing or probably damaging.

Conclusions: Summary in clinical characterization and epidemiological findings for nanophthalmos, and expanded phenotype-genotype correlations spectrum of the mutation in MFRP. These findings will help ophthalmologists detect nanophthalmos early and manage it in a timely manner.

Poster No.: PO-197

Clinical Outcome of Bent Ab-Interno Needle Goniotomy (BANG) in Different Stages of Open Angle Glaucoma

*First Author: Sahebaan **SETHI***

Purpose: First case series from India to evaluate the results and efficacy of combining Bent Angled Needle Goniotomy (BANG) with Phacoemulsification in the treatment of primary open-angle and normal tension glaucoma.

Methods: A retrospective chart review was performed on 30 eyes of 22 patients who underwent BANG combined with phacoemulsification surgery for glaucoma treatment at Arunodaya Eye Hospital, Gurgaon by a single surgeon. Glaucoma severity was classified as mild, moderate, or severe, and the patients were followed up for 3 months postoperatively. Data on pre-operative intraocular pressure (IOP), post-operative 1st and 3rd month IOP, and the number of anti-glaucoma medications (AGMs) used were collected and analyzed.

Results: The study showed a statistically significant decrease in IOP from pre-operative levels to 1st month and 3rd month postoperative levels, with an average IOP reduction of 5.72 mm Hg and 4.67mm Hg, respectively. Additionally, 22 out of 30 eyes (73.33%) showed a reduction in IOP greater than 20%, and 17 out of 30 eyes (56.67%) had a reduction in AGMs by the end of 3 months. Sub-analysis based on the severity of glaucoma showed a greater IOP reduction in severe glaucoma cases.

Conclusions: The results of this study suggest that combining BANG with phacoemulsification may be an effective low-cost treatment option for primary open-angle, particularly of value in developing nations.

Poster No.: PO-176

Clinical Outcomes of Three Cases of Uncommon Postoperative Delayed Choroidal Suprachoroidal Hemorrhage in Glaucoma Surgery

*First Author: Cao **DI***

Purpose: This study aims to explore the impact of intraocular pressure reduction on suprachoroidal hemorrhage. Decreased post-anti-glaucoma surgery pressure chould lead to choroidal exudation, rupturing ciliary arteries via traction. Compromised venous return also contributes to suprachoroidal hemorrhage.

Methods: We retrospectively analyze delayed choroidal hemorrhage post-anti-glaucoma surgery in three advanced glaucoma patients. Postoperative visual acuity and fundus outcomes are assessed.

Results: After anti-glaucoma surgery, the first case experienced suprachoroidal hemorrhage, needing extra-scleral punctures for drainage. Gradual relief occurred within 15 to 20 days post-final drainage, restoring visual acuity and retinal evenness. In the second case, observation managed recurrence after initial drainage, with hemorrhage relief on days 10-14, improving visual acuity to 0.05. The third patient, post-cataract extraction, developed suprachoroidal hemorrhage. Conservative treatment following insights from prior cases led to hemorrhage resolution, retinal stability, and visual acuity recovery to 0.1 by the 17th day.

Conclusions: Thorough preoperative assessments identify suprachoroidal hemorrhage risk factors and guide intervention strategies for advanced glaucoma. Pathophysiology varies from other intraocular procedures. Conservative observation may yield better outcomes for advanced glaucoma patients.

Poster No.: PO-145

Coenzyme Q10 in Promoting Retinal Ganglion Cell Survival on Glaucomatous Animal Model: A Systematic Review and Meta-analysis

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Purpose: This systematic review and meta-analysis evaluate the existing evidence of coenzyme Q10 supplementation in promoting retinal ganglion cell (RGC) death in the glaucomatous animal model.

Methods: This review is based on findings from articles in several electronic databases such as Medline/Pubmed, Web of Science, Proquest, and Science Direct to identify experimental animal studies. The titles and abstracts of studies acquired will be exported to Rayyan and reviewed independently by 4 authors. All in vivo animal models of human glaucoma receiving oral supplementation coenzyme Q10 were included. Study characteristics and primary outcomes, RGC counts, were summarized qualitatively. Discussions with the experts were made to resolve disagreements and uncertainties. SYRCLE's risk of bias tool was used in assessing the risk of bias. Mean differences were pooled using a fixed effects model.

Results: Study selection revealed four articles that met established inclusion criteria. Based on the fixed effect

model, the mean difference (MD) of retinal ganglion cell count was 27,18 (95% CI 24,21-30,14) with high heterogeneity (I2=100%). Ubiquinol supplementation was found to improve RGC axons preserve shown with the decrease of several protein expression related to ischemia by blocking the apoptotic pathway. It also prevents oxidative stress and reduces IOP elevation.

Conclusions: Ubiquinol has therapeutic potential in preventing RGC apoptosis by blocking the apoptotic pathway, preventing oxidative stress, and reducing IOP elevation in glaucomatous animal models.

Poster No.: PO-158

Combined Surgery for Combined Mechanism of Lens Induced Glaucoma

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Purpose: To report on combined mechanism lens-induced glaucoma (Phacoantigenic Glaucoma with Angle Closure Glaucoma) and its management.

Methods: To present a case report.

Results: A 66-year-old male came with a chief complaint of pain and redness in his right eye. He noticed a reduction in vision as well. He had previously been stabbed with a bamboo two months prior. The ophthalmology examination revealed a visual acuity of light perception in his right eye with Intraocular Pressure (IOP) of 48 mmHg. A slit lamp examination revealed blepharospasm with ciliary injection, corneal oedema with keratic precipitate, shallow anterior chamber, and a mature lens with rupture on the anterior capsule of the lens. The patient was diagnosed as Combined Mechanism Glaucoma and Traumatic Cataract right eye, he underwent Phacoemulsification convert to Extracapsular Cataract Extraction (ECCE) with Trabeculectomy, 5 Fluorouracil, Anterior Vitrectomy, and Implantation of Irisclaw Retropupil. After surgery, his visual acuity was improved to 0.2, and his IOP was lowered to 16 mmHg.

Conclusions: The gold standard for treating lens-induced glaucoma is lens extraction. Once the inflammation is under control, it can be done. The combined operation of Trabeculectomy and Lens Extraction can lead to a better prognosis for both visual and controlling the IOP.

Poster No.: PO-206

Combined Trabeculo-Trabeculectomy and Cataract Surgery for Pediatric Glaucoma With Lowe Syndrome

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Purpose: Lowe syndrome (LS) is a congenital multisystem disorder characterized by abnormalities in the ocular, central nervous system, and kidneys, and leads to a complex and comprehensive treatment approach. This case report described the surgical management for secondary pediatric glaucoma and congenital cataract found in LS with systemic complications.

Methods: We reported a case of a 2-month-old boy who presented with visual acuity of following object (+) in both eyes, bilateral corneal opacities with a diameter of 12 mm, normal anterior chamber depth, cloudy lens centrally, cupping cup-disc-ratio of 0.7 as well as intraocular pressure (IOP) of the right eye (RE) 26 mmHg and the left eye (LE) 29 mmHg. Axial length was 16.02 mm in the RE and 16.01 mm in the LE. He also had preaxial polydactyly on the left hand, brachycephaly, trivial tricuspid regurgitation, microcytic hypochromic anemia, renal impairment, and developmental delay. Combined trabeculo-trabeculectomy surgery was performed on the LE at the age of 3 months and RE at 4.5 months which resulted in postoperative IOP of 13 mmHg in LE and 15 mmHg in RE. Afterwards, lens aspiration with intraocular lens implantation was performed in the RE at 10.5 months and LE at 13 months.

Results: During postoperative follow-up, IOP was well-controlled with one glaucoma medication along with a clearer cornea. Streak retinoscopy on the RE showed S+1.50 C-0.50 Axis 156.

Conclusions: Combined trabeculo-trabeculectomy is a safe, effective, and feasible initial procedure in treating secondary glaucoma associated with Lowe syndrome. Moreover, the timing of glaucoma and cataract surgery should be a concern in treating similar cases.

Poster No.: PO-173

Comparing Variational Bayesian Linear Regression Models With SITA Standard in 10–2 Test Programs

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Purpose: We previously constructed the variational Bayesian linear regression (VBLR) model to measure visual field (VF), which is implemented in the AP-7700 perimeter (Kowa Company, Ltd., Japan); (VBLR-Standard, -Fast, and -Faster depending on the stimulus

presentation interval and threshold determination tolerance). The purpose of this study was to compare the VF test results measured with these VBLR models and Humphrey's Swedish interactive threshold algorithm standard (SITA-Standard) in 10-2 test programs.

Methods: This cross-sectional study included 52 eyes of 52 patients with glaucoma. VBLR-Standard and SITA-Standard, VBLR-Fast and SITA-Standard, or VBLR-Faster and SITA-Standard were performed in 17, 17, and 18 patients, respectively, on the same day. The mean deviation (MD), pattern standard deviation (PSD), and test duration were compared in each cohort.

Results: There was no significant difference in MD between VBLR-S (-15.59 dB) and SITA-S (-14.92 dB), VBLR-Fast (-15.29 dB) and SITA-S (-14.89 dB), and VBLR-Faster (-11.38 dB) and SITA-S (-12.01 dB). The correlation coefficients were 0.98, 0.96, and 0.96, respectively (each $p<0.01$). PSD was also not significantly different between VBLR-S (10.71 dB) and SITA-S (10.85 dB), VBLR-Fast (9.09 dB) and SITA-S (9.26 dB), and VBLR-Faster (8.56 dB) and SITA-S (9.41 dB). The correlation coefficients were 0.97, 0.75, and 0.99, respectively (each $p<0.01$). The test duration in SITA-Standard in each cohort was 432–440 seconds, while VBLR-Standard, VBLR-Fast, and VBLR-Faster significantly reduced the test duration to 383, 280, and 232 seconds, respectively (each $p<0.01$).

Conclusions: VBLR models reduced the test duration by 11–46% while maintaining the same accuracy as with SITA-Standard.

Poster No.: PO-195

Comparison of Efficacy and Ocular Surface Assessment Between Preserved and Preservative-Free Brimonidine/Timolol Eye Drops in Glaucoma Patients: A Parallel-Grouped, Randomized Trial

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Purpose: To compare the efficacy and safety using ocular surface assessment of preserved and preservative-free brimonidine/timolol eye drops in glaucoma or ocular hypertension patients.

Methods: This study was designed as a prospective, multicenter (three institutions), investigator-masked, parallel-grouped randomized clinical trial. The primary outcomes were corneal and conjunctival staining score, ocular surface disease index (OSDI) score, drug tolerance, and adherence rates at 12-week visits. The secondary outcomes were corneal and conjunctival staining score, OSDI score at 4-week visits and IOP, TBUT, and bulbar/limbal hyperemia score at the 4- and 12–week visits. For safety assessment, BCVA, SBP, DBP, HR, and physical examination at 4 and 12 weeks and adverse events during the whole study period were analyzed.

Results: Overall 59 patients were enrolled and randomized into each group (30 preservative-free and 29 preserved). Baseline characteristics showed no significant difference between the groups. While OSDI scores did not differ significantly between the groups, each corneal and conjunctival staining score change compared to baseline showed a significant increase in preserved brimonidine/timolol eye drops ($p=0.015$, 0.094, respectively). The drug tolerance and adherence rates were similar between the groups. Regarding drug satisfaction, however, higher proportions of patients in the preservative-free group reported convenience of installation ($p=0.002$). Also, stinging and burning sensations in drug tolerance showed better results in a preservative-free group with a significant difference ($p=0.011$). Other variables showed similar results between the groups.

Conclusions: Preservative-free brimonidine/timolol showed comparable efficacy and safety, better corneal and conjunctival staining score with convenience of installation and lower stinging and burning sensation.

Poster No.: PO-218

Comparison of Intraocular Pressure Fluctuation and Glaucoma Progression Rate Between Phakic and Pseudophakic Eyes in Pseudoexfoliation Glaucoma

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Purpose: To compare the intraocular pressure (IOP) fluctuation and the rate of glaucoma progression between phakic and pseudophakic eyes in pseudoexfoliation glaucoma (PXG) patients.

Methods: We enrolled a total of 22 PXG patients who had undergone cataract surgery at least 2 years prior and compared them with mean deviation (MD)-matched 22 PXG patients with phakic eyes. IOP measurement, Humphrey visual field (VF) testing, and optical coherence tomography (OCT) imaging were performed every 6 months. IOP parameters such as baseline IOP, peak IOP, mean IOP, and IOP standard deviation, were evaluated during the follow-up period. Annual rates of change in VF parameters and RNFL thickness were calculated, and rates of change were compared between the two groups.

Results: The results showed that both groups experienced a decrease in MD, with the group of pseudophakic eyes exhibiting a significantly higher rate of decline (-2.15 ± 2.66 dB/year vs. -0.78 ± 0.96 dB/year; $P = 0.046$). Similarly, there was a trend towards more rapid thinning of the retinal nerve fiber layer (RNFL) in the pseudophakic group (-2.92 ± 2.34 µm/year vs. -1.93 ± 2.00 µm/year; $P = 0.060$). No significant

differences in IOP parameters were observed between the two groups. Multivariate analysis revealed that pseudophakic lens status was significantly associated with a faster rate of MD decline in PXG patients.

Conclusions: In conclusion, we observed faster MD progression in PXG patients who underwent cataract surgery compared to MD-matched PXG patients with cataracts. This indicates that pseudophakic PXG patients may require more frequent follow-up and aggressive IOP-lowering treatment.

Poster No.: PO-605

Comparison of the Functioning Intrableb Structures After Trabeculectomy According to Amniotic Membrane Transplantation Using Anterior Segment Optical Coherence Tomography

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Purpose: The purpose of this study was to compare the characteristics of functioning bleb using anterior segment optical coherence tomography (AS-OCT) according to amniotic membrane transplantation (AMT).

Methods: A total of 40 eyes of 40 patients with primary open-angle glaucoma who received trabeculectomy with (AMT group; 20 eyes) or without AMT (control group; 20 eyes) were included. Bleb height, bleb wall thickness, striping layer thickness, striping/bleb wall ratio, bleb wall reflectivity, fluid-filled space score/height/area, and microcyst formation were evaluated using AS-OCT. A functioning bleb was defined at the time of AS-OCT as follows: an intraocular pressure (IOP) ≤18 mmHg and IOP reduction ≥20% without medication, a clinically diffuse bleb without any signs of an encapsulated bleb.

Results: Except for bleb height (P = 0.352) and microcyst formation (P = 0.266), there were significant differences between the two groups. The functioning bleb of the AMT group showed greater fluid-filled space score, area, and height than those of the control group after adjustment for AS-OCT time (all P < 0.001). Whereas, the functioning bleb of the control group had a thicker bleb wall and striping layer, higher striping/bleb wall ratio, and lower bleb wall reflectivity than those of the AMT group after adjustment for AS-OCT time (all P < 0.001).

Conclusions: The reflectivity and thickness of bleb wall structures are more pronounced in the functioning bleb after trabeculectomy alone. On the other hand, the extent of the fluid-filled space was a more distinctive feature of intrableb structures in the functioning bleb after trabeculectomy with AMT.

Poster No.: PO-211

Diagnostic Abilities of Three-Dimensional Anterior Segment Optical Coherence Tomography in Detecting Angle Closure

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Purpose: To investigate the diagnostic performance of single scan versus 3-dimensional (3D) angle parameters obtained from swept-source anterior segment optical coherence tomography (Casia2) in detecting angle closure.

Methods: This cross-sectional study enrolled phakic subjects during 2022-2023. Angle closure was defined in eyes without posterior trabecular meshwork visible by gonioscopy for >180 degrees. Angle opening distance (AOD), angle recess area (ARA), and trabecular iris space area (TISA) at 250, 500, and 750 µm from the scleral spur were measured from 128 radial-scan images (256 angles). The 3D information of each measurement was analyzed using built-in software in two patterns: (1) the average of the 256-angle measurements, and (2) the estimated angle area (for AOD) and angle volume (for ARA and TISA). The areas under the receiver operating curve (AUCs) of all eighteen 3D parameters were compared with averaged horizontal angles.

Results: Data from 118 subjects (59 open-angle, 59 closed-angle) was analyzed. The area of AOD-500 gave the highest AUC of 0.950 with a cut-off of 6.09 mm^2. The area of AOD-750 (AUC 0.948, cut-off 8.26 mm^2) and an average of TISA-750 (AUC 0.947, cut-off 0.13 mm^2) were the second and third highest AUCs. Parameters relating to ARA-250 yielded the lowest AUC. 3D parameters significantly increased the AUC of ARA-250 and TISA-250 ($p<0.02$) compared to the averaged horizontal angles. No significant improvement in AUC was demonstrated for AOD-250 and all parameters at 500 and 750 µm.

Conclusions: The 3D angle parameters had high performance in detecting angle closure. However, comparing a horizontal measurement to 3D parameters, the AUC improvement was mostly insignificant.

Poster No.: PO-168

Disfiguring Side Effects of Prostaglandin Analogue (PGAs) Eyedrops: Prostaglandin Associated Periorbitopathy (PAP)

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Purpose: Topical PGAs are preferred as first-line treatment in lowering intraocular pressure (IOP). However, the side effects of PAP may result in permanent cosmetic problems that may hinder

treatment adherence and long-term glaucoma management.

Methods: Case Report.

Results: A 29-year-old female hair stylist initially had persistent left eye pain and redness from a contact lens-related infection, which she self-medicated with gentamicin and dexamethasone eyedrops for over a year. Subsequently, she sought treatment at a private eye clinic and was diagnosed with left steroid-induced glaucoma and prescribed a daily dose of a combination of bimatoprost/timolol eyedrops. However, due to pandemic constraints preventing appropriate follow-up, she instilled eyedrop 5 times daily for a year with the misconception that this would further decrease IOP. She presented in July 2023 with worsening left vision and prominence of the left globe. The left eye exhibited apparent enophthalmos with superior sulcus deepening, periorbital fat atrophy, and inferior scleral show. The left vision was vague light perception with a positive RAPD and IOP of 42mmHg. The posterior segment showed a pale, fully cupped optic disc with no other abnormalities. Optical coherence tomography showed severe left RNFL thinning. The right eye was unremarkable, with an acuity of 6/6 and normal IOP. A diagnosis of end-stage steroid-induced glaucoma with PAP was made, and she was planned to undergo surgical intervention for IOP optimization.

Conclusions: This case highlighted the potential disfiguring consequences of PAP, particularly in young patients requiring long-term, unilateral therapy. It emphasizes the importance of patient education and cautious selection of anti-glaucoma treatments.

Poster No.: PO-215

Early Experience With iStent Inject Technologies Combined With Phacoemulsification in Korean Eyes With Normal-Tension Glaucoma

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Purpose: iStent inject technologies (iStent inject and iStent inject W) for the treatment of open-angle glaucoma were introduced in Korea in late 2020. This retrospective study assessed safety and clinical outcomes from combined phacoemulsification with iStent inject implantation up to postoperative month (POM) 6 in eyes with normal-tension glaucoma (NTG).

Methods: NTG eyes implanted with iStent inject as a combination phacoemulsification procedure from April 2021 were included. Intraocular pressure (IOP), number of medications, mean deviation (MD), and adverse events were extracted from medical records up to POM6. Changes in mean IOP and medications from preoperative values were estimated using multi-level mixed effects regression modeling. Success was assessed in eyes with POM6 data. Statistical analysis of paired continuous and proportional data used Wilcoxon Signed Rank and McNemar's tests, respectively. $P < 0.05$ indicated statistical significance.

Results: A total of 92 eyes from 63 patients (69.5±8.3 years old) were included. 78.3% of eyes were mild to moderate severity. At POM6, mean IOP was reduced by 1.0 mmHg (p=0.07) from 13.3, preoperative, to 12.3 mmHg. Mean medications decreased by 0.5 (p<0.001) from 1.4 to 0.9. In eyes with POM6 data (n=38), having IOP ≤ 15mmHg increased from 68.4%, preoperative, to 92.1% (p=0.01). 97.3% of eyes were on the same or fewer number of medications from baseline. Early adverse events were minimal and included transient IOP spikes and gross hyphema. No eyes had additional glaucoma surgery.

Conclusions: Early results showed iStent inject technologies with phacoemulsification safely improved medication burden while maintaining IOP control in NTG eyes.

Poster No.: PO-186

Early Outcomes of Ab Interno Microhook Trabeculotomy With Phacoemulsification in Open-Angle Glaucoma -a Randomised Control Trial

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Purpose: To study the efficacy and safety of Ab Interno microhook trabeculotomy (microLOT) combined with cataract surgery in patients with open-angle glaucoma.

Methods: This prospective, randomized, interventional comparative study was conducted on consecutive patients with visually significant cataracts and mild-moderate open-angle glaucoma. 114 patients were included. The patients were randomized to undergo microhook trabeculotomy with phacoemulsification (Group 1) or Phacoemulsification (Group 2) alone. All patients were followed up on days 1, 15, 30, 3 months, 6 & 12 months postoperatively. A p-value <0.05 was considered statistically significant. Baseline and follow-up visits were compared to find out the significant difference in the number of antiglaucoma medications (AGM), Intraocular pressure (IOP), and Best Corrected Visual Acuity (BCVA).

Results: There were 57 patients in each group. The groups had no statistically significant difference in their baseline characteristics. Mean preoperative IOP was 26.45±5.2mmHg which decreased to 12.43±3.6, 11.29±2.9, 10.98±3.2mmHg and 12.45±3.6 at 1,3,6 and 12 months respectively (p < 0.001 at all visits). LogMAR Visual acuity improved from 0.48 (IQR0.30-0.60) preop to 0 (0-0.18) (p<0..001). The AGM used reduced from 0.58±0.9 to 0.16±0.5 at 12 months. 87.4% of eyes achieved complete success at the end of one year. The most common complication was hyphema, noted

in four patients, out of which 1 needed an anterior chamber wash.

Conclusions: Ab Interno microhook trabeculotomy (microLOT) combined with phacoemulsification in patients with open-angle glaucoma is a safe and efficacious procedure with minimal complications.

Poster No.: PO-196

Establishing Neuroinflammation as a Significant Factor in Glaucoma: A Comprehensive Systematic Review of Post-mortem Studies

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Purpose: Glaucoma, a multifactorial disease, has been extensively researched to understand its underlying pathogenesis. Neuroinflammation has been speculated to play a crucial role in driving retinal ganglion cell (RGC) death. This review, therefore, analyses the existing literature for strengthening the evidence for the role of neuroinflammatory responses in glaucoma.

Methods: The Medline and Embase databases were searched for articles focusing on studies that utilized post-mortem tissues from glaucoma patients. A total of 32 studies were identified and analyzed. The quantitative data extracted from the studies was compared using standardized mean differences (SMDs).

Results: The review compared 490 post-mortem human samples from glaucoma patients with 380 controls. Glial activation was observed in 27 studies and predominantly associated with activated astrocytes (62.5%) and microglia (15.6%), with some involvement of Muller cells. Further, changes to extracellular matrix proteins like collagen, galectin, and tenascin-C suggested glial cells' influence on structural changes in the optic nerve head. The DAMPs-driven immune response and the classical complement cascade were reported to be associated with activated glial cells in glaucomatous tissue. Increased pro-inflammatory markers such as IL-6 and TNF-α were also linked to glial cells. Further, glial cell activation was also associated with disruptions in mitochondrial, vascular, metabolic and antioxidant components.

Conclusions: These findings highlight the potential role of glial cell responses in glaucoma pathogenesis. However, the exact mechanism remains unclear, thus, this review underscores the importance of neuroinflammation in glaucoma and emphasizes the need for humanized studies to precisely identify its role in the disease's progression.

Poster No.: PO-191

Evaluating the Performance of a New Glaucoma Screening Model in the Primary Care Setting

*First Author: Rubin **YONG***
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Purpose: The aim of this study is to validate the clinical utility of a new community-based glaucoma screening programme in Singapore.

Methods: This is a prospective study in which we screened elderly participants (age >60 years) for glaucoma in the primary care setting. All the participants were asymptomatic at the point of recruitment. Glaucoma screening tests, including visual acuity test, intra-ocular pressure (IOP) measurement, fundus imaging and visual field (VF) assessment were performed on the participants. VF assessments were performed only if the optic nerve showed features suggestive of glaucoma.

Results: Of the 270 participants enrolled in the primary care setting, 81 (30%) were referred to an ophthalmologist as glaucoma suspects. The indications for referral include high IOP (5, 1.8%), raised cup-disc ratio (CDR) (33, 12.2%) and VF defects (52, 19.3%); 10 (3.7%) presented with both raised CDR and VF defects. Notably, 2 of these patients required emergency referral (< 1 week) due to high IOP. In total, 51 were evaluated by an ophthalmologist. Of which, 9 (3.3%) were classified as glaucoma suspects; 7 (2.6%) were diagnosed with glaucoma - 3 were normotensive, 3 had primary angle closure, and 2 had primary open-angle glaucoma; and 3 (1.1%) had no formal diagnosis.

Conclusions: This study highlights the relevance of IOP measurement, fundus imaging and VF assessment for glaucoma screening. Furthermore, it provides preliminary evidence to support the potential of a glaucoma screening programme in the community.

Poster No.: PO-201

Evaluation of Irido-Trabecular Contact and Lens Parameters in Primary Angle Closure Disease: A Swept-Source Anterior Segment Optical Coherence Tomography Study

*First Author: Yoon **JEONG***
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Purpose: To evaluate irido-trabecular contact (ITC) and lens parameters in patients diagnosed with primary angle closure disease (PACD).

Methods: A retrospective analysis of 376 patients diagnosed with PACD who underwent swept-source anterior segment optical coherence tomography was conducted. We used 128 meridional scans to evaluate

the angle, iris, anterior chamber, and lens parameters. A relative lens vault greater than one-third was categorized as "high vault." Area under the receiver operating characteristic curve (AUROC) analysis was executed for ITC index above 50%. Decision tree analysis identified pivotal factors influencing ITC index.

Results: The study included 119 eyes from 119 PACD patients. The mean ITC index was 50.2%±30.5%, and the mean relative lens vault was 0.31±0.10. A high vault was associated with a greater ITC index ($p<0.001$). A significant positive correlation was observed between the ITC index and the relative lens vault ($r = 0.451$, $p<0.001$). The AUROC for detecting ITC index ≥50% was the greatest using angle recess area at 500 µm (ARA 500) (0.983, [95% confidence interval, 0.940-0.998]). Decision tree analysis identified trabecular iris space area at 500 µm (TISA 500) and ARA 500 as essential factors for distinguishing the ITC index. The addition of a relative lens vault did not significantly improve differentiating capability.

Conclusions: This study demonstrates a notable correlation between the relative lens vault and the ITC index in PACD patients. However, decision tree analysis indicates that relative lens vaults do not augment the diagnostic power of angle parameters in differentiating the ITC index. Thus, a comprehensive evaluation of PACD patients must encompass additional contributing factors beyond lens-induced effects.

Poster No.: PO-141

Expecting the Unexpected: Bleb-Related Endophthalmitis: A Diagnostic Surprise

*First Author: Chitransha **JALUTHARIYA***
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Purpose: To discuss the challenges in the management of a case of bleb-related endophthalmitis with atypical organism.

Methods: A 16-year-old male, known case of primary congenital glaucoma; status post both eyes trabeculectomy presented with sudden, progressive, painful right eye diminution of vision (perception of light present with an inaccurate projection of light) for 1 day. On examination, the right eye revealed a thin diffused bleb with surrounding infiltrates and conjunctival congestion, hypopyon in the anterior chamber, yellow glow on retro illumination, and membrane-like echoes on ultrasound B scan. The left eye also had a thin, cystic diffuse bleb. He was started on empirical topical and intravenous antibiotics (ceftazidime and vancomycin). The vitreous biopsy revealed gram-negative cocci, but the culture reports were still awaited, so we kept the patient on emperical treatment, but not much improvement was noted.

Results: The culture from vitreous biopsy revealed Neisseria mucosa, following which pars plana vitrectomy along with culture-sensitive intravitreal, subconjunctival antibiotics (piperacillin and tazobactam) were given. Patient vision improved to 6/18 in the last follow-up; the anterior segment and posterior segment findings were resolved. The bleb was healthy but cystic; planned for bleb excision later.

Conclusions: Bleb-related endophthalmitis needs aggressive management. This case had Neisseria mucosa in a vitreous biopsy, which is a commensal from the upper respiratory tract. No case reports have been found so far. Early detection is essential to start organism-specific treatment in order to have a better outcome.

Poster No.: PO-142

Exploring Diagnostic m6A Regulators in Primary Open-Angle Glaucoma

*First Author: Xinyue **ZHANG***
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Purpose: To explore the potential implications of N6-methyladenosine (m6A) regulators in trabecular meshwork (TM) tissues of primary open-angle glaucoma (POAG).

Methods: Bioinformatic analysis was performed to paint the expression landscape of m6A regulators in TM tissues. CCK-8 assay was used to investigate the proliferation. RNA sequencing was performed to identify downstream targets.

Results: The data from the GSE27276 database was used to profile the expression of m6A regulators in POAG. 5 m6A regulators exhibited a significant differential expression. Random Forest model showed that all five differentially expressed m6A regulators were characteristic genes of POAG and exhibited diagnostic potential. The consensus clustering analysis was achieved based on gene expression values of five important m6A regulators. As per the clustering outcomes, the POAG samples were efficaciously separated into two groups. Immune cell infiltration analysis showed that activated CD8+ T cells and regulatory T cells differed between the two subtypes. Further, the human trabecular meshwork cells (HTMCs) oxidative stress cell model and TGF-β2 stimulation cell model were constructed. YTHDC2 was significantly down-regulated in both models. TGF-β2 stimulation caused a decrease in the proliferation of HTMCs, and the silence of YTHDC2 showed a reverse outcome. Finally, we found that NLRP3, a key molecule of pyroptosis, might be the potential downstream target gene.

Conclusions: M6A regulatory genes in TM tissues may serve as potential diagnostic biomarkers for POAG. And, the down-regulation of YTHDC2 may be a self-protection mechanism in response to the decline of cell viability induced by oxidative stress or TGF-β2 stimulation in TM tissues.

Poster No.: PO-181

GSK840 Alleviates Retinal Neuronal Injury by Inhibiting Retinal Ganglion Cell Necroptosis After Ischemia/Reperfusion

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Purpose: This study aimed to explore the impact of GSK840 on retinal neuronal injury following retinal ischemia/reperfusion (IR) and its associated mechanism.

Methods: We established an in vivo mouse model of IR and an in vitro model of oxygen and glucose deprivation/reoxygenation (OGDR) in primary mouse retinal ganglion cells (RGCs). GSK840, a small-molecule compound, was employed to specifically inhibit RIPK3/MLKL-dependent necroptosis. Retinal structure and function evaluation was performed by using hematoxylin and eosin staining, optical coherence tomography and electroretinogram. Propidium Iodide (PI) staining was employed for the detection of necroptotic cell death, while western blot and immunofluorescence were utilized to assess necroptosis-related proteins and inner retinal neurons.

Results: RIPK3/MLKL-dependent necroptosis was rapidly activated in RGCs following retinal IR or OGDR. GSK840 helped maintain relatively normal inner retinal structure and thickness by preserving inner retinal neurons, particularly RGCs. Meanwhile, GSK840 ameliorated IR-induced visual dysfunction, as evidenced by the improved amplitudes of photopic negative response, a-wave, b-wave, and oscillatory potentials. And GSK840 treatment significantly reduced the population of PI+ RGCs following injury. Mechanistically, GSK840 ameliorated RGC necroptosis by inhibiting the RIPK3/MLKL pathway.

Conclusions: GSK840 exerts protective effects against retinal neuronal injury after IR by inhibiting RIPK3/MLKL-mediated RGC necroptosis. GSK840 may represent a protective strategy for RGC degeneration in ischemic retinopathy.

Poster No.: PO-140

Hypotony Due to Cilliary Body Shock in Acute Glaucoma Patient: a Case Report

*First Author: Widya **ANANDITA***

Purpose: To report the occurrence and management of hypotony due to presume cilliary body shock in a post-acute patient.

Methods: A case report was done by retrospective review of medical records.

Results: A 58-year-old female complains of sudden blurry vision and pain in her left eye, also accompanied by headache and nausea 10 days before presentation. She was treated by another ophthalmologist and was given oral acetazolamide and 2 anti-glaucoma drops, as well as receiving laser treatment in his left eye 1 week prior to presentation. On presentation, there was hypotony, with IOP (intraocular pressure) of 5 mmHg and a flat anterior chamber. The patient was treated with oral and topical steroids, as well as topical atropine, and hypotony started to resolve within 2 weeks after starting the therapy. The topical steroid was given for 3 months, and afterward, IOP was stable in the low teens without therapy until the last follow-up in 9 months post-acute attack.

Conclusions: Although rare, hypotony can occur following an acute attack. In this case, because there are no channels of aqueous humor present, cilliary body shock is thought as the cause of hypotony. Hypotony can be managed successfully by steroids and topical atropine.

Poster No.: PO-163

Intraocular Pressure Agreement Between iCare ic200 and Goldmann Applanation Tonometer in Adult Eyes

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Purpose: To determine agreement of intraocular pressure (IOP) by iCare ic200 and Goldmann applanation tonometer (GAT) in adult eyes with clear cornea over wide IOP and corneal thickness ranges.

Methods: Patients (aged 18-82 years) with glaucoma and suspects were enrolled. Those with fixation issues, corneal pathology were excluded. 2 sets of iCare ic200 and GAT readings were taken 5 minutes apart, by 2 independent masked observers. The sequence of iCare ic200 and GAT were randomized.

Results: Two hundred eyes (100 patients, age 58±12.6 years) were included. The IOPs ranged from 5-56mmHg (GAT mean 18.08±8.44mmHg, iCare ic200 19.21±8.80mmHg). Agreement by Bland Altman plots was limited in <21 mmHg IOP group (mean difference -1.48mmHg (-7.06 to 4.09) and poor in >21mmHg (-0.8 (-16.3 to 14.92). Intradevice repeatability for iCare ic200{0.986 (0.981-0.989) was good. Generalised estimating equation showed age, pachymetry, and baseline GAT IOP affected the difference between the 2 tonometers.

Conclusions: iCare ic200 overestimated IOP with an increase in baseline IOP, Pachymetry. GAT agreement with acceptable limits in <21mmHG IOP makes it alternative to be considered.

Poster No.: PO-207

Intraocular Pressure Changes in Individuals Undergoing Hyperbaric Oxygen Therapy: A Retrospective Study

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Purpose: This study aims to describe the short- and long-term changes in intraocular pressure (IOP) before and after hyperbaric oxygen therapy (HBOT).

Methods: We conducted a retrospective medical chart review of adult patients who received HBOT and had ophthalmology examination records before and after HBOT. Patients who received HBOT for ophthalmology-related indications of retinal artery and vein occlusion were excluded. Data was extracted and tabulated in a spreadsheet, and subsequent analysis was performed using Statistical Package for the Social Sciences (SPSS).

Results: The study included 94 patients (52.1% women) with an average age of 62.44 ± 13.16 years who underwent HBOT. Patients were split into three groups for post-HBOT ophthalmology exams: within 60 days (19), 60-180 days (24), and beyond 180 days (51). The results indicated a decrease in mean IOP values in both eyes, but the changes were not statistically significant (OD: 0.22 ± 3.92, p-value: 0.6, OS: 0.07 ± 4.06, p-value: 0.8). The sub-group analysis of patients with glaucoma at the baseline revealed no significant changes in IOP. There was no correlation between the number of HBOT treatment sessions, treatment pressure, or treatment profile on the IOP measurements.

Conclusions: Our findings suggest that HBOT treatment does not have short or long-term consequences on the IOP of treated patients, including those with a diagnosis of glaucoma. The low number of included patients and the significant variance in the time gap between the ophthalmology exams and HBOT treatments hindered the chronological evaluation and analysis of changes.

Poster No.: PO-144

Intraocular Pressure Control and Visual Outcome in a Patient With Phacolytic Glaucoma Managed by Phacoemulsification With Posterior Chamber Intraocular Lens Implantation – A Case Report

*First Author: Ju-kuo **LIN***

Purpose: To report a case suffering from chronic glaucoma and loss of vision in the left eye for several months, also with complaints of eye pain and headache for several days.

Methods: A retrospective case report and literature review.

Results: A 48-year-old male with symptoms of eye pain in his left eye and headache. Chronic glaucoma and vision loss in the left eye were presented for several months. After an ophthalmic examination, a mature white cataract was found in the left eye with an opening angle structure, under the impression of phacolytic glaucoma induced by mature white cataract. With medical management with anti-glaucoma drugs, IOP remained high, up to 30 mmHg. Finally, receiving the procedure of phacoemulsification cataract removal with posterior chamber intraocular lens implantation, IOP became normalized quickly after surgery, IOP was maintained at about 10-14 mmHg in the left eye without any need of anti-glaucoma medicine. The best-corrected visual acuity was restored to 20/20 in the left eye without evidence of any complication.

Conclusions: Phacoemulsification with posterior chamber intraocular lens implantation may be an effective and efficient management for patients with phacolytic glaucoma. This treatment modality may be a relatively simple method with good IOP control and visual outcome. A few case reports and review articles have been reported for the proper thinking process and principle of the effective management of the disease. The significance of phacoemulsification, or even combined with other procedures in the principle and sequence for the management of phacolytic glaucoma, should also be evaluated in the future.

Poster No.: PO-156

Intraocular Pressure Profile within 24 Hours after Micropulse Transscleral Cyclophotocoagulation

*First Author: Nattanan **PHANVICHATKUL***
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Purpose: To assess intraocular pressure (IOP) changes during 24 hours after micropulse transscleral cyclophotocoagulation (MP-CPC) and to find the relationship between predicting prognosis about successful long-term results, pain score and complications of MP-CPC.

Methods: In this retrospective non-comparative case series, patients who received MP-CPC in either eye from March 2021 to June 2023 were reviewed. Exclusion criteria were eyes with a previous history of cyclophotocoagulation, absence of serial IOP measurements during the first operative day, or the combination MP-CPC with other procedures, such as cataract surgery, anterior chamber irrigation, and intravitreal injections. IOP was collected at 1 hour, 5 hours, 9 hours, 13 hours, and on the following day after MP-CPC. Data at each time point were compared to preoperative data by using the Wilcoxon signed rank test.

Results: Forty-six eyes of 40 patients were included in this study. The majority of eyes were male (67.5%), and most had secondary glaucoma (60.9%). The mean (SD)

preoperative IOP was 36.4 (16.7) mmHg. The mean postoperative IOP values were 33.9 (17.0) mmHg at 1 hour, 36.1 (17.7) mmHg at 5 hours, 32.6 (16.4) mmHg at 9 hours, 29.7 (15.9) mmHg at 13 hours, and 24.5 (14.4) mmHg on the following day. The IOP on the following day was significantly lower compared to the preoperative IOP ($p < 0.001$).

Conclusions: Micropulse transscleral cyclophotocoagulation demonstrated a significant decrease in IOP starting from the first day following the procedure.

Poster No.: PO-193

Intraocular Pressure-Lowering Effect of Omidenepag Isopropyl in the Phase 3 SPECTRUM 5 Study: Subgroup Analysis of Prior Medications

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Purpose: This sub-analysis of the phase 3 SPECTRUM 5 study compared the effects of prior intraocular pressure (IOP)-lowering medications on omidenepag isopropyl (OMDI) 0.002% IOP-lowering efficacy among patients with primary open-angle glaucoma (POAG) or ocular hypertension (OHT) who were latanoprost low/non-responders.

Methods: In the phase 3 open-label SPECTRUM 5 study (NCT03697811), adult patients with POAG or OHT who were latanoprost low/non-responders received once-daily OMDI bilaterally for 3 months. Mean diurnal IOP (MD IOP) by prior IOP-lowering medication (defined as non-study medications ended before the study medication start date) was assessed.

Results: In the full analysis set (N=107), the mean (standard deviation [SD]) age was 63.1 (10.2) years, and 58.9% of patients were female. Baseline MD IOP (SD) was 23.34 (2.12) mmHg, and 85.0% of patients had prior antiglaucoma preparations/mitotics use; most common medication classes were prostaglandin analogs (63.6%), carbonic anhydrase inhibitors (31.8%), and beta blocking agents (14.0%). At 3 months, overall population MD IOP (SD) was 20.48 (3.31) mmHg and was similar across subgroups stratified by prior IOP-lowering medication class and no prior medication; 19.23 (5.02) with alpha agonists, 20.88 (3.69) with beta-blocking agents, 20.89 (3.60) with carbonic anhydrase inhibitors, 20.76 (3.40) with prostaglandin analogs, and 19.20 (2.30) with no prior medication.

Conclusions: In this study, OMDI IOP-lowering efficacy was consistent across subgroups based on prior IOP-lowering medication use.

Poster No.: PO-210

Intravitreal Resveratrol Protects Retinal Ganglion Cells After Ischemia-Reperfusion Injury in Rats

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Purpose: This study aimed to investigate the effect of intravitreal Resveratrol on retinal ganglion cells (RGC) after ischemia-reperfusion injury.

Methods: Rats were divided into 4 groups: control, IR0, PBS+IR7, and RSV+IR7. Ischemia-reperfusion (IR) injury was done through cannulation in the anterior chamber, and pressure was maintained at 110 mmHg for 60 minutes. Resveratrol (RSV) 100µM was injected intravitreally in the RSV+IR7 group. After 7 days, the rat's eye was enucleated. Immunohistochemistry of TNF-α, Bax, Caspase-3, SOD, MDA expression in the retina, and the number of RGC stained with Brn3a were evaluated. Hematoxylin and Eosin staining were used to determine the inner retinal thickness of the retina.

Results: The RSV+IR7 group had lower Bax, Caspase-3, MDA, and TNF-α expression compared to the PBS+IR7 group ($P<0.05$). The RSV+IR7 group had higher SOD expression, retinal ganglion cell count, and thicker inner retinal thickness compared to the PBS+IR7 group ($P<0.05$), suggesting a potential anti-apoptosis, antioxidant, anti-inflammatory, and neuroprotection effect of intravitreal RSV after ischemia-reperfusion injury. The Expression of Bax, Caspase-3, MDA, TNF-α, and SOD also RGC count and inner retinal thickness are not significant ($P>0.05$) between the RSV+IR7 and IR0 group, indicating that the numbers were quite similar and RSV helps preserve retinal ganglion cell after ischemia-reperfusion injury in 7 days.

Conclusions: This study showed that resveratrol intravitreal has a potential effect of anti-apoptosis, antioxidant, anti-inflammatory, and neuroprotection effects on RGC. RSV also helps preserve RGC after ischemia-reperfusion injury in 7 days in the animal model.

Poster No.: PO-149

Intravitreal Triamcinolone Induced Iris Nodules With Secondary Glaucoma – A Rare Case Series in Indian Eyes

*First Author: Parivadhini **A***
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Purpose: To report a case series of 6 patients who developed iris nodules with secondary glaucoma following intravitreal triamcinolone (IVTA) injections given for cystoid macular edema (CME).

Methods: Retrospective case series of patients who developed iris nodules following IVTA with secondary glaucoma in a tertiary care center in South India. Nodules were imaged with ASOCT (Anterior Segment Optical Coherence Tomography) and UBM (Ultrasound Biomicroscopy), and were subjected to histopathology if they underwent glaucoma surgery.

Results: Six eyes of 6 patients aged 46-70 years developed iris nodules with secondary glaucoma following IVTA during 2019-2020. 3 (50%) eyes received IVTA for pseudophakic CME, 2 (33.3%) for CME in branch retinal vein occlusion, and 1 (16.6%) for diabetic CME. All 6 eyes (100%) were pseudophakic with non-intact posterior capsules. The post-injection IOP was 40-62 mm of Hg (mean 51.6 mm of Hg). Iris nodules were seen 14 -274 days post IVTA injection (median 63 days). The cause of the development of iris nodules is not known. The histopathological examination of the trabeculectomy and iris tissue specimen showed cystic changes with steroid deposits, and there were no inflammatory cells. Serial evaluation in the patient with the longest follow-up showed a complete disappearance of nodules by 16 months.

Conclusions: Delayed formation of Iris nodules can occur following IVTA injection in patients with nonintact posterior capsules. These patients warrant regular follow-ups for secondary ocular hypertension. This is the first report of the formation of iris nodules following IVTA to the best of our knowledge.

Poster No.: PO-216

Investigation on the Prevalence and Influencing Factors of Different Types of Glaucoma in Central China

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Purpose: We aimed to describe the epidemiology, characteristics, management and final outcomes of pediatric (PG), secondary (SG) and POAG patients in central China.

Methods: Clinical and social characteristics of pediatric, SG and POAG at Henan Provincial People's Hospital and Henan Eye Hospital were analyzed between 2017 and 2023.

Results: 276 eyes of PG were analyzed. 2.93% of the patients had a family history of glaucoma. PCG was the most common type of glaucoma. Trabeculotomy and microcatheter-assisted 360° trabeculotomy (MAT) combined with Trabeculotomy were the most commonly performed surgeries. 1,129 cases (1,158 eyes) of SG were analyzed. The male–female ratio was 1.69. The New Rural Cooperative Medical System (NCMS) played the most important role in reimbursement (60.32%). Vascular disease and trauma were the leading causes of SG. Trauma-induced glaucoma decreased significantly during the Covid-19 pandemic. Ahmed glaucoma valve implantation was the most commonly performed surgery. 744 eyes were analyzed. MAT combined Trab showed an increasing trend. IOP decreased from 28.24±11.43 mmHg to 15.39±6.42 mmHg at the final follow-up ($p<0.001$). The average of superior RNFL, GCC, and superior of GCC thickness were significantly thinner than before.

Conclusions: Pediatric amblyopia might require full attention during the entire treatment, especially after glaucoma surgery. Effective preventive measures for at-risk populations, increased NCMS coverage and the promotion of higher education are necessary. Regular OCT examination may be important for the detection of early glaucoma and the follow-up of glaucoma treatment. The findings will help ophthalmologists detect different types of glaucoma early and manage it in a timely manner.

Poster No.: PO-172

Lack of Causal Association Between Diet-Derived Circulating Antioxidants and Primary Open-Angle Glaucoma: A Mendelian Randomization Study

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Purpose: This study aims to investigate the genetic causal relationships between diet-derived circulating antioxidants, primary open-angle glaucoma (POAG) and glaucoma-related traits using two-sample Mendelian randomization (MR).

Methods: Genetic variants associated with diet-derived circulating antioxidants (α-tocopherol, γ-tocopherol, retinol, β-carotene, ascorbate, and lycopene) were assessed as both absolute and metabolic as instrumental variables. POAG was derived from the largest genome-wide association study database with previous publications. Glaucoma-related traits include intraocular pressure (IOP), macular retinal nerve fiber layer (mRNFL) thickness, macular ganglion cell inner plexiform layer (mGCIPL) thickness, and vertical cup-disc ratio (vCDR). MR analyses were performed per outcome for each exposure.

Results: The present results show no causal association between diet-derived antioxidants and POAG. For absolute antioxidants, the odds ratio (OR) ranged from 0.982 (95% confidence interval [CI]: 0.833 – 1.150; P = 0.818) for ascorbate to 1.052 (95%CI: 0.911 – 1.215; P = 0.490) for β-carotene per natural log-transformed antioxidant values. For antioxidant metabolites, the OR ranged from 0.998 (95%CI: 0.801 – 1.244; P = 0.989) for ascorbate to 1.210 (95%CI: 0.870 – 1.682; P = 0.257) for γ-tocopherol per increase in log-transformed metabolite levels. Furthermore, our results also showed no genetic association between diet-derived antioxidants and glaucoma-related outcomes, including

IOP, mRNFL and mGCIPL thickness, and vCDR (all P > 0.05).

Conclusions: Our study did not have evidence to support the causal association between dietary-derived antioxidants, POAG and glaucoma-related traits. Therefore, the supplementation of antioxidants did not have a preventive effect on POAG risk and no protection against retinal nerve cells.

Poster No.: PO-187

Long-term Outcomes and Complications of Ahmed Glaucoma Valve in Type 1 Keratoprosthesis

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Purpose: To evaluate long-term outcomes and complications associated with Ahmed Glaucoma Valve (AGV) implantation in eyes with Type-1-Keratoprosthesis (KPro).

Methods: We retrospectively reviewed records of 43 eyes of 43 patients with Type-1-KPro and AGV from 2009-2021, having a minimum of 6 months of follow-up. The primary outcome measure was postoperative complications. The secondary outcome measure was the stability of glaucoma, assessed by visual fields, intraocular pressure (IOP), and best-corrected visual acuity (BCVA). Sight-threatening complications, the need for implant removal, or repeat glaucoma surgery were considered failures.

Results: AGV was performed after KPro in 32 eyes, prior to Kpro in 5 eyes, and simultaneously with KPro in 6 eyes. Median follow-up (interquartile range, IQR) was 34 (7-53) months after AGV. Seven eyes (16%) had implant-related complications, of which 5 eyes (11.6%) had tube-block requiring intervention, and 2-eyes (4.8%) had conjunctival erosion with tube exposure requiring repair. At final follow-up, there was no significant change in mean BCVA (p=0.24) (stable in 31-eyes (72%), improved in 4-eyes (9.3%) and decreased in 8-eyes (19%), mean number of anti-glaucoma medications significantly decreased from 3.4 to 1.7 (p<0.0001), the visual field mean deviation (p= 1.0) and visual field index (p=0.39) were stable. None had implant extrusion or removal and 2 eyes needed additional intervention for IOP control, after 8.5 years of follow-up (failure).

Conclusions: AGV implantation offered good long-term safety and efficacy in eyes with Type-1-KPro and glaucoma. Long-term tube-related complications were noted in 16% of eyes; none were sight-threatening, and 4.6% of eyes needed additional intervention for IOP control.

Poster No.: PO-152

Micro-invasive Glaucoma Surgery Versus Trabeculectomy in Management of Juvenile Open-Angle Glaucoma

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Purpose: To report the outcome of trabeculectomy and micro-invasive glaucoma surgery (MIGS) in bilateral young onset glaucoma.

Methods: A 14-year-old boy with decreased vision in both eyes (BE) presented with 1/60 in the right eye (RE) and 6/60 in the left eye (LE). Intraocular pressure (IOP) was 44-55 mmHg in BE. The patient has a wide-open angle configuration on the gonioscopy. Funduscopy examination revealed a glaucomatous optic disc with 0.6 cupping. Maximal medication has been administered but with minimal success. Trabeculectomy with antimetabolite was performed on the RE with uneventful fluctuative IOP as a result (1st day 20 mmHg, 1st week 2 mmHg, 1st month 27 mmHg). Gonioscopy-assisted transluminal trabeculotomy (GATT) was chosen for the LE to minimize the hypotony event. Postoperatively on the LE, the IOP result (1st day 18 mmHg, 1st week 16 mmHg, 1st month 14 mmHg), with vision improvement up to 6/21.

Results: This case study shows that filtration surgery in patients with juvenile open-angle glaucoma (JOAG) takes up a different surgical approach to conventional surgery and newer surgical procedures for glaucoma. The MIGS technique can be performed faster and bring less injury, with a faster recovery and safer procedure.

Conclusions: The MIGS procedure is a new option in JOAG management, but whether it can replace conventional filtration surgery is still debatable.

Poster No.: PO-165

Modified Ab-Interno Sulcus Placement of Non Valved Drainage Implant Tube-Early Outcomes of a Novel Technique

*First Author: Devendra **MAHESHWARI***
*Co-Author(s): Shivam **GUPTA***

Purpose: To evaluate the early outcomes of a modified needle-guided ab-interno method of nonvalved tube insertion into the ciliary sulcus.

Methods: Prospective interventional study. A 350 mm^2 Aurolab Aqueous Drainage Implant (AADI; Aurolab, Madurai, India) was used. In this modified technique, after securing the plate of the implant, a 21 G needle was inserted through the opposite limbus into the anterior chamber. The needle was directed to the sulcus, under the iris plane, and exiting through the bed of the scleral flap 2-2.5mm from the limbus. The tube was threaded into the needle lumen and guided

into the ciliary sulcus. Patients were followed up for a period of 6 months. Early outcomes of the surgery, which included visual acuity, intraocular pressure (IOP), number of anti-glaucoma medications (AGM), and surgical complications, were recorded.

Results: Fourteen eyes of 14 patients were included. Eleven of fourteen patients (78.6 %) had secondary glaucoma. Primary glaucomas (1 Advanced POAG and 2 PACG eyes) were seen in 3 of 14 patients (21.4%) respectively. Out of 14 patients,7 patients underwent AADI implantation combined with phacoemulsification and 7 underwent AADI implantation only. IOP reduced from a pre-operative mean (SD) of 33.57 (10.5)mmHg to 10.21 (4.0) mmHg at 6 months ($p < 0.001$). Mean (SD) number of preoperative AGM reduced from 2.93 (0.6) to 0.43 (0.8) medications ($p = 0.001$). No intraoperative complications were noted, although post-operatively, two patients had choroidal detachment.

Conclusions: The modified technique of non-valved drainage device tube implantation in the sulcus seemed promising and was found to be a simple, safe, and effective alternative to existing methods of sulcus placement.

Poster No.: PO-148

Multicenter Database of Treatment Pattern for Patients with Acute Primary Angle Closure in China

*First Author: Xiaojie **WANG***

Purpose: A Multicenter database regarding acute primary angle closure (APAC) is essential for evaluating APAC treatment patterns and establishing appropriate national policies regarding APAC management. This study aimed to investigate treatment patterns for patients with APAC and analyze the current status of APAC management in China using a multicenter database.

Methods: Data on APAC cases were retrieved from the 23 ophthalmic centers in 17 provincial-level regions from 2020-2022—specific inclusion time for patients from September 7th to January 6th. Data used for investigating the treatment pattern (including medicines, lasers, surgical, and lasers combined with surgical therapies) changes in China were retrieved from the multicenter database.

Results: Of the total 2202 adult patients with APAC, 78 (3.5%) required treatment for medicines, 251 (11.4%) required treatment for laser, 1809 (82.2%) required surgery treatment, and 64 (2.9%) required treatment for laser combined with surgery. Surgery was the most common first therapy. Of the surgery-treated patients, 1081 (59.8%) took phacoemulsification (Phaco) and intraocular lens (IOL) implantation and goniosynechialysis (GSL) as the preferred treatment, and trabeculectomy (Trab) was the primary glaucoma drainage surgery.

Conclusions: This population-based study is the first to describe the treatment pattern for APAC among patients in China. There is a growing need for appropriate national welfare policy and budget to care for aged APAC.

Poster No.: PO-225

Nanophthalmos Associated MYRF Gene Mutation Causes Ciliary Zonule Defects and Facilitates Intraocular Inflammation in Mice

*First Author: Xiaowei **YU***
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Purpose: Nanophthalmos patients who undergo intraocular surgery often present with abnormal ciliary zonules and high inflammation conditions. In a previous study, we reported mutation in MYRF is implicated in the pathogenesis of nanophthalmos. The aim of this study was to model the mutation in mice to explore the role of MYRF on zonule structure and intraocular inflammation.

Methods: Human MYRF nanophthalmos frameshift mutation was generated in mice. Anterior chamber depth (ACD) and morphological analysis of ciliary zonules were carried out using histology samples and immunofluorescence. Inflammation-associated signaling pathways analysis in eye tissues was performed using RNA-Sequence. Intraocular inflammation was induced by lipopolysaccharide intravitreal injection. The anterior segment clinical scores of the mice were examined at 24 hours after lipopolysaccharide injection. Infiltrating inflammatory cells and cytokines were evaluated through histopathology, immunofluorescence, qRT-PCR and ELISA.

Results: Myrf mutation mice showed ocular phenotypes similar to those reported in nanophthalmos patients, including shallow ACD, reduced zonular fiber density, and detectable structural dehiscence of zonular fibers. Inflammation-associated signaling pathways were enriched in Myrf mutation mice ocular tissues. At 24 hours, Myrf mutation mice showed high Inflammatory clinical scores with more infiltrating inflammatory cells (CD45+ and CD11b+) in the anterior and vitreous chamber. High expression of inflammatory cytokines in eyes and aqueous humor of Myrf mutation mice were detected.

Conclusions: Changes in the structure and major molecular composition of ciliary zonules accompanied by shallowing anterior chamber were detected in Myrf mutation mice. Besides, eyes could be more susceptible to inflammation in Myrf mutation mice.

Poster No.: PO-194

Omidenepag Isopropyl (OMDI) 0.002% and Preservative-Free OMDI (DE-117B) Bioequivalence in Primary Open-Angle Glaucoma or Ocular Hypertension (DAISY)

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Purpose: Evaluate bioequivalence of DE-117B (omidenepag isopropyl [OMDI] 0.002% preservative-free formulation) and OMDI 0.002% ophthalmic solutions for intraocular pressure (IOP)-lowering effects, and adverse events (AEs) in patients with primary open-angle glaucoma (POAG) or ocular hypertension (OHT).

Methods: Following a washout period (≤4 weeks), patients were randomized (1:1) to one drop of DE-117B or OMDI daily for 4 weeks, followed by a washout period and crossover to a second 4-week treatment period. The primary endpoint was mean diurnal (MD) IOP at week 4. The 95% confidence interval (CI) is used to determine if the difference between two groups in the least squares (LS) mean at week 4 is within the bioequivalence margin (-1.5 to 1.5).

Results: The baseline primary diagnoses of the 74 patients were POAG (59.5%) or OHT (40.5%). MD IOP (standard deviation [SD]) at week 4 was 17.76 (2.049) vs. 17.71 (2.005) mmHg for DE-117B vs. OMDI, respectively. LS mean difference was −0.02 [0.181] mmHg, and the 95% CI: −0.377 to 0.347 was within the bioequivalence margin. MD (SD) CFB IOP for DE-117B vs. OMDI was −5.45 (2.250) vs. −5.55 (2.196) mmHg at week 1, and −5.55 (2.067) mmHg vs. −5.58 (1.931) mmHg, respectively, at week 4. AE rates were similar between DE-117B and OMDI (43.8% vs. 45.9%, respectively). Conjunctival hyperemia was the most frequently reported AE (34.2% vs. 35.1% for DE-117B vs. OMDI, respectively). All ocular and non-ocular AEs were mild.

Conclusions: The prespecified bioequivalence threshold was met; DE-117B showed similar IOP-lowering effects and safety profile vs. OMDI.

Poster No.: PO-170

Outcomes of Bleb Needling With High Dose (40µg) Injectable Subconjunctival Mitomycin C in Failing or Failed Blebs

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Purpose: To evaluate the outcomes of bleb needling with High dose (40µg) injectable subconjunctival Mitomycin C (MMC) in failing or failed blebs.

Methods: Prospective, noncomparative, interventional study. Thirty eyes of 30 consecutive patients, who had raised Intraocular pressure (IOP) following trabeculectomy (>6 weeks and <1year) with patent internal ostium on gonioscopy, flat bleb, bleb encapsulation, and/or requiring anti-glaucoma medications (AGM) were included. Bleb needling with subconjunctival injection of high dose (40 µg) MMC was performed in a supine position in an operating room. The subconjunctival injection is given 8-10 mm away from the bleb area. A bent 26 needle is introduced 2 mm away from bleb and subconjunctival fibrosis is cut with firm back & forth motion. Baseline & follow-up visits were compared to find out differences in AGM, IOP, and best corrected visual acuity (BCVA).

Results: Thirty eyes of 30 patients were included. The IOP decreased significantly from 24.72+/-6.5mmHg to 17.52+/-4.2mmHg at the last follow-up (P < .0001). The AGM reduced from 2.32+/-1.02 to 1.96+/-1.11 (P=0.050) at the final visit which is not statistically significant. LogMAR BCVA improved marginally from a median of 0.18 (6/9) (range 0 - 1.30) to a median of 0.09 (6/6) (range 0 – 1.78) and was borderline statistically significant (P = 0.434). The overall success rate (complete +qualified) was 78.2% after 1 year. The failure rate was 21.7% after 12 months. There were no significant complications post-needling.

Conclusions: Bleb needling with high-dose injectable subconjunctival MMC appears to be a good option for effectively rescuing failing or failed filtration without compromising safety.

Poster No.: PO-184

Outcomes of Non-penetrating Deep Sclerectomy in Advanced Open-Angle Glaucoma in Indian Population

*First Author: Drishti **C***
*Co-Author(s): Shivam **GUPTA***

Purpose: To assess the safety & efficacy of non-penetrating deep sclerectomy (NPDS) in advanced glaucomatous damage with fixation loss.

Methods: This prospective, randomized, interventional study was conducted on consecutive patients with open-angle Glaucoma. 38 patients were included for analysis. All patients were followed up on days 1, 15, 30, 3 months, 6 & 12 months postoperatively. A p-value <0.05 was considered statistically significant. Baseline and follow-up visits were compared to find out the significant difference in the number of antiglaucoma medications (AGM), Intraocular pressure (IOP), and Best Corrected Visual Acuity (BCVA). Surgical success was considered if the patient's intraocular pressure (IOP)<22 mmHg and the IOP was lowered by more than 20% without the use of any medication. Kaplan–Meier survival curves were used to evaluate the success rate.

Results: There were 42 eyes of 38 patients in each group. Mean preoperative IOP was 18.17 (7.5) mmhg which decreased to 13.60 (7.1), 12.74 (7.2), and 14.52 (7.5) at 1,3 and 6 months respectively ($p < 0.001$ at all visits). LogMAR Visual acuity improved from 0.30 (0.18 to 0.60) preop to 0.18 (0 to 0.48). The AGM used reduced from 3.12 (1.0) to 1.63 (1.2) at 6 months.

Conclusions: NPDS can be considered an excellent & safe alternative to trabeculectomy in advanced open-angle glaucoma as it provides a progressive decrease in IOP with lesser complications than trabeculectomy.

Poster No.: PO-174

Outcomes of Trabeculectomy – A Single Surgeon, Single Center Experience at Rawalpindi

*First Author: Hira **MUAZZAM***
*Co-Author(s): Mahmood **ALI**, Farah **AKHTAR***

Purpose: To determine the outcomes of trabeculectomy at our center, we conducted a cross-sectional audit of the current performance of primary trabeculectomies at Al Shifa Trust Eye Hospital, Rawalpindi, Pakistan.

Methods: All Primary Trabeculectomies performed by a single surgeon at our center from Oct 4, 2021 to Oct 9, 2022 were included. Data on visual acuity, IOP, and the number of drugs the patients were on was collected preoperatively and then at 2 weeks, 1 month, 3 months, and 6 months. Complete success: IOP between 6 and 18 mmHg with no additional medication. Qualified success: Requirement of additional topical medication to keep the IOP between 6 and 18 mmHg. Failure: IOP < 6 or > 18 mmHg after the trabeculectomy after using maximum antiglaucoma therapy.

Results: Forty-eight primary trabeculectomies were performed in the one-year study period by a single surgeon. The mean pre-op IOP was 29.4 mmHg, which was reduced to 15.9 at 14 weeks and slightly increased to 17.3 at 3 months. 89% of patients were on 3 or more antiglaucoma drugs before the surgery. The mean number of drugs got reduced to 0.4 at 6 months. 71% of the patients achieved complete success, 17% still had raised IOP, 2% had over-drainage, while 10% got lost to follow-up. Visual acuity remained static or improved in 21/48 patients but worsened in 15/48 patients, but 12/15 of these patients had poor vision to begin with.

Conclusions: Complete success was achieved in 71% of the patients at 6 months.

Poster No.: PO-219

Outcomes of iStent Inject Combined With Cataract Surgery in Asian Eyes

*First Author: Brandon **HUYNH***
*Co-Author(s): Mitchell **LAWLOR***

Purpose: To analyse real-world outcomes in Asian eyes of iStent inject, a second-generation trabecular micro-bypass stent, combined with phacoemulsification.

Methods: This is a multi-centre, observational study of glaucomatous Asian eyes that have undergone iStent inject implantation combined with cataract surgery. Patient data were extracted from the Fight Glaucoma Blindness! Registry. Outcome measures included intraocular pressure reduction, glaucoma medication reduction, and adverse events including the need for secondary surgery.

Results: 123 eyes of 86 patients with a mean age of 68.4 ± 9.3 years underwent iStent inject implantation with phacoemulsification. At baseline, the mean ± SD preoperative intraocular pressure (IOP) was 16.0 ± 4.4 mmHg, and the mean preoperative number of topical glaucoma medications was 1.9 ± 1.4. At 12 months, 30.8% of eyes demonstrated a reduction in IOP greater than 20%; the mean IOP reduction was 12.5%, with an additional reduction of 0.7 glaucoma medications. 40% of eyes were using no medications at 12 months compared to 16.3% preoperatively. 8.2% of eyes required a subsequent procedure within the 12-month follow-up window.

Conclusions: iStent inject implantation combined with phacoemulsification in Asian eyes showed a clinically meaningful number of patients achieving a 20% IOP reduction and medication reduction in a real-world clinical setting. The safety profile of the device is good with minimal adverse outcomes. However, a subset of patients required secondary procedures within the 12-month follow-up.

Poster No.: PO-146

Pars Plana Filtration in Treatment of Refractory Glaucoma – A Pilot Study

*First Author: Xiaojie **WANG***

Purpose: To evaluate the efficacy and safety of pars plana filtration (PPF) surgery as a novel treatment for refractory glaucoma.

Methods: This pilot, single-center study was conducted in consecutive refractory glaucoma patients who underwent PPF. The primary endpoint was the intraocular pressure at the end of the follow-up period. PPF is a new type of external drainage surgery, through making a drainage channel in pars plana. The concrete step was: a reversed scleral flap was performed via 2mm posterior to the limbus from front to back. A sponge with 0.04% mitomycin C (MMC) was applied to the bare sclera. A 0.5mm x 1.5mm full-thickness

deep scleral tissue was excised in the lower middle of the deep sclera region until the pigment ciliary body tissue beneath was exposed and existed along with the window of sclerotomy. Cut out the prolapsing vitreous with scissors. Suture the scleral flap and conjunctiva.

Results: Twenty-three eyes of 20 patients underwent PPF. Mean baseline IOP ± standard deviation dropped from 35.83 ± 12.78 to 15.49 ± 2.28 mmHg (n = 23) at 6 months of follow-up. All patients had reasonable IOP control and stable vision; Postoperative complications were usually mild and self-limiting. Some cases require bleb needling.

Conclusions: The outcome of pars plana filtration surgery in these eyes supports using this technique in refractory glaucoma patients where medical treatment has not been sufficient to control the IOP.

Poster No.: PO-179

Paul Glaucoma Implant for Glaucoma Management in Pediatric Axenfeld-Rieger Syndrome

*First Author: Rini **SULASTIWATY***
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Purpose: To present our clinical observations regarding the management of familial Axenfeld-Rieger Syndrome (ARS) case and to elucidate our initial encounter with the Paul Glaucoma Implant (PGI) implantation within a pediatric ARS patient.

Methods: Due to the insufficient response to medical treatment, surgical interventions were explored as an alternative approach. Given the severity of the glaucoma and the complexities associated with ARS, the option of glaucoma tube implantation was presented to the patient's caregivers. PGI is a non-valved tube with a smaller tube diameter, and a large surface area end plate contributes to its efficiency in aqueous absorption while minimizing the risk of hypotony. PGI's smaller tube diameter contributes to reduced occupancy within the anterior chamber, which is advantageous in a patient with anterior segment anomalies like peripheral anterior synechiae (PAS) and pseudopolycoria. This feature minimizes potential complications related to tube positioning.

Results: In spite of maximum pharmacotherapy, the patient's intraocular pressure (IOP) remained refractory (35 mmHg). The consideration of a glaucoma tube implantation was proposed for IOP management, which was subsequently executed in the left eye, yielding favorable outcomes. Throughout the ensuing six-month postoperative monitoring, the patient's IOP was consistently maintained below 21 mmHg, obviating the necessity for supplementary glaucoma medications.

Conclusions: This particular case serves to underscore the considerable potential inherent in glaucoma tube implantation, particularly exemplified by the utilization of the Paul Glaucoma implant, as an effective strategy for addressing complex glaucoma management in the context of pediatric Axenfeld-Rieger syndrome patients.

Poster No.: PO-166

Prevalence of Lens-Induced Glaucoma Operated in Tertiary Hospital in Semarang: Two Years Descriptive Study

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Purpose: Lens-induced glaucoma (LIG) is secondary glaucoma caused by the lens condition. The purpose of the study is to describe the lens condition causing LIG and the prevalence of LIG patients who underwent surgery compared to all glaucoma surgery at the same time.

Methods: This study was a retrospective study that used secondary data from medical records of patients with a diagnosis of LIG who underwent surgery from January 2020 – December 2022 in a tertiary hospital in Semarang. Patients with incomplete medical records were excluded. The patients were classified based on the lens condition causing glaucoma and based on the type of surgery performed, such as filtering surgery, lens extraction, or both, to decrease the IOP. The data was then compared to the total amount of glaucoma surgery at the same time.

Results: A total of 53 LIG patients (53 eyes) were obtained, with 27 patients (51%) older than 60 years old and 29 patients (55%) being female. Based on the lens condition, there were 24 patients (45%) were diagnosed as phacomorphic, 23 patients (43%) as subluxation, 5 patients (9%) as phacolytic, and 1 patient (2%) as luxation. Most of the LIG patients underwent phacoemulsification only (30%) and phacoemulcification combined with trabeculectomy (28%). After comparing with the overall glaucoma surgery data (612 glaucoma surgeries) in the same year, it was found that LIG cases undergoing surgery amounted to 8.6%.

Conclusions: Glaucoma surgery due to LIG has a relatively high rate compared to overall glaucoma surgery, with phacomorphic being the most common lens condition causing LIG.

Poster No.: PO-198

Putting the Mind Under Tension- a Study to Analyse the Cognitive Function in Patients With Normal Tension Glaucoma

*First Author: Narayanan **BALAKRISHNAN***
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Purpose: This study aims to analyze the cognitive function in normal tension glaucoma (NTG) compared to High tension Glaucoma (HTG).

Methods: It is a case-control, cross-sectional analytical study of 28 patients with NTG with 28 age-matched HTG controls between the ages 45-60 years. Patients with vision-related or neurological conditions were excluded. A detailed glaucoma evaluation was done, which included vision, IOP, Gonioscopy, CCT, HVF, and anterior and posterior segment examination. Both groups underwent a Montreal Cognitive Assessment Test (MoCA), and their cognition was documented. A cognitive function of <26/30 was considered significantly poor.

Results: All baseline characteristics in both groups were matched. The overall cognitive function was impaired in the NTG group as compared to the HTG group, and this value was statistically significant. More patients in the NTG group had a score of <26/30. The mean MoCA score of <26/30 was found in 22 NTG (78.6%) and 12 HTG patients (42.9%) with a P-value of 0.006. The mean deviation (MD) and pattern standard deviation (PSD) values were correlated to the cognitive impairment in the NTG group. However, Central corneal thickness (CCT) did not show any correlation. On calculating the odd's ratio, the NTG group had a 2.4 times greater risk of developing cognitive impairment compared to the HTG group (OR= 2.4, 95% CI: 1.148 to 4.904).

Conclusions: NTG patients have poorer cognition as compared to high-tension glaucoma and may be associated with a risk of developing dementia in the future.

Poster No.: PO-224

Quantitative Analysis of Dynamic Iris Changes in Primary Angle Closure Disease with Long Axial Lengths: The Handan Eye Study

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Purpose: To investigate dynamic iris changes in patients with primary angle-closure disease (PACD) with long axial length (AL) compared to those with short and medium AL.

Methods: This observational cross-sectional study enrolled subjects aged 35 years or older from follow-up of the Handan Eye Study who were diagnosed with PACD and underwent anterior segment optical coherence tomography (ASOCT) imaging under light and dark conditions. The right eye of each participant was included in the analysis. AL was categorized as short (<22.5 mm), medium (≥22.5 to ≤23.5 mm), or long (>23.5 mm). The anterior segment parameters, including iris dynamic changes, were compared among the three groups with different ALs.

Results: Data from 448 patients with PACD were analyzed. We found that 10.9% of included eyes had a long AL, with a flatter cornea, larger central anterior chamber depth, angle opening distance, anterior chamber width, anterior chamber area and volume, and smaller lens thickness and lens vault (LV) (P<0.05) than those with short AL. No significant difference existed between the three groups in iris thickness, iris cross-sectional area (IA), iris curvature, and pupil diameter (PD) change between light and dark (P>0.05). The significant risk factors for IA changes were area recess area (ARA) in the dark, LV in the dark, and PD change from light to dark (P<0.05).

Conclusions: Dynamic and static iris parameters remained stable in patients with PACD with short, medium, or long AL and may contribute to the pathogenesis of angle closure in those atypical PACD.

Poster No.: PO-143

Risk Factor of Elevated Intraocular Pressure (IOP) Postoperatively Following Pars Plana Vitrectomy: A 12-Months Follow-up

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Purpose: To investigate the incidence, risk factors, and treatment of elevated IOP 12 months after PPV.

Methods: This retrospective cross-sectional study included 341 eyes from 335 consecutive patients according to inclusion criteria who underwent PPV. The data were reviewed from the medical records from January 2018 to June 2022. The incidence of elevated IOP after PPV was recorded at 12 months follow-up. Differences in IOP elevation in relation to tamponade and treatment procedure were evaluated.

Results: A total of 110/341 eyes (32.2%) had elevated IOP after PPV at the 12-month follow-up. The cumulative incidence rates of IOP elevation based on tamponade type were 40 %, 25.9 %, 12.5 %, 6.1 %, and 6.2 % for silicone oil, C3F8, BSS, SF6, and air, respectively. From the Kaplan-Meier analysis, tamponade type was a dominant risk factor that influenced IOP elevation after PPV (P=0.003, Mantel-Cox log-rank test). Eyes with elevated IOP that were promoted by BSS and gas tamponades could be controlled by only topical and systemic antiglaucoma. All vitrectomized eyes that were promoted by SO tamponade required surgical and laser treatment to control the elevated IOP, and most eyes required SO removal alone. The uncontrolled IOP elevation after SO removal would require other treatments, including drainage device, trabeculectomy with mitomycin C, cyclophotocoagulation, LPI, and peripheral iridectomy.

Conclusions: The incidence rates of elevated IOP were higher in eyes with SO tamponade. Therefore, careful postoperative monitoring is required. Medical therapy is the primary mode of managing elevated IOP after PPV. In persistent cases, surgical or laser treatment is usually effective.

Poster No.: PO-202

Risk Factors for the Development of Malignant Glaucoma Following Intraocular Surgery; a Case-Control Study

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Purpose: To assess risk factors for malignant glaucoma (MG) following intraocular surgery.

Methods: A retrospective case-control study (40 cases of MG and 80 age and gender-matched control eyes) which underwent intraocular surgery between January 1995 and December 2013 was performed.

Results: Diagnosis in cases included PACG: 31 (77.5%), POAG: 2 (5%), Pseudoexfoliation: 4 (10%); in controls included PACG 44 (55%) and POAG 36 (45%), ($p<0.001$). Mean pre-operative intraocular pressure (IOP, mmHg) was 29.9±13.2: cases and 19.7±6.4: controls ($p<0.001$). Trabeculectomy was performed in 23 eyes (57.5%); cases and 28 (35%); controls, phaco-trabeculectomy in 14 eyes (35%); cases and 52 eyes (65%) in controls, cataract surgery in 2 cases (5%) ($p=0.004$). Cycloplegics were not used in 23 (57.5%) cases and 21 (26.3%) in controls ($p<0.001$). Risk factors on the univariate analysis included PACG (O.R 12.68, 95% C.L; 2.84, 56.62, $P<0.001$, synechial angle closure > 180 degrees (O.R 10.1, 95% C.L; 2.87, 35.44, $p< 0.001$, higher pre-operative IOP > 21mmHg (O.R. 5.32, 95% C.L; 2.64,10.73 $p< 0.001$), absence of post-operative cyclopegia (O.R 3.05, 95% C.L 1.62,5.73) $p=0.001$, trabeculectomy surgery (O.R 3.05, 95% C.L 1.36,6.83 $p=0.007$) and axial length < 22 mms (O.R 6.80, 95% C.L 2.51,18.46, $p<0.001$. Pre-operative IOP > 21 mmHg (2.85, 95% C.L; 1.11, 7.31, $p=0.02$), 1.1, $p=0.02$ and trabeculectomy surgery (O.R 4.09, 95% C.L 1.48, 11.3, $p=0.007$) remained significant on multivariate analysis.

Conclusions: PACG eyes with higher pre-operative IOP, undergoing trabeculectomy surgery were at higher risk of developing MG.

Poster No.: PO-188

Role for NLRP3 Inflammasome-Mediated, Caspase1-Dependent Response in Glaucomatous Trabecular Meshwork Cell Death and Regulation of Aqueous Humor Outflow

*First Author: Xiaomei **FENG***
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Purpose: In the present study, we explored the potential molecular mechanisms underlying the causal link between high IOP and glaucomatous TM cell death. The use of NAC /VX-765 as a potential pharmaceutical intervention for reducing IOP was discussed.

Methods: ROS detection kit was used to detect the production of ROS in HTM cells, and cell counting kit-8 was used to detect cell viability. ROS scavenger N-acetyl-L-cysteine (NAC) and caspase-1 inhibitor VX-765 were used to intervene in TM injury. The expressions of NLRP3, caspase-1, GSDMD-N and IL-1β in H2O2 treated human TM cells and in AOH eyes were measured by reverse transcription-quantitative (RT–qPCR), Western blotting, immunofluorescence and ELISA. The changes of IOPs were monitored in 1, 3 and 7 days after surgical treatment.

Results: The results showed that H2O2 exposure decreased the viability of HTM cells and increased intracellular ROS levels. NLRP3 and caspase-1 were significantly elevated in patients with acute glaucoma. Gene and protein expressions of NLRP3, caspase-1, GSDMD-N and IL-1β were highly expressed in the H2O2-induced HTM cells and rodent AOH. NAC and VX-765 exhibit a protective effect against TM injury through the inhibition of pyroptosis. The effects of significantly lowering IOP in NAC and VX-765 treatment eyes remained for 7 days.

Conclusions: These data suggest that the classical pyroptosis pathway NLRP3/caspase-1/IL-1β plays a key role in glaucomatous TM injury. Targeting pyroptosis provides novel therapeutic avenues for treating AOH-induced irreversible TM injury. Simultaneously, it provides a promising therapeutic target for glaucoma treatment and a fresh approach to intervention.

Poster No.: PO-192

Role of Rho Kinase Inhibitors in Glaucoma

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Purpose: Glaucoma ranks as the second-leading contributor to visual impairment, affecting a population of more than 76 million people worldwide. The newest hypotensive eye medicine, the Rho Kinase Inhibitor (ROCK), works to reduce TIO with the ROCK inhibitor. In addition, the use of ROCK inhibitors has been shown to be beneficial in the treatment of glaucoma, corneal endothelial healing, and progressive diabetic retinopathy.

Methods: The authors performed a review of the literature using PubMed databases, Medline databases and Google Scholar. The main inclusion criterion for this review was data on Rho kinase inhibitors used in glaucoma. To provide the most up-to-date evidence, we preferred to choose more recent articles that were published in the last five years.

Results: Rho kinase inhibitor helps lower TIO by increasing AH outflow, reducing AH production, and lowering episcleral vein pressure (EVP). It's done in two different ways, which involves a Rho kinase path inhibitor. The metabolic pathway of Rho kinase controls

many aspects of cell morphology. After blocking the pathway to Rho Kinase, it has been observed that the cell body becomes round and there is a disruption in the production of actin. The mechanism by which the ROCK inhibitor effectively reduces TIO involves direct relaxation of the TM and Schlemm canal cells, which leads to greater permeability. This improved permeability then reduces the resistance to the AH outflow.

Conclusions: Because of the extensive properties of ROCK, these investigative agents have the potential not only to reduce IOP but also to provide optic nerve neuroprotection.

Poster No.: PO-177

Safety and Efficacy of Ab-Interno Canaloplasty Using the iTrack Across All Grades of Glaucoma Severity: 12-Month Results

*First Author: Jason **CHENG***

Purpose: To report the safety and efficacy of ab-interno canaloplasty using the iTrack™ device (Nova Eye Medical, Fremont, USA) across all grades of glaucoma severity.

Methods: Prospective case series of 69 eyes with mainly primary open-angle (n=45) and angle-closure (n=18) glaucoma undergoing ab-interno canaloplasty with (n=56) or without (n=13) phacoemulsification. Data was retrieved from the International Glaucoma Surgery Registry. Outcome measures included intraocular pressure (IOP), number of glaucoma medications (meds) and adverse events.

Results: Mean IOP and meds decreased from 18.0±5.0mmHg and 2.2±1.1 to 12.8±3.3mmHg (p<.001) and 0.95±1.2 (p<.001) at 6-month (n=55) and 13.8±4.3 (p<.001) and 0.95±1.3 (p<.001) at 12-month (n=41). IOP (mmHg) and meds in the mild (n=33), moderate (n=13), advanced (n=5) and severe (n=7) eyes were 17.8 and 1.8, 18.2 and 2.4, 16.2 and 2.8 and 16 and 3.1 at baseline and were reduced at 13.5 and 0.4, 12.4 and 1.4, 12.4 and 1.4 and 11.6 and 1.6 at 6 months postoperatively. 36% of the eyes had an IOP ≤15mmHg at baseline Vs 63% at 12 months postoperatively; 3% of the eyes were medication-free at baseline Vs 61% at 12 months postoperatively. Complications included 4 hyphemas (>10% anterior chamber) and 1 cystoid macular oedema.

Conclusions: Canaloplasty resulted in significant and safe IOP and medication reductions with most eyes medication-free at 12 months.

Poster No.: PO-155

Secondary Angle Closure Glaucoma Following Ocular Burn Trauma: A Rare Case Report

*First Author: Andika **WITONO***
*Co-Author(s): Novanita Shirley **SATOLOM***

Purpose: To report a rare case of secondary angle closure glaucoma due to chronic inflammation of a previous ocular burn and its treatment.

Methods: A case report of a female with secondary angle closure glaucoma following ocular burn trauma. The primary data were collected from an interview, a physical examination, and analysis of secondary data from medical records from July 2019 to February 2023.

Results: Female, 31 years old, with worsening eye pain and blurred vision for the last 4 years. History of thermal trauma on the left eye (LE) 11 years ago, has received treatment for thermal trauma for 4 years, and there have been improvements. Gradually the pain persists. On examination, LE visual acuity (VA) was no light perception (NLP), IOP 47mmHg, with slit-lamp (SL) examination showing mid-dilated pupil, shallow anterior chamber (AC), closed angle and shortening trabecular meshwork gonioscopic finding with the presence of anterior-posterior synechiae. The patient was prescribed glaucoma medications. One-month follow-up LE VA NLP, IOP 29mmHg, C/D ratio 0.9. RE VA 6/30, IOP 17mmHg, C/D ratio 0.6 with normal perimetry findings, suggested normal sign. The patient returned 4 years later, LE VA NLP IOP 32mmHg. Trabeculectomy with micropulse transscleral photocoagulation (MPTSCPC) was done and succeeded in reducing IOP, and the patient was no longer in pain.

Conclusions: Secondary angle closure glaucoma following ocular burn trauma could be found in late chronic phase inflammation and can occur even in healthy eyes. The ultimate factor of structural changes of trabecular meshwork is a result from inadequate streoid treatment. Routine follow-up and steroid management are mandatory to be carried out as early as possible by selecting the appropriate drug, dose, and time. Although surgical management is effective in treating painful eyes, the most important is the progression prevention of the pathology.

Poster No.: PO-162

Short Term Repeatability of Home Tonometry by Glaucoma Patients

*First Author: Sujatha **KADAMBI***
*Co-Author(s): Shantha **BALEKUDARU**, Mani **BASKARAN**, Ronnie **GEORGE**, Aishwarya **S**, Lingam **VIJAYA***

Purpose: To determine the repeatability of home tonometry readings made by glaucoma patients on two consecutive days.

Methods: Patients (18–80 years) with glaucoma and suspects were enrolled. Participants (patients or attenders) were provided training on using iCare HOME, by a qualified optometrist. Home tonometry was performed at 6 said time points between 6am and 9pm on 2 consecutive days. IOP, date and time were viewed via iCare LINK software.

Results: A total of 102 eyes (51 patients, age 53±16yrs) were analysed. Thirty-eight were suspects, and 64 had established glaucoma.77 eyes were treatment naïve. The majority showed a peak at 6 AM (29 eyes on day 1,31 eyes on day 2). Peak timing on the two days coincided for 28/102 eyes.Intraclass correlation coefficient for IOP peak {0.921 (0.885-0.946)}and mean IOP {0.83 (0.758-0.88)} was good and fair for IOP fluctuation {(0.428 (0.255-0.574)}.

Conclusions: Home tonometry measurements (self or attender-assisted) showed good repeatability on consecutive days and can help gather valuable information on a patient's IOP profile.

Poster No.: PO-199

Structure-Function Relationship Between Steady-State Pattern Electroretinogram, Optical Coherence Tomography, and Visual Field Test

*First Author: Hwayeong **KIM***
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Purpose: To evaluate the structure-function relationship between steady-state pattern electroretinogram (ssPERG), optical coherence tomography (OCT), and visual field test.

Methods: Normal subjects and patients with early glaucoma who underwent ssPERG, OCT, and visual field tests were included. The ratio between the amplitudes to 0.8° checks and to 16° checks was defined as PERGratio. The thickness of the macular ganglion cell-inner plexiform layer (GC-IPL) and peripapillary retinal nerve fiber layer (RNFL) were measured by OCT. Regression analysis and correlation analysis were performed using mean deviation and visual field index (VFI) of C24-2 visual field test.

Results: Linear regression models were the best fit models between PERGratio and GC-IPL thickness ($p = 0.016$), RNFL thickness ($p < 0.001$). Quadratic regression models were the best fit models between VFI and GC-IPL thickness ($p = 0.001$), RNFL thickness ($p = 0.008$). PERGratio was significantly correlated with GC-IPL thickness ($r = 0.201$, $p = 0.009$) and RNFL thickness ($r = 0.332$, $p < 0.001$).

Conclusions: PERGratio showed a linear relationship with GC-IPL thickness, and it could indicate dysfunctions of retinal ganglion cells in early glaucoma.

Poster No.: PO-151

Sturge-Weber Syndrome: Diagnosed at Middle Age

*First Author: Ernes **SURYAWIJAYA***

Purpose: To report a case of Sturge-Weber Syndrome (SWS) diagnosed at middle age.

Methods: A 34-year-old male complained of blurred vision in the left eye (LE) since childhood getting worse since 3 years ago. Complaints were accompanied by pain, glare, red eyes, watery, fid, felt to be more severe when the patient had a fever. His LE had been unable to see since he was 11 years old, and he had a history of abnormalities on the left half of his face. The patient was hospitalized because of a fever since the previous 2 days, with a history of loss of consciousness, seizures, and headaches. LE visual acuity (VA) light perception bad projection, palpebra edema and hyperemia, pericorneal vascular injection, scleral thinning, corneal edema, port wine stains, glaucomatous optic neuropathy (GON) with CDR 1.0, intraocular pressure (IOP) 52. Right eye VA 6/6, normal IOP and other ophthalmology examination normal. Head MRI shows choroid plexitis, meningitis, subdural hygroma, and suspected cerebral venous sinus thrombosis. The IOP became 32 with acetazolamide oral 3 times and timol 0.5% eye drop 2 times. Oral propranolol and topical timol 0.5% were applied in the hemangioma area, and given as the management for hemangioma. The patient responded to anti-glaucoma medications.

Results: SWS is a rare neurocutaneous disorder with angiomas involving the face, choroid, and leptomeninges, characterized by the presence of a facial port-wine birthmark (PWB), glaucoma, and neurological manifestations. SWS is usually diagnosed in infancy. The patient was first diagnosed with SWS at 34 y.o, came with GON and bad VA.

Conclusions: Early detection of glaucoma in SWS help patient to delayed the progression.

Poster No.: PO-154

Surgical Outcome of XEN Gel Stent in Open-angle Glaucoma Patients Using Ab Interno Technique: A 2-year of Follow-up Study in South Korea

*First Author: Do-ah **KIM***
*Co-Author(s): Myungjin **KIM**, Eunsol **KIM**, Seungsoo **RHO***

Purpose: To report the long-term outcome of XEN gel stent in patients with open-angle glaucoma (OAG), first in South Korea.

Methods: This single-center, retrospective study included a total of 31 eyes (21 eyes of primary OAG; 10 eyes of pseudoexfoliation glaucoma) who have received XEN gel stent using the original ab interno

technique. Complete or qualified success (defined as intraocular pressure (IOP) < 14 mmHg without or with medication, respectively) was assessed at 2 years postoperatively based on the XEN tip location at day 1 and the bleb morphology using anterior segment optical coherence tomography (AS-OCT) and slit lamp photography (SLP) at 6 months.

Results: The initial IOP and number of medications were 29.3 ± 10.1 mmHg and 3.1 ± 1.2. After 24 months of XEN gel stent, they reduced to 14.6 ± 6.0 mmHg and 0.6 ± 0.8, respectively (p<0.05). 5 out of 31 subjects (16.1%) required additional filtration surgeries. Depending on the XEN tip location on Day 1, the complete and partial success rates at 2 years were as follows: 33.3% and 50.0% for intraconjunctival, 38.9% and 50.0% for intratenon, and 28.6% and 57.1% for uviform, respectively. According to the bleb morphology using the SLP, the complete success rate of diffuse vascular was significantly higher than that of localized and diffuse vascular (p=0.010, 0.010).

Conclusions: The ab interno implantation of XEN gel stent in OAG is both effective and safe for managing open-angle glaucoma. Nonetheless, surgeons should be mindful that some patients may still require additional glaucoma surgery.

Poster No.: PO-223

The Effect of Early Post Trabeculectomy Bleb Leakage on Surgical Outcome: A Prospective Cohort Study

*First Author: Maryam **YADGARI***
*Co-Author(s): Nader **NASSIRI**, Kavousnezhad **SARA**, Kourosh **SHEIBANI***

Purpose: To evaluate the effect of early post-trabeculectomy bleb leakage on the trabeculectomy surgery outcomes and success rate.

Methods: The present prospective cohort study was conducted on 203 eyes of 203 patients who underwent trabeculectomy at Torfeh and Imam Hosein medical centers, Tehran, Iran, between 2016 and 2021. Patients were divided into two groups: those patients with early bleb leakage (during the first month postoperative) and those without bleb leakage. The success rate of surgery was compared 12, 18, and 24 months after surgery in the two groups. The average intraocular pressure (IOP) and the need for medications in patients 1, 3, 6, 9, 12, 18, and 24 months after the trabeculectomy were also compared.

Results: Bleb leakage was detected in 33 eyes during the first month after trabeculectomy (16.3%). The mean decrease in IOP in the group with leakage was significantly lower than in the patients without the leakage in 1,6,9,12,18 and 24 months after surgery (p<0.05). The need for anti-glaucoma medication was significantly higher among patients with bleb leakage at 3 months (p=0.04) and 9 months (p=0.047) (after surgery (p<0.05). The success rate 12, 18 and 24 months after surgery, was significantly lower in the group with the leakage than the group without the leakage.

Conclusions: Our study results suggest that early post-trabeculectomy bleb leakage has a negative effect on surgery success rates. Also, IOP reduction was lower in patients with early leakage.

Poster No.: PO-150

The Effect of Oral Caffeine on Ganglion Cell-Inner Plexiform Layer (GC-IPL) Thickness in Glaucoma Rat Model

*First Author: Astria **YUSWIR***

Purpose: The primary purpose of this study is to investigate the potential influence of oral caffeine administration on the thickness of the ganglion cell-inner plexiform layer (GC-IPL) in a glaucoma rat model. Given the progressive nature of glaucoma, characterized by the irreversible loss of retinal ganglion cells (RGCs), optic neuropathy, and visual field impairment, this research aims to explore whether caffeine's neuroprotective properties can mitigate RGC damage. By evaluating the effect of caffeine on the GC-IPL thickness, the study seeks to contribute to the understanding of adjunctive therapeutic strategies for glaucoma, particularly those focusing on neuroprotection to prevent RGC loss and impede the progression of the disease.

Methods: This research is an experimental study, post-test only with a control group design. This study used Wistar rats that were treated with glaucoma by cauterizing the episcleral veins. Forty rats were divided into 2 groups. The control group did not receive caffeine oral for 14 days, and the treatment group received caffeine oral for 14 days. GC-IPL thickness was checked on the 14th day.

Results: The mean GC-IPL layer thickness in the treatment group was 86,85 (82,90–104,32). In the control group, it was 46,26 (39,33–50,90) with p=0,002.

Conclusions: Ganglion cell-inner plexiform layer thickness of the glaucoma Wistar rat model given oral caffeine was higher than that of the control group.

Poster No.: PO-222

The Effect of the Hypertensive Phase on the Long-Term Outcomes of Ahmed Glaucoma Valve (AGV) Implantation

*First Author: Maryam **YADGARI***
*Co-Author(s): Nader **NASSIRI**, Kavousnezhad **SARA**, Kourosh **SHEIBANI***

Purpose: To investigate the long-term effect of hypertensive phase (HP) on the clinical outcomes of Ahmed glaucoma valve (AGV) implantation.

Methods: The records of patients with different etiologies of glaucoma who underwent AGV implantation with at least 3 years of follow-up were retrospectively reviewed. HP was defined as the IOP > 21 mm Hg during the first three months after surgery. The main outcome measure was cumulative success defined as 5 < IOP ≤ 21 mmHg and 20% reduction from the baseline with or without IOP lowering medications. Results that do not achieve cumulative success or undergo glaucoma reoperation during the follow-up period are considered failures. The secondary outcome measures were intraocular pressure (IOP) and the number of glaucoma medications.

Results: A total of 120 patients (28 patients with HP, 92 patients without HP) with an average age of 48.9 ± 19.6 years and mean follow-up of 4.5 ± 1.4 years were enrolled. The mean duration of survival was 5.3 ± 0.5 years in the HP group, which was significantly shorter than 6.4 ± 0.2 years in the non-HP (P = 0.04). Mean IOP and number of IOP lowering agents were higher in postoperative visits at 1,2, 3, and 4 years in HP patients compared with non-HP (all Ps < 0.01). Higher baseline IOP was significantly associated with higher rates of surgical failure.

Conclusions: In the long-term follow-up, the duration of survival was significantly longer in the non-HP group. In the non-HP group, the failure rate was significantly lower than in the HP group.

Poster No.: PO-161

The Impact of Axial Length on Longitudinal Changes of Treated Normal Tension Glaucoma

*First Author: Lan-hsin **CHUANG***

Purpose: To evaluate the structural and functional progression of normal tension glaucoma (NTG) with or without high myopia.

Methods: We evaluated 61 NTG eyes and classified 25 of the eyes with axial lengths (ALs) of ≥26 mm as highly myopic. We assessed the rate of change in OCTA parameters, namely radial peripapillary capillary (RPC) vessel density (VD), parafovea VD, deep parafovea VD, retinal nerve fibre layer (RNFL) thickness, and ganglion cell complex thickness. The correlation of the rate of change in OCTA parameters with VF loss and AL was evaluated.

Results: Among the 61 NTG eyes, rates of loss of RPC VD, parafovea VD, deep parafovea VD, and RNFL thickness were significantly different from zero despite the nonsignificant rate of change in VF mean deviation (MD). The rate of change in VF MD was significantly correlated with the rate of change in parafovea VD in highly myopic and non–highly myopic NTG eyes. AL was negatively correlated with the rates of loss of RNFL thickness, VF MD, and VF PSD in highly myopic NTG.

Conclusions: NTG eyes with a relatively stable VF exhibited loss of VD and RNFL thickness. VF progression in NTG was correlated with decreasing parafovea VD, indicating a structure–function correlation. Greater AL may indicate faster VF loss and RNFL thinning in highly myopic NTG eyes.

Poster No.: PO-221

The Role of Primary Needle Revision After Ahmed Glaucoma Valve (AGV) Implantation

*First Author: Kourosh **SHEIBANI***
*Co-Author(s): Nader **NASSIRI**, Kavousnezhad **SARA**, Maryam **YADGARI***

Purpose: To evaluate the efficacy and safety of primary needle revision after Ahmed Glaucoma Valve (AGV) implantation in comparison with glaucoma medication use.

Methods: In this interventional case series, 23 eyes of 23 patients who underwent AGV implantation were enrolled. Needle revision was performed when the intraocular pressure was higher than the target pressure before glaucoma medications. Using a 30-gauge needle, the Tenon's capsule over the plate was incised and the bleb was reformed. Patients were examined on a postoperative day one, weekly (for four weeks), and every 1–3 months. Two criteria were used to define cumulative success as a minimum 20% reduction in IOP and 5 < IOP ≤ 21 mmHg (Criteria A) or 5 < IOP ≤ 18 mmHg (Criteria B) without (Complete success) or with (Qualified success) glaucoma medication.

Results: The mean number of primary needle revisions was 2.2 ± 1.6. One year postoperatively, the cumulative success rate was 91.4% and 86.9% based on Criteria A and B, respectively. The mean of preoperative IOP was 28.26 ± 8.86 mmHg, reaching 13.78 ± 3.54 mmHg at the end of the one-year follow-up (P < 0.001). The mean preoperative medication significantly decreased from a median of 4 at baseline to 2 after the one-year follow-up (P < 0.001). One patient experienced leakage over the plate, which was successfully treated via conservative management.

Conclusions: Primary needle revision is a safe and effective method for controlling IOP after AGV implantation, resulting in a lower need for medication.

Poster No.: PO-200

The Water Drinking Test for Glaucoma: A Systematic Review and Meta-Analysis

*First Author: Bryan **ANG***
*Co-Author(s): Bjorn Kaijun **BETZLER**, Claire **GOH**, Choon Pooh **HENG**, Eric **JIN***

Purpose: This systematic review and meta-analysis examines the relationship between intraocular pressure (IOP) parameters during the water drinking

test (WDT) and diurnal IOP monitoring, and evaluates the reproducibility of the WDT and its association with future glaucomatous visual field (VF) loss.

Methods: A literature search was performed on PubMed, EMBASE, and Cochrane Library from inception to 31 March 2023. Cohort, cross-sectional and observational studies reporting WDT results in glaucoma patients were included. Meta-analysis with random-effect model was performed using the "metafor" package in R version 3.2.1.

Results: A total of 641 studies were identified in the initial literature search. 38 studies (2479 subjects) were included in the final analysis. Meta-analytic estimates of 5 studies (310 subjects) found a strong positive correlation in peak IOP between the WDT and diurnal IOP monitoring (r=0.92, 95% CI=0.75, 1.08, p<0.0001). However, there was only a weak positive correlation for IOP fluctuation between both methods (r=0.26, 95% CI=0.06,0.47, p<0.0001). Meta-analytic estimates of 3 studies (189 subjects) suggested a trend of the diurnal peak IOP being lower than that derived from the WDT (MD=-2.37mmHg, 95% Limit of Agreement (LOA) =-5.58,0.84, p=0.147). Two studies found that a higher WDT peak IOP was associated with greater future VF progression. Two studies demonstrated good reproducibility in peak IOP measurements for WDTs conducted across different days.

Conclusions: In glaucoma patients, there was a strong positive correlation between IOP peaks during the WDT and diurnal IOP monitoring. Peak IOP for the WDT demonstrated good reproducibility and may be associated with greater future VF progression.

Poster No.: PO-171

Three Letter Designations of the Glaucoma Medications to Facilitate Faster EHR Documentation

*First Author: Sriram **SONTY***
*Co-Author(s): Sri Sai **GOLLAMUDI***

Purpose: To create three-letter universal drug codes of glaucoma medications for faster documentation on the Electronic Health Records (EHR).

Methods: Currently used glaucoma medications have many letters to document, like the mostly used Latanoprost (11), Dorzolamide (11), Brimonidine (11), Timolol (7), Acetazolamide (13), Netarsudil (10 Ltrs), and Latanoprost Synod (16 Ltrs).

Results: In a recent 3-month study, a glaucoma practice, 363 medications were prescribed to 193 patients, including 88 Latanoprost, 38 Dorzolamide, 31 Lumigan, 27 Travatan, 23 Timolol, 19 Brimonidine,15 Alphagan, 10 Combigan, 30 for 9 other medications. Three-letter designations assigned and used were LTP – Latanopros (-8 Ltrs), TTN – Travatan (- 5 Ltrs), LGN- Lumigan (-4 Ltrs) BMN- Brimonidine (- 8 Ltrs) DZL – Dorzolamide (-8 Ltrs) TIM- Timolol (-4 Ltrs) XTN- Xalatan (- 4 Ltrs) AGN- Alphagan (-5 Ltrs).

Conclusions: (1) A total of 363 medications were prescribed to 193 patients, including 88 Latanoprost, 38 Dorzolamide, 31 Lumigan, 27 Travatan, 23 Timolol, 19 Brimonidine, 15 Alphagan, 10 Combigan, 30 for 9 other Medications (2) The total number of letters saved among the above medications: 1632 for 363 prescriptions (Avg – 4.03 Ltrs) (3) This can accumulate to daily average 50 pts X 2 medications (100 x 4 = 400 Ltrs) per month = 30 x 400 = 12,000 Ltrs; Year 12 x 1200 = 144,000 Ltrs.

Poster No.: PO-208

Three Year Outcomes of the Paul Glaucoma Implant for Treatment of Glaucoma

*First Author: Chee Wui **ONG***
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Purpose: To determine 3-year efficacy and safety of the PAUL Glaucoma Implant (PGI), a novel glaucoma tube shunt in patients with advanced glaucoma.

Methods: Retrospective review of patients who had undergone PGI implantation in a single tertiary institution in Singapore between May 1, 2017, and Jan 1, 2022. The primary outcome measure was failure, defined as IOP ≥18 mmHg or ≤6 mmHg on 2 consecutive visits after 3 months, reoperation for IOP-related indication, explantation of implant, or loss of light perception vision. Complete success was defined as the absence of failure without medications at 36 months, and qualified success similarly, but with medications. Post-operative mean IOP, mean number of IOP-lowering medications used and visual acuity were also assessed.

Results: Forty-eight eyes in 48 patients were identified. Thirty-one patients (64.6%) had primary glaucoma and 18 (37.5%) had previous existing tube implants or trabeculectomy. At 3 years post-operatively, 7 cases (14.6%) fulfilled the criteria for failure, and 36 (75%) met the criteria for complete success. The mean IOP at 36 months was 14.9 ± 4.11 mmHg, from the mean pre-operative IOP of 20.6 ± 6.13 mmHg (p<0.001). Mean number of IOP-lowering medications used was reduced from 3.13 ± 0.959 pre-operatively to 0.167 ± 0.476 at 36 months (p<0.001). The most common post-operative complication was hypotony (n=17, 35.4%), of which the majority were self-limiting, followed by hyphema (n=5, 10.4%) and tube exposure (n = 4, 8.3%).

Conclusions: The PGI demonstrated sustained reduction in IOP and medication burden at 3 years postoperatively, with comparable results to other glaucoma tube shunts.

Poster No.: PO-147

To Analyse Long-term Central Visual Field Fluctuation for Moderate to Advanced Glaucoma Patients

*First Author: Trupti **PATIL***
*Co-Author(s): Ronnie **GEORGE***

Purpose: To evaluate the long-term fluctuation for global parameters and individual points based on 10-2 visual field tests for primary glaucoma and comparison of fluctuation among eyes with and without progression based on 10-2 Point-wise linear regression analysis (PLR).

Methods: We analysed Humphrey visual fields 10-2 done for moderate to advanced primary glaucoma who had undergone at least five reliable 10-2 visual field tests with follow-up of at least two years. The fluctuation was measured using standard deviation (SD) at individual points and an SD of mean deviation (MD 10-2, 24-2), pattern standard deviation (PSD) 24-2 and visual field index (VFI) 24-2. Regression slope < -1dB/year at $p < 0.01$ at a point was defined as an individual threshold point progression.

Results: Ninety-six eyes of 74 patients with a median follow-up of 4 years (Interquartile range IQR 3.5, 5.4) were included. The median 24-2 MD at inclusion was – 21.90 dB (IQR -13.4, -27.8) and 10-2 MD -20.71 (IQR -13.2, -24.14). Fluctuation for 10-2 MD (1.48 vs. 1.27 dB p 0.04), VFI (4.4 vs. 3.7 % p 0.04) and 24-2 PSD (1.14 vs. 0.94 dB p 0.p1) showed higher fluctuation among eyes with progression while point-wise parameters have significant fluctuation among stable eyes (SD 3.88 vs. 4.22 $p < 0.001$). The average threshold value showed a negative correlation with SD (-0.29 p 0.01).

Conclusions: Global indices show higher fluctuation among eyes with progression. Individual point-based SD shows the opposite trend. The better the average threshold value, the lesser the fluctuation.

Poster No.: PO-153

Topical NSAIDS vs Short Course Topical Steroids After Laser Iridotomy – A Randomized Control Trial

*First Author: Tasneem **NEEMUCHWALA***
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Purpose: To compare the efficacy of topical non-steroidal anti-inflammatory drugs (NSAID) versus topical steroids in controlling anterior chamber inflammation after laser iridotomy in primary angle closure suspects- A randomized control trial.

Methods: A total of 158 participants with bilateral PACS were randomized into two groups: topical Nepafenac 0.1% (tid x 14 days) and topical Prednisolone acetate 1% (given qid x 5 days). Investigators were masked to the type of medication.

Results: No statistically significant difference was observed with respect to intraocular pressure, anterior chamber depth, or gonioscopic opening of the angle before and after LPI. At the 1st week visit, six patients in the Nepafenac group had anterior chamber reaction, which resolved with conservative treatment. None of the participants from either group presented with rebound iritis.

Conclusions: Traditional use of 5 days of topical steroid use after LPI is acceptable in eyes with PACS.

Poster No.: PO-159

Twelve-Month Outcomes of Combined Phacoemulsification and iStent Inject W Implantation in Asian Eyes With Normal Tension Glaucoma

*First Author: John **KAN***
*Co-Author(s): Bryan **ANG**, Bjorn Kaijun **BETZLER**, Jeremy **HU**, Leonard **YIP***

Purpose: To evaluate the efficacy and safety of combined phacoemulsification and iStent inject W implantation in Asian eyes with normal tension glaucoma (NTG) up to 12 months after surgery.

Methods: A retrospective study of consecutive eyes ("collective cohort") that underwent phacoemulsification and iStent inject W implantation from August 2020 to March 2022. Data was obtained at postoperative day 1 (POD1), week 1 (POW1), month 1 (POM1), month 3 (POM3), month 6 (POM6), and month 12 (POM12). Outcome measures included a reduction in intraocular pressure (IOP), a number of glaucoma medications, and adverse events. Subgroup analysis was performed for eyes with data available at all timepoints ("consistent cohort").

Results: The collective cohort comprised 70 eyes from 70 subjects. Pre-operative mean IOP was 13.8 ± 2.8 mmHg and the mean number of medications was 1.2 ± 0.5. There was a significant IOP decrease at all timepoints, except at POW1 and POM1. The consistent cohort comprised 19 eyes from 19 subjects. Pre-operative mean IOP was 14.0 ± 2.9 mmHg and the mean number of medications was 1.1 ± 0.4. While there was a significant IOP decrease at only POM3 and POM6, both cohorts demonstrated a significant reduction in the number of medications at all timepoints up to POM12. At POM12, there was a reduction of 1.1 ± 0.6 ($n=57$; $p<0.001$) medications in the collective cohort and 0.8 ± 0.8 ($p<0.001$) medications in the consistent cohort. No sight-threatening complications were observed.

Conclusions: Combined phacoemulsification and iStent inject W implantation is a safe and efficacious procedure in Asian eyes with NTG.

Poster No.: PO-190

Two Cases Required Surgical Intervention for Persistent Severe Choroidal Detachment Following Implantation of PreserFlo Microshunt and Their Preventive Measures

*First Author: Tetsuo **JOSHITA***
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Purpose: Reporting severe complications occurring after PreserFlo Microshunt implantation and subsequent clinical course, along with outcomes following implementation of preventive measures.

Methods: Fifty-one eyes of 45 consecutive patients underwent the PreserFlo Microshunt with mitomycin-C 0.4 mg/mL from January to August 2023. Two cases developed severe choroidal detachment (CD) and required surgical intervention. Despite efforts involving ophthalmic viscoelastic device injection, TAP, and air injection, improvement was not achieved. Vitrectomy, TAP, and silicone oil (SO) tamponade were subsequently performed. In 20 eyes, as a measure against excessive filtration, intraluminal stenting with nylon suture was performed intraoperatively.

Results: Out of the 51 eyes, CD occurred in 11 eyes. In 2 cases, CD improved after SO exchange. Both cases underwent SO removal two weeks later. In one case, there was intraocular pressure elevation requiring needling after SO removal, but intraocular pressure remained stable in both cases, and no re-elevation was observed. In the nylon stenting group, the incidence of excessive filtration and CD significantly decreased.

Conclusions: Postoperative CD following PreserFlo Microshunt implantation can be a significant complication requiring surgical intervention, particularly in cases of severe CD. In cases with risk factors, the intraoperative option of nylon stenting may also be considered as a viable measure against excessive filtration.

Poster No.: PO-204

Unmasking Phacolytic Glaucoma in an Elderly Adult Patient: A Rare Case Report

*First Author: Channdarith **KITH***
*Co-Author(s): Piseth **KONG**, Chukmol **KOSSAMA**, Tor **REMY***

Purpose: To demonstrate a case of phacolytic glaucoma masquerading as metastatic lesions in a late adult patient.

Methods: The medical record underwent review. A 69-year-old lady presented with a six-month history of severe headaches and increasing vision loss in her left eye. She was diagnosed with senile cataracts and declined surgery. One month later, she started to see halos, and then her condition worsened, with increased pressure at 34 mmHg, anterior chamber cells 2+, and pseudo-hypopyon in the left eye and sentinel vessels inferiorly. Her laboratory testing revealed that she was not infected. A brain CT scan indicated no metastasis. Topical prednisolone acetate 1%, brimonidine 0.2%/timolol 0.5%, and oral acetazolamide temporarily relieved her symptoms. Her lesion was most likely an intra-ocular metastasis. An interdisciplinary panel was created to evaluate her.

Results: The patient was admitted for lens extraction and anterior chamber washout. Histopathological examination of the anterior chamber materials and aqueous humor revealed a possibility of chronic iridocyclitis, most likely caused by lens protein leakage induced by mild chronic ocular inflammation and advancing cataract, but no evidence of malignancy. Her pressure was eventually reduced, but her optic disc was full of cupping and pallid. She was then monitored for up to two years, and the cataract in the fellow eye was removed.

Conclusions: Even though the pressure was under control in this patient, the optic disc had already been damaged. This is to underline the significance of prompt cataract extraction surgery before developing lens-induced uveitis and its accompanying consequences, especially in older individuals.

Poster No.: PO-183

"Paradox in the Eyes": A Case of Bilateral Acute Secondary Angle Closure Glaucoma

*First Author: Saloni **JOSHI***
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Purpose: 1. To create awareness about drug-induced bilateral acute secondary angle closure crisis, which is an ophthalmic emergency that can lead to vision-threatening sequelae if not recognized and treated promptly. 2. To highlight the cues to be picked up to identify this condition in a multidisciplinary set-up. 3. To focus on the fine line of differentiation between acute primary angle closure and acute secondary angle closure.

Methods: A 66-year-old male patient underwent retinal detachment surgery. He was treated with oral acetazolamide and topical steroids to tackle the post-operative inflammation and rise in intra-ocular pressure following the surgery. These drugs are routinely used postoperatively. On the contrary, the patient developed secondary angle closure glaucoma in both eyes. Upon realising that oral acetazolamide was in fact the culprit, the drug was discontinued immediately. Routine topical anti-glaucoma medications were prescribed for both eyes.

Results: An initial diagnosis of some form of secondary angle closure glaucoma was made. As soon as Acetazolamide was discontinued, the patient's clinical status improved. The diagnosis of acetazolamide-

induced bilateral secondary angle closure glaucoma was confirmed. Eventually, his anti-glaucoma medications were tapered and stopped.

Conclusions: Judicious use of oral acetazolamide and understanding of such rare occurrences of idiosyncrasy and vision-threatening bilateral secondary acute angle closure should be borne in mind. Timely withdrawal of the offending agent is a must to prevent irreversible loss of vision and preserve the quality of life.

Intraocular Inflammation, Uveitis and Scleritis

Poster No.: PO-235

A Prospective Study of the Efficacy and Safety of Deflazacort Versus Prednisone in Patients of Non-infectious, Non-necrotizing Scleritis

*First Author: Rakshita **KENE***
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Purpose: (1) To assess the efficacy of deflazacort in treating scleritis in comparison with prednisone. (2) To compare the short-term safety and tolerability of deflazacort against prednisone.

Methods: A prospective randomized interventional study was done for 18 months. Sample size: 14 cases-7 in each arm. It included patients who were above 18 years of age and able to give consent for study procedures, with non-infectious, non-necrotizing scleritis and not receiving any prior immunosuppressive therapy. It excluded patients with infectious and necrotizing scleritis, on immunosuppressive therapy, with uncontrolled blood pressure and blood sugar.

Results: Seventeen eyes of 16 patients were studied in 18 months. At 3 months follow-up, 66.67% had resolved scleritis in the deflazacort group, while in the prednisone group, 62.5% showed resolution. Two eyes in both groups had reactivation, and one was refractory to treatment. The mean time for resolution of disease in deflazacort was 30.00 ± 0.0 days, while that for the prednisone group was 24 ± 8.2 days (p =0.089). Weight gain in the deflazacort group was 0.625 ± 2.4 kg, while the prednisone group was 1.0 ± 3.4 kg. (p=0.81). At 3 months, the mean random blood glucose in the deflazacort group was 102.7 ± 3.9, and in the prednisone group was 152.0 ± 51.92 (p =0.02). Blood Pressure: The difference in systolic and diastolic blood pressure in each visit was not significant. None of the parameters comparing the tolerability of the drug were significant.

Conclusions: Both deflazacort and prednisone are equally efficacious in treating non-infectious, non-necrotizing anterior scleritis. DFZ can be preferred in pre-diabetic and diabetic subjects and is better tolerated.

Poster No.: PO-251

Acute Myopic Shift, Macular Striae and Periorbital Edema As the First Presenting Symptoms of Systemic Lupus Erythematosus

*First Author: Rebecca **LOW***
*Co-Author(s): Benjamin **CHANG**, Bindu **RAJESH***

Purpose: To describe a rare case of systemic lupus erythematosus (SLE) presenting with acute myopic shift, macular striae and periorbital edema as the first presentation of underlying systemic disease.

Methods: A 16-year-old Indian female presented with acute onset of bilateral blurring of vision associated with periorbital swelling of 4 days duration. She did not have any previous refractive error. She was diagnosed with SLE and was initiated on oral steroid therapy. We monitored the disease progression with spectral-domain optical coherence tomography (SD-OCT), fundus photography, and biometric measurements (IOLMaster 700).

Results: At presentation, visual acuity was 6/60 bilaterally, improving to 6/6 with a refractive correction of -3.5DS. She had bilateral macular striae, a single cotton wool spot and painless periorbital edema. SD-OCT showed internal limiting membrane (ILM) folds. After initiation of oral steroids, there was complete resolution of myopia, ILM folds, and periorbital edema. We observed a reduction in lens thickness (3.92 to 3.51mm right eye; 3.96 to 3.54mm left eye) and curvature and deepening of the anterior chamber post-treatment (3.06 to 3.54mm right eye; 2.58 to 3.46mm left eye).

Conclusions: Acute myopic shift, macula striae and periorbital edema are rare presentations of SLE. The likely mechanism is the anterior displacement of the lens-iris diaphragm and edema of ocular and periocular tissues. ILM folds may be present in the setting of an intact posterior hyaloid. The use of imaging and biometry may be useful in monitoring disease activity and treatment efficacy.

Poster No.: PO-226

Atypical Presentation and Treatment of Clinically Diagnosed Ocular Toxoplasmosis in an Immunocompetent Patient in a Tertiary Hospital in Manila

*First Author: Kevin Kenjee **DEE***

Purpose: To report a case of an immunocompetent patient who presented with atypical signs of Ocular Toxoplasmosis, options for pharmacologic intervention and the post-treatment visual prognosis.

Methods: The study followed the course of a 48-year-old Filipino male with an unremarkable ancillary history who presented with a 21-day history of blurring of vision of the left eye. On examination, visual acuity of the left eye 20/438 on the EDTRS Chart. A pupillary exam revealed anisocoria with sluggish relative afferent pupillary defect. A slit lamp examination of the left eye revealed some anterior chamber activity. Indirect ophthalmoscopy of the left eye showed a red-orange reflex seen through clear media, with the optic disc poorly visualized because of obscuration by necrotic retinal infiltrates. Diffuse perivascular sheathing admixed with confluent intraretinal hemorrhages, cotton wool spots, and neuroretinitis were also visualized. Clinical findings revealed acute non-granulomatous panuveitis, and uveitic work-up revealed positive Toxoplasma IgG.

Results: Treatment involved intravitreal injection of Clindamycin and initiation of high-dose oral corticosteroids. Vision improved to 20/80, with resolution of neuroretinitis, vitritis and perivascular sheathing. Residual blurring of vision is attributed to post-treatment optic atrophy of the left eye.

Conclusions: Ocular Toxoplasmosis remains to be one of the most common infectious causes of vision loss and the most common cause of posterior uveitis in the Philippines. Severe clinical findings are uncommon amongst immunocompetent patients, which are present in our index patient. Despite aggressive treatment, recurrence is common, and decreased post-treatment visual acuity can be attributed to macular scarring or optic and retinal atrophy.

Poster No.: PO-233

Autologous Periosteal Graft for Scleral Perforation After Pterygium Surgery: An Uncommon Treatment

*First Author: Nur **ANDRIYANI***
*Co-Author(s): Dina **NOVITA***

Purpose: To present a rarely used treatment for closing perforated sclera in a patient with surgically induced necrotizing scleritis (SINS) after pterygium surgery.

Methods: A case report of a 62-year-old woman with a successful outcome after undergoing a periosteal graft to close the perforated sclera.

Results: A 62-year-old woman complained of pain in the right eye, accompanied by the presence of a bluish-black lesion and foreign body sensation for one year, with a history of pterygium excision 8 years ago. There was no history of systemic disease. Visual acuity was 0.3 in the right eye (RE) and 0.6 in the left eye (LE). Intraocular pressure was 38 mmHg RE and 20 mmHg LE. Examination of the right eye revealed scleral perforation, exposed choroid with epithelization, and calcified plaque nasally. The anterior segment of the left eye was normal. The funduscopic examination showed that the cup-disc ratio was 0.7 RE with glaucomatous optic, while the left eye was normal. The patient then consulted the glaucoma department and was diagnosed with RE primary angle closure glaucoma and LE primary angle closure suspect. The patient underwent a periosteal graft to close the perforation as an alternative treatment because the corneoscleral donor was not available. The outcome was good. One-year postoperative follow-up, there was no wound dehisence, conjunctival flap retracted or periosteal graft exposed, and the pain was resolved.

Conclusions: A periosteal graft could be an alternative treatment to close scleral perforation other than a scleral patch. It preserves the integrity of the globe, especially when a corneoscleral donor is not available.

Poster No.: PO-238

Bilateral Neuroretinitis as a Rare Complication of Dengue Fever

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Purpose: To present a rare case of neuroretinitis due to dengue viral infection and its management.

Methods: Case report.

Results: A 49-year-old female presented with a blurry vision on day eight of dengue fever (DF). Her best-corrected visual acuity (BCVA) was 1/60 and 1/300 in the right and left eye, respectively. Fundus examination of both eyes showed a macular star with peripapillary edema. Further investigations only showed positive IgG-dengue. The patient was treated with methylprednisolone 1000 mg for five days, and her BCVA improved to 6/60 and 3/60. A standardized tapering down of oral corticosteroid was given, and on the one-month follow-up her BCVA improved to 6/7.5 and 6/30. Final BCVA of 6/6 and 6/7.5 was achieved after the oral steroid cessation.

Conclusions: This case report added another rare etiology of bilateral neuroretinitis due to DF that might occur at the lowest point of thrombocytopenia when there is an increased systemic immunologic response. High-dose corticosteroid therapy gave significant visual improvement, which proved the role of immune-mediated mechanism in dengue-related ocular complications.

Poster No.: PO-227

Case Series of Syphilitic Uveitis in a Tertiary Center in North-East India

*First Author: Pritisha **GOSWAMI***
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Purpose: Ocular manifestations can occur at any stage of syphilis. Syphilitic uveitis is considered a

great masquerader, posing a diagnostic challenge to clinicians.

Methods: A series of 4 cases presenting to the outpatient department with uveitis were evaluated and managed as syphilitic uveitis. Case 1: a 23-year-old male with the blurring of vision and floaters in the left eye had BCVA 6/18, AC cells+3, vitritis +1, vasculitis and chorioretinitis . He tested positive for RPR (1:32), TPHA and also HIV. Case 2: a 50-year-old female with painful blurring of vision in her right eye had BCVA 6/9, AC cells+2, vitritis +2, retinal vasculitis with hemorrhages. She tested positive for RPR (1:128) and TPHA. Case 3: 28-year-old male PLHA on ART complaining of bilateral blurring of vision, had BCVA both eyes 6/36 with AC cells+2, vitritis +2 and disc oedema. He tested positive for VDRL (1:32) and TPHA. Case 4: 46-year-old female with BCVA right eye 6/12 had vitritis +2, retinal vasculitis with exudates and hemorrhages. She tested positive for RPR (1:2) and TPHA.

Results: With topical anti-inflammatory eyedrops, all four patients received a neurosyphilitic regimen of intramuscular benzathine penicillin once weekly for three weeks. While three of them received intravenous ceftriaxone 2g once daily for 14 days, Case 4 being sensitive to ceftriaxone, received oral doxycycline instead. RPR titre at 4 weeks revealed a dramatic decrease in Case 1, 2, and 3, while Case 4 is undergoing treatment at present.

Conclusions: The re-emergence of syphilis and its myriad of ocular manifestations make it necessary to keep it as a differential diagnosis for all uveitis.

Poster No.: PO-253

Case of Conversion From Multiple Evanescent White Dot Syndrome to Punctate Inner Chorioretinopathy: A Rare Clinical Presentation

*First Author: Zhenlin **ANG***
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Purpose: This report elucidates a rare case of multiple evanescent white dot syndrome (MEWDS), which subsequently manifested signs consistent with punctate inner chorioretinopathy (PIC). MEWDS is a rare inflammatory eye condition, which is characterised by foveal granularity and multiple white dots which resolve without any scarring. PIC is an idiopathic, inflammatory condition characterised by yellowish chorioretinal lesions, and may result in scarring and choroidal neovascularization.

Methods: A 28-year-old lady presented with a few days' history of acute left eye blurring of vision, central scotoma and photopsia, associated with migraine. Past ocular history was significant for bilateral LASIK. On examination, her right eye had a visual acuity of 6/6 and her left eye was 6/60. Fundus examination showed left eye foveal granularity and white dots. HVF showed an enlarged blind spot. OCT macular demonstrated hyper-reflectivity and granularity at the fovea, leading to an impression of MEWDS.

Results: After one week, the patient's symptoms worsened. Fundus examination revealed chorioretinal atrophy inferotemporal to disc, decreased foveal granularity, with a reduction of white dots. OCT showed ellipsoid zone disruption. Indocyanine green angiography demonstrated late hypocyanescence with scattered phlebitis inferior to the disc. In light of these findings, the impression was PIC, and oral steroids were commenced. The patient reported symptomatic relief and improved clinically, prompting a gradual tapering of the oral steroid regimen.

Conclusions: This case underscores a unique clinical scenario in which MEWDS transitioned into PIC, substantiated by comprehensive multimodal imaging. The evolving presentation highlights the intricate nature of inflammatory chorioretinal conditions and emphasises the value of a holistic management approach.

Poster No.: PO-250

Centrifugation of Clinical Samples Contribute Causative Microorganism Detection Rate in Infectious Endophthalmitis

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Purpose: To examine intravitreal samples, it is essential to identify the causative microorganism in infectious endophthalmitis, but its detection rate from the intravitreal specimen has not been high. In this study, we retrospectively investigated intravitreal specimens of suspected infectious endophthalmitis by using two different preparation methods.

Methods: Thirty-six eyes with suspected infectious endophthalmitis which were diagnosed at our hospital from October 2014 to January 2023. We divided these patients into two groups (group A: cases before 2019, group B: cases after 2020). In group A, the intravitreal specimen was collected and seeded directly onto the culture medium. The specimen was also proceeded for smear examination. In group B, collected intravitreal samples were centrifuged at 5000 rpm for 15 minutes and the sediment was seeded onto culture medium. The sediment was also proceeded for smear examination.

Results: The numbers of patients were 17 eyes in group A, 19 eyes in group B. The mean age was 67 years in group A and 66 years in group B. In the culture, the detection rate of the causative microorganism was 6/17 eyes (35%) in Group A, and 13/19 eyes (68%) in group B (p=0.048). there was no difference of causative microorganism detection rate between group A (5/17

eyes (29%)) and group B (9/19 eyes (47%)) by smear examination (p=0.29).

Conclusions: Centrifugation before culture seeding increased the detection rate of the causative microorganism in infectious endophthalmitis. On the other hand, it did not improve the causative microorganism detection rate by smear examination.

Poster No.: PO-232

Changes in Bruch's Membrane Opening Area, Sub-foveal Choroidal Thickness, and Central Macular Thickness in Sarcoid Patients With or Without Ocular Manifestation

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Purpose: To see the Bruchs' membrane opening area, sub-foveal choroidal thickness and central macular thickness changes in diagnosed cases of sarcoidosis.

Methods: This is a hospital-based prospective, descriptive study and was conducted among the patients presenting to Tribhuvan University Teaching Hospital, Nepal, as diagnosed cases of sarcoidosis with or without ocular manifestation. Measurement of Bruch's membrane opening area was done by optic nerve head imaging technique, sub-foveal choroidal thickness, and macular thickness using enhanced depth imaging technique in spectral-domain optical coherence tomography (Heidelberg Engineering Germany version 6.1). Data analysis and interpretation were done in statistical analysis in Statistical Package for Social Science (SPSS) version 26.

Results: A total of 111 eyes of 73 participants were included. Sub-foveal choroidal thickness (SFCT), Bruch's membrane opening area (BMOA), and central macular thickness (CMT) were significantly changed in sarcoid patients compared to the healthy population with a p-value less than 0.05. mean subAbout 65% of the sarcoid patients had ocular manifestations. Where, panuveitis followed by anterior uveitis was most common ocular manifestations. The mean SFCT was 280.56±56.24µm and 260±46.46µm and 224.42±46.46µm for sarcoid with ocular manifestation, without ocular manifestations, and the control group. CMT was 278.50±58.42µm, 252.85±58.42µm and 248.52±58.42µm and BMOA was 1.84±0.34mm², 1.87±0.24mm² and 2.15±0.30mm² for sarcoid with ocular manifestation, without ocular manifestation and control group respectively.

Conclusions: Sarcoidosis may have a significant impact on ocular health, as evidenced by its association with several key ocular parameters. This concludes the significance of ophthalmology consultation of sarcoid patients for diagnosis, insight into disease status, early detection of complications, and prognosis, which guide appropriate decision-making for intervention.

Poster No.: PO-245

Changes in Scleral Thickness in Acute Phase of Vogt-Koyanagi-Harada Disease

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Purpose: To evaluate the changes in scleral thickness in eyes with Vogt-Koyanagi-Harada (VKH) disease using anterior-segment optical coherence tomography (AS-OCT).

Methods: This retrospective case series included 34 eyes of 17 treatment-naïve patients (4 men and 13 women; mean age, 52.4±11.1 years) with acute VKH disease. All patients were treated with intravenous 1000 mg/day of methylprednisolone for the first 3 days, followed by oral corticosteroids. AS-OCT was used to examine the prevalence of ciliochoroidal effusion and the scleral thickness at the initial visit and 1, 2, and 12 weeks after the start of treatment. Scleral thickness was measured by AS-OCT 6 mm posterior to the scleral spur in 4 directions.

Results: Ciliochoroidal effusion was present in 28 eyes (82.4%) at the initial visit and significantly decreased to 9 eyes (26.5%) 1 week after the start of treatment ($P < 0.001$). Compared to the initial visit, scleral thickness became significantly thinner at 1 week, at the superior (388.1 ± 44.5 to 361.3 ± 38.7 µm; $P < 0.05$), temporal (419.0 ± 48.5 to 383.1 ± 35.1µm; $P < 0.05$), inferior (429.6 ± 69.6 to 389.3 ± 38.6µm; $P < 0.05$), and nasal (428.4 ± 77.4 to 391.0 ± 47.1µm; $P < 0.05$) points. Scleral thickness did not change significantly afterward.

Conclusions: In acute VKH disease, the sclera became thinner in the early phase of treatment and did not change thereafter. The inflammation of VKH disease may affect not only the choroid but also the sclera.

Poster No.: PO-230

Clinical Features and Visual Outcomes in Patients With Bilateral Acute Retinal Necrosis Bilateral Acute Retinal Necrosis

*First Author: Srishti **RAMAMURTHY***
*Co-Author(s): Prapti **CHHEDA***

Purpose: To report the clinical features and visual outcomes in patients presenting with bilateral acute retinal necrosis (BARN).

Methods: Retrospective, observational case series. Clinical records were retrieved through an EMR based system and were analyzed by two trained retina consultants. 47 files with BARN at presentation were included for final analysis in the study. Detailed demographic data, presenting and final visual acuity and clinical features, seropositivity, details of medical and surgical interventions, and complications of BARN were documented.

Results: A total of 94 eyes of 47 patients with bilateral ARN were included. The mean age of the patients was 31 years (3 months - 80 years). 74.5% of patients were male. 13 (27.7%) patients were seropositive for HIV. BCVA (logMAR) at the presentation was 1.42, and at the last follow-up was 0.96. BCVA improved in 39.3%, remained stable in 42.5% and worsened in 18%. Prophylactic barrage laser was done for 6 eyes. One eye developed RD despite treatment. 32 out of 47 patients received antiviral drugs. Pars plana vitrectomy was done for 30 eyes with silicone oil tamponade. Rhegmatogenous RD was most common complication (34 eyes) followed by exudative (10 eyes) and tractional RD (6 eyes). Overall, 42 eyes had optic atrophy, 11 developed phthisis bulbi, 7 developed glaucoma and 3 cases had epiretinal membrane.

Conclusions: This case study includes the largest number of patients with BARN yet to be reported. Seropositivity for HIV was noted in 27% of our cases. Final visual outcomes were poor due to the high rate of ocular complications, the most common being optic atrophy.

Poster No.: PO-254

Clinical Profile of White Dot Syndromes at a Public Healthcare Hospital in Singapore – A Retrospective Case Series Study

*First Author: Sowkath **ALI***
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Purpose: White dot syndromes are a heterogenous group of disorders characterised by unique clinical features which often pose a challenge to the treating physician in terms of investigations and management. We herewith present a retrospective study of white dot syndromes encountered at our hospital over a period of 3 years (2020 - 2023).

Methods: Retrospective observational case series study (from 2020 to 2023) at a public healthcare hospital in Singapore.

Results: A total of 8 patients were included in our study (females 6, males 2). The mean age of presentation was 39.625 years. All of them were found to be myopic, with a mean refractive error found to be -3.25 D. Among the 8 patients, 7 were noted to have unilateral presentation (OD =1, OS =6), and one got bilateral involvement. The various diagnoses encountered were acute retinal pigment epitheliitis (n=2), Multiple evanescent white dot syndrome (n=2), Punctate inner choroidopathy (n=1), Acute idiopathic blind spot enlargement syndrome (n=1), Multifocal choroiditis with pan uveitis (n=1), and Acute macular neuro retinopathy (n=1) respectively. Treatment with oral steroids was initiated in 4 patients with good outcomes. Two patients were followed up with observation, one was lost to follow-up, and one declined treatment. Recurrences were noted only in one patient. An electrophysiological study was done only in one patient, which located the level of lesion. Systemic workup was positive in only one patient (anti-DSDNA, anti-SCL 70).

Conclusions: White dot syndromes pose a diagnostic challenge which can be overcome by multimodal imaging and proper clinical judgement.

Poster No.: PO-249

Correlation of Mantoux Test and Serum Angiotensin Converting Enzyme (ACE) Levels With Clinically and Radiologically Diagnosed Ocular Tuberculosis and Ocular Sarcoidosis

*First Author: Harinikrishna **BALAKRISHNAN***

Purpose: To study the correlation of the Mantoux test and serum angiotensin-converting enzyme (ACE) levels in clinically and radiologically diagnosed ocular tuberculosis and ocular sarcoidosis.

Methods: An observational study including patients with bilateral granulomatous uveitis with differential diagnosis as ocular tuberculosis/ocular sarcoidosis and should be diagnosed both radiologically and clinically over a six-month period.

Results: The study included 60 patients comprising 32 patients with ocular tuberculosis and 28 patients with ocular sarcoidosis. Anterior uveitis (34.4%) was the most common in the tuberculosis group and intermediate uveitis (35.7%) was most common in the sarcoidosis group. The most common fundus finding in the tuberculosis group was choroidal tubercles (31.2%), and in sarcoidosis, it was snow ball and snow banking (57.1%). Using the Mantoux test, 84.4% were correctly identified as tuberculosis (i.e., Sensitivity), 96.4% were correctly identified as Sarcoidosis, and the association between the Mantoux test and diagnoses was statistically significant (P-value <0.001). In the tuberculosis group, 25 subjects had normal, and 7 had elevated serum ACE levels. In the sarcoidosis group, 22 subjects had elevated, and 6 had normal serum ACE levels. Hence 78.1% were correctly identified with serum ACE level as <40 microgram/litre (i.e., sensitivity) in TB group and 78.6% were correctly identified as ≥40 microgram/litre in the sarcoidosis group, and the proportion difference was statistically significant (P-value <0.0.

Conclusions: Elevated serum ACE levels and negative Mantoux test are of significant value in diagnosing sarcoidosis and differentiating from sarcoidosis. Mantoux test remains a cost-effective investigation and can be used for diagnosis of tuberculosis when combined with clinical and radiological evidence.

Poster No.: PO-252

Demystifying Rare Diagnostic Enigma of Frosted Branch Angiitis- Proposal of a Novel Diagnostic and Treatment Protocol

*First Author: Bharat **GURNANI***
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Purpose: To analyze seven patients of Frosted Branch Angiitis (FBA) with diverse etiologies from two tertiary eye care hospitals.

Methods: FBA patients were retrospectively analyzed over the past 3 years with a minimum of one year of follow-up. BCVA, IOP, and anterior and posterior segment findings of both eyes were recorded. In addition, the B scan, OCT, and FFA details were analyzed. The specific etiologies in the immunocompromised group included HIV (1) and CMV (1). In the immunocompetent group, etiologies ranged from Trauma, Viral, Tuberculosis, Behcet's, and Idiopathic. The specific etiology, varied presentation, treatment response, and final visual outcome were documented. We also propose a novel diagnostic and treatment protocol based on our experience and literature review.

Results: Eleven eyes of 7 patients were analysed. The M:F ratio was 4:3. The mean age was 46.14+/-11.33 years. All the patients had posterior uveitis, 3 had intermediate uveitis, three had anterior uveitis, and one RAPD, The mean and median of presenting BCVA were 1.20 (0.37) and 1.08 (1-1.3), respectively, with a range from C.F. to 5/60.The final BCVA ranged from 6/36-6/6 with a mean and median of 0.51 (0.33) and 0.48 (0.3-0.78), respectively. Zones 1,2,3 were involved in 3 patients, zones 2,3 in 2, and zones 2 and 3 in one each. Males had a higher mean CMT of 429.16 (84.53) compared to females 319 (76.82). Two patients developed secondary glaucoma and macular scar each, and 1 had an RD.

Conclusions: The zones of retinal involvement can help in predicting the final visual outcome. The proposed diagnostic algorithm facilitates meticulous evaluation and targeted treatment.

Poster No.: PO-237

Exploring the Clinical Outcomes of Necrotizing Herpetic Retinitis: A 10-Year Retrospective Study

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Purpose: The objective was to assess visual outcomes of Necrotizing Herpetic Retinitis (NHR), covering Acute Retinal Necrosis (ARN) and Progressive Outer Retinal Necrosis (PORN), and identify factors linked to unfavorable outcomes and complications.

Methods: NHR cases diagnosed between January 2007 and December 2017 at a Thai tertiary hospital were retrospectively analyzed. Demographics, ocular assessments, treatments, and significant complications like retinal detachment (RD) were compiled. Poor visual outcome was defined as BCVA worse than 20/200.

Results: Data from 121 eyes of 96 patients were collected: 98 eyes from 81 patients had ARN, and 32 eyes from 15 patients had PORN. Among 96 patients, 46 (47.9%) were male. Poor visual outcome was observed in 49.1% of NHR cases—42.2% for ARN and 78.2% for PORN. Multivariable analysis revealed factors associated with poor visual acuity: macular involvement (odds ratio 6.48, 95% CI: 1.12, 37.4), CMV infection presence (odds ratio 4.29, 95% CI: 1.37, 13.39), and initial BCVA (odds ratio 1.16, 95% CI: 1.12, 2.44). Retinal detachment occurred in 47.8% of PORN cases and 50.0% of ARN cases, with median survival times of 91 and 273 days respectively. An area spanning over 9 clock hours raised RD risk (hazard ratio 3.18, 95% CI: 1.36, 7.47), while prophylactic PPV lowered RD risk (hazard ratio 0.22, 95% CI: 0.06, 0.78).

Conclusions: NHR cases often experience unfavorable visual outcomes and retinal detachment. Poor visual acuity related to macular involvement, CMV infection, and initial BCVA, while RD was linked to extended involvement and pre-RD PPV.

Poster No.: PO-255

Investigating the Tear Cytokine Profile in Fuchs' Uveitis Syndrome

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Purpose: To compare and analyze tear biomarkers like IL-1β, IL-6, IL-10, IL-17A, MMP-9, sICAM-1, TNF-α, and VEGF-A in eyes with FUS vs. the normal eyes of FUS patients and vs. healthy controls.

Methods: Cross-sectional observational analytical study on tear biomarkers in 15 eyes with FUS vs. 9 normal contralateral eyes of FUS patients vs. 50 eyes of 25 age-matched healthy controls. Tear samples were collected using sterile Schirmer tear strips and cytokines analysed using a biomarker kit (Bio M pathfinder) in both groups. Samples were collected before pharmacological mydriasis and stored in 1.5 mL microcentrifuge tubes. Kruskal Wallis test was used for statistical analysis.

Results: MMP-9, IL-6 and IL-17A are significantly higher in FUS eyes vs. controls. They are also upregulated in the normal contralateral eyes of FUS patients. There were no significant differences in levels of IL-10, IL-1β, sICAM-1, TNF-α and VEGF-A in the groups. In FUS eyes with glaucoma, MMP-9 levels were downregulated compared to FUS eyes without glaucoma.

Conclusions: Comparative analysis and quantification of specific tear cytokines may help to better understand the pathogenesis and plan future targeted therapy in FUS.

Poster No.: PO-229

Management of Anterior Uveitis in Psoriatic Arthritis With Cataract Complication

*First Author: M **SYAFRIDON***
*Co-Author(s): Petty **PURWANITA**, Anang **TRIWIBOWO***

Purpose: Non-infectious anterior uveitis is caused by underlying diseases, one of which is psoriatic arthritis. The main goal of uveitis therapy is to prevent blindness with topical steroids. Cataract is the most common complication in uveitis caused by chronic inflammation or prolonged corticosteroid exposure.

Methods: A 28-year-old male came to RSMH eye polyclinic with blurry vision for 2 months. The complaint was accompanied by redness, photosensitivity, and pain in his left eye. He had been diagnosed by the rheumatologist with psoriatic arthritis. The patient underwent a series of workup diagnostic processes to achieve a diagnosis. The visual examination 1/300 left eye. Anterior segment examination on the left eye (LE) was blepharospasm, ciliary injection, corneal oedema, flare, and cells and synechia on LE. While the right eye was within normal limits. Anti-inflammatory and mydriatic agent was given which lasted 1 month. The patient's condition improved. The complications of cataracts and synechia decreased visual function, and did the cataract surgery in unactive uveitis. Best-corrected visual acuity following cataract surgery significantly improved 6/15 left eye.

Results: Management of uveitis associated with psoriatic arthritis is aimed at relieving symptoms by controlling ongoing inflammation. Topical steroids and topical cycloplegics are used as the first line. Patients with cataracts following uveitis experience improved visual acuity after cataract surgery, and phacoemulsification is the most common surgical approach.

Conclusions: Periodic care and check-ups are required for patients with psoriatic arthritis with uveitis. Early diagnosis can lead to appropriate treatment options that will reduce the inflammatory burden of both diseases.

Poster No.: PO-239

Metagenomics Next-generation Sequencing of Aqueous Humor Identifies Ocular Toxoplasmosis

*First Author: Jian **LI***
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Purpose: Ocular toxoplasmosis (OT) is one of the most common causes of posterior uveitis resulting from Toxoplasma gondii (T. gondii) infection and is diagnosed mainly by clinical manifestations. The objective of this study is to determine if unbiased metagenomics next-generation sequencing (mNGS) can accurately detect T. gondii in aqueous humor samples of patients with uveitis.

Methods: A total of 5 aqueous humor samples were collected from 5 patients with clinically suspected ocular toxoplasmosis. Five aqueous humor from other uveitis patients and 5 samples from subjects without ocular inflammation were used as controls. Samples were subjected to mNGS. Pathogens were identified using a rapid computational pipeline to analyze the non-host sequences obtained from mNGS.

Results: The mNGS detected T. gondii genome in the aqueous humor of 4 out of 5 patients, including one atypical OT patient with a 6 disc diameter yellowish-white lesion in the very peripheral region of the superonasal retina. Laboratory results showed that more than 97.75% of nucleotide reads were matched with the T. gondii genome. The only one mNGS-negative patient showed ocular toxoplasmosis scar lesions with a medical history of 13-month uveitis. mNGS results for the samples from the two control groups were all T. gondii negative.

Conclusions: The mNGS of aqueous humor can be utilized as a useful method for laboratory diagnosis of OT.

Poster No.: PO-234

Occam's Razor Versus Hickam's Dictum: Bilateral Panuveitis in a Patient With Ocular Toxocariasis and Coexistent Juvenile Spondyloarthritis

*First Author: Raymund **TANCHULING***

Purpose: To report a case of juvenile spondyloarthritis and ocular toxocariasis affecting both eyes and to discuss the pathogenetic contributions of each in disease evolution.

Methods: We present the case of a 16-year-old male with juvenile spondyloarthritis and ocular toxocariasis affecting both eyes. He exhibited generalized pustules, back pain, peripheral polyarthritis, and bilateral panuveitis. Both eyes displayed abnormalities in the anterior segments, including corectopia, seclusio, and

occlusio pupillae. The right eye exhibited vitritis, disc edema, and a granuloma surrounded by infiltrates and perivascular sheathing.

Results: In the left eye, a B scan revealed vitritis and a hyperechoic band from the disc to the retinal periphery. Toxocara IgG and HLA-B27 were positive, and lumbosacral magnetic resonance imaging confirmed sacroiliitis. Comprehensive diagnostic tests ruled out other infectious and inflammatory conditions, including tuberculosis and syphilis. Treatment involved steroids and anti-TNF inhibitors, resulting in stabilization of visual acuity and resolution of symptoms.

Conclusions: This case highlights the rare co-occurrence of two diseases with overlapping symptoms and uncertain pathogenetic contributions from each to cause the observed manifestations. It supports existing studies proposing a connection between rheumatic disease and parasitosis. While Occam's razor promotes diagnostic parsimony, Hickam's dictum reminds us to consider the complexity and the potential involvement of multiple factors; a comprehensive approach is crucial for determining underlying disease mechanisms.

Poster No.: PO-236

Ocular Manifestations and Diagnosis of Tuberculosis Involving the Uvea: A Case Series

*First Author: Rachel **CHEUNG***
*Co-Author(s): Nicholas **FUNG**, Stephanie **POON**, Jennifer **TSUI***

Purpose: Ocular tuberculosis (TB) affects 1-2% of patients with TB, with TB uveitis being the most common. This series aims to look at different manifestations of tuberculosis-associated uveitis and the tests to make a diagnosis.

Methods: Patients diagnosed with TB-related uveitis in Hong Kong SAR between 2017-2020 were reviewed. Demographics, clinical features, investigations and treatments were collected.

Results: Fifteen eyes in 10 patients with a mean age of 57.30±10.17 years were included. The ocular manifestations on presentation included anterior uveitis (50%), posterior uveitis (40%) and panuveitis (10%), where 70% were unilateral and 30% were bilateral; on subsequent visits, the manifestations further developed into posterior uveitis (40%), panuveitis (40%) and anterior uveitis (20%), where 50% were unilateral and 50% bilateral. Tuberculosis tests were positive in 5 of 7 Mantoux tests, 4 of 4 T-SPOT TB tests, 3 of 4 QuantiFERON-TB gold tests, 1 of 1 lymph node biopsy, and 0 of 9 chest x-rays (CXR). Vision-impairing complications occurred in 6 patients, with retinal vasculitis being the most common. With anti-TB treatment prescribed in 9 patients, side effects occurred in 5 patients, including ocular hypertension, disc swelling, and hepatitis.

Conclusions: Ocular TB may have various manifestations, and bilateral involvement is common. When suspected, diagnostic confirmation requires multimodal investigations where a negative CXR is not useful in ruling out ocular TB, especially in an endemic region like Hong Kong. In these patients, it is crucial to have a high index of suspicion for TB, even when they do not demonstrate classical respiratory signs and symptoms of TB.

Poster No.: PO-244

Prevalence and Clinical Profile of Ocular Syphilis: A Recent 5-Year Retrospective Study at a Tertiary Hospital in Bali, Indonesia

*First Author: Ida Ayu Ary **PRAMITA***

Purpose: To describe the prevalence and clinical features of ocular syphilis.

Methods: A retrospective, observational study with a cross-sectional approach of 36 patients who had visited a tertiary hospital in Bali from 2018-2023. All patients with positive syphilis serological results were included.

Results: This study has shown that cases of ocular syphilis among all uveitis patients in the last 5 years are 10.6%. A total of 83.3% (30 patients) were HIV positive, of which 19 were newly diagnosed. The available CD4+ data varies widely from 7 to 557. Patients are predominately male, 66.7%, and with a bilateral incidence of 66.7%. Analysis was performed on 60 eyes, with clinical features sorted from the most frequent are posterior uveitis (31.7%), panuveitis (28.3%), isolated papillitis (25%), uveitis anterior + intermediate (8.3%), uveitis anterior (5%) and intermediate (1.7%). The mean BCVA improved after antisyphilis therapy, from 1.3 ± 0.98 logMar to 0.73 ± 0.90 logMar.

Conclusions: Increasing cases of ocular syphilis are still emerging. It is important to think about the possibility of syphilis in patients with any uveitis or isolated papillitis because they are great imitators. It is known that it is often related to HIV, and for that, we are obliged to do HIV screening. Ocular syphilis is a disease that responds well when properly diagnosed and managed.

Poster No.: PO-241

Prolonged Conjunctivitis Mimicking Nodular Episcleritis as a Manifestation of Granulomatous With Polyangiitis (GPA)

*First Author: Hong Nien **LEE***
*Co-Author(s): Visvaraja **SUBRAYAN***

Purpose: To highlight the possible presentation of granulomatous with polyangiitis.

Methods: A case report.

Results: A 57-year-old woman who presented with red eye and tearing was partially treated with topical

antibiotics. Topical and oral non-steroidal anti-inflammatory drugs were commenced. However, she developed cornea thinning subsequently, and her systemic examination revealed an injected uvula with the absence of upper respiratory tract infection. She was found to have raised anti-inflammatory markers, and antinuclear antibody and C-ANCA were tested positive. Her conditions improved significantly after the commencement of topical corticosteroid with a high dose of systemic corticosteroid.

Conclusions: Red eye is commonly encountered in our practice, and it is associated with a variety of diseases. GPA manifestation can be as subtle as a red eye. Any prolonged partially treated red eye should prompt suspicion of a more sinister cause.

Poster No.: PO-243

Quantitative Assessment of Peripheral Choroidal Vasculature on UWF ICGA in Posterior Uveitis Using Advanced Imaging Processing Techniques

*First Author: Ashish **MARKAN***
*Co-Author(s): Aniruddha **AGARWAL**, Rupesh **AGRAWAL**, Vishali **GUPTA**, Jainy **SACHDEVA***

Purpose: Quantitative assessment of peripheral choroidal vasculature on UWF ICGA in posterior uveitis.

Methods: A retrospective data analysis of all patients diagnosed with posterior uveitis and underwent UWF FFA and ICGA was carried out. Early and mid-phase images were registered through affine transformation. The following quantitative parameters were evaluated: choroidal vessel densitometry (CVD), asymmetry of choroidal outflow (ACO), the diameter of prominent choroidal vessel (DPCV) in each quadrant and the average distance between the ampulla and optic nerve in each quadrant. Image registration of FFA and ICGA images was done using affine transformation.

Results: A total of 31 patients diagnosed with posterior uveitis were included. The mean choroidal vessel densitometry was 0.36+0.04. The mean asymmetry of choroidal outflow in eyes with posterior uveitis was 18.52+7.21 pixel units. The diameter of prominent choroidal vessel ranged from 0.37-0.39 mm (in quadrant 1 was 0.37+0.10, quadrant 2 was 0.37+0.10, quadrant 3 was 0.39+0.10 and quadrant 4 was 0.39+0.09). The average distance of the ampulla from the optic nerve in uveitic eyes ranged from 10.76-11.33 mm (in quadrant 1 was 10.76+1.06, quadrant 2 was 10.99+0.92, quadrant 3 was 11.33+1.22, and quadrant 4 was 11.27+1.16.

Conclusions: This is the first study to quantify peripheral choroidal vasculature on ultrawide field ICG angiography using advanced image processing techniques in eyes with posterior uveitis. These quantitative parameters can be used to monitor the disease progression and its response to therapy.

Poster No.: PO-248

Sacro-Iliac Joint X-ray: An Unexplored Prognostic Tool in Limited HLA B 27 Uveitis

*First Author: Samiksha S **KUMAR***
*Co-Author(s): Namita C **ANAGOL***

Purpose: To study the association of sacroiliac joint (SIJ) sclerosis with the management and prognosis of HLAB 27 positive uveitis in patients with no prior systemic disease.

Methods: A retrospective study was done at our hospital over 10 years. Type of uveitis, treatment, complications, and hip joint X-ray findings were recorded. Exclusion criteria were cases of pre-existing Ankylosing spondylitis or other systemic diseases. HLAB 27 uveitis patients were evaluated with routine X-ray hip joints and divided into two groups. In group A, patients with SIJ sclerosis were added and those with normal SIJ were included in group B.

Results: Among the 125 cases included in our study, 69 had SIJ sclerosis (Group A), and 56 had normal X-rays (Group B). The incidence of posterior segment involvement, complications and need for glaucoma surgery was greater in patients of group A. 78.3% of patients with SIJ sclerosis required systemic immunomodulator therapy (IMT) as opposed to 39% of patients with normal SIJ. Combined IMT was needed in 31.5% of group A as compared to 9% of group B. The final visual acuity was significantly worse in group A (6/38) as compared to group B (6/6).

Conclusions: The presence of sacroiliac sclerosis must prompt the ophthalmologist to send for a rheumatologist referral to start early systemic therapy to reduce ocular and systemic morbidity. The hip X-ray is a simple, non-invasive test that can detect disease early on and, thereby, impact the prognosis. It stands for consideration for routine practice in all cases of HLAB 27 Uveitis.

Poster No.: PO-246

Serratia Marcescens Endophthalmitis: A Case Series

*First Author: Sankha **CHAUDHURI***
*Co-Author(s): Madhurima **CHAUDHURI**, Madhurima **KUMAR**, Madhurima **KUMAR***

Purpose: To report the signs, symptoms, antibiotic sensitivity and outcome of Serratia marcescens endophthalmitis.

Methods: A case series of 3 patients with culture-positive endophthalmitis due to Serratia marcescens from September 1, 2021 to December 31, 2022, at a tertiary care centre.

Results: Out of the 3 study patients, clinical history included post- Small Incision Cataract surgery (n=1), post-phacoemulsification (n=1) and post-intravitreal

Ranibizumab (n=1). Clinical features included pain,red hypopyon and BCVA of hand movement or worse in all 3 cases. Fundus examination was not possible due to hazy media but USG B scan revealed multiple clumps of vitreous echoes (n=3). Vitreous tap was taken in all 3 patients and sent for gram staining, AFB staining, KOH mount and culture and sensitivity testing. All 3 patients initially received one dose of intravitreal Vancomycin (1mg/0.1ml) and Ceftazidime (2.25mg/0.1ml) prior to pars plana vitrectomy. S. marcescens was isolated on nutrient agar and positive from vitreous biopsy of all patients (n=3) with sensitivity to Imipenem and Ceftazidime. All isolates were resistant to Vancomycin. Biochemical results were urease positive, VP positive and nitrate reduction positive. Further treatment included pars plana vitrectomy with intravitreal injection of Imipenem and Ceftazidime (n=3). Repeat vitreous tapping revealed a persistent positive culture in only 1 patient. Final visual acuity was no light perception in 2 out of 3 patients and only light perception in 1 patient.

Conclusions: Red hypopyon should raise clinical suspicion, and outcomes of S.marcescens endophthalmitis were generally poor, with a high chance of complete loss of vision in the affected eye.

Poster No.: PO-231

Spectrum of Presumed Versus Biopsy Proven Ocular Sarcoidosis From a Tertiary Eye Care Centre From North India

*First Author: Priyanka **GUPTA***
*Co-Author(s): Navneet **MEHROTRA**, Shahana **MAZUMDAR***

Purpose: To study and compare the clinical pattern of ocular sarcoidosis in patients with definite and presumed ocular sarcoidosis presenting to a tertiary eye center in north India.

Methods: Prospective observational case series. The ocular manifestations were compatible with the sarcoidosis of 30 patients with presumed sarcoidosis (raised ACE levels, bilateral hilar lymphadenopathy, and negative Mantoux) and were compared with 10 biopsy-proven definitive sarcoidosis patients. Results were statistically analyzed using SPSS software 17.

Results: The incidence of sarcoid-related uveitis was 16%. The mean age group was 42.7 ± 13.4 years. Females were more common. Diminution of vision was the most common ocular complaint. Constitutional symptoms were the most common systemic complaint and were seen in fifteen (37.5%) patients. There was no difference between sex, race, age distribution, and ocular manifestations seen in each group. Bilateral and recurrent uveitis was the major presentation. Anterior and intermediate uveitis were the most common eye manifestations seen in 43.3% of the presumed group and 30% of the biopsy-proven group, followed by intermediate uveitis in 30% of both.

Conclusions: In our study, there was a definite female preponderance, and all the subjects were in the middle-aged group. Bilateral, recurrent 'anterior and intermediate' uveitis was the commonest manifestation. Constitutional symptoms and respiratory involvement were the commonest systemic manifestations. The pattern of uveitis was similar in 'presumed' and 'biopsy-proven' ocular sarcoidosis patients. Hence the diagnostic criteria for 'presumed appear to be reflective of biopsy proven and it validates in our study.

Poster No.: PO-228

Syphilitic Ocular Inflammations: Take a Closer Look to the Rise of the Great Imitator

*First Author: Eka **BUDININGTYAS***

Purpose: To illustrate several variations of clinical manifestation in syphilitic ocular inflammation patients.

Methods: Case series of 4 patients with various clinical manifestations of syphilis ocular inflammation. Symptoms varied from red eye, floaters, and blurred vision. Visual acuity ranged from 1 meter finger counting to 6/6. Findings showed different uveitis manifestations in every patient, ranging from nodular scleritis to pan uveitis with macular edema, bilateral edema of the optic nerve head, and bilateral retinal vasculitis. All patients showed high titers of Treponema pallidum hemagglutination assay (TPHA). Two out of four patients had positive findings of human immunodeficiency virus (HIV) infection.

Results: All four patients were managed to get a full dose of Penicillin G injection. Three patients already showed improvement both in lesions and visual function. Titer of TPHA was also decreasing along with the given therapy. Additional adjunctive corticosteroid therapy was given to the patient with nodular scleritis, and the result was satisfying. One patient with HIV-positive status had a co-infection with tuberculosis infection, and until this abstract was written, the therapy is still ongoing.

Conclusions: Early detection and thorough uveitis workup examination are important in determining syphilitic eye infection due to the nature of the pathophysiology of syphilis as one of the great imitators of uveitis.

Poster No.: PO-247

The Parable of the Prodigal Daughter

*First Author: Vrinda **DALWANI***
*Co-Author(s): Rathinam **SIVAKUMAR***

Purpose: The significance of not sticking to a single diagnosis and treatment plan is highlighted by an intriguing example. A person is affected by two distinct diseases at two different times, each of which presents similarly yet reacts to therapy differently. The question

is whether treating one ailment led to the development of the other, if there is a causal link.

Methods: A 12-year-old girl who had been experiencing unilateral, painless vision loss for a month was seen. Since she was 6 years old, the patient has taken immunosuppressants, both orally and intravenously, for juvenile idiopathic arthritis. She had previously undergone a synovial fluid aspiration and biopsy from her right ankle two months before presenting to us, at which point Anti-Tubercular Treatment (ATT) was initiated in order to treat her Tuberculosis (TB). She had choroidal granuloma and vitritis when she first came to see us, but those conditions became better with time.

Results: ATT was kept up, and the patient got better over time.

Conclusions: Due to a proper diagnosis and timely therapy, we were able to manage this difficult problem. The question of whether immunosuppression played a role in this arises because TB is a pretty common disease in our nation. As a result, keeping an eye out for symptoms and indications, as well as keeping an open mind while establishing a differential diagnosis, are crucial in this circumstance.

Poster No.: PO-242

To Describe Ultrawidefield Angiography Features of Enhanced S Cone Syndrome

*First Author: Navya **CHERUKURI***

Purpose: A 22-year-old male was diagnosed elsewhere with retinal vasculitis was started on oral steroids and was referred to our institute for further management. On probing about the history, the patient had suboptimal vision from childhood especially during night time and had no specific complaints at present. On examination, the best corrected visual acuity (BCVA) in the right eye (RE) and left eye (LE) was 20/160 and 20/100, respectively, with a spherical equivalent of +10 in both eyes. The anterior segment had no signs of inflammation. Fundus examination of BE showed nummular pigmentary lesions along the arcades.

Methods: Autofluorescence (AF) showed hyper AF at the fovea with surrounding hypoAF till the arcades. The axial lengths of RE and LE were 17.58 and 17.71mm, respectively. Optical coherence tomography (OCT) showed outer retinal layer loss with foveal schisis. Fundus fluorescein angiography (FFA) showed multiple hypofluorescent spots corresponding to nummular pigments and diffuse vascular leakage in late phases, extending from the posterior to the periphery.

Results: An electroretinogram (ERG) was performed, which showed extinguished rod and cone responses with reduced S cone responses as well. Based on these findings, a diagnosis of both eyes enhanced S cone syndrome with nanophthalmos was made. The patient was investigated elsewhere and was negative for all infective and noninfective causes of uveitis which included complete blood picture, HIV, TPHA, Mantoux, CECT chest.

Conclusions: This is a very interesting case of enhanced S cone syndrome with nanophthalmos, foveal schists and retinal vasculitis and should be differentiated from recent onset inflammation.

Poster No.: PO-240

To Report the Demographic Profile and Clinical Characteristics of Acute Anterior Uveitis Following Photorefractive Keratectomy (PRK)

*First Author: Ashish **MARKAN***
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Purpose: To report the clinical characteristics of acute anterior uveitis following PRK.

Methods: In this retrospective study, medical records of all the patients who suffered from AAU following PRK (between July 2022 and June 2023) were collected. Necessary demographic details and preoperative ocular examination details of the patients were collected. Other information included intraoperative surgical details, grade of inflammation, the onset of AAU after the surgery, time to heal, and any recurrent episodes during the study period.

Results: Sixteen patients (29 eyes, bilateral: 13 patients, unilateral: 3 patients) presented with an AAU following PRK surgery. The mean age of the patients was 27.43+4.53 years, with a mean spherical equivalent of -3.18+2.16. The majority of the patients (93.75%) were male. The mean time of onset of AAU post-surgery was 27.8+10.9 days. The mean ablation depth was 55.13+28.10 mm and the mean duration of excimer laser ablation was 11.27+8.31 seconds. Most eyes (79.3%) had a moderate-intense grade of inflammation, with significant pigment dispersion. Laboratory and immunological tests were negative in all the patients. All patients were started on topical steroids and cycloplegics. The mean time to heal was 57.43+27.87 days, with 3 patients having recurrent uveitis. The mean follow-up duration was 4.2+1.56 months.

Conclusions: Anterior uveitis after PRK is infrequent. The possibility may arise from transmitting high-frequency excimer laser beams within the eye, which are used for extended periods to achieve uninterrupted, single-step ablation.

Myopia

Poster No.: PO-257

Accuracy of Subjective Refraction Performed by a Trained Non-refractionist Compared With an Experienced Refractionist

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*Co-Author(s): Usha **KIM**, Thulasiraj **RAVILLA**, Dhivya **RAMASAMY**, Jerrome **SELVARAJ**, Balagiri **SUNDAR***

Purpose: Addressing the scarcity of skilled personnel for providing refraction services, especially in low-resource settings, is a pressing challenge. This study seeks to validate a novel approach to subjective refraction, employing a trained non-refractionist (TNR) assisted by a precise auto-refractor. This approach is compared with the established standard of subjective refraction conducted by an experienced refractionist (ER).

Methods: Conducted at a tertiary eye hospital in India, this diagnostic accuracy study involved patients aged 15-40 years. Sequential refractions were administered by both an ER and a TNR, with both examiners blinded to each other's measurements. Patients remained unaware of the source of their glass prescriptions. Agreement between the ER and TNR glass prescriptions was assessed. Visual acuity differences and patient preferences between the ER and TNR were also evaluated.

Results: The study revealed substantial agreement between the ER and TNR for key parameters: spherical equivalent-M (ICC–0.994), J0 (ICC–0.961), and J45 (ICC–0.886). The mean differences and 95% limits of agreement in diopters were as follows: -0.039 (-0.661 to 0.583) for M, -0.019 (0.933 to 0.894) for J0, and 0.009 (-0.771 to 0.79) for J45. Overall, 61% of patients exhibited no preference, while 21% favoured TNR prescriptions, and 18% favoured ER prescriptions.

Conclusions: Empowering trained non-refractionists through precise auto-refractors enables accurate subjective refraction and prescription recommendations. This innovative approach holds promise in alleviating the burden of uncorrected refractive errors, particularly within resource-limited settings.

Poster No.: PO-270

Association Between Sleep and Myopia in Children and Adolescents: A Systematic Review and Meta-Analysis

*First Author: Eric **JIN***
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Purpose: There is a scarcity of literature focusing on sleep's impact on myopia in children despite an epidemic rise of myopia among the age group and the importance of early prevention. As such, this systematic review meta-analysis aims to evaluate the association between various aspects of sleep and myopia in children and adolescents aged 0 - 19 years.

Methods: We searched PubMed, EMBASE, and Cochrane Library till 08/12/2022 for studies reporting sleep in relation to myopia among children and adolescents. Myopia was defined as spherical equivalent refraction < -0.5 diopter. The primary outcome was the relationship between sleep duration and myopia prevalence. Secondary outcomes include the effect of sleep quality, bedtime, and waketime on myopia prevalence, incidence, and progression. The odds ratio (OR) was estimated with a 95% confidence interval (95% CI).

Results: Eighteen studies (49,277 participants) were included in the review, and 6 studies (14,116 participants) were included in the meta-analysis for the primary outcome. There was no significant correlation between sleep and myopia prevalence (OR = 0.905, 95% CI = 0.782 to 1.047). Some studies suggested that better sleep quality (2 of 6 studies), earlier bedtime (3 of 5 studies), and later waketimes (2 of 3 studies) had protective effects on myopia.

Conclusions: Sleep duration did not affect myopia prevalence in children, while other aspects of sleep had plausible but inconclusive impacts on myopia development and progression. More research with diverse populations and standardised methods of reporting is needed.

Poster No.: PO-269

Choriocapillaris, Photoreceptors and Inner Retinal Layers in Spatial Relationship to Parapapillary Alpha, Beta, Gamma and Delta Zone

*First Author: Songhomitra **PANDA-JONAS***
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Purpose: To examine the spatial relationships between the retinal inner nuclear layer (INL), outer nuclear layer (ONL), retinal pigment epithelium (RPE) layer, Bruch's membrane (BM) and choriocapillaris in the parapapillary region.

Methods: Human eyes enucleated due to uveal melanomas or secondary angle-closure glaucoma were histomorphometrically examined. We compared the tissue dimensions between four groups of eyes categorized based on the presence/absence of high myopia and glaucoma.

Results: The investigation consisted of 100 globes (axial length: 25.6±3.1mm; range: 20.0-35.0mm). In non-highly myopic non-glaucomatous eyes, the INL, ONL, RPE, BM and choriocapillaris ended approximately at the end of the RPE layer, with no significant (all P≥0.10) difference between the layers in their distance to the RPE-layer end. From non-highly myopic non-glaucomatous eyes to non-highly myopic, glaucomatous eyes, highly myopic non-glaucomatous eyes and eventually to highly myopic glaucomatous eyes, the choriocapillaris, INL and ONL increasingly extended into the beta zone, most marked for the choriocapillaris and least marked for the ONL. A larger extension of the choriocapillaris into parapapillary beta zone correlated with longer axial length (standardized regression coefficient beta:0.24; B: 23.0; 95% CI: 1.6, 44.5; P=0.04) and wider parapapillary beta zone (beta: 0.59; B: 0.32; 95% CI: 0.22, 0.41; P<0.001), a larger extension of the INL correlated with longer axial length (beta: 0.34; B: 43.7; 95% CI: 11.6, 75.7; P=0.009), longer gamma zone (beta:0.52; B:0.28; 5% CI: 0.15, 0.41; P<0.001) and diagnosis of non-highly myopic glaucoma (beta: 0.28; B: 267; 95% CI: 80.8, 454; P=0.006), and a larger extension of the ONL into parapapillary beta zone correlated with longer axial length (beta: 0.50; B: 32.2; 95% CI:21.6, 42.8; P<0.001) and wider parapapillary beta zone (beta: 0.28; B: 0.10; 95% CI: 0.04, 0.16; P<0.001).

Conclusions: Non-glaucomatous non-highly myopic eyes differ from highly myopic eyes and glaucomatous eyes in the spatial relationship of the parapapillary tissue layers.

Poster No.: PO-256

Comparison of Orthokeratology, Defocus Incorporated Multiple Segments (DIMS) Lens, and Combined With 0.01% Atropine Treatment for Myopia Control in 6- to 14-Year-Old Children

*First Author: Tao **TANG***
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Purpose: The study aimed to evaluate the efficacy of orthokeratology (Ortho-K), DIMS lens and combined with 0.01% atropine treatment for myopia control.

Methods: A cohort study assessed 167 myopic children aged 6-14 years divided into four treatment subgroups: Ortho-K (OK, n=41), Ortho-K combined with atropine (OKA, n=43), DIMS (n=41), and DIMS combined with atropine (DIMSA, n=42), and two age subgroups: 6-10 years and 10-14 years. Axial length (AL) was measured at baseline and visits at 3, 6, 9, and 12 months. Axial elongation over time and between groups was analyzed.

Results: Baseline age, sex, and ocular biometrics were similar between the four treatment groups (all p>0.05). After 12 months, the AL change was 0.20±0.12 mm, 0.12±0.14 mm, 0.22±0.14 mm, and 0.15±0.15 mm in the OK, OKA, DIMS, and DIMSA, respectively. There were significant differences in AL change between OKA and OK (p=0.03), and between OKA and DIMS (p=0.009). After stratification by age, in the subgroup aged 6-10 years, there was a significant difference in AL change between OKA and DIMS (p=0.018), and no difference between other groups, while in the subgroup aged 10-14 years, the difference between OKA and DIMS became insignificant (p=0.237), and the difference between OK and OKA, OK and DIMSA, DIMS, and DIMSA became significant (all p<0.05).

Conclusions: Ortho-K and DIMS lenses show similar reductions in myopia progression. OKA achieves the best efficacy of myopia control. Atropine can significantly improve the efficacy of myopia control of both Ortho-K and DIMS lenses, and this add-on effect is better in older children.

Poster No.: PO-267

Machine Learning to Identify Cornea Biomechanics and Anterior Segment Parameters Associated With Myopia in Children

*First Author: Joey **CHUNG***
*Co-Author(s): Marcus **ANG**, Yong **LI**, Angeline **TOH***

Purpose: To examine cornea biomechanical and anterior segment parameters associated with myopia in children using machine learning.

Methods: A prospective study of 500 Asian children aged 5-8 years with myopia (≤-0.50D) or pre-myopia (>-0.50 D) was recruited. All the subjects underwent examinations including ocular biometry, cycloplegic autorefraction, ocular biomechanical measures using an ocular response analyzer (ORA, Reichert, USA), and Schiempflug imaging (Pentacam, Oculus, Germany). Factor selection was performed based on the Lasso regularization method, and various machine learning algorithms were then trained and compared to best identify eyes with myopia.

Results: A total of 647 (64.7%) of the 1000 eyes of 500 children were myopic. The spherical equivalent was +0.58 ± 0.63D vs -2.19 ± 1.43D (p<0.001) in the myopic and non-myopic groups. Comparing myopic and pre-myopic eyes: biomechanical variables including IOPg (15.13 ± 3.04mmHg vs 16.00 ± 3.25mmHg, p<0.001), IOPcc (15.27 ± 2.93mmHg vs 16.12 ± 3.22mmHg, p<0.001), and intelligent waveform scores (6.23 ± 1.76 vs 6.56 ± 1.71, p=0.004) were significantly different. Anterior segment variables including anterior

chamber depth (2.85 ± 0.25mm vs 3.13 ± 0.23mm, p<0.001), chamber volume (172.69 ± 16.25microL vs 179.26 ± 17.14microL, p<0.001), and chamber angle (41.35 ± 2.75degree vs 42.57 ± 3.06degree, p<0.001) were significantly different between the two groups. With the selected variables, the ORA and Pentacam-based models achieved an AUC of 64.9% and 78.7%, respectively, while combined models achieved an AUC of 79.9%.

Conclusions: Our pilot study suggests cornea biomechanical and anterior segment parameters differ between myopic and pre-myopic eyes in young Asian children, which requires further study.

Poster No.: PO-264

Ocular Biometric and Refractive Changes After Discontinuation of Long-Term Orthokeratology

*First Author: Shang-yen **WU***
*Co-Author(s): Cheng-jen **CHIU**, Hou-ren **TSAI***

Purpose: To evaluate the serial changes of corneal biomechanical properties (CBPs) in orthokeratology (Ortho-K) users and observe ocular biometric and refractive changes during the discontinuation and refitting period of orthokeratology.

Methods: This prospective cohort study recruited myopic children treated with Ortho-K lens from January 2020 to July 2020. CBPs were measured with Corvis-ST at baseline, 2 weeks, 1 month, and every 6 months during 1-year wearing period. Ocular biometric and refractive changes were also recorded after one-month discontinuation and refitting of Ortho-K for one month. The axial length (AL) was measured at baseline, one month, and every 6 months. We then assessed the time effect on the CBPs difference over time, and also the association of CBPs and change of AL during the follow-up period.

Results: A total of 37 Ortho-K users completed 26-month follow-ups. The mean spherical equivalent was -2.85±1.42 D. During the fitting periods, biomechanical intraocular pressure (bIOP), Ambrósio's relational thickness horizontal (ARTh), and stiffness parameter at the first applanation (SP-A1) showed significantly decreased trends while the corneal biomechanical index (CBI) was significantly increased. We found significant differences among CBPs such as central corneal thickness (CCT), bIOP, CBI, ARTh, and SP-A1 after one-month fitting. Subsequently, those CBPs reverted and closed to baseline level after one-month discontinuation and significantly changed during the refitting period.

Conclusions: Ortho-k treatments caused serial CBP changes during a 24-month fitting, one-month discontinuation, and one-month refitting period. However, the treatment effect of Ortho-k is not associated with CBP changes at the one-year and two-year follow-up.

Poster No.: PO-261

Refractive Myopia and Structural Characteristics in Eyes With Retinopathy of Prematurity Measured by the GRAS in Myopia Master

*First Author: Saiko **MATSUMURA***
*Co-Author(s): Yuichi **HORI**, Riyo **IIDA**, Momoko **KAWAKAMI**, Tadashi **MATSUMOTO***

Purpose: The Gullstrand Refractive Analysis System (GRAS) in Myopia Master detects differences in each refractive element compared to age-corrected pediatric normal model eyes. The purpose of this study is to evaluate the structural characteristics of eyes with retinopathy of prematurity (ROP) by this function.

Methods: The subjects were 73 children (137 eyes) with myopia (spherical equivalent ≥ -0.50 D) followed up at Toho University Medical Center Omori Hospital [age (mean ± SD) 9.02 ± 0.30 years, 55 boys]. Cycloplegic refraction, axial length (AL), corneal curvature and GRAS were measured using Myopia Master, and anterior segment factors were measured using anterior segment optical coherence tomography (OCT).

Results: In the three-group comparison (ROP-treated group, ROP-untreated group, and control group), significant differences were found in GRAS corneal values (-2.78, -0.58, and -0.05, p<0.001), GRAS lens values (-2.82, 0.10, and 0.56, p<0.001) and GRAS ocular AL values (0.91, -4.00, and -5.53, p<0.001). For anterior segment factors, significant differences were found in anterior chamber depth (ACD) (2.76, 3.24, and 3.31, p<0.001) and lens thickness (LT) (3.92, 3.41, and 3.42, p<0.001). ACD (R2 = 0.89, p<0.001) and LT (R2 = 0.86, p<0.001) were highly correlated with GRAS lens values.

Conclusions: ROP-treated eyes had steeper corneal curvatures, shorter AL, thicker lenses, and smaller ACD compared to ROP-untreated eyes and controls. The GRAS in Myopia Master was useful in assessing refractive myopia and ocular structures in ROP-treated eyes.

Poster No.: PO-259

Rigid Gas Permeable (RGP) Contact Lens Treatment For High Compound Myopic Astigmatism With Isoametropic Amblyopia

*First Author: M.Rifqi **HAMIDIN***

Purpose: To report a case of a high compound myopic astigmatism with isoametropic amblyopia patient who was treated with rigid gas permeable (RGP) contact lenses.

Methods: An 11-year-old female with high compound myopic astigmatism and isoametropic amblyopia came to the refraction, contact lens, and low vision of RSMH Palembang. The patient was evaluated for all aspects of her ophthalmological condition, had her refractive status corrected, through a thorough RGP pre-fitting examination, had her contact lenses fitted, and had her post-fitting assessment performed.

Results: The results of the ophthalmologic examination showed that the left eye's 2/60 ph 6/60 and the right eye's 3/60 ph 6/60 uncorrected visual acuity, respectively. The best corrected visual acuity (BCVA) for the right eye was 6/12 with correction S-16.00 C-4.00 10O, while for the left eye, it was 6/12 with correction S-15.50 C-4.50 10O. Using a pair of RGP contact lens fittings with a power of 9.0 diopters and a diameter of 9.2 mm, the base-curve measurement of the RGP was taken to achieve 7.59 mm for the right eye and 7.54 mm for the left eye. In order to achieve maximal correction in both eyes without any additional astigmatism, over-refraction was performed after the contact lenses were mounted, yielding S-6.00 D for both right and left eyes, and the result was 6/12, with binocular visual acuity of 6/9, the needs to evaluate the treatment in 2-3 month follow-up.

Conclusions: High compound myopic astigmatism with isoametropic amblyopia can be managed with the use of RGP contact lenses.

Poster No.: PO-262

The Association of Mental Health, Vision Impairment, and Eyeglasses Usage Among Junior High School Students: Evidence From Rural China

*First Author: Huan **WANG***

Purpose: This study looks at the correlational relationship between vision impairment, eyeglasses usage, and mental health among junior high school students in the rural Ningxia region of China.

Methods: Visual acuity assessments were conducted on 20,376 junior high school students by trained medical and research professionals to determine the presence of vision impairment. All sample students were surveyed with a questionnaire, which asked about individual and family characteristics, eyeglasses ownership, and educational aspirations and included a standardized math test. Students then completed an adapted and validated Chinese version of the Strengths and Difficulties Questionnaire (SDQ) to multidimensionally assess their mental health.

Results: Among our sample, 48% of sample students suffered from vision impairment, but only 35% of them wore proper eyeglasses. Around 10% of the students were classified as "abnormal," or more likely to have mental health problems, based on the SDQ. There is a correlation between impaired vision and poorer mental health. Eyeglasses usage is significantly positively associated with better mental health.

Conclusions: The significant positive relationship between eyeglasses usage and mental health may guide future interventions and policies designed to improve student mental health.

Poster No.: PO-266

The Atropine Treatment Long-Term Assessment Study (ATLAS): 10 to 20-Year Safety and Outcomes Report

*First Author: Wen Pei Angeline **TOH***
*Co-Author(s): Marcus **ANG**, Joey **CHUNG**, Yong **LI***

Purpose: To report the long-term safety and outcomes of topical atropine treatment for myopia during childhood.

Methods: Participants are adults recalled from the Atropine for the Treatment of Myopia (ATOM) 1 study (atropine 1% vs placebo, 20-year follow-up) and ATOM2 study (atropine 0.01% vs 0.1% vs 0.5%, 10-year follow-up). All patients underwent a detailed ophthalmologic examination including cycloplegic autorefraction, biometry, and fundus photography. The main outcomes were change in cycloplegic spherical equivalent (SE) with axial length (AL), and incidence of ocular complications.

Results: Among contactable subjects (n = 159/400, 39.8% ATOM1; n = 255/400, 63.8% ATOM2), we evaluated 71 (44.7%) ATOM1 and 158 (62.0%) ATOM2 subjects whose baseline characteristics did not differ from those who were uncontactable. In ATOM1 subjects, myopia progression and axial elongation from the final trial visit to the current study visit were not significantly different comparing atropine-treated eyes versus placebo (0.90 ± 1.21 D vs -0.94 ± 1.08 D (P = 0.89); 0.78 ± 0.64 mm vs 0.56 ± 0.66 mm (P = 0.19)). There was no significant difference in the 20-year incidence of cataract/lens opacities (P = 0.34), myopic macular degeneration (P = 0.56), or parapapillary atrophy (beta/gamma zone) (P = 0.69) compared to atropine-treated eyes versus placebo.

Conclusions: We found that topical atropine eyedrops ranging from 0.01% to 1.0% for a duration of 2-4 years during childhood for myopia control did not have an effect on myopia progression or increased incidence of treatment or myopia-related ocular complications 10 to 20 years after the cessation of treatment.

Poster No.: PO-258

The Basis of Increased High Myopia Prevalence

*First Author: Monica **JONG***
*Co-Author(s): Noel **BRENNAN**, Mark **BULLIMORE**, Xu **CHENG***

Purpose: To examine why the relative rate of change in the prevalence of high myopia may be disproportionate to the rate of change in the prevalence of myopia at higher prevalences of myopia.

Methods: Forty-three data sets from 23 papers with at least two prevalence values (e.g., ≤-0.50D and <-6.00D) myopia and widely varying myopia prevalence were used to model the slope of ln (Odds High Myopia) versus ln (Odds Myopia). The slope was highly repeatable across the progression range and was then used to calculate the expected ratio of the change in high myopia prevalence of myopia prevalence across myopia prevalence.

Results: Ln (Odds High Myopia) was highly correlated with ln (Odds Myopia) (r=0.85, p<0.001). At 25%, 50%, 60%, 70%, 80% and 90% myopia prevalence, the ratio of increase in high myopia prevalence (<-6.00D) to increase in myopia prevalence (<-0.50D) for every 1% increment in myopia prevalence is 0.11, 0.23, 0.34, 0.55, 1.04 and 2.61, respectively, demonstrating an exponential increase.

Conclusions: The claimed disproportionate increase in the prevalence of high myopia compared to that of myopia as the latter rises is merely a function of, and entirely explainable by, the underlying nature of refractive error probability distributions. It requires no further explanation, such as decreasing age of onset, faster progression among young children, or differences between races, as to its origin.

Poster No.: PO-260

The Binocular Visual Function in Young Adults Wearing With a Persistent History of Orthokeratology Lenses Correction

*First Author: Chen-shan **WEI***
*Co-Author(s): Hanyin **SUN**, Min-jia **SUN**, Ren-yu **YANG***

Purpose: To compare binocular visual function for wearing orthokeratology (OK) lenses, single-vision soft contact lenses, and single-vision spectacles in Taiwanese college students.

Methods: In the present retrospective study, 27 subjects were recruited and divided into three groups, based on their corrections: OK lenses (n=9), single-vision soft contact lenses (n=8), and single-vision spectacles (n=10). All subjects were aged between 18 and 22 years, with spherical refractions less than -5.00D, astigmatism lower than 1.00D, and continuously received the treatment for more than 5 years. Binocular vision function measurements included near point of convergence (NPC), amplitude of accommodation (AA), monocular and binocular accommodative facility, negative and positive relative accommodation (NRA and PRA), accommodative response, horizontal and vertical fusional vergences, horizontal and vertical phorias, and stereo-acuity.

Results: A significant difference in stereo-acuity among the three groups was found (p=0.027). For the break point of NPC test, the OK group had a higher value than the spectacle group (p=0.038), and there were differences in the recovery points of the NPC compared to spectacle (p=0.014) and contact lenses (p=0.025). No significant difference was found among the three groups in the other binocular visual function tests.

Conclusions: Young adults with a longer history of wearing OK lenses displayed lower stereo-acuities and had a higher mean break and recovery point compared to those with different corrective treatments. Therefore, the results indicate that OK lenses may influence stereo-acuities and convergence, and provide evidence that subjective binocular functions were not similar in different corrections.

Poster No.: PO-265

The Long-Term Efficacy and Safety of Topaz Orthokeratology Treatments on High Myopia Students in Taiwan

*First Author: Shang-yen **WU***
*Co-Author(s): Cheng-jen **CHIU**, Yuan-chieh **LEE***

Purpose: To analyze the efficacy and safety of the Topaz orthokeratology treatment on high myopia children at a tertiary hospital in Taiwan.

Methods: We reviewed clinical files of high myopic children who have worn Topaz orthokeratology from Mar. 2019 to Nov. 2021. The average clinical follow-up was 2–3 months. UCVA, BCVA and findings of slit-lamp examination of each visit were recorded. Corneal topography examination and axial length measurement were performed every 3 and 6 months.

Results: Twenty-four students were enrolled and 84% of the users were wearing and cleaning lenses by themselves. Around 91% of the wearers regularly visited the clinic and 73% of the users wore the lenses for more than 6 hours each day. Their average bare vision was -0.05±0.08 Log MAR, and males had better vision than females. Twenty-five eyes had clear vision all day, and the rate of clear day vision was higher in males than females. There was a slight decrease in AL during one-year follow-up. No threatening complication was found.

Conclusions: Topaz orthokeratology was safe and effective in vision correction and myopia control in high myopic eyes. For both sexes, the effect of myopia control was similar and axial length decreased slightly with age increase.

Poster No.: PO-263

The Synergistic Efficacy and Safety of Combined 0.01% Atropine and Orthokeratology for Prevention of Childhood Myopia: A 2-Year Randomized, Controlled, Double-Blind Multicenter Clinical Trial

*First Author: Bilian **KE***
*Co-Author(s): Ying **YUAN***

Purpose: To explore the efficacy and ocular surface safety of combined low-concentration atropine (AOK) and orthokeratology (OK) lenses for slowing the progression of myopia.

Methods: Children (n=96) aged 8-12 years with -1.00 to -4.00 D of myopia and astigmatism <1.50 D were randomly assigned to the AOK group or OK group at a ratio of 1:1. The primary outcome, axial elongation, was examined at baseline and visits at 6, 12, 18 and 24 months, along with secondary outcomes including tear meniscus height (TMH), non-invasive break-up time (NBUT), near visual acuity and distant visual acuity.

Results: Over the 24 months, the overall axial elongation was significantly slower in the AOK group than in the OK group (0.33 mm vs 0.43 mm, respectively; p = 0.004). In the subgroup analysis, there were significant differences in the change of axial length in the subgroup of subjects with an initial spherical equivalent refraction of -1.00 to -3.00 D or aged 8-10 years (p=0.017, 0.021, respectively). At the 24-month visit, the change of TMH, NBUT in the AOK group were 0.01mm and -0.46s, respectively, which were insignificantly different with 0.03mm and 0.66s in the OK group (p =0.344, 0.103, respectively). The near visual acuity and distant visual acuity were not significant between the two groups after 2 years of treatment.

Conclusions: There was a synergistic effect of a combined 0.01% atropine and OK lens over two years. And the combination of 0.01% atropine and OK lenses showed a tendency to reduce tear film stability.

Poster No.: PO-268

Time Trends in Myopia and High Myopia Prevalence in Young University Adults in China

*First Author: Hongmei **ZHANG***

Purpose: To investigate time trends in myopia and high myopia prevalence over 6 years among young university adults in China.

Methods: This is a 6-year series cross-sectional study from 2016 to 2021. A total of 4,910 freshmen enrolled from 2016 to 2021 at a Medical University completed a questionnaire concerning age, gender, and disease history. Students with eye diseases were excluded after a detailed eye examination. The refractive status was measured by non-cycloplegic objective refraction and ocular parameters were measured by Lenstar 900. The examination followed the same protocol each year. Trends over time in myopia, high myopia prevalence, and ocular biometry parameters were analyzed.

Results: From 2016 to 2021, the axial length (AL) and corneal radius (CR) increased significantly (p=0.002 for AL; p=0.04 for CR). However, the spherical equivalent (SE) and the ratio of axial length to the corneal radius (AL/CR) did not change significantly (p=0.59 for SE; p=0.24 for AL/CR). The frequency of AL ≥26.0 mm increased from 26.6% in 2016 to 29.3% in 2021 (p=0.05 for trend). The prevalence of myopia and high myopia did not change significantly in our study. Compared to a similar cross-sectional study conducted 10 years ago, the prevalence of myopia decreased significantly (94.9% vs. 91.8%, p<0.001). Whereas, the prevalence of high myopia increased largely (18.12% vs. 27.6%, p<0.001).

Conclusions: The prevalence of high myopia increased in young university adults during 10 years period. Myopia control should begin earlier in childhood, however, these treatments are still needed for high myopia even in young adulthood.

Neuro-Ophthalmology

Poster No.: PO-298

A Farewell Blinding Shot

*First Author: Reuben **FOO***
*Co-Author(s): Jing Liang **LOO**, Dan **MILEA**, Sharon **TOW**, Christine **YAU***

Purpose: To consider methanol poisoning as a possible cause of acute, painless, bilateral visual loss even in developed countries, due to the ease of travel.

Methods: We report a patient who regained good vision after methanol poisoning with timely intervention.

Results: A healthy 39-year-old Bangladeshi male presented with bilateral visual loss for 2 days. He had a mild headache, and abdominal discomfort but no pain in eye movement. Visual acuity was 6/60, with reduced color vision in both eyes. Both pupils were sluggish with a right grade 2 RAPD. Visual fields showed a dense right inferocentral defect and a left paracentral defect. Both discs were swollen. The rest of the examination was normal. Upon further inquiry, he admitted to drinking 50ml of alcohol shots with friends at a party in Bangladesh three nights prior to his return to Singapore. He denied any drug abuse. Urgent blood work showed a high anion-gap metabolic acidosis. Serum and urine samples confirmed methanol toxicity. MRI brain & orbits showed patchy contrast enhancement of both retrobulbar optic

nerves. He was given IV ethanol, folinic acid, NaHCO3 and underwent hemodialysis. He was also started on IV methylprednisolone for 5 days and tapering oral steroids. At 1 month, vision improved to 6/7.5 and his visual field defects resolved completely.

Conclusions: Methanol toxicity is a rare but serious condition that can cause bilateral, irreversible, severe visual loss. We need to take a comprehensive history and maintain a high index of suspicion. IV methylprednisolone is effective if instituted early.

Poster No.: PO-300

Adie's Tonic Pupil: A Commonly Missed Diagnosis of Anisocoria

*First Author: Raymac **ROSALES***
*Co-Author(s): Lourdes **ANG***

Purpose: Anisocoria can be an alarming ocular finding since it can be a presentation of life-threatening conditions, warranting immediate medical or even surgical intervention. Anisocoria, as an incidental finding during ocular examination, can lead to misdiagnosis and unnecessary workup.

Methods: This is a case of a 31-year-old female who presented to the outpatient clinics with a long-standing complaint of glare. Ocular examination yielded anisocoria, with the left pupil being more dilated (5.5 mm). The right pupil constricts briskly to light while the left pupil reacts poorly. Iris were dark brown in color with no visible damages, heterochromia nor synchiae noted. The left pupil is mid-dilated and irregular-shaped, with sectoral palsy and vermiform movement upon slit-lamp examination.

Results: Both pupils, however, reacted well to accommodation. The left pupil constricted to 3.5 mm after the instillation of diluted pilocarpine, whereas the right pupil size remains the same, thus the consideration of Adie's Tonic Pupil.

Conclusions: In patients with anisocoria, it is important to assess completely the pupil and its reaction to different stimuli as well as accompanying ocular or systemic symptoms. The commonly missed case of Adie Tonic Pupil happens because of a lack of ocular complaints. Neuro-imaging and other work-ups may not be warranted, especially in unilateral and asymptomatic cases, but may be optional to rule out any organic causes. Treatment depends on patients' symptoms and how it affects their daily activities. If not warranted to treat pharmacologically, clinical observation along with monitoring for any progression of other ocular symptoms is sufficient.

Poster No.: PO-278

Bilateral Horizontal Gaze Palsy in a Young Patient

*First Author: Rusti **SARI***
*Co-Author(s): Antonia **INDRIATI**, Bambang **SETIOHADJI**, Dianita **VEULINA**, Prettyla **YOLLAMANDA***

Purpose: Bilateral horizontal gaze palsy is a rare disorder which has been reported in pontine lesions due to infarction, haemorhage, or metastasis. Demyelinating lesions due to multiple sclerosis may also be responsible for bilateral horizontal gaze palsy. Eye movement abnormality can be shown either at the onset or during the course of the disease, but often, it is underdiagnosed. The purpose of this study is to report bilateral gaze palsy as the first manifestation of multiple sclerosis in a young patient.

Methods: A case report of a 19-year-old boy with sudden onset of horizontal binocular diplopia a week ago before admission. The patient had a history of seizure 1 year ago. Ophthalmic examination revealed visual acuity in both eyes was 1.0. His primary position is esotropia, there was limitation of adduction and abduction on both eyes. The anterior segment showed direct and consensual light reflexes were decreased in both eyes. The Humphrey visual field test showed mild homonymus hemianopia sinistra. The patient was diagnosed with bilateral horizontal gaze palsy due to a pontine lesion and homonymus hemianopia sinistra. Magnetic Resonance Imaging examination showed multiple hyperintense lesions in the cerebral juxtacortical, periventricular, corpus callosum, and brachium pontis on both sides.

Results: Ophthalmic examination after high-dose oral corticosteroid treatment showed improvement in ocular movement and visual field.

Conclusions: Eye movement abnormality can occur in demyelinating lesions. Detailed neuro-ophthalmic examination with visual complaints often yields a diagnosis with highly specific neuroanatomic localization. In turn, thorough evaluations may suggest targeted symptomatic therapies and enhance the ability to monitor disease progression.

Poster No.: PO-302

Blindness Due to the Third Eye – Sudden Vision Loss in Pineal Gland Tumour

*First Author: Sameer **CHAUDHARY***
*Co-Author(s): Kowsalya **AKKAYASAMY**, Jayasri **KN**, Sagnik **SEN**, Maheshkumar **SHANMUGAM***

Purpose: Pineal region tumours, due to their close anatomical relation to the midbrain and aqueduct of Sylvius, often result in clinical features secondary to the compression of the latter. However, they are not known to cause sudden visual loss, with only three reports documenting the same. In this case, we

describe a unique presentation of sudden visual loss in a child with a pineal gland tumour associated with one-and-a-half syndrome and Parinaud's syndrome.

Methods: This study examined the record of one patient with sudden vision loss. Demographic data and detailed history were recorded, and a comprehensive clinical examination was done at the presentation and follow-up. Neuroimaging, along with a detailed record of the surgical intervention, was obtained.

Results: A 9-year-old child presented with one week of sudden-onset vision loss with nil light perception (NLP). Features suggestive of Parinaud's syndrome and one-and-a-half syndrome were present. Fundus examination was unremarkable, without disc oedema or pallor. Neuroimaging revealed a pituitary region tumour compressing the adjacent structures. Ventriculoperitoneal shunting followed by surgical removal of the tumour was done. Visual acuity improved from NLP to 1/60 in the right eye and counting fingers in the left eye. The cause of sudden vision loss was attributed to subclinical compression of the optic chiasma by a dilated and anteriorly displaced third ventricle.

Conclusions: This case highlights that pineal region masses can be a rare cause of sudden visual loss, which can be managed in collaboration with neurosurgeons.

Poster No.: PO-291

COVID-19 Vaccine Associated New Onset Ocular Myasthenia Gravis: Treatment Outcome With Pyridostigmine Alone Without the Use of Immunosuppressive Therapy

First Author: Julian Rafaello ***MALABANAN***
Co-Author(s): Marianne ***CARABEO***

Purpose: To describe the ophthalmologic findings and discuss the treatment options of new-onset ocular myasthenia gravis associated with COVID-19 vaccination presenting with diplopia, ptosis, ophthalmoplegia and its treatment outcome using acetylcholinesterase inhibitor alone without the use of immunosuppression.

Methods: Case Report.

Results: A 35-year-old female, Filipino, presented with diplopia, ptosis, and ophthalmoplegia 2 days after receiving a Pfizer-BioNTech (BNT162b2) vaccine booster dose. Examination revealed variable and fatigable ptosis with ophthalmoplegia in the absence of generalized symptoms. Diagnostic workup revealed an abnormal single nerve fiber electromyography with a normal MRI of the brain and orbit as well as a normal CT of the chest. The patient was started on pyridostigmine (mestinon) without immunosuppression to avoid reducing the effectiveness of the vaccine. The ptosis, ophthalmoplegia, and especially diplopia gradually resolved with Pyridostigmine (Mestinon) alone. The final eyelid exam and motility exam revealed no remaining residual symptoms.

Conclusions: Ocular Myasthenia as an adverse event of the COVID-19 vaccine is rare, and no causal link has been established yet. Treatment should aim to improve the symptomatology of the patient without compromising the effectiveness of the vaccine. Good control of symptoms in ocular myasthenia can be safely achieved in this case by giving anticholinesterase inhibitors while withholding immunosuppression to maximize the benefit of the vaccine.

Poster No.: PO-289

Causes of Papilledema in Paediatric Age Group: An 11-Year Hospital-Based Study in North-Eastern India

First Author: Hiranmoyee ***DAS***

Purpose: The diagnosis of papilledema carries with it a heavy responsibility. Knowledge of common causes of papilledema in a certain geographical area will guide us in early diagnosis & cost-effective management. Therefore, this study was done to find out various causes of papilledema in the paediatric age group in a tribal-dominated population in northeastern India, which is located at 5,000 feet above sea level.

Methods: A total of 170 patients having papilledema from January 2011 to December 2021 were studied prospectively & followed up to 3 months.

Results: Cases were divided into 3 age groups: (0-3) yrs, (4-12) yrs & (13-18) yrs. 43.52% of cases were infection, 32.94% space occupying lesion (SOL), 10.59% intracranial complication of middle ear infection, 8.23% pseudotumor cerebri & 4.70% hypertension. Among the infective group, 56.76% tuberculosis, 27.02% viral, 12.16% bacterial &4.05% of fungal etiology. Among SOL 30.35% tumors, 30.35% tuberculoma, 17.85% intracranial hematoma, 10.71% brain abscess &10.71% neurocysticercosis. In 0-3yrs the commonest etiology was an infection; in 4-12 years, it was SOL; and in 13 -18 years, the incidence of various etiology was almost the same. The earliest regression of papilledema was seen at the end of one month & it was maximum in cases with infective origin.

Conclusions: Important findings were: (1) Tuberculosis (either in the form of tubercular meningitis or brain tuberculoma) as the most common cause. (2) Complication of middle ear infection (higher altitude location of study region) (3) Neurocysticercosis (due to the habit of taking smoked pork in the tribal-dominated study population). This study will guide us in the early management of papilledema cases in underdeveloped areas.

Poster No.: PO-273

Central and Peripheral Contrast Sensitivity in Pituitary Macroadenoma: An Overlooked Parameter

*First Author: Hennaav **DHILLON***
*Co-Author(s): Itisha **GOEL**, Parul **ICHHPUJANI***

Purpose: To establish the importance of peripheral contrast sensitivity via free online access based "Spaeth/Richman Contrast Sensitivity Test (SPARCS)" in a case of Pituitary Macroadenoma.

Methods: A 44-year-old woman was diagnosed with a case of PA, and she underwent pre- and post-operative diagnostic tests, including best-corrected visual acuity, central and peripheral contrast sensitivity, and visual fields. She also underwent a comprehensive systemic and neurologic evaluation pre- and post-tutor resection. All parameters were followed up to 6 months.

Results: Post-operatively, at 2 weeks, BCVA was 20/20 OU with complete recovery of colour vision and improvement in the central as well as the peripheral CS OU: OD showed a total score of 80 (17.43, 14.04, 17.43, 15.93, 14.87 in the ST, SN, central, IT and the IN quadrant respectively). OS showed a total score of 73 (14.87, 14.87, 14.04, 14.04, 14.87 in the ST, SN, central, IT, IN quadrant respectively). The HVF 30-2 threshold program showed partial resolution of the bi-temporal hemianopia. At 3 months, there was complete recovery of BCVA/ CS both central and peripheral and HVF.

Conclusions: Evaluation of CS, both peripheral and central, is a simple and effective tool for monitoring and early detection of visual dysfunction in patients with pituitary adenomas. This offers the possibility for early surgery and visual recovery, thus preventing permanent visual damage.

Poster No.: PO-292

Clinical Presentations and Treatment Outcomes of Myelin Oligodendrocyte Glycoprotein Antibody-Associated Disease (MOGAD) Associated Optic Neuritis: A Single Center Case Series in a Tertiary Eye Hospital in Jakarta, Indonesia

*First Author: Alia **ARIANTI***
*Co-Author(s): Viona **VIONA***

Purpose: The objective of this case series is to present the clinical characteristics and treatment outcomes of MOGAD-associated optic neuritis as observed within our institution.

Methods: This study was a single-center case series. Inclusion criteria were patients from January 2021 to January 2023, maintained a follow-up of at least 6 months, were aged above 18 years, met the diagnostic criteria for MOGAD, and had comprehensive clinical data, inclusive of serology test results and brain MRI scans.

Results: Five cases were included in this study, comprising 80% female and 20% male patients. The disease onset prior to admission ranged from 3 days to 3 months. The mean age was 45.12 ± 13.29 years. Optic neuritis manifested as unilateral cases in 40% and bilateral cases in 60%. All patients tested positive for anti-myelin oligodendrocyte glycoprotein and negative for aquaporin-4 (IgG). All MRI scans indicated the presence of long-segment optic nerve involvement. While the extent and location of optic nerve involvement differed among the cases, most cases exhibit a more anterior involvement of the optic nerve segment. No other neurological deficits were observed in the patients; hence, spinal MRIs were not conducted. Treatment involved intravenous methylprednisolone (IVMP) followed by oral corticosteroids, tailored to the severity of the disease, and immunosuppressive agents. During the follow-up period, none of the patients experienced a relapse. Favorable visual recovery was observed in all patients following treatment.

Conclusions: This single-center case series provided insights into the clinical characteristics and treatment outcomes, highlighting the diverse manifestations of MOGAD-associated optic neuritis.

Poster No.: PO-284

Cryptic Idiopathic: A Case of a 39-Year-Old Male With Idiopathic Intracranial Hypertension

*First Author: Michael **SIBULO***

Purpose: To present a case of idiopathic intracranial hypertension in a male patient.

Methods: A 39-year-old overweight male Filipino IT employee consulted for a 3-month history of painless blurring of vision on the right eye and TVO. He was initially diagnosed with dry eye disease and advised to continue spectacle use. The blurring of vision progressed, TVOs increased to 15 episodes per day, accompanied by pulsatile tinnitus. No episodes of headaches were reported.

Results: His best corrected visual acuity was 20/80 on the right and 20/50 on the left with bilateral disc swelling. Normal Ishihara, pupils and motility. Perimetry revealed bilateral blind spot enlargement. Thickened retinal fiber layer on optical coherence tomography. MRI of the brain and orbits with contrast were suggestive of IIH. Blood parameters, neuropathy screening, cranial MRV and CSF cytology were normal. Lumbar puncture opening pressure of 47mmHg. He was given 2g oral daily acetazolamide, but papilledema remained at Frisen 4-5. He underwent ventriculoperitoneal shunt insertion via

neuronavigation. Papilledema resolved and vision returned to 20/20.

Conclusions: When confronted by a patient with bilateral disc swelling, urgent imaging is needed to rule out life-threatening disease. IIH is a diagnosis of exclusion. It is best to rule out more common causes such as compression, inflammation, and autoimmune. IIH can rarely occur in males. In cases where vision is threatened, surgical management is an option, either through VP shunt placement or optic nerve fenestration.

Poster No.: PO-274

Effect of Oral Vitamin D3 Administration on Malondialdehyde Expression and Retina Ganglion Cell Density (Experimental Study of Wistar Rats Administered Ethambutol)

First Author: Ni Made Helen Virginia ***JACOB***
Co-Author(s): A Rizal ***FANANY****, Trilaksana* ***NUGROHO****, Riski* ***PRIHATNINGTIAS****, Arief* ***WILDAN***

Purpose: To prove the effect of oral vitamin D3 on MDA expression and retinal ganglion cell density in Wistar rats given ethambutol.

Methods: A true experimental design using Wistar rats divided into 2 groups for 30 days. Given ethambutol and oral vitamin D3 as a treatment and ethambutol without oral vitamin D3 as a control. MDA expression was examined by Immunohistochemistry staining and retinal ganglion cell density was examined by Hematoxylin Eosin staining. Data was collected and processed and then Mann-Whitney analysis was performed for MDA expression data and independent T-Test analysis for retinal ganglion cell density data. Then we analyzed the correlation between the two variables with Spearman's correlation test (Significant $p < 0.05$).

Results: Analysis of MDA expression in the treatment group obtained Mean ± SD (4.40 ± 0.55) and the control group (4.80 ± 1.30) with $p = 0.511$. Analysis of retinal ganglion cell density in the treatment group obtained Mean ± SD (11.36 ± 0.52) and the control group (9.72 ± 1.09) with a $p = 0.016$. Correlation analysis of MDA expression with retinal ganglion cell density obtained $p=0.889$.

Conclusions: MDA expression in the treatment group is lower than in the control group. The retinal ganglion cell density of the treatment group was significantly higher than that of the control group. There was no significant relationship between MDA expression and retinal ganglion cell density.

Poster No.: PO-296

Establishment of a Novel Optic Nerve-Specific In Vivo Mouse Model of Neuromyelitis Optica Spectrum Disorder Related Optic Neuritis

First Author: Shaoying ***TAN***
Co-Author(s): Xiayin ***YANG***

Purpose: The optic nerve is one of the predominant targets of neuromyelitis optica spectrum disorder (NMOSD), which often leads to permanent vision loss, so call NMOSD-related optic neuritis (NMOSD-ON). Most of the in vivo NMOSD experimental models are unable to directly reveal the pathogenesis in optic nerves. Therefore, this study aims to establish a novel optic nerve-specific mouse model of NMOSD-ON.

Methods: The study mice were treated with intracranial injection (near the optic chiasm) of aquaporin-4 IgG (AQP4-IgG) and human complement, or complement alone as a control. Histology and immunofluorescence staining of the retina and optic nerves, western blot, and retinal structural evaluation were performed to determine the pathogenesis profile of axonal injury, retinal ganglion cells (RGCs) damage, and neural recovery.

Results: A total of 56 mice were included in our study. In the induced disease animals, the deposition of AQP4-IgG within the optic nerve was confirmed by the presence of staining by the anti-human IgG. A significant AQP4 loss at 1 week ($p<0.001$) and partial recovery at 2 weeks was observed. The CD68-labelled microglia were upregulated at 1 week after animal model induction ($p<0.01$), and the axon, myelin sheath, and number of RGCs experienced loss progressively ($p<0.01$). The in vivo imaging showed a thickening trend in the retinal nerve fibre layer (RNFL) while a thinning trend in the inner nuclear layer (INL) during the disease progress.

Conclusions: The novel model established in this study will provide an ideal platform for follow-up studies on the characteristics, pathogenesis, and new therapeutic development in relation to NMOSD-ON and NMOSD.

Poster No.: PO-286

Foster Kennedy Syndrome Secondary to Sphenoid Wing Meningioma: A Case Report

First Author: Daniel ***RANGGADWIPA***
Co-Author(s): Riski ***PRIHATNINGTIAS***

Purpose: Foster Kennedy syndrome is a rare neurological condition characterized by a gradual loss of vision loss with optic atrophy in one eye and significant papilledema in the fellow eye. The presence of unilateral optic disc atrophy is primarily caused by an ipsilateral intracranial tumor, along with contralateral optic disc edema due to elevated intracranial pressure.

Methods: A 46-year-old female with a medical history of left sphenoid wing meningioma presented complaining of acute visual loss in her left eye accompanied by headache and vomiting. A relative afferent pupillary defect was present in the left eye. Disc pallor in her left eye and disc edema in the opposite eye were discovered during the funducopy examination. A computed tomography scan revealed an enhaced rounded, well-circumscribed and hyperdense mass lesion with a regular border over the left sphenoid wing accompanied by perifocal edema.

Results: An open craniotomy was scheduled, and antiedema therapy was started with intravenous dexamethasone and manittol.

Conclusions: Foster Kennedy syndrome is a rare constellation of clinical signs and symptoms that may appear suddenly with decreased visual acuity. Complete history taking, ocular evaluation, and neuroimaging are required to provide an appropriate diagnosis of Foster Kennedy syndrome. Management and prognosis of Foster Kennedy syndrome depend on the underlying condition.

Poster No.: PO-277

From Black to Bright: Decoding the diagnostic dilemma of Retrobulbar Optic Neuritis in Children

*First Author: Gargi **WAVIKAR***
*Co-Author(s): Nilutparna **DEORI**, Ganesh Ch **KURI***

Purpose: To characterize optic neuritis in children with a normal optic disc appearance and to assess the impact of prompt administration of high-dose intravenous steroids on the disease course.

Methods: Three children (2 males, 1 female, age group 9-13 years) with sudden profound diminution of vision, unilateral in one case and bilateral in two cases, pain on ocular movements, normal optic disc appearance underwent magnetic resonance imaging showing perineural edema with T2 hyperintensity and diffusion restriction suggestive of retrobulbar optic neuritis. One patient with bilateral involvement was positive for neuromyelitis optica (NMO) and myelin oligodendrocyte glycoprotein (MOG) antibodies and developed vision loss 3 weeks after onset of autoimmune encephalitis. All three patients were administered high-dose intravenous methylprednisolone (IVMP) for 3 days, followed by oral prednisolone within 1 week of the onset of vision loss. The fourth patient, a 5-year-old male, presented a diagnostic dilemma: bilateral vision loss for 8 days, 1 month following encephalitis, headache, seizures for 2 weeks, no light perception in both eyes, and papilledema. Intracranial tension was found to be raised. Close ophthalmic follow-up was advised.

Results: Children treated with IVMP showed drastic clinical improvement with an eventual best-corrected distance visual acuity of 6/9 in the affected eye (s). In the fourth patient, however, vision loss persisted.

Conclusions: A high degree of clinical suspicion is essential in the diagnosis of retrobulbar optic neuritis in children, given the paucity of clinical findings. Prompt treatment with high-dose intravenous steroids results in a bright visual prognosis.

Poster No.: PO-288

Giant Cell Arteritis Across Borders: A Story in a Malay Male

*First Author: Nurul Adibah **ABDUL RAHMAN***
*Co-Author(s): Nurliza **KHALIDDIN**, Mimiwati **ZAHARI***

Purpose: To report a case of unilateral arteritic anterior ischemic optic neuropathy (AAION) of giant cell arteritis (GCA) with confirmation of temporal artery biopsy (TAB) in an elderly Malay man, of which prevalence is rare among Asians compared to Caucasians.

Methods: Case report.

Results: An 85-year-old gentleman with bilateral pseudophakia and end-stage renal failure on regular hemodialysis presented to the emergency department (ED) with acute vision loss of his left eye post-intra-dialytic hypotension. He had a history of visiting the ED due to unexplained headaches and jaw stiffness and was treated with painkillers by the dental team. Thorough examination revealed positive relative afferent pupil defect (RAPD) over the left eye with a visual acuity of light perception and 6/9 in the right eye. Posterior segment examination of the left eye revealed a pale and swollen optic disk. Temporal artery revealed beading and prominence, however no scalp tenderness or necrosis. Computed tomography (CT) of the brain showed only multifocal chronic infarct without acute findings. His erythrocyte sedimentation rate (ESR) was elevated. He was treated with a high dose of intravenous methylprednisolone and confirmed of GCA by TAB. He was referred to the rheumatology team for further evaluation and treatment.

Conclusions: While GCA is rare in the Asian population, it is essential to quickly identify, diagnose, and begin treatment to avoid the risk of further complications.

Poster No.: PO-279

Headache Is the Only Symptom of the Intracranial Lesion Presenting a Visual Field Defect: A Case Report

*First Author: Lukisiari **AGUSTINI***

Purpose: To report a case when a patient came to the ophthalmologist with a headache around the orbita that travelled to the back head as the only symptom, which was presumed as a problem with her eye.

Methods: A 25-year-old woman came to an outpatient clinic with a chief complaint of a headache around

the orbita that travelled to the back head. The visual acuity of the right eye was 5/30 with BCVA 5/5, and the left eye was 5/40 with BCVA 5/5. The Ishihara test was 14/14 in both eyes. The intraocular pressure of the right eye was 14.6 mmHg, and that of the left eye was 14,6 mmHg. The anterior segment showed rounded pupils, isochoric 3 mm, normal light reflex, and no RAPD. There were no limitations and pain in ocular motility. The posterior segment showed normal. OCT showed normal RNFL thickness in both eyes. Blood investigation and liver and renal function tests revealed normal. A Humphrey visual field analysis revealed homonym incongruent superior left quadranopsia. These findings created suspicion that other pre-existing diseases or another differential diagnosis must be excluded from these findings; therefore, imaging is mandatory.

Results: MRI showed an encephalomalacial cyst in the right temporal lobe. MRI also revealed Arnold Chiari malformation with syringomyelia. Communicating hydrocephalus was also noted on MRI and caused by obstruction under Luscha-Magendie foramen with periventricular edema.

Conclusions: Headaches are the most ubiquitous. Most headaches do not reflect serious pathology, but the headache's coincidence with visual field defects must be a concern for the existence of intracranial pathology. Complete neuroophthalmologic evaluation is essential for diagnosis.

Poster No.: PO-287

Hidden Wonders of Wegener's: Tolosa Hunt Syndrome as a Limited Form of Wegener's Granulomatosis

*First Author: Alyssa Marie **HIZON***
*Co-Author(s): Marianne **CARABEO***

Purpose: To discuss a case of a limited form of Wegener's granulomatosis presenting with recurrent neuro-ophthalmic conditions, approach to diagnosis and management.

Methods: A 34-year-old female was previously diagnosed with Tolosa-Hunt Syndrome and optic neuritis in her left eye 6 months prior. Vision deteriorated to light perception but recovered to 20/20 after pulse steroid therapy. The patient now manifests with binocular horizontal diplopia without other ocular symptoms. Best corrected visual acuity was 20/20, abducens nerve palsy bilaterally, and Frisen 4 disc swelling on both eyes with intact color vision. Infectious, inflammatory, and biochemical tests were unremarkable except for the presence of perinuclear anti-neutrophil cytoplasmic antibodies (p-ANCA). Lumbar puncture opening pressure was 40mmHg. Imaging showed nodules in the lungs, pachymeningiopathy in the brain, and signs of increased intracranial pressure but no recurrence of Tolosa-Hunt Syndrome. She was co-managed with neurology, rheumatology and otorhinolaryngology and treated with 1 gram intravenous methylprednisolone for 5 days and 1 gram oral acetazolamide with slow oral taper. Complete resolution of papilledema and diplopia were noted within 1 month.

Results: p-ANCA autoantibodies play a role in certain autoimmune diseases involving small vessels. It targets neutrophils and triggers an inflammatory response, causing damage to the vessel walls of organs. Neuro-ophthalmic involvement may potentially manifest as optic neuritis, cranial neuropathies, retinal vasculitis, and ischemic optic neuropathy.

Conclusions: This case underscores the presence of recurrent neuro-ophthalmic manifestations in Limited Wegener's Granulomatosis. A multidisciplinary approach is essential to explore potential complications affecting the cerebral, oculorhinal, and pulmonary systems. Early detection and proper management are critical for optimal outcomes.

Poster No.: PO-295

Hyperglycemic Hemianopia: A Reversible Complication of Non-ketotic Hyperglycaemia

*First Author: Caius **GOH***
*Co-Author(s): Eunice **GOH**, Goh **KONG YONG***

Purpose: To report a case of reversible visual field defect from non-ketotic hyperglycaemia.

Methods: A case report.

Results: A 56-year-old female complained of painless blurring of vision in her left visual field associated with seeing non-existent images of trees, grass, and people. She has diabetes mellitus and hyperlipidaemia. On examination, her best corrected visual acuity was 6/7.5 in both eyes. Her intra-ocular pressures and colour vision were normal. The neuro-ophthalmic examination was essentially normal except for left-sided hemianopia on confrontation. Fundoscopy was normal without any diabetic retinopathy detected. An automated perimetry confirmed the presence of a left incomplete homonymous hemianopia. MRI of the brain did not reveal any cerebral infarcts nor haemorrhage. There were numerous punctate foci of T2 and FLAIR hyperintensities, in the centrum semiovale bilaterally, deep and periventricular white matter of both cerebral hemispheres with no discernible enhancement. Her presenting fasting blood glucose level was 17.7 mmol/L and her HBA1c was 11%. The blood glucose level was brought under control with s/c injection insulin; gliclazide 60 mg bd; metformin 850 mg tds and sitagliptin 100 mg om. Her visual field defect began to resolve 1 week after her blood glucose was brought under control. Four months later, no field defects were detected on automated perimetry.

Conclusions: Severe non-ketotic hyperglycaemia can cause reversible field defects as well as palinopsia. It is

important to check the fasting blood glucose level of diabetic patients who present with visual field defects.

Poster No.: PO-299

Insidious Right Visual Loss As the First and Sole Manifestation of Brain Metastasis From a Gastro-Intestinal Origin Malignancy: A Case Report

*First Author: Chenghao **SUNG***
*Co-Author(s): Shu-chun **KUO**, Chia Yi **LEE**, Wan-ju annabelle **LEE**, Yu-shiuan **LIN***

Purpose: To present a case with gradual right vision loss without other neurological signs, later diagnosed with metastatic adenocarcinoma located adjacent to the right orbital apex.

Methods: A case report and literature review.

Results: A 59-year-old male presented with gradual loss of right eye vision without other neurologic symptoms. No paresthesia, ophthalmoplegia, orbital pain, or visual field defects. The best-corrected visual acuity was light sense negative in OD and 1.0 in OS. Intraocular pressure was OD 15.8 and OS 14.4 mmHg. There was no limitation of eye movement. A mid-dilated right pupil lost its direct light reflex but retained its indirect light reflex, and vice versa in the left eye. Positive relative afferent pupillary defect in OD was noticed. Fundus exam, macular and disc ocular coherence tomography revealed normal results, OU. Visual field analysis showed total depression, -31.94 db in OD. Brain MRI with contrast revealed an enhancing mass with a diameter of 2.2 centimeters surrounding the right optic nerve, located adjacent to the orbital cone. The right extraconal extradural tumor was later removed, and the pathology reported an epithelial tumor with glandular differentiation, with an Immunohistochemical (IHC) stain showing positive in CK7, CK20, and CDX-2, highly suspect of gastrointestinal tract origin. Due to elevated serum CA19-9, the further survey revealed a metastatic liver tumor with positive IHC stain in CK7, CK19, and CDX-2. Nevertheless, the colonoscopy revealed only adenoma with dysplasia only. He's undergoing chemotherapy with a regimen against metastatic colorectal cancer currently.

Conclusions: We successfully recognized the first manifestation of brain metastasis from an occult gastrointestinal malignancy in this case.

Poster No.: PO-306

Intracranial Neoplasms Presenting with Visual Symptoms: A Case Series

*First Author: Wan-ju annabelle **LEE***
*Co-Author(s): Tim Yi-ting **CHEN**, Shu-chun **KUO***

Purpose: The objective of this study is to investigate the most common intracranial neoplasm that initially presents as visual disturbance. The aim is to analyze the common visual symptoms associated with primary intracranial neoplasms.

Methods: This study employed a retrospective, observational case series design. The study included all patients who presented with visual symptoms and received a diagnosis of intracranial neoplasm at the neuro-ophthalmology department of Chi Mei Medical Center in Taiwan between January 2021 and March 2023. The decision to perform surgery was made by neurosurgeons based on the severity of the patients' clinical symptoms. Detailed patient histories, ocular symptoms and signs, tumor types, treatment methods, and visual prognosis were recorded and assessed.

Results: Nine cases (3 men, mean age: 41.22±12.16 yrs.) were included in this study. Duration of symptoms ranged from one day to several years, with the most common complaint being blurred vision (n=6). Common findings included visual field defect (n=6), increased cupping (n=5) and elevated IOP (n=4). The most common type of intracranial tumor was pituitary adenoma (n=5). Four patients underwent surgical intervention. Visual prognosis ranged from worsening from 0.6 to 0.2 following surgery to remaining stable at 1.0 without surgery.

Conclusions: Visual symptoms stemming from intracranial neoplasms often exhibit a slow and diverse progression. It is imperative to conduct thorough evaluations to consider the possibility of these neoplasms as a potential diagnosis. Regardless of the chosen treatment approach, regular follow-up is essential due to the unpredictable nature of the visual prognosis.

Poster No.: PO-304

Involvement of Endoplasmic Reticulum Stress in Trigeminal Ganglion Corneal Neuron Injury in Dry Eye Disease

*First Author: Jinyu **ZHANG***

Purpose: Dry eye disease (DED) is a multifactorial disease with a high prevalence worldwide. Uncomfortable corneal sensations severely affect daily life in DED patients. Hence, corneal neuron injury is a vital pathogenesis in DED. Notably, endoplasmic reticulum stress (ERS) plays a role in peripheral neuron injury. However, the role of ERS in DED corneal neuron injury is still far from being clear. This study is aimed to investigate the impact of ERS in DED corneal neuron injury.

Methods: Firstly, we established an environmental DED (eDED) model in vivo and a hyperosmotic DED model in vitro. Subsequently, trigeminal ganglion (TG) corneal neurons were retrograde labeled by WGA-Alexa Fluor 555, and fluorescence-activated cell sorting was used to collect targeted corneal neurons for RNA sequencing in mice.

Results: Our results revealed that TG corneal neuron injury but not apoptosis in DED. ERS-related genes and proteins were upregulated in TG corneal neurons of the eDED mice. ERS inhibition alleviated TG corneal neuron's ERS-related injury.

Conclusions: ERS-induced TG corneal neuron injury may be an important pathomechanism and provide a promising therapeutic approach to DED.

Poster No.: PO-301

Macular Thickness Alterations in Patients With Leber Hereditary Optic Neuropathy

*First Author: Jincui **WANG***
*Co-Author(s): Shaoying **TAN**, Xiayin **YANG***

Purpose: This study aims to illustrate the changing rate of the macular thickness (MT) in different durations by Optical Coherence Tomography (OCT) in Leber Hereditary Optic Neuropathy (LHON). Moreover, it also investigates to differentiate those patients with 11778 mutations from those patients with 14484 mutations.

Methods: The patients with LHON were divided into 8 groups with respect to the duration dated from the onset of the disease. The MT in ETDRS quadrants on OCT across different durations were compared. The MT between patients with 11778 mutations and 14484 mutations was also compared over different durations.

Results: A total of 186 eyes were recruited. The MT experienced a significant reduction in the parafoveal superior (median 312.0 µm to 295.0 µm; P=0.015), parafoveal inferior (median 299.5 µm to 282.5 µm; P=0.027) and parafoveal temporal (median 297.0 µm to 283.0 µm; P=0.022) quadrants at 1-3 months as compared to within 1 month. The MT in all quadrants underwent a significant decrease of MT at 3-6 months as compared to 1-3 months. The significant difference of MT was found between patients with 11778 mutation and 14484 mutation, especially in 3 – 6 months, all quadrants tend to be thinner in patients with 11778 mutation compared to 14484 mutation.

Conclusions: Thinning MT was identified across different durations in LHON. This study provided vital information for the diagnosis of LHON and help to differentiate LHON patients with 11778 mutations from 14484 mutations by MT.

Poster No.: PO-307

Monocular Blindness Caused by Craniopharyngioma in a Young Man

*First Author: Nhi **NGUYEN***
*Co-Author(s): Hoang Tran Quoc **NGUYEN***

Purpose: To report a case of craniopharyngioma diagnosed in a young man with unilateral visual loss.

Methods: This is a case report.

Results: A 37-year-old man presented with painless progressive vision loss in his left eye for 6 months. He had no other symptoms and his medical history was unremarkable. The visual acuity of his right eye was 20/20 and that of his left eye was hand movement. An ocular examination of his left eye showed a hyporeactive pupil with a relative afferent pupillary defect (RAPD). There was mild pallor of the left optic nerve on fundus examination and thinning of the retinal nerve fiber layer on OCT. Given the clinical manifestations, compressive optic neuropathy was suspected and a brain and orbit MRI was ordered. The result revealed a cystic suprasellar mass measuring 28 x 16 mm, compressing the optic chiasm. The patient was diagnosed with craniopharyngioma and was referred to neurology for treatment.

Conclusions: Craniopharyngioma is generally considered a pediatric disease but can be diagnosed in adults. Although patients usually present with visual field defects, most commonly temporal hemianopsia, compression of the chiasm to one side by the tumor can cause unilateral visual loss.

Poster No.: PO-272

Neuro-Systemic Manifestations & Biochemical Profile of Wilson Disease Patients With Variable Degrees of Kayser Fleischer (KF) Ring

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Purpose: To report neuro-systemic manifestations and biochemical profiles of patients with suspected Wilson disease referred from a tertiary neurology center to a tertiary eye care center.

Methods: A prospective analysis of patients with suspected Wilson disease referred to the tertiary eye care outpatient department from January 2020 to June 2022 was done. All the patients underwent detailed ocular evaluation. Patients were grouped depending on the number of clock hours of involvement of the Kayser Fleischer (KF) ring. In those where slit lamp examination could not confirm the presence of a KF ring, gonioscopy +/- anterior segment optical coherence tomography was performed. Analysis of ocular features, associated neuro systemic features and biochemical profile was performed.

Results: A total of 60 patients were evaluated. 45% (n=27) had presence of KF ring. The mean age was 19 years (range 3-67 years). Mean+/-SD BCVA was 0.16+/-0.51 LogMAR. 100% of patients had bilateral (92.59% symmetrical) involvement of KF ring. 22.22% (n=6) had abnormal fundus features like attenuated arterioles, pigmentary retinopathy and/or chorioretinal atrophy. None of the patients had associated cataract.

74.07% of patients had neurological manifestations like tremors, spasticity/ dystonia. 48.14% had behavioral issues, whereas 51.85% had associated hepatic problems. Hepatic problems (66.66%) and behavioral issues (53.33%) were more common in patients with KF ring involving >6 clock hours. The mean 24-hour urinary output of copper was 299.25micogram/day; mean serum ceruloplasmin levels were 14.11mg/dL. Denser KF rings were associated with increased urinary copper output and relatively lesser ceruloplasmin levels.

Conclusions: Denser distribution of the KF ring is associated with increased 24-hour urinary output of copper, reduced serum ceruloplasmin levels, and increased neuro-systemic association.

Poster No.: PO-294

Neuromyelitis Optica IgG Causes Primary Retinal Damage via Interactions Between Müller Cells and Microglia

*First Author: Biyue **CHEN***
*Co-Author(s): Shihui **WEI***

Purpose: To explore the mechanism of Neuromyelitis Optic (NMO) IgG inducing primary retinal lesions through the interaction between Müller cells and microglia.

Methods: Patient serum-purified NMO-IgG was delivered to C57/BL6 mice by intravitreous injection. The structural and functional abnormalities of the retina were detected by optical coherence tomography (OCT), electroretinography (ERG), real-time fluorescence quantitative PCR (RT-qPCR), and immunofluorescence. The remission of retinopathy was assessed following microglial depletion using PLX3397. Transwell co-culture of MIO-M1 and BV2 was constructed to reveal the interaction between Müller cells and microglia.

Results: In vivo, the deposition of NMO-IgG in the retina and reduction of AQP4 expression in Müller cells were observed after purified NMO-IgG intravitreous injection. Evans Blue staining showed different degrees of vascular leakage. Loss of retinal ganglion cells (RGCs) with thinning of the retinal nerve fiber layer indicated the dysfunction of the retina, which is consistent with ERG results. The expression of C3 in Müller cells and C1q in microglia was upregulated on day 7, meanwhile the number of iNOS (+)IBA-1 (+)cells increased and microglial morphology changed induced by NMO-IgG indicating the significant activation of microglia. RBPMS (+) labeled RGCs were restored after ablation of microglia by using PLX3397 in chow. In vitro, the secretion of C3 in NMO-IgG-treated MIO-M1 cells increased which processed the activation and migration of BV2 compared to control.

Conclusions: NMO-IgG can induce primary dysfunction of the retina in NMO by stimulating Müller cells and leading to excess C3 secretion, which then activates microglia. Müller cell-microglia crosstalk in NMO-IgG-induced retinopathy could be a promising therapy target.

Poster No.: PO-303

No Light Perception Following Uneventful Cataract Surgery

*First Author: Madhumita **GOPAL***

Purpose: Possible causes of optic neuropathy following cataract surgery.

Methods: An 81-year-old male with presenting vision in the right eye of 6/18, N18, underwent small incision cataract surgery under subtenon anesthesia. His vision on post-operation day 1 was the perception of light. On examination, he had a grade 3 RAPD and disc edema.

Results: MRI brain and orbit were unremarkable. Blood investigations showed haemoglobin was 9g%. Blood sugar levels, ESR, CRP were within normal levels. Autoimmune and vasculitis workup was negative. The vision had worsened to no light perception when the patient was reviewed with reports. A trial of steroids was given with no improvement. The left eye showed no evidence of optic neuropathy. As the above finding made the diagnosis of ischemic optic neuropathy unlikely, direct trauma to the optic nerve during subtenon block was considered as the most likely diagnosis. The cannula for subtenon injection was measured on a cadaveric specimen and found to be long enough to reach the optic nerve insertion.

Conclusions: Although subtenon block is considered a safer option than a peribulbar block, it still carries the risk of direct trauma to the optic nerve; hence, due precaution should be taken during a subtenon block.

Poster No.: PO-293

Optic NEWritis – The Indian Scenario of Challenges Faced in Diagnosis and Management in the Evolving Landscape of Optic Neuritis (ON)

*First Author: Chinmay **MAHATME***
*Co-Author(s): Madhurima **KAUSHIK**, Karthik **KUMAR**, Virna **SHAH***

Purpose: Identification and management of atypical ON (especially neuromyelitis optica (NMO) and myelin oligodendrocyte glycoprotein antibody disease (MOGAD)) have taken the spotlight in neuro-ophthalmology over the past decade. Studies in the Indian subcontinent show increased atypical ON cases, yet data scarcity persists. We aimed to uncover etiology, clinico-radiologic profiles, and challenges, contributing to Asian literature and enabling economical treatment protocols for marginalized populations.

Methods: Electronic medical records at a South Indian tertiary care center were reviewed. Data from January 2021 to June 2022 was included. Out of the 11,106 new outpatient visits to the neuro-ophthalmology clinic - 157 new cases of optic neuritis were identified. Those with co-existing ocular morbidities, follow-up less than 3 months, and incomplete treatment were excluded. Patterns of clinical presentation, demographics, seropositivity for NMO and MOGAD, other atypical presentations, and treatment outcomes were studied.

Results: Mean age of patients - 37.76 ± 13.44 years, 66% were female. Serological testing was done for 49.27% of patients. 65 patients were unable to undergo serological testing due to financial constraints. Out of the 68 patients who underwent serology - 48.5% tested positive for MOGAD and 11.76% for NMOSD. 22 patients had recurrent attacks, out of which 50% were seropositive for either MOGAD or NMO. We identified some atypical etiologies including tuberculosis (1.5%), post-COVID vaccination (1.5%), and ANA+ve (3%) as well.

Conclusions: Atypical ON, especially MOGAD, is highly prevalent in India amidst varied presentations. Lack of resources and financial constraints requires a carefully planned course of investigation and management to prevent recurrences and disease progression.

Poster No.: PO-308

Optic Neuropathy Secondary to COVID-19 Vaccination: A Case Report

*First Author: Khushbakht **PETERS***

Purpose: The purpose of this case report is to document a rare complication of optic neuropathy following the administration of the AstraZeneca COVID-19 vaccine. The report aims to highlight the importance of early diagnosis and treatment in preventing permanent blindness associated with vaccination-induced optic neuritis.

Methods: A 36-year-old male presenting with sudden painless loss of vision within 1 day of receiving the AstraZeneca vaccine is described. The patient was diagnosed with optic neuritis elsewhere but was not administered proper treatment like I/V steroids. After 3 weeks, he presented to us.

Results: Upon examination, the patient exhibited positive projection of light in two quadrants of the right eye, with a sluggish pupillary reaction. There was no perception of light in the left eye. Optic disc evaluation revealed clear margins with temporal pallor. Initial investigations yielded normal results. The patient was administered intravenous methylprednisolone followed by oral prednisolone, but there was no significant improvement in vision over the next 10 days. Unfortunately, the patient did not return for further follow-up.

Conclusions: Vaccination-induced optic neuritis is a rare complication associated with COVID-19 vaccination. However, prompt diagnosis and early initiation of treatment are crucial for favorable outcomes. In this case, the patient presented early, but the management was delayed, leading to a poor treatment response. This case report underscores the significance of timely recognition and management of optic neuropathy following COVID-19 vaccination to prevent permanent blindness. Healthcare providers should remain vigilant in monitoring and addressing potential ocular complications associated with COVID-19 vaccination.

Poster No.: PO-281

Pattern Reversal Visual Evoked Potential in Indonesian Adults: Normative Data and the Effect of Gender

*First Author: Dewi Nugrahwati **PUTRI***
*Co-Author(s): Muhammad Iqbal **BASRI**, Yunita **MANSYUR**, Habibah **MUHIDDIN**, Batari **UMAR**, Andi Alfian **ZAINUDDIN***

Purpose: Visual evoked potential (VEP) waves can be affected by various factors, including age, gender, device, and technique. Therefore, each laboratory must establish its own normative data. The purpose of this study is to determine the normal values of P100 latency and P100 amplitude of pattern reversal VEP (PRVEP) in Indonesian adults, as well as the effect of gender on VEP.

Methods: This cross-sectional study was conducted on 100 healthy subjects consisting of 50 males and 50 females between 20 and 44 years old. Vital signs, blood sugar level, head circumference, visual acuity, and ophthalmology examination were performed, then continued with monocular PRVEP recording using a 15 min and 60 min check size stimulus. The standard procedures of the International Society for Clinical Electrophysiology of Vision (ISCEV) were followed. PREVP parameter data for each gender were collected.

Results: The mean head circumferences of males and females were 55,4±1,59 cm and 53,73±1,85 cm (P = 0,001), respectively. The normal values of latency using a 15 min check size for males and females were 104,52±3,74 ms and 102,76±4,04 ms, respectively, as well as 16,3±5,94 µV and 19,21±7,4 µV for amplitude. The normal values of latency using a 60 min check size were 103,37±3,91 ms and 102,2±3,56 ms, while 12,67±3,51 µV and 14,95±5,27 µV for amplitude.

Conclusions: There are significant differences between the PRVEP amplitude in males and females, which are possibly due to the significantly smaller head circumference in females. Therefore, normative data are suggested to be provided for each gender.

Poster No.: PO-280

Pituitary Abscess Presenting With Oculomotor Nerve Palsy- a Rare Cause With Rare Manifestation!

*First Author: Vidhya **DHARANI***

Purpose: To report a rare clinical condition: pituitary abscess manifesting with paralysis of the third cranial nerve.

Methods: Retrospective case study.

Results: A 41-year-old lady, known diabetic, presented with drooping of the left upper lid, diplopia associated with mild pain for 2 days, and intermittent low-grade fever for a month. Examination revealed left pupil involving Oculomotor nerve palsy. MRI of the brain and orbit showed a lobulated lesion with a central non-enhancing necrotic area with peripheral enhancement in the sellar, left parasellar, and cavernous sinus region suggestive of the pituitary abscess.

Conclusions: Pituitary abscesses are rare, accounting for less than 1% of all pituitary lesions and having high mortality. This poster highlights an extremely rare pituitary lesion presenting with ophthalmoplegia and emphasizes the critical role of neuroimaging in early diagnosis and treatment.

Poster No.: PO-305

Ptosis and Eye Movement Disturbance With Fungal Sinusitis Due to Schizophyllum Commune: Case Report

*First Author: Yoshikazu **ITO***
*Co-Author(s): Taizo **FUDONO**, Takahiro **HIRAOKA**, Shohei **MORIKAWA**, Tetsuro **OSHIKA***

Purpose: To report a case of ptosis and ocular motility disturbance due to orbital abscess spread from refractory fungal sinusitis by Schizophyllum commune.

Methods: An observational case report.

Results: A 63-year-old female experienced temporal and frontal headaches in August 20XX. In October, she developed left ptosis, leading her to seek medical attention at the Department of Neurology. Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) were performed, then fungal sinusitis was suspected. Subsequently, the patient was referred to Otolaryngology and Ophthalmology departments for surgical evaluation. Ocular examination revealed normal visual acuity and eye movements, except for the left ptosis. In December, sinus surgery was performed in the Otolaryngology department, during which filamentous fungi were detected through pathological examination. Despite the surgical intervention, ptosis did not improve and impaired upward gaze in the left eye appeared, thus intraorbital injection of amphotericin B and systemic administration of voriconazole were initiated. In January 20XX+1, MRI revealed inflammation involving the cranial base, and systemic administration of posaconazole started. A biopsy of the left orbital tissue was performed, Schizophyllum commune was identified through genetic sequence analysis. While ptosis persisted, continuous administration of antifungal agents improved eye movement, and follow-up MRI showed a reduction in intracranial and orbital inflammation. During the whole period, pain was mild and no disturbance of visual function was observed.

Conclusions: Schizophyllum commune, a basidiomycete filamentous fungus, was detected in the human sinuses. Although Schizophyllum commune is generally considered less pathogenic, this case highlights its potential as a rare pathogen causing invasive mycosis.

Poster No.: PO-290

Recovery Visual Outcome of Direct Traumatic Optic Neuropathy: A Case Report

*First Author: Anditta **SYIFARAHMAH***

Purpose: Traumatic optic neuropathy is a serious vision-threatening condition that can be caused by ocular or head trauma. This article presents a full recovery visual outcome after corticosteroid therapy.

Methods: A 9-year-old female patient with a history of visual loss following a motorcycle crash 12 hours before was admitted to the hospital. Visual acuity was light perception in the left eye as a consequence of trauma. Lea chart-contrast sensitivity test showed a reduction in contrast sensitivity, and the Ishihara color test indicated dysfunction of color perception in the left eye. Relative afferent pupillary defect was also present. Confrontation tests revealed inferonasal, inferior and inferotemporal visual field defects. The retina and optic nerve head appeared normal on funduscopy with extraocular movements of both eyes within the normal limits. CT Scan showed a fracture of the left sphenoid wing and left parietal bone. Brain MRI with contrast showed no thickening or enhancement of the bilateral optic nerve.

Results: Based on the findings, corticosteroid therapy without surgery was conducted. The patient underwent steroid treatment with intravenous application of methylprednisolone 125 mg q.i.d. for 3 days. The patient responded well to treatment with visual recovery.

Conclusions: Appropriate options for TON treatment are still controversial. The injections of methylprednisolone should begin as soon as traumatic optic neuropathy is diagnosed to achieve a recovery visual outcome.

Poster No.: PO-283

Sudden Vision Loss and Herpes Zoster Ophthalmicus Associated with Hyaluronic Acid Filler Injection

*First Author: Janin Lou **BILLANO***

Purpose: We report a case of hyaluronic acid (HA) filler injection to the forehead that progressed to blindness and Herpes Zoster Ophthalmicus (HZO). Knowledge of these complications will alert fellow physicians in its diagnosis, management, and prevention.

Methods: Case report.

Results: A 20-year-old Filipino male experienced sudden vision loss and headache after injection of HA on the right forehead for a "Barbie doll forehead augmentation". The medical provider immediately injected 150 units of hyaluronidase subcutaneously. Eight hours later, he presented to us for persistent vision loss and periorbital pain. Visual acuity of the right eye was hand movement, with a relative afferent pupillary defect (RAPD). There was exotropia, ptosis, and limitation on adduction and infraduction. Optic nerve (ON) edema and hyperemia were noted. Magnetic resonance angiography (MRA) revealed no obvious emboli. He was managed as a case of anterior ischemic optic neuropathy with ophthalmoplegia and was subjected to hyperbaric oxygen treatment (HBOT). Seventy-two hours post-injection, he developed vesicles and pustules on the right periorbital area. Tzanck smear was positive. He was managed for HZO with intravenous Acyclovir. After 1 week, skin lesions and periorbital swelling improved. Ophthalmoplegia, ptosis, and exotropia resolved after 1 month. Visual acuity remained poor, with persistent RAPD and eventual pallor of the ON 3 months later.

Conclusions: With a projected rise in the frequency of aesthetic medical procedures, ophthalmologists should be on the frontline in educating the public on the prevention and prompt diagnosis of its complications. Disabling visual complications, as well as disfigurement, are exceedingly unfortunate in these cases.

Poster No.: PO-285

The Wrath of Steven Johnson Syndrome: A Continuum of Ocular Complications

*First Author: Joanna Mae O'**SANTOS***
*Co-Author(s): Marianne **CARABEO**, Denise Polly **CHAO-PO**, Raymond Nelson **REGALADO***

Purpose: Ocular Steven Johnson Syndrome (SJS) is a rare severe inflammatory disorder with widespread mucocutaneous involvement attributed to delayed hypersensitivity. Corneal keratinization necessitates the implantation of devices, including keratoprosthesis (KPro) and glaucoma drainage devices (GDD). Complications include anterior segment inflammation, tissue disruption, optic neuritis, and uveitis from biomechanical and autoimmune damage, with infection and medications triggering flares.

Methods: This paper presents a case of ocular SJS with Boston KPro and GDD, who developed optic neuritis and uveitis following COVID-19 infection, for which she is recalcitrant to steroids, and discusses the approach to diagnosis and management.

Results: A 55-year-old female with bilateral ocular SJS underwent Boston KPro and GDD implantation in the right eye. She developed a COVID-19 infection and then noted blurring of vision on the right from 20/70 to 20/150. On OCT-ONH, optic neuritis was seen. 5-day pulse IV methylprednisolone was given, improving BCVA to 20/40. Gradual taper was done. While off steroids, an episode of bacterial conjunctivitis occurred. One week later, there was a sudden blurring of vision with a flare of optic neuritis. Vision dropped to 20/100, with scleritis and floaters. 90mkd oral prednisone was started, resulting in improvement. On slow taper, vision worsened to light perception, and was assessed with anterior and intermediate uveitis, and optic neuritis recurrence. Rheumatologic work-ups are negative. Methotrexate and a higher dose of steroids were started, together with possible oral azathioprine.

Conclusions: Ocular SJS with Boston KPro and GDD, alongside optic neuritis and uveitis, poses unique challenges. SJS, an autoimmune disease, can evolve with purely ocular symptoms. A multidisciplinary approach is crucial to optimize outcomes.

Poster No.: PO-282

Tolosa-Hunt Syndrome with Compressive Optic Neuropathy: A Rare Case Report

*First Author: Nur **RAHMAWATI***
*Co-Author(s): Sita **AYUNINGTYAS**, Salmarezka **DEWIPUTRI**, Syntia **NUSANTI**, Mohamad **SIDIK***

Purpose: This study aims to demonstrate the challenging management of Tolosa-Hunt syndrome (THS), a unilateral painful ophthalmoplegia condition which rarely involves compressive optic neuropathy.

Methods: A 31-year-old woman presented to a neuro-ophthalmology clinic with an acute onset of unilateral decreased vision, accompanied by periorbital pain. She was currently breastfeeding her 8-month-old baby. Visual acuity (VA) in the left eye was light perception and wrong projection. Ophthalmology examination revealed left-sided ptosis, left-sided oculomotor, trochlear, and abducens nerve palsy, along with a positive relative afferent pupillary defect and edema in the left optic nerve. Laboratory workups were all normal except for a high LED level. Orbital CT scan showed soft tissue thickening with contrast enhancement in the left orbital apex extending to the intracanalicular optic nerve with a widened cavernous sinus. High-dose intravenous methylprednisolone

was given for three days, followed by oral methylprednisolone, resulting in some improvement.

Results: The clinical and radiographic findings led to a diagnosis of THS. After the administration of steroids, the pain subsided, ophthalmoplegia and ptosis signs fully improved, and visual acuity improved to hand movement.

Conclusions: Corticosteroid therapy effectively improves THS signs and symptoms; thus, early clinical suspicion and diagnosis are essential. As a diagnosis of exclusion, THS diagnosis was made based on the clinical presentations, imaging findings, and a positive steroid response. Compressive optic neuropathy can also occur due to the orbital apex involvement. Regular monitoring should be performed to observe disease progression and recurrence.

Poster No.: PO-271

Traumatic Chiasmal Injury: A Diagnostic Dilemma and a Rare Double Trouble

*First Author: Abhilasha **KUMARI***
*Co-Author(s): Shweta **CHAURASIA***

Purpose: Clinical assessment of a patient with post-traumatic non-paretic diplopia.

Methods: A 45-year-old male presented with loss of field and double vision following road traffic accident 1 year back. He had a loss of consciousness and underwent ventriculoperitoneal shunt and vertebral fixation. After regaining consciousness, he complained of intermittent, progressive, horizontal, binocular, diplopia along with visual field impairment. On ocular examination, the left eye exhibited reduced visual acuity, color vision, and contrast sensitivity. Anterior segment examination was normal. There was mild disc pallor. The Hirschberg reflex was central. Cover/uncover and alternate cover tests revealed small exophoria of 6-8 prism dioptres. Extraocular movements, convergence, and accommodation were normal. Sensory examinations revealed mixed picture of 100 secs arc stereopsis and intermittent comitant crossed diplopia both for distance and near at other times. Analysis of visual fields demonstrated bitemporal hemianopia. Magnetic Resonance Imaging of Brain was grossly normal with structurally intact optic chiasma.

Results: A detailed pupillary examination from both sides revealed Wernicke's hemianopic pupil and a meticulous fundus examination revealed bow-tie pattern optic atrophy in both eyes, corroborated on ocular coherence tomography with corresponding Ganglion cell loss. A clinical diagnosis of traumatic chiasmal syndrome with bitemporal hemianopia and retinal hemifield slide phenomenon was made, which caused the inability to fuse hemianopic visual fields and non-paretic diplopia.

Conclusions: Traumatic chiasmal syndrome is a rare phenomenon, and retinal hemifield slide in such patients is even rarer. Diagnosis is often clinical without imaging findings, and it must be considered as a differential in patients with visual field defect and non-paretic diplopia post-trauma.

Poster No.: PO-276

Unusual Presentation of Occipital Lobe Lesion: The Culprit Found on Visual Fields

*First Author: Fatima **MUNSHI***
*Co-Author(s): Niharika **CHAUDHARY**, Vishnu Swarup **GUPTA**, Monika **KAPUR**, Taskin **KHAN***

Purpose: The importance of detailed ophthalmological examination and timely referral is to save patients from the deleterious effects of stroke.

Methods: A 51-year-old male patient presented to ophthalmology OPD at a tertiary eye care center with complaints of headache, vertigo, and blurring of vision in both eyes for one month. The best corrected visual acuity at presentation was 6/12 in the right eye and 6/9 in the left eye. Anterior segment examination revealed immature senile cataracts in both eyes. Posterior segment examination revealed no significant abnormality. The patient gave no significant history of any systemic illness. A routine confrontation field test revealed depression in the right inferior quadrants of both eyes. Humphrey Fields 30-2 SITA confirmed right incomplete homonymous hemianopia. Systemic examination depicted a blood pressure of 180/100 mmHg. MRI was ordered after reviewing the results of visual fields with a suspected parietal lobe lesion. It revealed posterior cerebral artery territory infarct with hemorrhagic residues and focus of acute infarct in the left occipital lobe.

Results: The patient was referred to an intensivist for control of blood pressure and further management.

Conclusions: This case highlights the significance of preliminary testing of visual fields using the confrontation method, which could reveal serious life-threatening lesions involving the visual pathways, especially posterior to the lateral geniculate body, which the patient might perceive as blurring of vision.

Poster No.: PO-275

Vector-ious: A Case Report on Unilateral Viral Neuroretinitis

*First Author: Oliver **LISTANO***
*Co-Author(s): Victor Ephraime **PAULINO**, Joel **PEREZ**, Jeffrey Naz **RACOMA**, Jamie **NARCISO***

Purpose: This case contributes to incidence reporting and profiling of unilateral neuroretinitis in Filipinos caused by the dengue virus. Consequently, it aims to serve as an outline for the timing of treatment and further management of patients diagnosed with

dengue fever with visual signs and symptoms similar to this case.

Methods: This is a case of a 53-year-old male presenting with unilateral, painless, generalized blurring of vision of the right eye with decreased in color contrast and sensitivity. A 14-day history of mosquito bite was documented, followed 4 days after by non-specific flu-like illness with serologically positive dengue virus IgG/IgM prior to consult was established.

Results: Initiation of intravenous and oral steroid regimen despite resolution of systemic symptoms was advised due to worsening visual acuity (VA) of the right eye with counting fingers upon admission, grade 1+ relative afferent pupillary defect (RAPD), 14/16 score in Ishihara testing, and optic disc and perifoveal edema on fundoscopy which were supported by optical coherence tomography. Magnetic resonance imaging of the brain with contrast, chest x-ray, and blood culture were unremarkable. Toxoplasma and Bartonella IgG antibody tested positive, but IgM antibody negative. 1-month post-treatment, improvement of VA, color sensitivity with resolution of RAPD, and fundus findings were noted.

Conclusions: In endemic areas, unilateral neuroretinitis can manifest as a dengue fever sequela and should be considered whenever patients present with visual symptoms. Progressive improvement of visual acuity after a 3-day high-dose intravenous methylprednisolone, followed by a 10-day oral tapering prednisolone therapy, was observed and may be used in cases with similar presentations.

Ocular Imaging

Poster No.: PO-327

A Comparison of Retinal and Nail-Fold Microvascular Changes Between Patients With Dyslipidemia and Non-dyslipidemia Volunteers

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Purpose: To investigate microvasculature in dyslipidemia (DLP) patients using Optical Coherence Tomography Angiography (OCTA) and nail-fold capillaroscopy (NFC).

Methods: A pilot study enrolled 80 participants from a tertiary hospital. Subjects were divided into a DLP group of 50 patients and a control group of 30 healthy volunteers. OCTA parameters were assessed, including superficial and deep retinal vascular density (SVD and DVD). NFC was concurrently performed to evaluate the capillary density and morphological characteristics.

Results: Significant decreases in SVD and DVD were observed in OCTA (whole image area) between DLP and controls ($p = 0.007$ and 0.038, respectively). When patients with hypertension (HT) and diabetes mellitus (DM) were excluded, only SVD remained different ($p = 0.046$). Meanwhile, there were no differences in nail-fold parameters between DLP patients and controls. In the subgroup analysis of DLP patients aged 50 or more without diabetes and hypertension, SVDs between those with or without coronary artery disease complications (CAD) were similar. However, the SVD in both groups decreased significantly compared with healthy controls. In addition, we found a higher proportion of nailfold capillary tortuosity in DLP patients with CAD than in those without CAD ($p = 0.011$).

Conclusions: Dyslipidemia was associated with microvascular changes in the retina, while nailfold capillary morphologic changes were found in DLP patients with macrovascular complications. Therefore, OCTA could serve as a means of detecting changes before the onset of macrovascular complications. Meanwhile, NFC could reveal abnormalities in DLP patients with concurrent macrovascular complications.

Poster No.: PO-318

A Multicenter Study of Fundus Lesions in Patients After COVID-19 Infection by Multimodal Imaging

*First Author: Liping **DU***
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Purpose: To define the characteristics of fundus manifestations in COVID-19-infected individuals with multimodal imaging techniques.

Methods: A retrospective case series study including 90 patients was conducted. All patients with visual complaints occurring immediately after COVID-19 infection were referred to six clinics between December 2022 and February 2023. Demographic information and the temporal relationship between COVID-19 infection and visual symptoms were documented. The characteristics of the fundus lesions were evaluated using multimodal imaging.

Results: Ninety patients from 6 hospitals were enrolled in this study, including 24 males (26.67%) and 66 (73.33%) females. Seventy-eight patients (86.66%) (146 eyes) were diagnosed with AMN. The AMN patients were primarily young women (67.95%). Sixty-eight patients (87.18%) had AMN in both eyes. Thirty-eight eyes (24.36%) included Purtscher or Purtscher-like lesions. AMN lesions were evident in all OCT and IR images (100.00%). mf-ERG and VF abnormalities corresponded closely to the shape and location of the lesion images. Eleven cases were diagnosed with simple Purtscher or Purtscher-like retinopathy (2

cases, 2.22%), VKH or VKH-like uveitis (3 cases, 3.33%), MEWDS (2 cases, 2.22%), and ROCM (5 cases, 5.56%).

Conclusions: After COVID-19 infection, diversified fundus lesions were evident in patients with visual complaints. In this report, AMN was the dominant manifestation, followed by Purtscher or Purtscher-like retinopathy, MEWDS, VKH-like uveitis, and RCOM.

Poster No.: PO-323

Association of Lamina Cribrosa Morphology With Retinal Nerve Fiber Layer Thickness and Visual Field Defects in Primary Open-Angle Glaucoma

*First Author: Vy **LY***

Purpose: Lamina cribrosa (LC) morphology is a biomarker in the diagnosis and prognosis of glaucoma. Enhanced depth imaging (EDI) is a tool for evaluating the LC structure. This study clarifies the relationships between LC thickness (LCT) and LC depth (LCD) with retinal nerve fiber layer thickness (RNFLT) and visual field damage (MD) in POAG.

Methods: In this observational cross-sectional study, 71 POAG eyes were recruited to obtain radial B-scans of the optic nerve heads (ONH) using EDI-OCT. The LCT was defined as the vertical distance between the LC's anterior and posterior borders. The LCD was the deepest distance from the plane connecting the Bruch's membrane openings to the anterior LC surface. These LC parameters were measured at three locations (mid-horizontal, superior, and inferior mid-peripheral).

Results: The average LCT and LCD were 197.05 ± 28.21 µm and 556.36 ± 170.61 µm, respectively. The intraclass correlation coefficient reflected the excellent interobserver reproducibility of LC parameter values (ICC > 0.9). LC parameters were not different among the three locations. Associations were found between LCT and LCD with MD (r = 0,486 and -0.647). The mean RNFL was correlated with LCT (r = 0,405) and LCD (r = -0,363). Glaucoma with greater severity is associated with increasing LCD and decreasing LCT.

Conclusions: The LC parameters investigated by EDI-OCT reliably indicate the disease's progression. There are correlations between LCT and LCD with structural index and retinal function. These results suggest EDI-OCT helps increase the accuracy of the diagnosis of ONH injury and understand glaucoma's biomechanics.

Poster No.: PO-320

Central Serous Chorioretinopathy Versus Posterior Scleritis

*First Author: Navya **CHERUKURI***

Purpose: To describe a 43-year-old female with a decrease in vision in her left eye since 6 months.

Methods: On examination, the best corrected visual acuity (BCVA) in the right eye (RE) and the left eye (LE) was 20/20 and 20/40 respectively. Fundus examination of RE showed choroidal folds, while LE showed similar choroidal folds, neurosensory detachment (NSD) at the macula, and inferior exudative retinal detachment (RD). A differential diagnosis of LE posterior scleritis, central serous retinopathy (CSCR) or unilateral Vogt Koyanagi-Harada syndrome (VKH) was made.

Results: Optical coherence tomography (OCT) of the LE showed hyperreflective dots in the posterior vitreous, shallow NSD at the fovea with RPE undulations, and the axial B scan showed subtenons fluid (STF). Indocyanine angiography did not show choroidal vascular hyperpermeability (CVH), while Fundus fluorescein angiography (FFA) showed early hyperfluorescence, which increased in intensity in late phases. Based on these findings, a diagnosis of LE posterior scleritis was made. All infective causes were ruled out, and the patient was started on oral steroids. However, the patient developed steroid-induced CSCR after 3 weeks. Focal laser was done to focal leak based on FFA and steroids were tapered and started on immunosuppression. One month post laser, NSD reduced, but shallow SRF was still present, and FFA still showed focal leak, so repeat focal laser as advised and continue on immunosuppression.

Conclusions: This is a very interesting case which had confusing features of both CSR and posterior scleritis. History, along with imaging features like STF, vitreous inflammation, and lack of CVH, helped to diagnose and treat posterior scleritis.

Poster No.: PO-324

Clinical Features of Retinopathy After Cardiopulmonary Resuscitation

*First Author: Seung Min **LEE***
*Co-Author(s): Ji Eun **LEE**, Seung Ahn **YANG***

Purpose: To evaluate the clinical patterns of retinopathy in patients who received cardiopulmonary resuscitation (CPR) using wide-field fundus photography and slit-lamp fundus examination.

Methods: The medical records of patients aged ≥ 18 years who survived after receiving CPR and underwent wide-field fundus photography and slit-lamp fundus examination within 3 months were retrospectively analyzed. Fundus findings, including retinal hemorrhage and cotton wool spots, were investigated. The subjects were categorized into the retinopathy and non-retinopathy groups based on the presence of fundus findings. Systemic and CPR-related factors were analyzed to compare the two groups.

Results: Twenty eyes (10 patients) and 28 eyes (14 patients) were included in the retinopathy and non-retinopathy groups, respectively. The retinopathy group had longer CPR time than the non-retinopathy

group (15 ± 11 min vs. 6 ± 5 min, p = 0.027). In the retinopathy group, retinal nerve fiber layer hemorrhage was observed in all eyes, and intraretinal hemorrhage was observed in 55% of the eyes. Eighty percent of hemorrhages were located in the peripapillary or posterior pole. There were no interval changes in visual acuity, intraocular pressure, and central retinal thickness for 6 months. The average remission periods of retinal hemorrhage and cotton wool spots were 6.8 ± 2.6 months and 5.6 ± 2.1 months, respectively. No retinopathy progression was observed.

Conclusions: The signs of retinopathy, such as retinal hemorrhages and cotton wool spots, which are found after CPR, mainly occur in patients who receive longer time of CPR and improve over time.

Poster No.: PO-309

Colors Lost and Found: Exploring the Clinical Spectrum of Achromatopsia

*First Author: Matthew K **KENWORTHY***
*Co-Author(s): Fred **CHEN**, Tina M **LAMEY**, Jennifer A **THOMPSON***

Purpose: Inherited retinal diseases are the most common cause of blindness in the working age. Achromatopsia (ACHM) is a common early-onset IRD due to mutations in one of 6 genes. We report the clinical findings of a cohort of patients with genetically confirmed ACHM.

Methods: Patients with ACHM were reviewed retrospectively and underwent genetic testing using the MVL panel, whole exome or targeted sequencing and variant curation was conducted according to ACMG criteria. Multimodal imaging with Heidelberg optical coherence tomography (OCT) and fundus autofluorescence (FAF) imaging were performed.

Results: Twelve individuals (9 females and 3 males) from 10 families were included. Biallelic pathogenic CNGB3, CNGA3, and PDE6C variants were identified in 8, 2, and 2 individuals, respectively. The mean age at referral was 25 years (range: 5 to 56). Dyschromatopsia and/or photophobia were the most common reported symptoms. OCT showed an optic gap in 10 patients and outer nuclear layer loss in 2 patients. FAF showed central hypoautofluorescence with a surrounding hyperautofluorescent ring in 6 patients. The dark-adapted 0.01 b-wave amplitude was normal in 9 patients and subnormal in 4 patients. The light-adapted 30Hz flicker amplitude was <10 microV in 9 patients, subnormal in 3 patients, and normal in 1 patient. The latter patient possessed compound heterozygous c.1148delC p.(Thr383IlefsTer13) in trans with c.1208G>A p.(Arg403Gln), a known hypomorphic variant in CNGB3. One family with PDE6C had pseudodominant inheritance.

Conclusions: ACHM exhibits a spectrum of electrophysiological features. Future work in large cohorts may reveal specific imaging biomarkers that predict the severity and genotype of ACHM.

Poster No.: PO-310

Comparative Study of a Handheld and Tabletop Device for Non-mydriatic Fundus Imaging for Mass Screening in the Community

*First Author: Rayven **CHUA***
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Purpose: Compare the performance of a handheld and table-top non-mydriatic fundus camera, for community-based eye screening.

Methods: This is a prospective study involving elderly participants above 60 years who have not seen an eye doctor for the past 1 year. The participants underwent non-mydriatic fundus photography using a handheld device (ZEISS VISUSCOUT 100) and a table-top fundus camera (Cirrus Photo 600). A macula-centered 45-degree field-of-view photograph was taken with both devices. The primary outcomes were in gradability and image quality of the photographs. Image gradability, as assessed by an eye doctor, was based on (1) optimal coverage of the macula and optic nerve head, (2) images that had sharp focus and distinct visibility, and (3) the ability to trace and discern vascular structures. The quality of the images was subject to Fast Fourier Transformation (FFT) to give an objective quantification of the blur of the images.

Results: The mean visual acuity score of the participants (n=270) was 0.22±0.21 logMAR. The handheld device had significantly higher, more gradable fundus images compared to the table-top device ($\chi 2 = 53.7$, n=270, $p<0.0001$), although the image quality captured was lower (blur factor: 7.95±0.31 vs 7.71±0.06, n=270, $p<0.0001$). Notably, with lower variability, the handheld fundus camera could reliably capture gradable fundus images, suggesting a lower technical requirement to operate the device.

Conclusions: The handheld fundus camera can robustly produce quality fundus images for less-skilled personnel. In addition to its portability, its clinical utility renders it a suitable alternative that can be easily scalable for use in the community.

Poster No.: PO-326

Complexity of Retinal Vessels and Mortality Risk: Evidence From UK Biobank Cohort Study

*First Author: Mayinuer **YUSUFU***
*Co-Author(s): Mingguang **HE**, Xianwen **SHANG**, Danli **SHI***

Purpose: To explore the associations between the complexity of retinal vessels and mortality risk.

Methods: After excluding participants without quality retinal images, we included 66415 participants from the UK Biobank study and extracted 42 complexity parameters of retinal vascular network with a deep learning model, including their variance and distribution. We adopted the Least Absolute Shrinkage and Selection Operator method to screen out parameters with significant predictive value. In the final analysis, 23 variables were included in the multivariate Cox regression.

Results: In the fully adjusted model, there were 5 complexity parameters showing significant association with mortality risk: the number of artery trees was positively associated with mortality risk with a hazard ratio (HR) of 1.05 (95% confidential interval: 1.01 - 1.09); while number of artery segments (HR: 0.94), skeleton density of arteries (the ratio of the total length of arteries to the total area of the image at 1 pixel, HR: 0.94) in the macular region, mean Strahler number of arteries (HR: 0.96), and area density of arteries (ratio of the area occupied by vessels divided by the total area; HR 0.95) in the macular region all showed significant negative associations with mortality risk.

Conclusions: The observed associations suggest that decreased complexity of arteries in the retina may indicate a comprised blood supply (less oxygen and nutrients) and higher mortality risk. These findings highlight the potential of arterial vessel complexity as a valuable indicator for assessing mortality risk and provide further understanding of the relationship between retinal health and overall well-being.

Poster No.: PO-317

Correlation of Optical Coherence Tomography Angiography and Indocyanine Green Angiography in Polypoidal Choroidal Vasculopathy

*First Author: Colin **TAN***

Purpose: Polypoidal choroidal vasculopathy (PCV) is a variant of age-related macular degeneration. The current gold standard for diagnosis of PCV is indocyanine green angiography (ICGA). We aimed to describe the features of PCV seen in optical coherence tomography angiography (OCTA) and determine its utility in the management of PCV.

Methods: A study of 28 consecutive patients with PCV. The diagnosis of PCV was confirmed by a reading center using standardized diagnostic criteria of features. The OCTA images of these patients were then independently graded, and the OCTA features subsequently correlated with the ICGA images.

Results: The mean age of the 28 patients was 69.3 years (range, 53 to 80, SD ± 6.5). 85.7% were male, and 14.3% were female. Among eyes with polyps seen on ICGA, 78.6% had lesions detected on OCTA scans, with a sensitivity of 78.6% and a positive predictive value (PPV) of 100%. Among eyes with branching vascular network (BVN) seen on ICGA, 92% were also detectable on OCTA (sensitivity 92%, PPV 100%). The polyps and BVN were both located in the choriocapillaris.

Conclusions: The features of PCV seen on OCTA correlate well with those seen on ICGA, although some lesion components are not detected. OCTA provides a non-invasive means to image and diagnose patients and may aid in the diagnosis of PCV in patients where ICGA is unavailable or contraindicated.

Poster No.: PO-321

Dazzling Deception-Unveiling PVDs Macular Mirage

*First Author: Ayshwaria **BASKER***
*Co-Author(s): Jai Mercy **MERCY***

Purpose: This case report explores an unusual presentation of PVD that mimicked an elevated lesion, highlighting the importance of accurate diagnosis through imaging techniques.

Methods: A 62-year-old female came for a routine screening and was diagnosed with moderate non-proliferative diabetic retinopathy (NPDR) in both eyes. Despite exhibiting characteristic features of elevated edema-like features, upon fundus imaging, further examination revealed a surprising twist - complete PVD with a break with intact macular layers on optical coherence tomography (OCT). This intriguing case sheds light on the deceptive nature of PVD and emphasises the need for comprehensive diagnostic assessment, utilising OCT imaging to accurately differentiate PVD from other retinal conditions.

Results: Proper diagnosis prevented unnecessary interventions and guided appropriate management.

Conclusions: This case emphasises the necessity of advanced imaging modalities such as OCT and ultrasonography in differentiating PVD from true elevated retinal lesions. Clinicians should be aware of this atypical presentation to avoid misdiagnosis and ensure optimal patient care.

Poster No.: PO-325

Diagnostic Ability of Confocal Scanning Ophthalmoscope for the Detection of Concurrent Retinal Disease in Eyes with Asteroid Hyalosis

*First Author: Ji Hyoung **CHEY***
*Co-Author(s): Han **KWON***

Purpose: To compare the diagnostic ability of color fundus camera (CFC), ultra-wide-field bicolor confocal scanning laser ophthalmoscope (BC-cSLO; OPTOS), and true-colour confocal scanning ophthalmoscope (TC-cSO; EIDON) for detecting coexisting retinal diseases in eyes with asteroid hyalosis (AH).

Methods: The medical records of consecutive patients with AH referred to a tertiary hospital for follow-up evaluation by a vitreoretinal specialist were retrospectively reviewed. Simultaneous fundus images obtained using CFC, BC-cSLO, and TC-cSO were classified into four grades based on the obscuration by asteroid bodies. The proportion of first-grade images (discernible optic disc and second-order retinal vessels) was assessed for each imaging modality. The diagnostic and screening abilities for concurrent retinal diseases were compared with the accuracy and sensitivity of each device.

Results: Among 100 eyes with AH, 76 had coexisting retinal diseases, such as diabetic retinopathy (DR), retinal vascular occlusion, age-related macular degeneration, epiretinal membrane, and retinitis pigmentosa. TC-cSO had the highest ratio of first-grade images (97%, P<0.001), followed by CFC (67%) and BC-cSLO (63%). TC-cSO demonstrated higher accuracy and sensitivity (95% and 81%, respectively) compared with CFC (89% and 43%, respectively) and BC-cSLO (89% and 39%, respectively). BC-cSLO showed the highest accuracy and sensitivity for DR diagnosis. TC-cSO showed the best performance for detecting all other retinal disorders.

Conclusions: TC-cSO images showed minimal obscuration and the highest diagnostic ability for diagnosing retinal disease accompanied by AH. TC-cSO can be a valuable alternative screening tool for concurrent retinal diseases in cases where AH impedes diagnosis during fundus examination or imaging.

Poster No.: PO-313

Distribution of Hyperreflective Choroidal Foci at the Macula

*First Author: Jaeryung **OH***
*Co-Author(s): Youngho **KIM**, Myung-sun **SONG***

Purpose: To investigate the spatial distribution of hyperreflective foci (HCF) within the upper choroid of the macula in normal eyes.

Methods: In this retrospective study, we included healthy eyes with a normal fundus from an en-face swept-source optical coherence tomography angiography (OCTA) database covering a 6 mm by 6 mm area centered on the fovea. The macular area was divided into 9 sectors based on the modified ETDRS grid: Zone 1 representing the central 1 mm area, Zone 2 representing four sectors within 1-3 mm area, and Zone 3 representing four sectors within 3-5 mm area. Using an en-face OCTA image of the choroid, we assessed the distribution of HCF, choriocapillaris vascular density (CcVD), and choroidal stromal density (CSD) in each sector.

Results: We investigated 35 eyes from 35 patients. The mean density and area fraction of HCF at the 5mm macular area were 35.6±7.8 /mm^2, 3.0 ± 0.7 %, respectively. The density of HCF was significantly higher in Zone 1 (50.7±20.9/mm^2) compared to Zone 2 (35.1±13.0/mm^2) or Zone 3 (35.6±6.5/mm^2) (P<0.001, P<0.001). Area fraction of HCF in Zone 1 (4.8 ± 3.4 %) was greater than in Zone 2 (2.6±1.2%) or Zone 3 (3.1±0.7%) (P<0.001, P = 0.004). The distribution of HCF was not significantly correlated with either CcVD or CSD.

Conclusions: Variation in the spatial distribution of HCF at the macula was analyzed on the OCTA en-face structural images. The results of this study may serve as fundamental data for understanding the characteristics of the choroid in the healthy eye.

Poster No.: PO-316

Effect of the Ocular Shape of the Macula on Hole Findings in Idiopathic Macular Hole Differs Depending on the Stage of the Macular Hole

*First Author: Hiroto **TERASAKI***
*Co-Author(s): Ryoh **FUNATSU**, Naohisa **MIHARA**, Taiji **SAKAMOTO**, Toshifumi **YAMASHITA***

Purpose: This study aimed to investigate the relationship between macular shape and idiopathic macular hole (MH) findings using an objective method.

Methods: We present a retrospective observational case series on patients with MH. The shape of the macular area was quantified using quadratic equations, and the ocular shape (OS) index was calculated. The correlation between the OS index and macular hole findings for each stage was evaluated.

Results: Pearson's correlation coefficient showed a significant correlation between the OS index and horizontal hole diameter (p = 0.044), bottom diameter (p = 0.006), and vertical bottom diameter (p = 0.024) in stage 2. For stage 4, there was a negative and significant correlation between the OS index and age (p = 0.037), and horizontal (p = 0.021) and vertical (p=0.027) bottom diameter. Multiple regression analysis showed that the horizontal (p = 0.0067) and vertical (p = 0.0312) bottom diameter and OS index were independently and positively correlated in stage 2. In stage 4, the OS index was independently and negatively correlated with the horizontal (p = 0.0447) and vertical (p = 0.032) bottom diameter (p = 0.0447).

Conclusions: The ocular shape of the macula affects MH findings, and its impact depends on its stage.

Poster No.: PO-319

Evaluation of Changes Due to Hydroxychloroquine Drug in Retinal Electrical Activity Using Multifocal ERG-A Retrospective Study

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*Co-Author(s): Deepa G.**K**, Sri **GANESH**, Rahul **ROY**, J Sachin **SINGH**, Kamal **THAKUR***

Purpose: To investigate the effect of Hydroxychloroquine drug in retinal Electrical activity using Multifocal ERG (mfERG).

Methods: A hospital-based, retrospective study was done on fifty-five patients who were referred to the hospital for screening of hydroxychloroquine (HCQ) drug toxicity between 2018-2022. Data were collected on variables concerning demographic data, medical history, ocular history, ocular findings, visual acuity and data of mfERG. A control group of twenty-nine subjects without retinal disease and not on HCQ was selected and mfERG was performed and mfERG data was used for comparison with the HCQ group.

Results: One hundred and ten eyes of fifty-five subjects taking HCQ with a mean age of 57 +/- 12.26 years and fifty-eight eyes of twenty-nine subjects were taken as the control group in this study. The Ring 1 P1 response densities were significantly lower in HCQ patients compared to the control group (P<0.001*). The Ring 2 response densities and amplitude were also statistically significantly lower in the HCQ group when compared to the control group (P<0.001*).

Conclusions: The mfERG is an excellent tool for the early detection of HCQ drug toxicity. mfERG demonstrated depression of signals in the parafoveal and central region in patients with HCQ use. mfERG may be very useful in the early detection of maculopathy even in patients without changes in the visual acuities and fundus.

Poster No.: PO-314

OCT Predictors of Visual Outcome in Retinal Vein Occlusion-Associated Macular Oedema After Anti-VEGF Injection

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*Co-Author(s): Carol **CHEUNG**, Vivian Wing-ki **HUI**, Shaheeda **MOHAMED**, Simon **SZETO***

Purpose: Macular oedema (MO) is a commonly encountered complication of retinal vein occlusion (RVO), resulting in visual loss in patients. Anti-Vascular Endothelial Growth Factor intravitreal injection is a recognized treatment for macular oedema. However, despite multiple clinical trials showing its effectiveness, there were patients achieving unfavorable outcomes. This study aims to identify clinically relevant imaging biomarkers on Optical Coherence Tomography (OCT) as predictors of visual outcomes in patients suffering from RVO-associated MO.

Methods: This is a retrospective cohort study performed in a tertiary eye center in Hong Kong. Patients who suffered from RVO-associated MO who received anti-VEGF injections between 1st Jan 2020 and 31st Dec 2021 were included. Respective medical records were retrieved for analysis of baseline demographics, characteristics of RVO, and visual acuity. OCT images at baseline and after completion were retrieved and analyzed for quantitative and qualitative analysis.

Results: The study included 86 eyes suffering from RVO-associated MO. Our analysis has shown that few OCT biomarkers were associated with worse baseline Visual Acuity (VA), and worse subsequent VA at 12 and 18 months. The study also demonstrated the association between baseline OCT biomarkers and subsequent VA change as well as improvement in OCT biomarkers and improvement of VA.

Conclusions: This study supports the use of OCT characteristics in providing prognostication of treatment response in patients with RVO-associated MO.

Poster No.: PO-312

Quantification of Choroidal Hyperreflective Layer: A Swept-Source Optical Coherence Tomography Study

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*Co-Author(s): So Min **AHN**, Youngho **KIM**, Myung-sun **SONG***

Purpose: To investigate variation in reflectivity of choroidal layers in normal eyes.

Methods: From the swept-source optical coherence tomography database, we retrospectively included eyes with a normal fundus. Choroidal reflectivity was measured on the horizontal and vertical B-scan optical coherence tomography images. The optical barrier of the choroid was defined as the first hill in the middle of the reflectance graph from the retinal pigment epithelium-Bruch's membrane complex to the chorioscleral junction.

Results: The optical barrier of the choroid was identified in 91 eyes of 91 individuals. The amplitude of peak reflectivity of the optical barrier of the choroid at the macular center (142.85 ± 15.04) was greater than those in the superior (136.12 ± 14.08) or inferior macula (135.30 ± 16.13) (P = 0.028, P = 0.008, respectively). The latency between the peak of the retinal pigment epithelium-Bruch's membrane complex and the optical barrier of the choroid at the macular center (48.11 ± 13.78 µm) was shorter than those in the nasal macula (55.58 ± 19.21 µm) (P = 0.021). The amplitude of the peak reflectivity of the optical barrier of the choroid in the center negatively correlated with

the latency between the retinal pigment epithelium-Bruch's membrane complex and the optical barrier of the choroid (P < 0.001).

Conclusions: An optical barrier exists in the inner choroid of the normal eye. Its depth depends on the location within the macula. Further studies are mandatory to evaluate variations in the barrier in the eyes with chorioretinal disease.

Poster No.: PO-322

Role of AS-OCT in Microbial Keratitis

*First Author: Aafreen **BARI***
*Co-Author(s): Prafulla **MAHARANA**, Namrata **SHARMA***

Purpose: To evaluate the role of Anterior Segment Optical Coherence Tomography (AS-OCT) in cases of microbial keratitis.

Methods: All cases of microbial keratitis underwent slit lamp examination by 2 observers (observer A with 1-year clinical experience and observer B with 10 years of clinical experience in cornea services) and AS-OCT at a tertiary care centre. Both observers filled a structured proforma documenting their slit lamp findings. All documented parameters were compared with AS-OCT findings by a triple-blinded observer.

Results: A total of 30 cases of microbial keratitis were included in the study. The senior observer analysed various clinical points more precisely as compared to the junior observer, like corneal thinning and depth of infiltrates. Fungal ulcers were most common and clinically diagnosed by the senior observer in 85% of the cases. AS-OCT was superior to both observers in terms of precision of various clinical parameters like the presence of retrocorneal membrane and early corneal ectasia.

Conclusions: This study explored the usefulness of AS-OCT in identifying key clinical features in microbial keratitis as compared to expert as well as inexperienced hands.

Poster No.: PO-311

Value of F-18 FDG PET/CT in Staging of Orbital and Ocular Adnexal Mucosa-Associated Lymphoid Tissue (MALT)-Type Lymphoma

*First Author: Sonya **PARK***
*Co-Author(s): Woosuck **SUH***

Purpose: Despite the widespread use of F-18 FDG PET in the diagnosis and follow-up of patients with lymphoma, few studies have assessed its value in ocular adnexal lymphomas, especially those subtypes with lower avidity. The purpose of this study was to evaluate the role of PET/CT in staging of low-grade orbital and ocular adnexal lymphomas, and to compare its diagnostic accuracy to MRI.

Methods: Patients with biopsy-confirmed ocular adnexal MALT-type lymphomas who underwent pretreatment FDG PET/CT scans were retrospectively identified. Maximum standardized uptake value (SUVmax) and peak standardized uptake value (SUVpeak) were measured for all lesions. These metabolic parameters were also measured for the contralateral side. Findings were compared to MR. Further analysis was done by ophthalmologic site, namely nonconjunctival or conjunctiva.

Results: Of the 57 patients included in this study, 19 (33.3%) showed positive FDG uptake with mean SUVmax 4.4 and SUVpeak 3.7, while the detection rate for MR was 18/57 (31.6%), and not statistically different. There were 9 discordant cases, and 39 cases were false negatives for both modalities. Sensitivity was significantly higher in nonconjunctival sites, with 14/17 (82.4%) positive FDG uptake compared to 5/40 (12.5%) in the conjunctiva (p<0.001). Mean SUVmax and SUVpeak were 6.5 and 5.5 for nonconjunctival sites, both higher than in the conjunctiva, 2.3 and 2.0, respectively (p=0.039 and p=0.035).

Conclusions: FDG PET proved comparable to MR imaging in the evaluation of even low-grade orbital and ocular adnexal lymphomas. Both SUVmax and SUVpeak were informative parameters, and the value of FDG PET was especially highlighted in nonconjunctival sites.

Poster No.: PO-315

Widefield Specular Microscopy Imaging in Eyes with Fuchs Dystrophy Undergoing Cataract Surgery

*First Author: Ezekiel **CHEONG***
*Co-Author(s): Marcus **ANG**, Stacy Hsiao Lan **CHAN**, Kai Yuan **TEY***

Purpose: To assess widefield specular imaging of the corneal endothelium in eyes with Fuchs' endothelial corneal dystrophy (FECD) following femtosecond laser-assisted cataract surgery (FLACS).

Methods: This is a prospective study of 18 FECD subjects requiring cataract surgery. Prior to, and 1-month post-FLACS, all 36 eyes were imaged with a widefield specular microscope (CEM-530, Nidek, Japan). Images were taken at the central, paracentral and peripheral corneal regions. The main outcome measures were central, paracentral, and peripheral endothelial cell density (ECD).

Results: There were 18 subjects, with a median age of 69, 64% female, and 83% of eyes with subclinical edema. We observed that mean corneal thickness (CT) increased throughout the cornea (p < 0.01), but mean ECD decline was detected only in the paracentral cornea (p < 0.002), with no significant difference in the central and peripheral cornea. A significant decline in image quality was also only detected in the paracentral cornea (p < 0.001). Paired analyses showed a 4.0% CT

increase and a 21.4% ECD decrease from pre- to post-FLACS ($p < 0.0001$, $p = 0.012$).

Conclusions: We observed regional changes in ECD of the corneal endothelium in eyes with FECD undergoing FLACS using a widefield specular microscopy technique.

Ocular Oncology and Pathology

Poster No.: PO-361

A Case Series of Uveal Ring Melanoma in New Zealand and Review of Current Literature

*First Author: Joevy **LIM***
*Co-Author(s): Alexandra **CRAWFORD**, Charles **MCGHEE***

Purpose: To investigate the clinical features, tumour characteristics including histopathology and cytogenetic analysis, and management of patients with uveal ring melanoma (URM) in New Zealand.

Methods: A retrospective review was conducted on all uveal melanoma cases treated in a single national oncology centre in NZ and URM cases were identified from this cohort. Study period: 1/1/2013 – 31/12/2022 (10 years). Written consent was obtained from all patients included in this case series.

Results: URM (n=4) comprised 0.7% of all uveal melanomas. URM affected 3 NZ European and 1 mixed Chinese/Pasifika patients. Three patients were symptomatic at presentation with spontaneous hyphaema, glaucoma and cataract, while one patient was asymptomatic but subsequently developed painful refractory glaucoma. All eyes underwent enucleation. Three eyes had primary iris biopsies with subsequent enucleation for refractory glaucoma and pain and one eye underwent primary enucleation. All patients demonstrated malignant tumour characteristics – diffuse 270-to-360-degree ciliary body ring growth pattern, epithelioid-cell type, and the presence of either BAP-1 expression loss or gain of MYC gene. Two patients (50%) developed distant organ metastasis to the liver, parotid gland, and breast. Of those, one patient was deceased at the time of follow-up, while one had completed treatment for metastases.

Conclusions: URM is a rare tumour that is highly invasive and malignant. When detected, prompt definitive treatment should be advocated, and patient counselling should be given regarding the high risk of developing a painful, blind eye with an increased risk of metastasis in the absence of treatment.

Poster No.: PO-357

A Case of Severe Proptosis from Diffuse Large B Cell Lymphoma

*First Author: Pg N H Fitri **PG OTHMAN***
*Co-Author(s): Mohan **RAMALINGHAM***

Purpose: To present a case of diffuse large B cell lymphoma with a drastic progression of proptosis over a three-week period resulting in a drop in visual acuity.

Methods: A 69-year-old Malay woman presented with 1 week's history of right eye proptosis with a slow-growing palpable mass on her right temporal region with 6/12 vision bilaterally. On the Ultrasound B scan, there was a well-defined, extraconal lesion superotemporal orbit with medium to high internal reflectivity. After 3 weeks, proptosis got dramatically worse. It became irreducible, intense, and visual acuity dropped to counting fingers at 3 metres. MRI head showed a lytic lesion with large soft tissue involving the greater wing of the sphenoid. There was also a heterogenic mass in the left orbit extraconal. PET scan showed a hypermetabolic extraconal mass in the right orbit with right temporalis muscle thickening. Hypermetabolic lymph nodes above and below the diaphragm, splenomegaly, and skeletal lesions with adjacent muscle involvement. FNAC performed, and histopathology confirmed diffuse large b cell lymphoma.

Results: The patient was then started on immunotherapy and chemotherapy. After the completion of 6 cycles of chemotherapy, her eye symptoms resolved completely.

Conclusions: Orbital lymphoma may be the first manifestation of disseminated disease and it is essential to take full systemic and heamatological examination. It is important to act swiftly and efficiently as this condition may progress very rapidly. If prompt diagnosis is done, early treatment can be started, and the patient's condition and symptoms can be resolved with a good return of visual acuity.

Poster No.: PO-328

A Retrospective Comparative Analysis of Genetic Factors in Groups of Patients With and Without Metastases of Uveal Melanoma

*First Author: Vera **YAROVAYA***
*Co-Author(s): Aiza **GALBATSOVA**, Ilia **LEVASHOV**, Andrei **YAROVOI***

Purpose: To analyze genetic factors in a retrospective comparative analysis of homogeneous groups of patients with and without metastases.

Methods: This study included 96 patients (96 eyes) with UM after enucleation: 41 NoMTS and 55 MTS. NoMTS were included with a follow-up period of up to 36 months. NoMTS and MTS groups were statistically

homogeneous by all known clinical features (p>0.05). The search for mutations was carried out in GNAQ, GNA11, EIF1AX, SRSF2, and SF3B1. Chromosomes 1, 3, 6 and 8 were analyzed by MLPA. Immunohistochemistry and MLPA were performed for BAP1.

Results: Kaplan-Meier survival analysis showed the GNA11 mutation may indicate an increased risk of metastases at follow-up over 2 years (p = 0.03). EIF1AX gene mutation was frequently detected in NoMTS and associated with high survival (p <0.0001). BAP1 immunohistochemistry had no association with survival (p=0,98). BAP1 deletion (p=0,012) and deletion of 3p (p=0,004) and 3q (p=0,006) were associated with low survival. Deletion of 8p (p<0,0001) and amplification of 8q (p<0,0001) were associated with low survival as well. SF3B1, 6p, 6q did not reveal a significant impact on survival (p>0.05). On the base of our results, a comparison of cytogenetic and mutational classifications was performed and revealed the coincidence of classes in 20% (kappa = -0.007).

Conclusions: Retrospective comparative analysis allowed us to develop a panel of prognostically significant markers for the development of dissemination of UM.

Poster No.: PO-338

Aggressive Alveolar Rhabdomyosarcoma in Adolescence – A Rarer Variant

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Purpose: To report a rare case of Alveolar Rhabdomyosarcoma in an underlying Hodgkin Lymphoma patient.

Methods: A case report.

Results: A 24-year-old man presented with right eye (RE) subacute painless non-axial proptosis and ipsilateral neck swelling for three weeks duration. The RE proptosis was gradually worsening, resulting in diplopia, redness, and tearing. He was previously treated for Hodgkin Lymphoma and remained in remission for 10 years until his current presentation. Initial visual acuity was 6/9 bilaterally with negative relative afferent pupillary defect (RAPD). Ocular examination showed RE partial ptosis with inferotemporal proptosis and prolapsed conjunctiva. RE conjunctiva was injected with the presence of punctate epithelial erosion inferiorly. The posterior segment was unremarkable. The left eye was normal. Magnetic resonance imaging (MRI) of the brain and orbit revealed a large sinonasal tumor with an extension into the orbital apex and surrounding sinuses. The patient was co-managed with the otorhinolaryngology (ENT) team, and an incisional biopsy revealed a small round blue cell tumor with neuroendocrine expression and myoid differentiation. The patient subsequently underwent tumor debulking surgery with incomplete excision. Histopathological examination revealed alveolar rhabdomyosarcoma. Post-operatively, the patient's vision deteriorated to the nonperception of light. Examination revealed RE-positive RAPD with optic disc swelling and exudative retinal detachment. Repeated imaging showed retro-orbital tumor extension with intraconal optic nerve compression. Patient was subjected to a series of chemotherapy and subsequently the RE proptosis and conjunctival prolapse resolved, however his vision could not be salvaged.

Conclusions: The high degree of malignant suspicion, early diagnosis, and a multidisciplinary approach should be implied when dealing with orbital mass or tumor.

Poster No.: PO-350

Assembled Nanodrug Inhibit Uveal Melanoma Growth and Metastasis by Targeting Dysregulation of m6A Modification

*First Author: Hao **TIAN***
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Purpose: To explore new therapeutic targets and treatment for uvea melanoma.

Methods: Uveal melanoma cells treated with meclofenamic acid (MA) were collected for meRIP sequencing. MA was linked to the phosphorothiolated DNA backbone (PSDNA) without affecting the active site via a disulfide bond to construct an MA-loaded spherical nucleic acid (SNAMA). The therapeutic effects of SNAMA were further validated in both orthotopic tumor models and liver metastasis models. Changes in tumor microenvironment were verified by immunofluorescence (IF) analyses.

Results: Agarose gel electrophoresis confirmed the successful linkage of DNA-MA, TEM showed the SNAMA is homodisperse with a 15 nm diameter. DSL revealed a relatively narrow distribution of nanoparticle size. SNAMA presented relative stability in serum, and the fluorescence image showed a good cell uptake rate of SNAMA. CCK-8 demonstrates a higher anti-tumor efficiency in SNAMA than MA, and IC50 was decreased about 4-fold. Additionally, the m6A dot blot presented a restored m6A modification in UM cells after SNAMA treatment, which means the active site of MA was not destroyed. Further, the SNAMA also showed significant efficacy in both orthotopic tumor models and liver metastasis models that it could significantly inhibit tumor growth, as well as enhance the immune microenvironment within the tumor area.

Conclusions: In summary, this study constructed a nanomedicine delivery system that provided a new strategy for the treatment of UM and other malignancy by targeting dysregulation of m6A modification.

Poster No.: PO-358

Breakthrough on the Mechanism of m6A Modification Regulating Tumor Vascularization in Cancer-Associated Fibroblasts

*First Author: Qili **LIAO***

Purpose: Conjunctival melanoma (CoM) is a deadly ocular malignancy. Some studies have reported that the metastasis of CoM is closely related to the highly heterogeneous tumor microenvironment (TME). In addition, more and more epigenetic factors have been gradually revealed in the mechanism of action in ocular melanoma, but there are still gaps in the treatment of m6A methylation modification and CAF. Therefore, we reviewed the interaction between melanoma and fibroblasts, and we hope to find the effect of m6A modification in CAF on tumors.

Methods: With the support of RNA-seq, meRIP-seq and other advanced experimental methods, this study analyzed the changes in the expression levels of Human Dermal Fibroblasts (HDF) and CAF genes. In vitro and in vivo experiments, the effects of FTO in CAF on vascularization in the tumor microenvironment were determined.

Results: HDF was induced to CAF using authoritative methods in vitro, followed by sequencing for both types of cells. Combined with low-throughput experimental results, it was verified that the expression of FTO in CAF was significantly correlated with tumor vascularization. Furthermore, downstream vascularization-related pathways and their key genes were screened out, and then verified by molecular biology experiments.

Conclusions: There is no effective treatment for metastatic ocular malignant melanoma at present, and the prognosis of patients with advanced and metastatic stages is very poor. This study proposed that blocking tumor-associated fibroblasts from promoting tumor development and metastasis through tumor vascularization by regulating the induction effect of tumor cells on fibroblasts, is a potential effective direction to optimize cancer treatment.

Poster No.: PO-353

Characteristics of Computer tomography in the Diagnosis of Orbital Tumors

*First Author: Hang **TRAN***
*Co-Author(s): Anh **NGUYEN**, Hà Huy **THIÊN THANH***

Purpose: To find out the characteristics of Computer tomography in the diagnosis of Orbital Tumors.

Methods: A retrospective review was performed on the clinical and imaging records of 57 patients with a diagnosis of orbital tumor.

Results: Of the 57 patients reviewed in the study, 28 (49,1%) were male and 29 (50,9%) were female. The mean age at presentation was 47.5 ± 19.3 (range 3 - 78). Most of the lesions are located in the superolateral (68,4%), overall orbital length (52,6%), and extraconal (42,1%). The orbital tumor's average size was 26,9 ± 9,5 (mm). Most orbital tumors had high density (73,6%), well-defined margin (68,4%), and no bone erosion (87,8%).

Conclusions: Computed tomography is the most common and cost-effective technique in the diagnosis of orbital tumors.

Poster No.: PO-360

Choroidal Metastases As the Presenting Feature of Disseminated Malignancy

*First Author: Akshay **NAIR***
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Purpose: To report the characteristics and outcomes of cases where the choroidal mass was the presenting feature of previously undiagnosed metastatic cancer.

Methods: Retrospective case series.

Results: A total of 14 eyes of 12 patients were included. The mean age of the patients was 62.5 years. 10 patients had unilateral lesions, and 2/12 had bilateral lesions. In 10/14 (71.4%) of the cases, solitary mass lesions were seen, in 7/14 eyes – there were multiple lesions. Lung was the most common primary site (4/14;28.6%), followed by breast (3/14). The most common complaint was reduced vision (100%), followed by flashes (4/14). The mean duration from onset of symptoms to presentation was 12.6 days. The mean number of metastatic sites involved (on PET-CT) at the time of diagnosis was 2.3. The mean follow-up period was 12.4 months (range 2- 66). In all, 6/12 patients died due to the disease, and the mean duration from diagnosis to death in this cohort was 4.8 months. Patients with solitary lesions had higher survival compared to those with multiple lesions, but this difference was not statistically significant.

Conclusions: Unilateral, solitary choroidal masses are the most common lesion in cases where choroidal mets are the initial presenting feature of disseminated cancer. The lung is the most common primary site. Patients with solitary lesions may have higher survival compared to those with multiple lesions. In our study, 50% of the patients died within 6 months of diagnosis, suggesting that choroidal metastases, when seen as the presenting feature of previously undiagnosed cancer, may have a rapidly downhill course.

Poster No.: PO-364

Clinicopathological Spectrum and Surgical Management of a Rare Presentation of Mucoepidermoid Carcinoma on the Upper Eyelid: A Case Report

*First Author: Kimhour **LAY***
*Co-Author(s): Sam Ang **CHENG**, Piseth **KONG**, Thorn **POK***

Purpose: To report the clinicopathological features and the therapeutic method of mucoepidermoid carcinoma on an atypical left upper eyelid in a low-resource setting country.

Methods: A 60-year-old female patient came with the chief complaint of a painless nodule on her left upper eyelid. She underwent several repetitive incisions of this recurrent tumor at the same location during one year. Clinical examination exhibited a malignancy characteristic-like mass that was presumptively diagnosed as sebaceous gland carcinoma. Tumor excision was performed and reconstructed under the Cutler-Beard flap technique. Pathological examination was being done. The follow-up period is up to 48 weeks.

Results: The pathological finding revealed the characteristics of mucoepidermoid carcinoma rather. The patient passed away 18 months postoperative and was confirmed to have lung cancer.

Conclusions: With its higher malignancy and rareness compared to basal cell carcinoma and squamous cell carcinoma, it is essential not to eliminate mucoepidermoid carcinoma until pathologically proven otherwise. A frequent follow-up post-operative is necessary to detect either its recurrent or metastasis. In a low-resource setting country where surgical excision by Moh's technique is unavailable, total tumor removal may be an alternative option, but at a conscious that the deep margin must be free. Otherwise, the re-surgery must be performed immediately.

Poster No.: PO-335

Coats Disease With Macular Nodule Mimicking Retinoblastoma: A Study of 7 Patients

*First Author: Anasua **KAPOOR***

Purpose: To describe a case series of Coats disease with macular nodules.

Methods: Retrospective case series.

Results: Of 339 patients with Coats disease, 7 (2%) with macular nodules were included. All had a referral diagnosis of retinoblastoma. All were males (mean age - 6 years). The most common presenting complaint was decreased vision (n=4, 57%). The median best corrected visual acuity at presentation was counting fingers close to face, which was maintained at the last follow-up (mean, 8 months). The nodule had a mean diameter of 5x4x3mm, was greyish white, bilobed (n=3,43%) or dome-shaped (n=4,57%) with surface pigmentation (n=4,57%), involving fovea (n=5, 71%), with surrounding exudates and second or third order retinal vessels. OCT (n=4) showed a well-defined hyperreflective subretinal nodule with posterior shadowing, cysts and exudates. USG (n=6) showed an echodense intraocular nodule with moderate internal reflectivity with hyperechoic foci in 2 (33%) cases. FFA showed early and mid-phase hypo-fluorescence with focal leakage with late-phase hyper-fluorescence. Transpupillary thermotherapy was performed in 5, one underwent subretinal fluid drainage and scleral buckling, and one was observed.

Conclusions: Macular nodules in Coats disease are extremely rare and represent a vascular process. Be aware of this entity to ensure appropriate diagnosis and treatment.

Poster No.: PO-333

Conjunctival Melanoma: A 7-Year Study in National Referral Hospital in Indonesia

*First Author: Indah **SARASWATI***
*Co-Author(s): Neni **ANGGRAINI**, Mutmainah **MAHYUDDIN***

Purpose: To identify the clinical characteristics, treatment outcomes, and survival analysis of conjunctival melanoma cases recorded in National Referral Hospital in Indonesia.

Methods: A retrospective cohort study enrolled patients with primary conjunctival melanoma cases at Cipto Mangunkusumo National Referral Hospital in Indonesia between 2015-2022. Clinical characteristics, such as age, gender, cell type, and TNM stage, were recorded. Survival was calculated using the Kaplan-Meier method.

Results: Thirty-seven patients were included in this study. The mean age at diagnosis was 54.7 ± 2.1 years, with female predominance (62.2%). The median follow-up was 36 months (range 8-84). Fifteen patients (40.5%) developed local recurrence during the follow-up (median 6 months; range 1-33). Significantly fewer local recurrences occurred with tumors initially treated with wide excision and adjuvant topical Mitomycin-C 0,04% (40%) rather than with wide excision only (60%). Eight patients (21.6%) underwent orbital exenteration. Twelve patients (32.4%) developed distant metastases (mean follow-up 15.1± 3.9 months), mainly in the lung, liver, and bones. The recurrence-free survival after 1 and 5 years was 70.3% and 59.5%, respectively. The overall survival rate was 97.3% after 1 year and 85.7% after 5 years.

Conclusions: Conjunctival melanoma is a rare malignancy and proves to be a management challenge. The tumor behavior was aggressive due to high local

recurrence and distant metastasis rates despite the current management. The surgery followed with adjuvant treatment can possibly decrease the risk of local recurrence.

Poster No.: PO-345

En Face Swept-Source Optical Coherence Tomography (SS-OCT) and SS-OCT Angiography Findings of Retinal Astrocytic Hamartomas in Patients With Tuberous Sclerosis Complex

*First Author: Chenxi **ZHANG***
*Co-Author(s): Qin **LONG**, Kaifeng **XU**, Zhikun **YANG**, Xiao **ZHANG**, Zhiqiao **ZHANG***

Purpose: To investigate the en face swept-source optical coherence tomography (SS-OCT) and SS-OCT angiography (SS-OCTA) features of tuberous sclerosis complex (TSC)-associated retinal astrocytic hamartoma (RAH).

Methods: 10 TSC-associated RAH patients were imaged with en face SS-OCT, SS-OCTA and fundus photography.

Results: Of the 10 TSC patients, 21 RAH lesions were fully scanned. On en face SS-OCT, 17 of 21 RAH presented vitreous changes and the vitreoretinal traction was clearly shown in 6 RAH lesions. Calcified components of type 2 RAHs were illustrated as closely arranged isoreflective vesicles, while those of type 3 RAHs were shown as sharply defined dark areas. On SS-OCTA, a dense vascular network with disorganization of RPC was revealed in almost all the type 1 RAHs, and half of them (9/18) had congestive intrinsic microvasculature. Feeder vessels were only identified in 2 type 1 lesions. Nonflow moth-eaten cavities were the characteristics of calcified components of type 2 or type 3 RAHs. The tumor vascular density was positively correlated with tumor maximal thickness in type 1 RAH ($r=0.510$, $P=0.037$).

Conclusions: For TSC-associated RAH, en face SS-OCT had a good display of RAH-related vitreoretinal traction and tumor calcification, while SS-OCTA clearly visualized the intratumoral vascularity.

Poster No.: PO-604

Eyelid Reconstruction According to Lid Defect After Malignancy Resection

*First Author: Ji Sun **PAIK***
*Co-Author(s): Abdulaziz S **ALHARTHI**, Suk-woo **YANG***

Purpose: To determine the clinical outcomes in patients who underwent surgical resection and various types of lid reconstruction according to eyelid malignancy conditions.

Methods: This retrospective study was performed on all patients with eyelid malignant tumors who underwent tumor removal and eyelid reconstructive procedures extended over a 17-year period from 2004 to 2021.

Results: A total of 152 patients with surgical excision with eyelid reconstruction or orbital exenteration due to eyelid Malignancy were enrolled in this study. Basal cell carcinoma was the most common eyelid malignant tumor (52.6%), and sebaceous cell carcinoma was the second most common type (32.2%). The most common eyelid location involved depends on the histological tumor type. Different reconstructive techniques were performed to maintain eyelid function and cosmesis. Direct lid closure was the most used procedure to primarily close the defect. There were a few postoperative complications based on the procedure type, including ectropion, entropion, canalicular obstruction, and scar, requiring additional surgery. The outcomes of these surgical therapies for the majority of patients in this study were satisfactory. Recurrence was observed in 13 cases after eyelid tumor excision.

Conclusions: Surgical excision and reconstruction remain the mainly used therapeutic options for eyelid malignancy, with a variety of techniques used based on tumor size, location, and extension, resulting in proper lid position and function.

Poster No.: PO-359

Global Sentiment for Retinoblastoma and Enucleation: A Machine Learning Approach For Multi- National Multi-Platform Social Media Analysis

*First Author: Emily **WONG***

Purpose: The use of social media in cancer research, patient support, and information sharing has been well documented in health care. In this study, we evaluate the role of social media, investigate its applications, and identify the reasons for treatment disparity and delay in retinoblastoma treatment across regions globally.

Methods: Posts on retinoblastoma were extracted from Twitter, Weibo, Instagram, YouTube, Weixin, and Facebook. We trained 3 Bidirectional Encoder Representations from Transformers models (BERT) to identify the relevance and conducted sentiment analysis. The Hierarchical Dirichlet Process was trained to identify topics. Network analysis was conducted to identify key drivers for discussions. Retinoblastoma outcomes were obtained from systemic review and meta-analysis, covering articles published between January 1, 1981 and October 8, 2021.

Results: More than 2 million posts were extracted from the included social media platforms. Regions with more reluctance towards enucleation were associated with poorer survival ($\beta=-0.9993$, $p=0.0011$). Active participation of clinical staff ($\beta=-0.1052$, $p=0.0111$) and academia ($\beta=-0.1164$, $p=0.0126$) in the discussion was associated with lower enucleation hesitancy. Network

analysis for discussions from regions with poorer survival and higher reluctance revealed infrequent participation by healthcare professionals, media outlets, and patient support groups.

Conclusions: There are extensive applications of social media for retinoblastoma education and support, more in North America and Western Europe than in other regions. Targeted information dissemination by trained personnel can improve acceptance in vulnerable zones and hence outcomes. Timely support should be provided for all patients, though some may not express their needs to receive early management.

Poster No.: PO-346

Globe Salvage Treatment With Primary Radical Chemoradiotherapy for Lacrimal Gland Adenoid Cystic Carcinoma (LGACC)

*First Author: Preethi **JEYABAL***
*Co-Author(s): Paul **CAUCHI***

Purpose: To describe a case of adenoid cystic carcinoma of the lacrimal gland eye treated with primary radical radiotherapy and concurrent chemotherapy and review the outcome.

Methods: A descriptive case study.

Results: A 44-year-old female presented with left eye ocular surface symptoms related to dryness. Her right eye vision was reduced to 6/18 due to adult-onset vitelliform macular dystrophy (AVMD), and her left eye vision was 6/9. She had 5mm axial proptosis in her left eye. There was the fullness of superior orbit with a firm, immobile mass in the lacrimal fossa area. Ocular motility was full with no optic neuropathy. CT Orbits showed an extensive mass inseparable from the lacrimal gland occupying 50% of the lateral orbit in both intra and extraconal spaces with destruction of the bony orbital walls. MRI scan showed involvement of dura. An orbital incisional biopsy was performed, which confirmed LGACC with no peri-neural invasion (AJCC Stage T4bNo). As the tumour was not considered surgically resectable due to dural involvement, and this was the side of the better-seeing eye, a multi-disciplinary team decision to treat it with primary radical chemoradiotherapy was made instead of radical surgery. She underwent primary radiotherapy (65Gy over 30 fractions) with 2 concurrent cycles of Cisplatin. The tumour decreased in size significantly, and there has been no evidence of disease recurrence or metastatic spread 7 years post treatment with retention of her eye.

Conclusions: Primary chemoradiotherapy could be considered as a treatment option in the management of the LGACC lacrimal gland as a globe-sparing treatment in certain situations.

Poster No.: PO-343

Globe Salvage Treatment in Group D and Group E Retinoblastoma

*First Author: Hussain **KHAQAN***

Purpose: To evaluate four treatment strategies in group D and group E retinoblastoma.

Methods: Eight-one patients with Group D and Group E retinoblastoma. Participants were divided into four sets. In set I, eyes received primary intravenous chemotherapy (IVC), cryotherapy (CT), laser therapy (LT) and Intravitreal Chemotherapy with Melphalan (IViC). In set II, primary IVC was combined with second-line IVC, CT, LT, and IVT-M. Set III eyes received primary IVC and Intra-arterial chemotherapy (IAC), CT, LT and IViC. Set IV eyes received IAC, CT, LT and IViC. Treatment failure was defined as inadequate response during or after IVC or IAC. Main Outcome Measures: globe salvage and enucleation rates.

Results: Fifty-two eyes were included in Group D and 29 in Group E. In group D, globe salvage was obtained in 8 out of 11 eyes in Set I, 13 out of 19 eyes in set II, 5 out 6 eyes in set III, and 13 out of 16 eyes in set IV. In group E, enucleation was performed in 17 eyes. Global salvage was obtained in 0 out of 2 eyes in set I, 2 out of 3 eyes in set II, 3 out of 5 in set III, and in 1 out of 2 eyes in set IV.

Conclusions: IVC with adjuvant IAC, LT, CT and IViC has shown favorable results as a treatment method for group D and group E retinoblastoma. Keywords: retinoblastoma, intravenous chemotherapy, intravitreal Melphalan, globe salvage.

Poster No.: PO-352

Histone Lactylation Drives Oncogenesis by Facilitating m6A Reader Protein YTHDF2 Expression in Uveal Melanoma

*First Author: Jie **YU***
*Co-Author(s): Shengfang **GE**, Yu **HUA***

Purpose: Histone lactylation, a metabolic stress-related histone modification, plays an important role in the regulation of gene expression during M1 macrophage polarization. However, the role of histone lactylation in tumorigenesis remains unclear. Therefore, we decided to explore the potential function of histone lactylation in uveal melanoma.

Methods: We used western blot and immunofluorescent staining to identify the histone lactylation level in both uveal melanoma cell lines and tissue samples. We also explored their prognostic value in ocular melanoma. In addition, chromatin immunoprecipitation (ChIP)-seq and RNA-seq conjoint analysis were applied to identify the regulatory targets of histone lactylation.

Results: Here, we showed histone lactylation was elevated in tumors, which was associated with a poor prognosis of uveal melanoma. Target correction of aberrant histone lactylation triggered therapeutic efficacy both in vitro and in vivo. Mechanistically, histone lactylation contributed to tumorigenesis by facilitating YTHDF2 expression. Moreover, YTHDF2 recognized the m6A-modified PER1 and TP53 mRNAs and promoted their degradation, which accelerated tumorigenesis of uveal melanoma.

Conclusions: We initially revealed the oncogenic role of histone lactylation, thereby providing novel therapeutic targets for uveal melanoma therapy. We also bridged histone modifications with RNA modifications, which provided a novel understanding of epigenetic regulation in tumorigenesis.

Poster No.: PO-348

Immunohistochemistry Expression of MYD88 and Its Relationship With Prognosis in Ocular Adnexal B-Cell Non-Hodgkin Lymphoma at Cipto Mangunkusumo Hospital

*First Author: Karina **LUTHFIA***
*Co-Author(s): Neni **ANGGRAINI**, Agnes Stephanie **HARAHAP**, Joedo **PRIHARTONO***

Purpose: To determine the relationship between the expression of the MYD88 immunohistochemical (IHC) marker and the prognosis in terms of overall survival (OS), event-free survival (EFS), and progression-free survival (PFS) in patients with ocular adnexal B-cell lymphomas.

Methods: This study is a retrospective cohort study. Cross-interpretation of medical record data of patients with ocular adnexal B-cell lymphomas and MYD88 IHC staining on paraffin blocks was performed. Fisher's exact test was used to assess the results of MYD88 IHC expression. A log-rank test was applied to evaluate the impact of MYD88 IHC expression on OS, PFS, and EFS values.

Results: The total number of subjects was 47, with 57.4% males and 42.6% females. The mean age of the study subjects was 58.11±14.3 years. The most common histopathological type was Extranodal Marginal Zone Lymphoma (EMZL) (83%). Strong MYD88 expression scores were found exclusively in DLBCL ($p<0.001$). The OS rate was 80%, the PFS rate was 55%, and the EFS rate was 82%. The strong expression of MYD88 is associated with a likelihood of 2.16 times for low overall survival (OS) value ($p=0.357$). On the other hand, due to the low number of the more aggressive type of lymphoma, nonsignificant outcomes were also observed in terms of PFS and EFS.

Conclusions: There was no significant difference in the expression of strong and weak MYD88 in the cytoplasm of ocular adnexal B-cell lymphomas and its association with prognosis in terms of OS, EFS, and PFS. However, a trend was observed suggesting a relationship between strong MYD88 expression and lower OS rates.

Poster No.: PO-331

Kimura – Rare Yet Not So Rare Tumour

*First Author: Samhitha **R***

Purpose: To highlight importance of clinical suspicion and histopathology in diagnosing Kimura's disease of the orbit.

Methods: A 25-year-old male came with c/o swelling near the medial canthus in the upper lid on and off since 8 months. Previous notes from the attending ophthalmologist mentioned a left upper lid firm mass. CT done elsewhere gives a report of lacrimal sac tumour, films not available. O/E soft- firm mass present in medial 1/3 of UL, non-tender, in anterior orbit, well-defined, smooth surface, EOM normal, rest orbit normal. A provisional diagnosis of a benign orbital tumour was made, an excision biopsy was done, and the sample was sent for histopathology. HPE showed features of Kimura's disease. The patient has been advised to further blood investigations and renal evaluation.

Results: Kimura's should be considered as a differential in young males of Asian descent with firm, painless nodular subcutaneous or orbital mass, especially in the superior orbit. It has to be differentiated from AHLE by HPE. AHLE shows atypical histiocytes in the vascular endothelial cells, does not show peripheral eosinophilia, and has no systemic associations. Once diagnosis of Kimuras is made, it is important to evaluate for various systemic associations, including asthma, nephrotic syndrome, sinusitis, tuberculosis, and Loeffler's syndrome. Kimuras can be treated with excision biopsy, and deeper, larger lesions in orbit also respond to radiotherapy.

Conclusions: Kimuras is a rare yet not so rare orbital tumour in Young Asian males. A complete excision biopsy, thorough HPE and further blood systemic evaluation can differentiate this from other conditions and successfully treat it.

Poster No.: PO-347

Malignant Eyelid Tumor at a Tertiary Eye Center in Indonesia: Clinical Features and Management

*First Author: Raissa **TANTO***
*Co-Author(s): Shanti **BOESOIRIE**, Rinaldi **DAHLAN**, Ni Luh Putu Ayu **DEWI***

Purpose: To describe the clinical features and management of malignant eyelid tumors at a tertiary eye center in Indonesia.

Methods: This descriptive retrospective study obtained data from medical records of patients who underwent

surgery and were diagnosed with malignant eyelid tumors confirmed by histological examination. The study period was between January 2021 to December 2022 at a tertiary eye center in Indonesia. Clinical features and management were evaluated.

Results: A total of 66 patients were included. The subjects were mainly female (66.67%), with a mean age of 59.05±13.195. The most common type of malignant eyelid tumor was basal cell carcinoma (42.42%) with 37.88% inferior eyelid involvement. Tumors were predominantly hard in consistency (75.75%), immobile (92.42%), well-demarcated (72.73%), ≥10 mm in size, and unilateral (98.48%) at presentation. The mean duration of onset was 24.94±35.940 months. Wide excision with reconstruction accounted for 75.75% of the surgical procedure. Recurrences were seen in 24.25% of patients.

Conclusions: Basal cell carcinoma was the most prevalent malignant eyelid tumor in this study. Hard, immobile, demarcated, larger than 10 mm tumors are features suspicious for malignancy. Surgical excision with negative margins remains the mainstay treatment. The definitive diagnosis is carried out by histopathological examination.

Poster No.: PO-349

Molecular Characteristics of Primary Orbital Liposarcoma - An Analysis of 4 Cases With Clinicopathologic Correlation

*First Author: Yidian **FU***
*Co-Author(s): Renbing **JIA**, Shichong **JIA**, Yang **LUDI***

Purpose: Primary orbital liposarcomas represent low morbidity. However, its high recurrence rate seriously impacts patients' quality of life. Few cases reported in the modern literature hinted a lack of standard regimen in its treatment. The efficacy of surgery, radiotherapy, and other approaches are still unclear. We aim to summarize the clinical features and outcomes and identify molecular characteristics of primary orbital liposarcoma.

Methods: Clinical data of four patients diagnosed with orbital liposarcoma was collected in our hospital from November 2016 to October 2022. Whole-exome sequencing was performed on two patients. PubMed was searched for patients diagnosed with orbital liposarcomas.

Results: Four cases of primary orbital liposarcoma were included, 2 of which were primary presentations, and the rest were recurrences. Exenteration was performed in 2 cases. One patient died of metastatic liposarcoma, one patient had pulmonary metastasis, and the rest were alive with no recurrence. One case was associated with the Li-Fraumeni syndrome and other malignancies. The top 10 mutated genes included COL1A1 and COL1A2, which participate in tumor progression and metastasis. Copy number variation analysis revealed amplifications in chromosome 12q14.1, in consistence with the molecular features of well-differentiated liposarcomas. A total of 72 patients diagnosed with orbital liposarcoma were reviewed from PubMed. Patients with a history of recurrence were more prone to die than those without recurrence before (p=0.04). The orbital exenteration showed a protective effect on tumor recurrence (p=0.003).

Conclusions: Our study provides novel insight into the primary orbital liposarcoma and unveils its genetic background and potential pathogenic features to instruct promising therapeutic strategies.

Poster No.: PO-334

Ocular Outcomes of Group D Versus Group E Retinoblastoma Among Patients Treated With IAC

*First Author: Iqra **ASLAM***

Purpose: To determine the ocular outcomes of Group D retinoblastoma versus ocular outcomes in E among cases treated with IAC because of being refractive to conventional systemic chemotherapy.

Methods: Study design: Cross-sectional, retrospective study. Sampling Technique: Consecutive non-probability sampling.

Results: Vision was preserved in 90% of cases of group D and. 78% with group E patients who were treated with IAC.

Conclusions: IAC is effective in preventing enucleation and preserving vision in both group D and E retinoblastoma refractory to systemic chemotherapy.

Poster No.: PO-337

Ocular Surface Squamous Neoplasia in Hepatitis B Seropositive Patients- Incidence, Risk Factors, Clinical Features and Treatment Outcomes

*First Author: Anasua **KAPOOR***
*Co-Author(s): S **KALIKI***

Purpose: Study the clinico-morphological characteristics and management outcomes in OSSN with hepatitis B.

Methods: This was a retrospective case-control study. Out of 438 OSSN patients, 14 patients who had an associated hepatitis B were included as cases and 67 as controls.

Results: The majority had nodular OSSN, with limbus being the epicenter similar to the control group; however, diffuse OSSN, and OSSN involving fornix, or tarsal conjunctiva were more prominent in cases. 6 (42%) had more than or equal to T3 AJCC grading AJCC grading. Eight underwent wide excision biopsy, one enucleation, and 2 exenteration. The base was

positive on histopathology in 5 patients, out of which 3 patients received plaque brachytherapy. 2 patients had a recurrence. Rest all were tumor-free, surviving at the last follow-up.

Conclusions: OSSN occurring in hepatitis B patients is more aggressive with a high rate of involvement of forniceal and tarsal conjunctiva with high base positivity, advanced T stage, and needs aggressive management.

Poster No.: PO-336

Orbital Candidiasis Presenting as Necrotizing Cellulitis: A Rare Case Report

*First Author: Rizaldy Zulham **SUARDI***
*Co-Author(s): Suliati **AMIR**, Halimah **PAGARRA**, Andi **PRATIWI***

Purpose: Necrotizing orbital cellulitis usually occurs in immunocompromised patients and is mainly caused by mucormycosis. We aim to report a rare case of orbital candidiasis presenting as necrotizing cellulitis in a patient with uncontrolled diabetes mellitus.

Methods: To present a case report.

Results: A 76-year-old female patient was admitted due to painful swelling of her right palpebra with skin erythema, production of blood-tinged tears, and difficulty opening the affected eye. Diabetes mellitus was found during the hospitalization. The superior and inferior palpebrae displayed black necrotic skin and discharge, suggesting mucormycosis. A discharge sample from the necrotic palpebra was then obtained and cultured. The culture results surprisingly showed the presence of candida tropicalis. The patient underwent right eye exenteration due to the severe extent of the infection and the presence of an intraorbital abscess. She was then treated with fluconazole, metronidazole, and ciprofloxacin. A fungal culture taken from the procedure on Sabouraud dextrose agar revealed hyphae with an unidentified fungus species. Histologic findings also showed necrotic masses, ulceration of the cornea, and inflammation on the choroidal layer of the sclera. 20 days after exenteration, there was an improvement both in the eye and the jaws, showing granulation.

Conclusions: Despite its rarity, orbital candidiasis presenting as necrotizing cellulitis carries a high risk of mortality and, thus, may require invasive surgical management. Identification through culture was mandatory to differentiate from other fungal-origin orbital infections.

Poster No.: PO-342

Pilomatrixoma Eyelid Mimicking Sebaceous Gland Carcinoma

*First Author: Priyanka **GOLHAIT***
*Co-Author(s): Ruchi **GOEL**, Ravindra **SARAN***

Purpose: To report a case of pilomatrixoma of the eyelid, misdiagnosed as sebaceous gland carcinoma.

Methods: A 57-year female presented with a painless right upper lid mass since six months. The mass was small to begin with, gradually increasing in size over six months to 16*8mm. It was adhering to the tarsus with multiple yellowish globules and overlying dilated telangiectatic vessels. The lid architecture was distorted with the loss of eyelashes. The anterior and posterior segments were unremarkable, with extraocular movements being complete and unrestricted. There was no lymphadenopathy and systemic investigations including CECT chest and abdomen were unremarkable. There was no prior history of surgical intervention for the lesion. Considering the clinical features and patient profile, we made a provisional diagnosis of right upper lid malignancy, most likely sebaceous gland carcinoma. The patient underwent a frozen section biopsy with wide margins (4mm), followed by lid reconstruction with Tenzel's semicircular flap.

Results: Histopathology showed a cystic cavity surrounded by a capsule lined by basaloid cells arranged in sheets with many shadow cells. There was abrupt central keratinization with the absence of a granular cell layer, with focal areas of calcification and mononuclear cell inflammation. The features were suggestive of pilomatrixoma, and the resection margins were tumor-free. There has been no recurrence in the past one year.

Conclusions: Pilomatrixoma is a rare, benign neoplasm arising from the hair root matrix. It is often misdiagnosed clinically, and a definitive diagnosis can be established on histopathological evaluation. It must be kept in mind as a differential while working up eyelid tumors as it can mimic malignant eyelid lesions and undergo malignant transformation.

Poster No.: PO-362

Poroid Hidradenoma Arising on the Lower Lid: A Case Report

*First Author: Patricia Abigail **LIM***

Purpose: Poroid hidradenoma is a rare neoplasm, characterized by benign eccrine differentiation, with solid and cystic dermal components, within adnexal structures. Its clinical, radiologic and histopathologic characteristics closely resemble highly malignant neoplasms. If not completely excised, its recurrence rate is 12% and its malignant transformation rate is <1%. We aim to discuss a case of poroid hidradenoma presenting as a malignant lower lid tumor. The

exceedingly rare nature of this case demonstrates its management and outcome in our local setting.

Methods: The manuscript details the treatment progress of a patient seen in a tertiary hospital in the Philippines.

Results: A 61-year-old female presented with a slowly growing, smooth, well-circumscribed, hyperpigmented, pedunculated, and telangiectatic left lower lid mass that measured 23 x 21 x 15mm, causing mechanical ectropion and lagophthalmos of her left eye. Initial clinical differential diagnoses considered were basal cell carcinoma, melanoma, and hemangioma. The tumor was surgically excised en toto and was submitted for histopathologic evaluation. All histopathologic features were consistent with poroid hidradenoma; namely, strict confinement of the tumor to the dermis without overlying connection to the epidermis, prominent cystic and solid components, and monomorphous population of either basaloid cells or large cuticular cells.

Conclusions: When encountering lid tumors, a detailed knowledge of differentials, coupled with proper surgical technique and apt histology, can result in the prompt detection and subsequent correct management of even the rarest of entities.

Poster No.: PO-363

Prevalence of Eyelid Tumors in A Tertiary Government Hospital in the Philippines: A 5-year Review

*First Author: Allyson Rose **FACUNDO***

Purpose: To describe the epidemiology of primary eyelid tumors over a 5-year period in a tertiary hospital in the Philippines.

Methods: This retrospective study examined the histopathology of eyelid tumors treated from 2015 - 2020. Demographic profiles were also collected, like age, gender, and laterality of lesion. Descriptive statistics were used to identify the subgroups.

Results: A total of 148 eyelid tumors comprised the study sample. 72 were excluded; 76 were included. There were 14 (18%) malignant cases and 62 (82%) benign cases. For malignant tumors, there were 57% basal cell carcinomas, 14% sebaceous gland carcinoma, 7% squamous cell carcinomas, and 7% lymphoma. The benign eyelid lesions were comprised of 12% nevi, 11% dermoid cysts, 8% keratinous cysts, and 8% seborrheic keratosis. Benign eyelid lesions occurred with equal frequency in the left and right lids. Malignant lesions were more frequently located in the left lid.

Conclusions: In one of the tertiary hospitals in the Philippines, benign lesions are more common than malignant ones. Benign lesions were nevi, cysts and seborrheic keratosis. Malignant lesions were basal cell carcinoma, squamous cell carcinoma and sebaceous gland carcinoma.

Poster No.: PO-339

Pseudo-Retinoblastomas: Evidence From Histopathology and Supported by Molecular Pathology Study

*First Author: Jessica **BASUMATARY***
*Co-Author(s): Harsha **BHATTACHARJEE***

Purpose: To present different cases of pseudo-retinoblastomas in enucleated eyeball specimens supported by immuno-histochemical (IHC) staining.

Methods: Enucleated eyeballs with the diagnosis of intraocular lesions were subjected to enucleation after proper consent. Gross and histopathological examinations were carried out in those cases and were documented. Special stains and immunohistochemistry tests were done in selected cases.

Results: A total of 11 cases were seen, with ages ranging from 4-17 years, and the male: female ratio was 8:3. Coats disease was seen in eight cases, two cases were of persistent hyperplastic primary vitreous (PHPV) and one case was of retinal dysplasia.

Conclusions: Atypical rosettes in retinal dysplasia and various other interesting changes in PHPV and Coats disease were noted and documented.

Poster No.: PO-344

RNA N6-Methyladenosine Demethylase FTO Regulates ATG5 via Autophagy to Inhibit Malignant Progression of Uveal Melanoma

*First Author: Yating **YANG***
*Co-Author(s): Yong **CHENG**, Jianhong **LIANG***

Purpose: The research aimed to identify the function of fat mass- and obesity-associated protein (FTO), an eraser of N6-methyladenosine (m6A), and explore its possible mechanisms in uveal melanoma (UVM).

Methods: We used the quantitative real-time PCR, western blot and gene correlation analysis with Gepia2 to identify FTO and its potential targets in uveal melanoma. To determine the underlying mechanism for the axis of FTO-ATG5, we performed CCK-8 assay, colony formation, cell migration, wound healing assays, cell cycle assay, and Cell apoptosis assay in 2 uveal melanoma cell lines.

Results: It was recognized that FTO, a key m6A demethylase, was upregulated in human uveal melanoma tissues compared with that in normal choroid tissues. Knockdown of FTO in Mel270 and OMM2.7 cells significantly promoted proliferation, migration and suppressed apoptosis. We identified ATG5, an autophagy-related gene, as a downstream target of FTO-mediated m6A modification. ATG5

dramatically alleviated FTO-down-regulation-dependent tumor growth and metastasis.

Conclusions: Our findings demonstrate the functional significance of the m6A demethylase FTO by regulating ATG5 through autophagy in uveal melanoma, and suggest that FTO may serve as a novel potential therapeutic target of uveal melanoma.

Poster No.: PO-329

Recurrent Chalazion in the Young and the Elderly – Thinking Beyond Sebaceous Gland Carcinoma!

*First Author: Shalin **SHAH***
*Co-Author(s): Ruchi **GOEL***

Purpose: A recurrent chalazion is a red flag for malignancy, classically sebaceous gland carcinoma (SGC). Elderly and immunocompromised cases are primarily predisposed to ocular adnexal malignancies.

Methods: Case 1: A 75-year-old female with recurrent swelling of the right upper lid for 8 months. 10x6mm firm nodular, yellowish lesion with dilated vessels, loss of eyelashes, ulceration on lateral one-third of right upper eyelid suggested possible SGC. No palpable lymph nodes, negative systemic metastatic workup. A wide excision was done, followed by lid and lateral canthus reconstruction. Case 2: A 35-year-old female with recurrent swelling on her left upper eyelid for 2 years. 15x10mm firm, nodular mass was palpated on the medial one-third of the upper eyelid, with symblepharon formation underneath. No palpable lymph nodes, negative systemic metastatic workup, negative workup for immunocompromised status. A wide excision was followed by a lid and medial canthus reconstruction.

Results: Case 1: Histopathology confirmed atypical cells with palisading and separation artifacts, suggestive of nodular basal cell carcinoma (nBCC). 3mm margins were clear. The final diagnosis was BCC T1cN0M0. The patient has no recurrence at 16-month follow-up. Case 2: Histopathology confirmed atypical small blue round cells with immunohistochemistry markers positive for synaptophysin, chromogranin, TTF–1, CK20, CAM5.2. This was suggestive of Merkel cell carcinoma (MCC). 4mm margins were clear. The final diagnosis was MCC T2N0M0. The patient has no recurrence at 5-month follow-up.

Conclusions: The atypical presentation of eyelid malignancies is well-documented. BCC and MCC can be potential mimickers of SGC, in the form of recurrent chalazia. Detailed histopathology of every lid mass is essential.

Poster No.: PO-356

Retinochoroidal Manifestations in Choroidal Osteoma

*First Author: Suganya **N***
*Co-Author(s): George J **MANAYATH**, Veerappan **SARAVANAN**, Narendran **VENKATAPATHY***

Purpose: The aim of this presentation is to describe the retinochoroidal manifestations and multimodal imaging features of a case series of choroidal osteomas to help decide on treatment.

Methods: We describe a case series of 19 eyes from 17 patients of choroidal osteoma, who underwent multimodal imaging like fundus photo, fundus autofluorescence, fundus fluorescence angiography, Indocyanin green angiography, optical coherence tomography, OCT angiography, Ocular Ultrasound. The first patient presented with choroidal osteoma with Type 2 CNVM with subretinal haemorrhage was successfully treated with photodynamic therapy. The second patient, who had choroidal osteoma with Type 1CNVM, underwent multiple doses of Avastin injections and had persistent SRF, but responded well to aflibercept injection. Three patients had choroidal osteoma with type 2 CNVM who underwent multiple injections of Anti VEGF agents, 3 patients had choroidal osteoma with subretinal fluid with no associated CNVM,1 patient had macular choroidal osteoma with decalcification, 2 patients had bilateral choroidal osteoma, 8 patients had choroidal osteoma with no SRF /CNVM and was advised periodic follow-up.

Results: Multimodal imaging is important to understand the diagnostic signs of choroidal osteoma and the retinochoroidal manifestations like SRF and Secondary CNVM which aids in treatment and monitoring treatment response. CNVM is an important complication of choroidal osteoma which needs prompt intravitreal injections to preserve vision.

Conclusions: Choroidal osteoma per se may need only close observation. However, the presence of SRF in the absence of CNVM may resolve spontaneously or respond with Anti VEGF or is resistant to intravitreal injection, if associated with CNVM then AntiVEGF is the first line of treatment.

Poster No.: PO-351

Role of Perilesional Bleomycin in Eyelid and Periocular Basal Cell Carcinoma

*First Author: Rajendra **MAURYA***
*Co-Author(s): Shreya **SHAH**, Vinod **SINGH**, Shivangi **SINGH***

Purpose: To evaluate the role of perilesional bleomycin as a sole or adjuvant therapy in eyelid and periocular basal cell carcinoma.

Methods: This was a retrospective evaluation of 16 patients of Periocular BCC who received perilesional

bleomycin injection at a dose of 0.5 mg/ kg body weight (Maximum 15mg) along with 2% lignocaine. Repeat injections were given as per requirement, at intervals of 4 weeks. Clinical regression of lesions & complications were evaluated. Serial photographic comparisons were done.

Results: Out of 16 patients, 9 (56.3%) were females. The maximum patient had diffuse BCC of the lower eyelid (50.0%) followed by BCC of medial canthus (25.0%), the upper eyelid with lateral canthus (18.8%). One patient had BCC of eyebrow. All patients were treated with 3-4 injections. The follow-up period ranged from 6-18 months. 68.8% had complete resolution, 18.8% had poor response, and recurrence was observed in 4 patients of BCC. No long-term systemic complications were noticed.

Conclusions: Perilesional bleomycin therapy may be an effective & safe adjuvant therapy for extensive BCC.

Poster No.: PO-340

Scrutinizing Ocular Foreign Bodies Under the Microscope

First Author: Jessica ***BASUMATARY***
Co-Author(s): Harsha ***BHATTACHARJEE***

Purpose: To study the pathological significance of ocular foreign bodies (FBs).

Methods: This is a hospital-based, retrospective, laboratory study conducted between 2010 and 2015. Different tissues, including eyeball specimens received in an ocular pathology laboratory in a tertiary institute in northeast India, were studied. The tissues were grossly examined under a dissecting microscope and then stained with hematoxylin and eosin stain for histopathological analysis. Specialised stains such as Perl's stain, Grocott's methenamine silver, Periodic acid-Schiff and Congo red were also used.

Results: Sixteen pathological specimens with various FBs were seen and classified. There were six cases of iron FBs, copper FB was found in one case of phthisis bulbi and three cases of vegetative FBs were seen in the orbital/lid tissues, one conjunctival specimen had urate crystals and one had tripod glass wool FB. FBs were also retrieved from the exciting eye of two cases of sympathetic ophthalmia. One case of insect FB and one case of cilia were also detected in the cohort. Hospital records for the clinical profile, ultrasound findings and other radiological investigations were also noted.

Conclusions: Iron FB was the most common in the study; large-sized FBs caused significant damage to the ocular structures. Pathological diagnosis of the FBs is important for evidence-based medicine.

Poster No.: PO-603

Study on the Mechanism of Nano Diagnostic and Therapeutic Agent With Photothermal Response and Radiation-Sensitivity in Treatment of Melanoma

First Author: Hongpei ***DENG***
Co-Author(s): Huimin ***LIN****, Jingjing* ***RUAN****, Jie* ***YU***

Purpose: Uveal melanoma (UM) is the most common primary intraocular malignancy in adults. The single treatment strategy is limited by high radiation dose, multiple complications, and poor efficacy. Thus, this study is to clarify the mechanism of nanosensitizer for tumor radiotherapy (RT) combined with photothermal therapy (PTT), developing a new nano-agent for UM treatment.

Methods: In this study, polydopamine doped with gold nanoparticles is chemically modified on the surface of GQDs to improve the stability and photothermal conversion efficiency in the physiological environment. Accordingly, a new radiotherapy/hyperthermia nano-sensitizer (GQDs@PDA/Au) is developed, then evaluating the biosafety, cellular uptake, pharmacokinetics, and therapeutic mechanism in vitro and in vivo.

Results: The characterization results of transmission electron microscopy, Raman spectroscopy, and UV absorption show the successful preparation of GQDs@PDA/Au with a relatively uniform morphology. GQDs@PDA/Au indicates excellent photothermal effect under irradiation for 5 min by laser with 650 nm of wavelength and a power of 1.0 W/cm2. The antitumor performance is investigated by cell proliferation experiments and tumor-bearing mice, illustrating that GQDs@PDA/Au is an effective therapy agent for tumor therapy, and RT combined with PTT has the most significant tumor-killing effect.

Conclusions: GQDs@PDA/Au, with favorable biological safety, good photothermal conversion efficiency and radiation-sensitivity, is a multifunctional therapy platform of PTT and RT on tumors. Furthermore, these nanoparticles much more significantly suppress UM compared with the single treatment. Therefore, this study provides a unique approach to promote the application of RT combined with PTT in the clinical treatment of ocular tumors.

Poster No.: PO-354

Subconjunctival Tumor: Surprise Surprise!

First Author: Puneet ***JAIN***
Co-Author(s): Kaustubh ***MULAY***

Purpose: To document a rare case of a pleomorphic adenoma of the palpebral lobe of the lacrimal gland presenting as a subconjunctival mass.

Methods: A case report of a 30-year-old female presenting with a slow-growing, painless mass on her right eye and a review of literature.

Results: Examination showed a well-defined, firm, non-tender, reddish subconjunctival mass located in the lateral fornix, abutting the palpebral lobe of the lacrimal gland. The surface was smooth and the overlying bulbar conjunctiva was free with a few telangiectatic blood vessels. The posterior extent of the mass was not clinically appreciable. There was no proptosis and extraocular muscle movements were full, free and painless. The vision was 20/20, intraocular pressure-16 mm Hg and Schirmer's was 26 mm. Fundus examination was unremarkable. There was no regional lymphadenopathy. Ultrasonography did not reveal any hyperechogenic focus. Computed tomography scan of orbit showed a well-defined, homogenous, isodense mass with minimal post-contrast enhancement. The patient underwent excision biopsy via a transconjunctival approach and the tumor was removed in toto with intact pseudo-capsule. Histopathology revealed an encapsulated biphasic tumor composed of epithelial and stromal components. The post-operative period was uneventful and a 24-month follow-up showed no recurrence.

Conclusions: Herein, we report on a very rare case of pleomorphic adenoma of the palpebral lobe of the lacrimal gland presenting as a subconjunctival mass.

Poster No.: PO-601

Taming the Toughest Duo: Tale of Two Sclerocorneal Cysts

*First Author: Nibedita **DAS***
*Co-Author(s): Joyeeta **DAS***

Purpose: To report two cases of primary congenital sclerocorneal cyst which was recurred after primary scleral patch graft and required further attempts.

Methods: One 9-year-old and one 19-year-old boy presented with a growing transparent bluish-white structure in one of their eyes with corneal involvement. On examination, it was diagnosed as a primary sclerocorneal cyst with probable underlying scleral thinning. Anterior segment optical coherence tomography showed hyperreflective epithelial lining over a hypoechoic shadow. Excision of total scleral cyst with lamellar scleral patch grafting with ablation of the corneal cyst done under general anaesthesia.

Results: But the 9-year-old child has the scleral patch melt and recurrence of scleral cyst after 1 month. Repeated small patch scleral graft was done with further no recurrence for 6 months. On the other hand the 19-year-old had two times scleral cyst recurrences managed successfully after 3rd scleral patch graft and intraoperative 5 fluorouracil wash.

Conclusions: Recurrence of the scleral part of the cyst is rarely possible, even after the complete removal and deroofing of the cyst wall.

Poster No.: PO-332

Targeting Histone Deacetylase Suppresses Tumor Growth Through Eliciting METTL14-Modified m(6)A RNA Methylation in Ocular Melanoma

*First Author: Tongxin **GE***
*Co-Author(s): Ai **ZHUANG***

Purpose: This study aimed to explore the role of histone acetylation and m (6)A modifications in the regulation of tumorigenesis of uveal melanoma.

Methods: Histone modification inhibitor screening was used to explore the effects of HDACis on uveal melanoma cells. Dot blotting assay was used to detect the global m (6)A RNA modification level. Multi-omics assays were performed to reveal the mechanisms of HDACis on methyltransferase-like 14 (METTL14) and FAT tumor suppressor homolog 4 (FAT4) in uveal melanoma. Quantitative real-time PCR, western blotting, and immunofluorescent staining were applied to detect the expression of METTL14 and FAT4 in uveal melanoma cells and tissues. Cell models and orthotopic xenograft models were established to determine the roles of METTL14 and FAT4 in the growth of uveal melanoma. RIP-qPCR, meRIP-seq, miCLIP-seq, and RNA stability assay were adopted to investigate the mechanism by which m (6)A levels of FAT4 were affected.

Results: First, we found that uveal melanoma cells presented vulnerability towards HDACis. HDACis triggered the elevation of m (6)A RNA modification in uveal melanoma. Further studies revealed that METTL14 served as a downstream candidate for HDACis. METTL14 was silenced by the hypo-histone acetylation status, whereas HDACi restored the normal histone acetylation level of METTL14, thereby inducing its expression. Subsequently, METTL14 served as a tumor suppressor by promoting the expression of FAT4, a tumor suppressor, in a m (6)A-dependent manner.

Conclusions: These results demonstrate that HDACis exerts anti-cancer effects by orchestrating m (6)A modification, which unveils a "histone-RNA crosstalk" of the HDACi/METTL14/FAT4 epigenetic cascade in uveal melanoma.

Poster No.: PO-330

The Association Between p53 and Ki-67 Expression With Clinical and Histopathological Prognostic Factors in Periocular Sebaceous Cell Carcinoma at Cipto Mangunkusumo Hospital

*First Author: Ferdinand **LUMINTA***
*Co-Author(s): Evelina **KODRAT**, Mutmainah **MAHYUDDIN**, Joedo **PRIHARTONO***

Purpose: To evaluate the expression of p53 and Ki-67 in sebaceous cell carcinoma and its association with clinical and histopathological prognostic factors, including tumor size, lymph node involvement, distant metastasis, cell differentiation, pagetoid spread, and perineural invasion.

Methods: Immunohistochemical staining using p53 and Ki-67 antibodies was performed on paraffin-embedded sebaceous cell carcinoma tissues obtained from medical records between 2017-2022. Expression assessment was conducted using manual and semi-quantitative methods processed with Qupath software. The results were then cross-checked with patients' clinical data.

Results: A total of 34 patients were analyzed based on clinical data and p53 and Ki-67 expression. Most samples showed high expression levels (55.9% for p53; 67.6% for Ki-67). There was no statistically significant association between p53 expression and clinical and histopathological prognostic factors ($p>0.05$). However, high p53 expression was associated with a higher proportion of poor prognostic factors, such as metastasis, perineural invasion, and pagetoid spread. Similarly, there was no statistically significant association between Ki-67 expression categories and clinical and histopathological prognostic factors ($p>0.05$). High Ki-67 expression was more frequently observed in cases with larger tumor size, metastasis, poor differentiation, and perineural invasion.

Conclusions: There was no statistically significant association between Ki-67 and p53 expression with poor prognostic factors in sebaceous carcinoma. A higher proportion of samples with high Ki-67 expression and higher median values were observed in cases with poor prognostic factors: bigger tumor size, metastasis, poor differentiation, and perineural invasion. In p53 staining, a higher proportion of high-expression samples and higher median values were found in large tumor-size samples.

Poster No.: PO-355

Urbach-Wiethe Syndrome: A Rare Case Report

*First Author: Puneet **JAIN***
*Co-Author(s): Chirakshi **DHULL***

Purpose: To document a rare case report of Urbach-Wiethe Syndrome.

Methods: A 40-year-old male presented with bilateral, multiple, painless upper eyelid masses and a diminution of vision.

Results: Upper eyelid examination showed multiple rows of beaded, waxy, yellow-white papules along the lid margin (string of pearls appearance). The posterior lid margin was normal (sharp) and meibomian gland orifices were unaffected. There was no loss of lashes, no telangiectatic blood vessels, and no signs of inflammation. The intra-ocular pressure was 16mm Hg. The best corrected visual acuity was 6/24 in both eyes. Slit lamp examination (both eyes) showed a clear cornea, normal gonioscopy and cataract. Fundus examination was normal. There was no regional lymphadenopathy. Systemic findings- a hoarse voice with thickened vocal cords, indented teeth, thickened tongue. The patient underwent an excision biopsy- multiple intact cysts were removed from the left eye upper lid margin and sent for histopathological (HPE) examination. HPE revealed cysts filled with amorphous, eosinophilic, PAS-positive material. The patient underwent bilateral cataract surgery. The lens capsule sent for HPE showed amorphous, eosinophilic, PAS-positive depositions. The blood sample was sent for next-generation sequencing.

Conclusions: Herein, we report on a very rare case of classic moniliform blepharosis and Urbach-Wiethe Syndrome, with the first such documentation of PAS-positive lens capsule depositions.

Ocular Trauma

Poster No.: PO-366

A Flowing Mystery in the Eye

*First Author: Anjori **GUPTA***

Purpose: Whether an immediate or delayed removal of foreign body (FB) is needed in a quiet eye following open-globe injury.

Methods: An 8-year-old boy presented to the emergency department with an alleged history of trauma to the left eye with the tip of a spinning top, followed by a sudden, painful diminution of vision for a day. He had a full-thickness corneal tear extending 2 clock hours at limbus with vitreous prolapse through the wound and hyphema, associated with traumatic iridodialysis. Perception of light in the left eye was

intact. He underwent a limbal tear repair the same day, and was managed with steroids and antibiotics. Post-operative ultrasound showed vitreous hemorrhage (VH) and attached retina. CT orbit showed no FB and was kept on close follow-up. On the 9th post-operative day, the hyphema resolved, and a long thin black cylindrical FB was noted in the anterior chamber in front of the cataractous lens. The VH gradually resolved, and fundus evaluation showed pale disc, choroidal rupture, and retinal pigment alterations at the fovea. However, there was no inflammation. He was observed closely. A month later, he underwent FB removal with lens aspiration and intraocular lens implantation. Per-operatively, FB was identified to be an "eyelash". Post-operatively, he showed angle recession on gonioscopy and an intraocular pressure spike, which was managed with topical anti-glaucoma medication.

Results: The patient had a quiet eye with BCVA of 3/60 on the final follow-up.

Conclusions: Staged removal of FB gave a good post-operative outcome. The primary aim is wound closure in an open-globe injury, and anterior and posterior-segment details may not be visible at the time of examination, so close follow-up is necessary.

Poster No.: PO-383

A Prospective Clinical Study Of Ocular Trauma In Paediatric Patients Attending Tertiary Care Centre

First Author: Shivna ***PANDYA***
Co-Author(s): Sonali ***SHAH***

Purpose: To study demographic parameters, modes of injury, its impact and relation to visual outcomes in paediatric ocular trauma.

Methods: A prospective observational study was done at a tertiary center for 120 eyes of 117 patients over a period of 2 years.

Results: The mean age of patients in this study was 7.97 ± 3.919 years, with males being predominance. No severe injuries were noted in children whose parents had college-level education. The mean distance between the place of injury and our center had no significant correlation with the final BCVA, but it significantly correlated with delay in presentation. Wooden sticks and household items were the most common agents of injury, followed by iron wire/rod/nail and chemical/thermal agents. The most common pathology was Corneal tear, followed by corneoscleral tear and Chemical / Thermal injuries. Posterior segment involvement was seen in 27.5 % of cases. Traumatic cataract was noted in 13 eyes. Open-globe injuries exceeded closed-globe ones. Prognostically closed globe injuries had better visual outcomes and achieved higher BCVA than closed globe ones irrespective of mode of management being surgical/nonsurgical.

Conclusions: This study showed a demographic snapshot for the patients of ocular trauma, with male children between the age group of 6-8 years most commonly affected. BCVA was related not to socioeconomic status but to the educational status of the patients. Mode and type of injury strongly correlated with visual acuity. Final BCVA correlated to BCVA at presentation, and not to the treatment factors, thus making primary prevention of trauma of paramount importance.

Poster No.: PO-371

A Successful Removal of Barbed Fish-hook Penetrating Corneoscleral Injury: "Cut-Out" Surgical Technique

First Author: Krisnhaliani ***WETARINI***
Co-Author(s): Ari ***ANDAYANI,*** *Ni Made Ari* ***SURYATHI***

Purpose: Fish hook injuries can result in severe ocular trauma, including the rupture of the globe, leading to a potential risk of visual impairment or loss. We present a case report of a patient who sustained a fish hook injury with a successful repair of a corneoscleral rupture.

Methods: A 30-year-old male reported an accidental injury while fishing, resulting in the penetration of a rusted fish hook into his right eye. On examination, a superficial foreign body was observed with associated corneoscleral rupture in the inferotemporal quadrant, approximately 3 mm in length, with prolapse of uveal tissue. The patient was scheduled for immediate surgical intervention. The entry wound was extended to facilitate the smooth removal of the fish hook. The prolapsed uveal tissue was carefully repositioned, and the corneoscleral rupture was meticulously repaired using interrupted 7-0 polyglactin and 10-0 nylon sutures. Good wound apposition, absence of leaks, and stable visual acuity were observed during the final follow-up.

Results: Fishhooks are designed with a barb which poses a distinctive difficulty during the removal process, as it potentially causes substantial damage to the surrounding tissue. The "cut-out" technique involves widening the entry site to create sufficient space for safe removal of the hook, while minimizing damage to surrounding tissues. The fish hook was successfully extracted, and the incision was subsequently closed using conventional anterior segment suturing methods.

Conclusions: The prompt removal of fish-hook and repair of a corneoscleral rupture using a meticulous "cut-out" technique can lead to excellent anatomical outcomes.

Poster No.: PO-367

Challenging Management of Traumatic Cataract and Iridodialysis with a Single-Knot Suture

First Author: Farahdila ***ADLINE***
Co-Author(s): Muhammad ***FIRMANSJAH****, Dicky* ***HERMAWAN****, Indri* ***WAHYUNI****, Ima* ***YUSTIARINI****, Ismi* ***ZUHRIA***

Purpose: Traumatic cataract is one of the most common complications of ocular trauma and often presents with associated iris injuries.

Methods: A 30-year-old female was referred to our hospital with traumatic cataracts and iridodialysis in her right eye caused by blunt trauma. She complained of right eye redness, severe pain, nausea, and vomiting before, and had previously been treated with topical timolol, prednisolone, atropine, and oral acetazolamide. Right eye visual acuity was hand movement with a cloudy lens, irregular pupil, iridodialysis from 11 to 2 o'clock, and posterior synechiae at 9 and 3 o'clock positions. We performed simple aspiration and iridodialysis repair with a single-knot suture. The visual outcome improved significantly after two weeks of follow-up post-surgery.

Results: Traumatic cataracts may result from disruption of the lens capsule or concussion of the lens caused by blunt trauma, and the management may be complicated by several factors, such as iridodialysis. Small superior iridodialysis, less than 1 clock hour, may not require surgical correction. However, as iridodialysis occurred in 3 clock hours in our case, surgical repair was performed with a single-knot suture which attached the iris and sclera with one suture only. IOL power calculation was difficult to perform in this case so we defer the IOL placement procedure.

Conclusions: Simple cataract aspiration and single-knot suture iridodialysis repair significantly improved the visual outcome. Early recognition, prompt referral, and timely intervention can help optimize visual outcomes in patients with traumatic cataracts.

Poster No.: PO-372

Delayed Presentation of Paediatric Traumatic Cataract: Are They Worth Operating Upon?

First Author: Lely ***WULANDARI***

Purpose: Delay in the presentation of paediatric traumatic cataracts remains a significant problem in developing countries. This study evaluated paediatric traumatic cataract patients with delay in presentation and surgical intervention and its impact on final visual outcome.

Methods: An observation study was conducted on 15 children less than 17 years old. Data from 2021 to 2023 were retrospectively analysed. All patients were subjected to detailed history taking and ocular examination. Patients who underwent cataract surgery with or without intraocular lens (IOL) were followed for 6 months.

Results: Toy injury was found to be the most common causal agent. All the patients were males. The number between closed-globe injury (CGI) and open-globe injury (OGI) is almost similar. Patients come to our center from day 1 until 1 year after injury, and mostly come several months after injury. The initial visual acuity was hand motion and light perception (87%). Corneoscleral rupture was the most frequent preoperative complication. All patients with OGI underwent corneoscleral suturing. 53% of the patients refused to undergo cataract surgery. Visual outcome and ocular condition were improved in 85% of patients after cataract surgery (p=0.03). Visual acuity improved from 2.301 logMar before surgery to 0.477 - 0 logMar after surgery.

Conclusions: Delayed presentation and surgical intervention could be due to multifactorial social factors, including lack of family support, distance to hospital, and poor socioeconomic status. The results of this study confirmed that patients with delayed presentation and surgical intervention achieved significant ocular conditions and visual improvement. Especially those that come in less than 2 months.

Poster No.: PO-379

Demographic and Clinical Profile of Patients Presenting With Corneal Foreign Body to a Secondary Eye Care Center in Rural Southern India

First Author: Harinikrishna ***BALAKRISHNAN***

Purpose: To describe the demographic profile and clinical characteristics of patients presenting with corneal foreign body (FB) to a secondary eye care center.

Methods: A single-center, cross-sectional study of 119 patients with corneal FB. Demographic details, clinical characteristics of FB and ocular findings were noted.

Results: A total of 119 patients were included in the study. Male preponderance was noted (89.9%). 52% of patients belonged to the age category of 21-40 years and 40% between 41-60 years. 37% of patients were employed in the metal industry, and 12% in the construction industry. 30.2% of the patients were involved in welding and 12.6% in metal grinding when the FB fall occurred. Only 22 patients (18.8%) used protective glasses during work. 25 patients were involved in the self-removal of FB, and currency notes were most commonly used for removal. Native practices were followed by 14 patients which included applying breast milk and hen blood. 68% of the patients had no awareness of the ocular morbidity caused by corneal FB. The most common type of FB was metal

(53.8%) followed by plastic (15%) and vegetative matter (13.8%). Rust ring was seen in 49 patients (41.2%). Corneal infiltrate was seen in 15 patients (12.6%). Only one pediatric patient required referral to a tertiary care center as the patient was uncooperative in the removal of FB.

Conclusions: Corneal foreign bodies are a common form of ocular trauma and can be associated with ocular morbidity and risk of vision loss. The use of protective wear can decrease the risk of fall of FB. Awareness needs to be created against the use of native medications and over-the-counter medications.

Poster No.: PO-374

Epidemiologic Profile and Management of Ocular Trauma at a Tertiary Hospital: A Retrospective Study

*First Author: Arlan Manuel **VENERACION***
*Co-Author(s): Elenor Reina **AQUINO***

Purpose: This study aims to determine the epidemiologic profile of ocular trauma (OT) in a tertiary hospital.

Methods: A retrospective chart review of 214 ocular trauma patients in a tertiary hospital seen from January 2018 to June 2022.

Results: 362 patient records were obtained, and 214 cases were included in the study. Most were male (82.24%), between 18-25 years old (51.87%). Most injuries were work-related (38.32%), happened at the workplace (43.93%), and from construction (42.99%). Subjects were seen within 1 hour to 24 hours from injury (55.6%), with an initial VA of 20/40 or better (85.5%), an OTS of 100 (85.04%), and a final VA of 20/40 or better (93.93%). The etiology of trauma, place of injury, and interval to consult were found to have no significant association with final VA (P-value> 0.05). There was no significant association between the etiology of trauma and the presence of complications. However, occupation, alcohol intake, initial VA, and presence of complications had a significant association with final VA (P-value <0.05). There was a significant association between the etiology of trauma and the type of management.

Conclusions: Ocular trauma is an important cause of blindness and ocular morbidity. Several factors may affect the visual outcome of trauma cases and may be preventable if proper management is done in a timely manner.

Poster No.: PO-377

Intraocular Foreign Bodies: Analysis of Demographics, Clinical Characteristics, Management and Visual Outcome in a Tertiary Hospital

*First Author: Toh Shi Jin **DIANA***
*Co-Author(s): Ee Ling **ANG***

Purpose: This study aimed to explore the clinical characteristics, management and visual outcome in cases of intraocular foreign body (IOFB) in a tertiary hospital.

Methods: We retrospectively reviewed 16 patients with IOFBs between June 2018 to July 2023. The demographics, mechanism of injury, nature and size of IOFB, timing of surgery and visual outcome were collected.

Results: The mean age of patients was 40.4 years. There were seven Malays, four Chinese, one Indian, and four foreigners. All the patients included in this study were male. Three patients presented to our hospital casualty, while 13 were referred from other public or private hospitals. The majority of the cases were work-related injuries (81.3%), and none of the patients were wearing protective eyewear. The most common penetrating site was cornea (75.0%), and the IOFB was mainly metal (68.8%). Other ocular manifestations upon referral included eight traumatic cataract, eight vitreous hemorrhage, three retinal detachment, and two endophthalmitis. Antibiotic use was reported in all the cases. Timing of IOFB removal was within two weeks post-trauma for 11 patients (68.75%) and more than two weeks for five cases (31.3%), with no significant difference in visual outcome between the groups (p=0.838). Poorer visual outcomes were found in patients with presenting visual acuity worse than 6/36, larger IOFB diameter ≥ 3 mm, concomitant retinal detachment and endophthalmitis (p<0.05).

Conclusions: Diagnosing a retained IOFB is crucial for establishing proper management of patients with ocular trauma. Presenting visual acuity, size of IOFB, concomitant retinal detachment and endophthalmitis were strong predictors of final visual outcome in this study.

Poster No.: PO-384

Ocular Bee Sting Injury

*First Author: Shagun **KORLA***
*Co-Author(s): Ravinder **GUPTA***

Purpose: Bee sting injury to the eye is a rare occurrence with sequelae ranging from mild conjunctival hyperemia to intractable secondary glaucoma.

Methods: A ten-year-old boy presented with a painful diminution of vision in his left eye for six hours. Ocular examination showed the best-corrected vision of hand

movement close to face with digitally low intraocular pressure in the left eye. The anterior segment showed mild conjunctival hyperemia with a black-colored impacted bee at 3 o'clock near the limbus with diffuse stromal edema, half chamber hyphaema, dilated pupil, iridodonesis, and phacodonesis. The posterior segment was normal on the B-scan.

Results: The bee stinger was removed with the repair of underlying conjunctival and sclera perforation with strict aseptic conditions under an operating microscope using general anesthesia.

Conclusions: The nonenzymatic polypeptide toxins and neurotoxins, mast-cell degranulating peptides cause membrane disruption, direct hemolysis, and denaturation of the protein which is responsible for endothelial cell damage, cataract, zonulolysis, and lens subluxation.

Poster No.: PO-373

Ocular Emergency Study (OES): True Ocular Emergency and Non-urgent Cases at Emergency Department at Hetauda Community Eye Hospital

*First Author: Hom **GURUNG***
*Co-Author(s): Kalpana **SINGH**, Sunil **THAKALI***

Purpose: To assess the load of non-urgent and true emergency cases presenting in the emergency department of a tertiary eye center in Nepal.

Methods: A retrospective, descriptive study was done for all emergency visits at a tertiary eye hospital in 2020. Data on age, gender, address, and diagnosis were collected. Diagnoses were classified according to urgency.

Results: We had 6526 cases with an average of 18 cases per day. The male-to-female ratio was 1.47:1. Non-urgent cases comprised 48% of ED visits. The mean age of patients visiting the ED was 34.18+-19.27 years. Foreign body in the cornea was the most common diagnosis, while mild conjunctivitis was the commonest cause of nonurgent ED visits. The most common age group to visit as a true ocular emergency was 21-30 years, with 23.20 %. Males were more likely to visit as a true ocular emergency than females.

Conclusions: Younger males are more likely to use Emergency services. More focus should be placed on triaging, public education, and awareness to reduce non-urgent cases in the emergency department.

Poster No.: PO-368

Ocular Trauma Among Older Adults In An Urban Teaching Hospital in Malaysia

*First Author: Fadzilah Hanim **RAHIM***
*Co-Author(s): Tengku **KAMALDEN***

Purpose: To describe the clinical characteristics of ocular injuries among adults aged 55 years and older in a teaching hospital in Kuala Lumpur.

Methods: This is a registry-based observational prospective cohort study. All ocular trauma among patients aged 55 years and above between September 2020 and March 2023 were included. Only patients who received primary treatment at the centre were recruited. Clinical data was collected using the World Eye Injury Registry format. Patients were followed up until 6 months after trauma.

Results: Out of a total of 286 patients with ocular trauma, 76 (26.6%) were aged above 55 years old. The average age was 70.8 ±9.7 years, and the majority were male (65.8%). Fall was the commonest cause of ocular trauma (65.8%), object-related (19.7%), and vehicular accidents (10.5%). Home is the most frequent location of injury (64.5%). The majority sustained only periocular injuries (73.7%), whilst closed and globe injuries accounted for 19.7% and 6.6%, respectively. Most presented with a vision of 6/18 and better (63.2%), while 27.6% presented with poor vision. OTS 5 and object-related ocular trauma were associated with good visual acuity at presentation.

Conclusions: Ocular trauma among older adults accounts for a significant proportion of all ocular trauma cases. Falls are the most common cause of trauma, and the majority presented with non-sight-threatening injuries. The highest frequency of ocular trauma occurred at home among older adults. The results of this study highlight that, in most cases, ocular trauma in older adults may be mitigated by taking steps to prevent falls.

Poster No.: PO-376

Ocular Trauma Resulting In Enucleation After An Electrical Transformer Substation Explosion – A Case Report Of An Uncommon Occurrence In Orbito-Ocular Trauma

*First Author: Nathaniel **TAN***
*Co-Author(s): Reinne **CHRISTINE**, Jannes **TAN***

Purpose: A rare case of trauma caused by the explosion of an electrical transformer substation was reported in a 31-year-old man working as an electrician. Obtained compos mentis patient. In the left eye, there was no light perception, and there were multiple palpebral lacerations and globe rupture with uveal tract avulsion. CT Scan showed multiple fractures of the orbital rims. Proper, early management and reconstructive

surgical techniques can improve function and cosmetic appearance.

Methods: Case report study of eye trauma with enucleation, reconstruction of the orbital cavities, palpebral, and 3 months postoperative results. Patients were reviewed for clinical history, clinical examination, indications for enucleation, and details of surgery.

Results: After stabilizing the general condition, the ruptured left eyeball with nearby structures, including part of the optic nerve, was removed in the operating room, and then orbital reconstruction was performed for the eye prosthesis and palpebral reconstruction. Laceration of facial reconstruction by a plastic surgeon. The patient underwent follow-up visits during hospital admission and showed no signs of developing sympathetic ophthalmia, persistent postoperative pain, infection, or hematoma and, after 3 months, had an acceptable function and aesthetic appearance.

Conclusions: Ocular trauma resulting in enucleation is an extremely rare condition and can be caused by direct, high-energy trauma. Orbito-ocular trauma can cause severe damage to the eyeball, lids, and orbital cavity. Appropriate and early treatment with enucleation, reconstruction of the orbital cavity, and restoration of the structure and function of the eyelids obtains a good result.

Poster No.: PO-370

Ophthalmological Outcomes of Road Traffic Accident Patients in a Tertiary Ophthalmic Hospital

*First Author: Takashi **ONO***
*Co-Author(s): Makoto **AIHARA**, Takuya **IWASAKI**, Takashi **MIYAI**, Kazunori **MIYATA***

Purpose: To investigate the characteristics and prognosis of ocular complications in patients with road traffic accidents in a tertiary ophthalmic specialized hospital.

Methods: Eighty-eight eyes of 44 patients with road traffic accidents were classified into two groups: those with corrected distance visual acuity equal to or better than the logarithm of the minimum resolving angle of 0 (good group) and those with poor visual acuity (poor group) at initial examination. Final visual acuity, intraocular pressure, traumatic cataract, corneal damage and treatment were compared between groups. In addition, multivariate linear regression analysis was performed to identify factors associated with final visual acuity.

Results: Ocular contusion, orbital blowout fracture, traumatic iritis and trochlear nerve palsy were present in 14.8%, 3.4%, 2.3% and 2.3% of patients, respectively. Topical medication was administered in 17.0%, and ophthalmic treatment/surgery in 9.1%. Final visual acuity was significantly better in the good group (68 eyes) than in the poor group (20 eyes) ($p < 0.001$), but there were no differences in demographic characteristics between groups. There was a significant correlation between initial and final visual acuity ($p < 0.001$). Some patients experienced severe ophthalmic complications requiring surgery.

Conclusions: Assessing the visual acuity of patients with road traffic accidents at the initial visit is crucial for predicting final visual acuity.

Poster No.: PO-381

Predictive Factors for Structural and Functional Outcomes of 25 Gauge Pars Plana Vitrectomy (PPV) for Removal of Posterior IOFB

*First Author: Ashish **MARKAN***
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Purpose: To identify predictive factors for structural and functional outcomes of 25G PPV for removal of posterior IOFB.

Methods: A retrospective data analysis was performed for patients undergoing 25G PPV for removal of posterior IOFB between August 2019 and June 2021. Necessary demographic details and data regarding pre-operative ophthalmic examination were recorded. Similarly, intraoperative surgical details were recorded. Postoperative outcome measures included final BCVA, retinal status, and epiretinal membrane formation at the last follow-up visit. A univariate analysis was applied to find the association of various independent variables with functional and structural outcomes.

Results: A total of 39 patients were included in the study, with 37 males and 2 females. The mean age of the study group was 30.5+10.8 years. The most common zone of injury was zone 1. Most of the impactions of IOFB were seen outside the macular area, in Zone 2 and Zone 3. Preoperative BCVA was 2.23+0.58 logMAR, which improved significantly to 1.21+0.83 in the postoperative period (p value<0.001). Anatomical success was achieved in 82% of patients, in terms of attached retinal status at the last follow-up visit. The presence of impacted IOFB, associated endophthalmitis and IOFB >4mm were associated with poor visual outcomes (univariate analysis; p value<0.05). None of the factors affected the anatomical success rates.

Conclusions: The presence of impacted IOFB, associated endophthalmitis, and large IOFB (>4mm) were associated with poor visual outcomes.

Poster No.: PO-378

Shattered Sight - The Tale of a Large Rusted Metal Intruder

*First Author: Wan Mohd **WAN HASSAN***
*Co-Author(s): Ee Ling **ANG**, Toh Shi Jin **DIANA**, Abdul Salim **ISMAIL**, Choo Gee **LYNN**, Julieana **MUHAMMED***

Purpose: To report a rare case of large intraocular foreign body (IOFB) due to industrial injury.

Methods: A case report.

Results: A 32-year-old inexperienced foreign construction worker presented with a left eye full-thickness corneoscleral laceration wound with a large IOFB following an industrial injury resulting from drilling concrete with a jackhammer. He was not wearing eye protection. He complained of intense pain and profound visual loss. Visual acuity during the presentation was the vague perception of light in the left eye and 6/6 over the right eye. There was a stellate-shaped full-thickness cornea laceration wound extending limbus to limbus as well as to the sclera inferiorly (6mm) and temporally (2mm) with uveal prolapse. There was full hyphema with no fundus view. Plain computed tomography (CT) scan of the orbit revealed a c-shaped hyperdense lesion in the vitreous suggestive of IOFB. The patient was planned for examination under anaesthesia, corneoscleral wound repair, and IOFB removal. Pre-operatively, the patient also consented to primary evisceration if needed in view of large-sized IOFB and extensive corneoscleral laceration wound. Pre-operatively, he developed an episode of low-grade fever. Corneoscleral wound suture and IOFB retrieval were attempted. However, the IOFB was too large and incarcerated to the surrounding uveal tissues. Hence, evisceration was performed, and a large rusted metal piece measuring 13 x 10 x 8mm was removed.

Conclusions: Surgical removal of large IOFBs can be challenging, particularly if they are of irregular shape and incarcerated. Awareness of protective eyewear at the workplace should be advocated.

Poster No.: PO-375

Single-pass Four Throw Pupilloplasty in Fixed DAlated Pupil after Blunt Eye Trauma Surgical Repair: A Case Series

*First Author: Elgalytha **LENDE***
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Purpose: This study presents cases of fixed dilated pupils after blunt eye trauma patients who underwent single-pass four-throw (SFT) pupilloplasty technique and its outcome.

Methods: Eight patients with fixed dilated pupils and aphakia after blunt eye trauma were included in the study. Patients with severe glare and photophobia due to wide pupil diameter from 5.0 to 9.0 mm were managed by SFT pupilloplasty, combined with secondary lens implantation to improve the visual outcome. All patients underwent a detailed ophthalmologic examination before and after surgery. The postoperative results, including best-corrected visual acuity (BCVA), anatomic results, pupil diameter, dysphotopsia, and intraocular pressure (IOP) were evaluated.

Results: This series consisted of 8 consecutive eyes from 8 patients in whom SFT technique was performed. All cases had a follow-up period of 1 month. BCVA improved in all patients from preoperative hand movement (HM) in 6 patients and counting finger (CF) in 2 patients to postoperative 20/20, 20/25 in 2 patients, 20/50, and 20/100 in 4 patients (Snellen charts). All eyes achieved regular anatomic result with pupil diameter 3–4.5 mm. The dysphotopsia disappeared, and IOP was within normal limits in all patients.

Conclusions: The combination of SFT pupilloplasty with secondary lens implantation appears to be a safe and effective surgical technique in reducing pupil size and improving visual outcomes. Because of the study design and relatively short follow-up period, the long-term efficacy and safety of this combined surgery need to be further evaluated.

Poster No.: PO-369

Subconjuntival Lens Dislocation: Traumatic Phacocele

*First Author: Li Faung **TAN***
*Co-Author(s): Stella **SINNAPPAN**, Li Mun **TAN***

Purpose: To report an intriguing case of traumatic phacocele.

Methods: Case report.

Results: A 74-year-old man presented with a sudden diminution of vision over the right eye (RE) following a motor vehicle accident. Visual acuity of the RE was no perception of light, and the left eye was 6/9. Relative afferent pupillary defect was positive and intraocular pressure was 6mmHg over RE. On examination, the RE showed hemorrhagic chemosis with a well-delineated globular mass located at the subconjunctival space at the superior limbus. The pupil was eccentric and displaced superiorly. Anterior segment examination revealed the absence of the crystalline lens and a deep anterior chamber with a streak of hyphema. There was no view of the fundus due to dense vitreous hemorrhage. The left eye examination was normal. B-scan ultrasonography confirmed the presence of vitreous hemorrhage and the absence of lens echoes. A well-defined hypoechoic mass was seen over the superior subconjunctival space. A computed tomography (CT) scan of the right orbit confirmed the diagnosis of traumatic phacocele with anterior scleral

rupture. Surgical exploration under general anesthesia was planned, but unfortunately, the patient refused any surgical intervention. His latest right visual acuity was 2/60 post trauma 2 months.

Conclusions: Traumatic phacocele is a rare event. A finding of subconjunctival mass with hypotony following trauma should prompt a high suspicion of phacocele with occult perforation.

Poster No.: PO-365

Surgical Management of an Intra Lenticular Foreign Body With Posterior Capsular (PC) Dehiscence

*First Author: Tony **KOSHY***
*Co-Author(s): Sankarananthan **R**, Madhu **SEKHAR***

Purpose: Presenting a case of a 24-year-old gentleman who presented with high-velocity intra-ocular trauma with shrapnel and its timely management.

Methods: A 26-year-old gentleman presented with a penetrating injury to his left eye with shrapnel while working. His uncorrected distant visual acuity (UDVA) was 3/60, and he had circumcorneal congestion with a 2x1mm sealed corneal entry wound and mild anterior uveitis. The crystalline lens revealed a 2x1 mm metallic foreign body (FB) with a posterior capsular rent (PCR). B scan and CT scan confirmed an intralenticular metallic FB with no intraorbital fragments.

Results: The patient was started on topical antibiotics, cycloplegics, antiglaucoma drops, and steroids with oral antibiotics and painkillers and underwent Manual Small Incision Cataract surgery with FB removal with 3-piece acrylic IOL placed in the sulcus with optic capture the next day (video).

Conclusions: The time and technique of surgery and the role of antibiotic prophylaxis are the two aspects of management. Early surgical intervention is the preferred treatment modality so as to avoid siderosis and chalcosis bulbi. We also highlight here the need for appropriate imaging both for management and medicolegal formalities and also imparting awareness to high-risk professionals.

Poster No.: PO-385

Traumatic Endophthalmitis Following Injury by a Freshwater Fish: A Rare Case Report

*First Author: R **SUDARSHAN***

Purpose: Traumatic endophthalmitis is one of the most dreaded sequels of open globe injury, which is further aggravated by the presence of a retained intraocular foreign body (IOFB). Attack by fish represents a very rare form of ocular injury, with a handful of such reports in existing literature. Most such cases have predominantly caused orbital injury, and traumatic endophthalmitis in the absence of orbital injury is rarely attributed to injury by fish. We present a rare case of open globe injury following an attack by a fish, which left a cartilaginous tissue impacted as an IOFB and caused endophthalmitis.

Methods: A 26-year-old male presented with decreased vision in his left eye (OS) following an attack by a fish while swimming in a pond. His best corrected visual acuity (BCVA) was hand movements in OS and 20/20 in the right eye (OD). Fundus examination and ultrasonography B scan confirmed the presence of traumatic endophthalmitis in OS. Wound exploration confirmed the presence of a foreign body near the limbus, which was removed and found to be a cartilaginous fish tissue, 4.5 millimeters in length.

Results: Pars plana vitrectomy was done, and intravitreal antibiotics were administered. The case highlights a rare form of ocular injury and its management.

Conclusions: In our case, although the gram stain showed numerous pus cells, no organism was seen, and culture was negative. We, therefore, continued the patient on empirical therapy, and improvement was noted. At 6 month follow-up, the patient underwent phacoemulsification with intraocular lens implantation.

Poster No.: PO-380

Traumatic Globe Luxation: A Case Report With Excellent Functional and Cosmetic Outcome

*First Author: Sitesh **VATS***
*Co-Author(s): Naila **AFTAB**, Bhawesh Chandra **SAHA**, Kopal **SRIVASTAVA***

Purpose: To show a case of a child with traumatic globe luxation and its surgical outcomes.

Methods: Ocular traumas are the common cause of ocular morbidity, leading to ocular disfigurement and blindness. Children are more vulnerable to facial and ocular injury even with trivial trauma. Globe luxation is the anterior displacement of an eyeball, which can be spontaneous, traumatic, or occasionally voluntary. We are presenting such a case of globe luxation in a 13-year-old male following trauma with a bicycle hand brake. He presented to us with poor visual acuity and proptosed eye but recovered with good visual and functional outcomes following globe repositioning surgery.

Results: The patient achieved excellent functional and cosmetic results post-surgery for globe luxation.

Conclusions: Isolated globe luxation is rare, but in an ophthalmic emergency, active and early intervention can bring good visual and functional outcomes.

Ophthalmic Epidemiology and Prevention of Blindness

Poster No.: PO-389

A Study of Causes of Visual Disability and Application for Blindness Certificates at a Tertiary Care Centre in Central Maharashtra

*First Author: Archana **VARE***

Purpose: As there was no data regarding the causes of visual impairment and blindness in adults and children in the local population, a study was undertaken to analyze the causes of visual impairment (VI) and blindness in adults and children through applications for blindness certificates at a large government hospital in Central Maharashtra.

Methods: All applications for blindness certificates received from January 2018 to December 2019 were analyzed to identify the main causes of VI and blindness in adults and children separately. In the process of categorization of the applicants, while ascertaining the percentage of disability, the guidelines given by the Government of India (category 0-4; 20-100%) were followed.

Results: We analyzed data from 310 patients with a mean age of 33.5 ± 19.7 years (range = 2 – 82 years) with maximum patients between the 16-30 years age group. Males (n=189, 61%) were more common. The commonest cause of VI was phthisis bulbi, which accounted for 13% of the causes, while Retinitis pigmentosa (11%) and microphthalmos (10%) were the second and third commonest causes of VI in patients applying for blindness certificates. In children aged 15 years or younger, microphthalmos (14%) and amblyopia (14%) were by far the commonest cause of VI. In terms of categories of blindness, the majority were in Category 3 (n=214, 69%) while Category 2 had 49 (16%) patients and Category 1 had 47 (15%) patients.

Conclusions: Data from applications for blindness disability certificates provides an important source of information regarding the different causes of VI and blindness.

Poster No.: PO-399

An Outreach School Screening Model for Functional Vision Assessment in Children With Disabilities

*First Author: Elackiya **MANIMARAN***
*Co-Author(s): Sahithya **BHASKARAN***

Purpose: Children with multiple disabilities are the missing targets in the population who are more at risk of vision impairment and functional vision loss. They are the vulnerable and dependent subset of the population with limited access to optimal ophthalmology services. They are also not covered in routine school screening programs. So, we have come up with our school screening model to examine them.

Methods: We have our clutter-free "round table school screening model," where the total stations are reduced to three for the ease of these children. Functional vision assessment is done in addition to standard vision testing. Comprehensive eye care is provided involving ophthalmologists, rehabilitationists, and special educators.

Results: It took around 45 minutes to examine a child, which is less compared to their examination at the outpatient department. 37% of these children had refractive error as against 8% in normal school screening. We identified other anomalies like strabismus, cataract, retinal, and optic disc pathologies as well. 70% of them had some form of functional vision impairment (FVI) for which rehabilitation strategies were discussed at a campsite in the presence of their parents and teachers who are going to implement it.

Conclusions: Multi-disciplinary care is given under one roof. The assessments used are affordable, available, and easy to use without complex instrumentation, and we get better cooperation from these kids as they feel secure in their known environment. Customized one-to-one training can be given to the caretakers and teachers, and this screening enhances the awareness among special educators on FVI.

Poster No.: PO-401

Clinical Study of the Effect of Refractive Status on Near Stereopsis in School-Age Children

*First Author: I Nyoman Surya **ARI WAHYUDI***
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Purpose: Stereopsis assessment plays an important role in ophthalmology. To date, there is still a lack of studies reporting near stereopsis function in children. This study aims to evaluate the effect of refractive status on near stereopsis function among school-age children.

Methods: This study was conducted as a population-based cross-sectional from June to October 2021 in 13 orphanages with a total of 334 respondents that meet the inclusion criteria and divided into 3 age groups of 6-12, 13-15, and 16-18 years old. The visual acuity (VA) and inter-eye line difference were measured using LogMAR of the LVRC chart. The Refractive status was determined using the spherical equivalent (SE) of an autorefractometer, and then divided into emmetropia, myopia and hypermetropia (low, moderate, and high). Near stereopsis function was measured using TNO and Butterfly test in arcsecond, and each test completion

time was also calculated. The data were analyzed with SPSS 25 using the Kruskal-Wallis and Spearman test.

Results: There were significant differences in refractive status and inter-eye line difference to both TNO and butterfly score and time ($p<0.05$). The group with more severe refractive status and more inter-eye line differences in VA than others has a lower stereopsis score and longer completion time. There were no differences between the age groups in both TNO and butterfly score and time ($p>0.05$). There is a positive correlation between TNO and the butterfly test ($p<0.05$, $r= 0.365$).

Conclusions: There is a significant difference in refractive status and inter-eye line difference in near stereopsis function in school-aged children. Near stereopsis test may be beneficial for the screening of refractive disorder.

Poster No.: PO-404

Compliance with Guidelines for Hydroxychloroquine Retinopathy Screening in a Tertiary Centre in Malaysia

*First Author: Sabrina **ASAARI***
*Co-Author(s): Tajunisah **IQBAL**, Pooi Wah **LOTT**, Norlina **RAMLI***

Purpose: To determine compliance to hydroxychloroquine retinopathy screening according to guidelines in a tertiary hospital among ophthalmology trainees.

Methods: A 2-month audit was conducted to assess trainees' compliance with published guidelines when assessing patients on hydroxychloroquine. This includes enquiring about risk factors associated with developing hydroxychloroquine retinopathy, ordering the correct investigations, and determining the frequency of review. Standards of practice were compared to screening recommendations by The Royal College of Ophthalmologists (2020), The Royal Australian and New Zealand College of Ophthalmologists (2021) and the American Academy of Ophthalmology (2016). Based on the result, an intervention in the form of a departmental screening guideline was introduced and enforced, and a post-intervention audit was conducted.

Results: Out of the 58 patients on active hydroxychloroquine retinopathy screening, trainees identified risk factors for hydroxychloroquine retinopathy in only 4 patients (6.9%). Upon review, 53 patients (93%) had either a Humphrey Visual Field 24-2 or an Optical Coherence Tomography (OCT) of the macula. Appointments for annual review were given to 33 patients (58%). The post-intervention audit showed that adherence to the screening guidelines met the set targets above 90% in all areas.

Conclusions: Implementing a hydroxychloroquine retinopathy screening guideline was beneficial to streamline services and reduce unnecessary tests during clinic appointments.

Poster No.: PO-386

Does Patient Literacy Determine the Likelihood of Utilizing Cataract Surgical Services? A Systematic Review and Meta-analysis

*First Author: Farisa **FACHIR***
*Co-Author(s): Muhammad **FAISAL***

Purpose: This study aims to systematically review the literature and determine the association between literacy (ability to read and write) and the utilization of cataract surgical services among cataract patients.

Methods: We conducted a systematic review and meta-analysis according to Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. A literature search was performed on PubMed, ScienceDirect, and ProQuest databases, screening all related articles from 2010 until now. Data were analyzed using RevMan 5.3, with the pooled effect estimates presented as an odds ratio (OR) with a 95% confidence interval (CI).

Results: A total of 12 studies from ten articles were identified and included in the meta-analysis. The pooled results of these studies demonstrate a statistically significant relationship between literacy and cataract surgery utilization among cataract patients. Illiterate individuals were less likely to utilize cataract surgery compared to literate individuals (OR 0.63, 95% CI 0.46-0.85, $p=0.002$). The heterogeneity between studies was significant ($I2$ 59%, $p=0.005$) and a random effect model was adopted.

Conclusions: Our finding indicates that there is an association between literacy and the utilization of cataract surgical services, with illiterate individuals being less likely to use cataract surgical services than literate individuals. These findings can inform targeted interventions aimed at improving cataract surgical coverage among illiterate populations.

Poster No.: PO-398

Effectiveness of Teacher-Led School Eye Health Program Over 10 Years in Ba Ria-Vung Tau Province, Vietnam

*First Author: Prakash **PAUDEL***
*Co-Author(s): Anthea **BURNETT**, Tim **FRICKE**, Phuong Ly **HUYNH**, Viet Giap **NGUYEN***

Purpose: To evaluate the effectiveness of teacher-led school-based eye health programs in Ba Ria-Vung Tau (BRVT) province, Vietnam.

Methods: A mixed-methods research design was adopted to assess the change in an eye health care of schoolchildren over ten years and to identify the

key factors (facilitator/ inhibitor) for effective school-based eye health programs. A comparison of rates of vision problems and screening ability of schoolteachers with the findings documented in 2011 was analysed. The 'effectiveness' was evaluated by comparison of standardised clinical and valued measures and focus groups/ interviews with the related stakeholders.

Results: A total of 23 schools that received school eye health interventions in 2011 participated. 50% of teachers trained in 2011 were present in respective schools, and about 50% of schools conducted vision screening in the last two years. Among the available trained teachers from six schools, the sensitivity of their vision screening ability was at similar levels (86.7% in 2011 and 83.2% in 2021). Over ten years, the rates of uncorrected vision impairment in school children had increased by 7% (19.4% to 26.4%), and the main reason was a 6% increase in myopia rates (20.4% to 26.3%). The focus groups and interviews with the stakeholders suggested this intervention demonstrated an overall positive impact on school eye health care and emphasised that some areas need improvement for better outcomes.

Conclusions: The teacher-led school eye health initiative was generally successful in addressing the vision needs of schoolchildren in BRVT, Vietnam. Some identified grey areas for improvement would further contribute to its success.

Poster No.: PO-406

Establishment of the First Corneal Eye Bank in Pakistan

*First Author: Sara **RIAZ***

Purpose: To establish the first corneal eye bank in (Faisalabad) Pakistan was the main purpose. It included encouragement for people to donate cornea to help poor deserving patients who are blind in one or both eyes.

Methods: Lyallpur Trust was established in 2017 with 14 trustees who bear trust expenses. It has 7 staff members including 5 counselors. The donors get themselves registered prior to the written form countersigned by their two immediate family members. When the information is received regarding the demise of the donor, team members with storage media and a kit, reach the location.

Results: In 2017, corneas were imported from Nepal (5), USA (46), Kuwait (12), and retrieved locally through the persuasive effects of Lyallpur Eye Trust (22). In 2018, corneas were imported from Nepal (0), the USA (48), Kuwait (14) and retrieved locally (48). In 2019, only 25 corneas were received from the USA and 68 were retrieved locally. The rate was exponentially increasing until COVID hit in 2020 when 36 were retrieved locally and 8 were received from the USA. In 2021,2022 and 2023 none of the corneas is imported from foreign countries. Corneas retrieved locally in 2021 (68), 2022 (62), and in 2023 till date, 31 corneas are retrieved.

Conclusions: After establishing the first working corneal bank in Faisalabad (Pakistan), in 2017, there has been a marked decline in the imports of foreign corneas. For the past approximately 3 years, none of the corneas have been imported from outside the country, and locally generated corneas, which are fresh and timely, are transplanted in order to prevent blindness.

Poster No.: PO-400

Impact of Preoperative Posterior Segment Evaluation on Surgical Intervention in Camp Patients: A Retrospective Analysis

*First Author: Nisha **AHUJA***

Purpose: To retrospectively study the impact of preoperative posterior segment evaluation on surgical intervention in camp patients recruited for cataract surgery in Gujarat, India.

Methods: A retrospective analysis of six months of data collected from the hospital electronic medical record (EMR) system of 9820 admitted patients recruited from a screening camp for cataract surgery from 1/10/2019 to 31/3/2020 in Tertiary Eye Hospital in Gujarat, India, has been done. Comprehensive clinical evaluation, of both anterior and posterior segments which included detailed history; best corrected visual acuity (BCVA); intraocular pressure measurement with a noncontact tonometer (NCT) and when required with Goldman applanation tonometer; slit lamp examination; and fundus examination with + 90 diopter lens as well as indirect ophthalmoscope as and when indicated. In case there was no view of the retina, a Bscan ultrasound was done to rule out any posterior segment pathology. Immediate surgical intervention was assessed, and results were analyzed in percentage.

Results: Cataract surgery was advised for 8390 patients (85.43%). Surgical intervention for the management of glaucoma was done for 68 patients (0.692%). Retina intervention was done for 86 patients. Posterior segment evaluation changed the immediate surgical plane of management for 154 (1.57%) patients.

Conclusions: Comprehensive clinical evaluation is economical and should be mandatory, especially in community services, as comorbid conditions like glaucoma, diabetic retinopathy, retinal vein occlusion, and other varied posterior segment diseases contribute significantly to visual disability in the elderly age group. It is difficult to follow these patients later if manageable comorbidity is not informed about and, if indicated, dealt with simultaneously for visual rehabilitation of the patient.

Poster No.: PO-402

Impact of the COVID-19 pandemic on Care-Seeking Behavior in Ophthalmology Department: A Systematic Review and Meta-Analysis

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Purpose: To conduct a systematic review on the impact of the COVID-19 pandemic on the care-seeking behavior in the ophthalmology department.

Methods: We systematically searched all articles published in PubMed and EMBASE from January 1, 2020 to December 5, 2022, using the combination of terms ("COVID-19") AND ("ophthalmology") AND ("ambulatory care" OR "outpatient"). Extracted data from the included studies were summed up for subsequent comparison of pre- and mid-pandemic (active pandemic and lockdown periods) ophthalmologic outpatient visit patterns. The ratio of pre- and mid-pandemic outpatient visits was calculated using a one-group meta-analysis.

Results: This study identified 355 articles. 21 articles were included in the qualitative synthesis; 16 articles were included in the meta-analysis for quantitative evaluation. The total number of outpatient visits decreased both during the COVID-19 pandemic and the lockdown period compared to the pre-pandemic period (1,349,954/2,854,255, 25,593/195,990, respectively). Meta-analysis revealed that the total number of outpatient visits during the COVID-19 pandemic decreased to 58% (95% confidence interval [CI] 0.38-0.78) compared to the pre-pandemic level. During the lockdown period, the total number of outpatient visits decreased to 30% (95% CI 0.13-0.47) compared to pre-pandemic level.

Conclusions: The total number of visits to ophthalmology outpatient departments decreased to 58% and 30% during the COVID-19 pandemic and the lockdown phase of the pandemic, respectively, compared to the pre-pandemic period. These results suggest that the COVID-19 pandemic may have caused a setback in detecting and monitoring various ophthalmologic pathologies, leading to delayed diagnosis, disease exacerbation, and prolongation of appropriate treatment intervals.

Poster No.: PO-405

Incidence and Clinical Characteristics of COVID-19 Ophthalmopathy Following the Termination of Dynamic Zero COVID-19 Strategy in China

*First Author: Chuan-bin **SUN***

Purpose: To evaluate the incidence and clinical characteristics of COVID-19 ophthalmopathy in COVID-19 patients.

Methods: In this prospective observational case series study, we recruited 2445 consecutive cases presenting at the neuro-ophthalmology clinic of our hospital during the last wave of SARS-CoV-2 infection from December 8, 2022 to March 15, 2023 in China.

Results: A total of 171 cases were diagnosed as probable COVID-19 ophthalmopathy, 100 cases were female, with a mean age of 42.8 years (ranging from 6 to 88 years), and the mean follow-up time was 8.2 weeks (ranging from 3 to 15 weeks). Positive past ophthalmic medical history, mainly including optic neuritis, uveitis, and orbital pseudotumor, was recorded in 22 cases. One hundred and thirty-one of 171 cases (76.6%) manifested systemic symptoms, mostly fever and cough prior to or soon after ocular involvement. The most common COVID-19 ophthalmopathy was optic neuritis (66/171), followed by acute zonal occult outer retinopathy complex disease (39/171), uveitis (25/171), ocular mobility disorder-related (third, fourth, or sixth) cranial nerve neuritis (17/171), retinal vessel occlusion (11/171), retinal microangiopathy including retinal hemorrhage and cotton spot (9/171), anterior ischemic optic neuropathy (9/171), viral conjunctivitis (8/171), viral keratitis (3/171), orbital inflammation (3/171), ptosis (2 /171), and Adie pupil (1/171). Our study revealed an incidence of 6.99% for COVID-19 ophthalmopathy in outpatients at the ophthalmology clinic during the last resurgence of COVID-19 in China.

Conclusions: SARS-CoV-2 infection can induce an initial onset or a relapse of ophthalmic disease, and ocular involvement may appear as the initial presentation of COVID-19.

Poster No.: PO-395

Lens Power and Associated Factors in Non-human Primate Subjects: A Cross-sectional Study

*First Author: Wei **LIU***
*Co-Author(s): Jian **WU***

Purpose: To examine the normative profile of lens power (LP) and its associations with related parameters among a cynomolgus monkey colony.

Methods: This population-based cross-sectional Non-human Primate Eye Study (NHPES) recruited mid-aged subjects in south China. All included macaques

underwent a detailed ophthalmic examination. LP was calculated using the modified Bennett's formula, with biometry data from an autorefractometer and A-scan. SPSS version 25.0 was used for statistical analysis.

Results: A total of 296 macaques with an average age of 18.75±2.95 years were collected in this study. The mean LP was 25.40 ± 2.96 diopters (D). Greater LP was independently associated with younger age, longer AL, and lower SE ($p = 0.028$, $p = 0.025$, $p = 0.034$, respectively). LP showed a positive correlation with age, spherical equivalent refraction, corneal radius (CR), axial length (AL), lens thickness, and anterior chamber depth, while no correlation was observed between lens power and AL/CR ratio.

Conclusions: Our results suggested the LP distribution in NHP colony, and indicated the AL and SE strongly influenced the rate of LP. Therefore, this study contributed to a deeper understanding of the relative significance of the LP on the optics of the crystalline lens study.

Poster No.: PO-396

Macular Thickness and Its Associated Factors in a Healthy Cynomolgus Colony: The Non-human Primates Eye Study

*First Author: Hongyi **LIU***
*Co-Author(s): Wei **LIU**, Jian **WU***

Purpose: to investigate the normal range of macular thickness in a colony of healthy cynomolgus and examine its association with relevant parameters.

Methods: The study utilized data from the Non-Human Primates Study (NHPS) conducted between 2021 and 2022. All included monkeys underwent comprehensive ocular measurements, including scanning of macular thickness using spectral-domain optical coherence tomography (SD-OCT). To assess the gender differences in macular thickness and volume, a T-test was employed. Univariate and multivariate analyses were conducted to evaluate the associations between mean macular thickness and various systemic and ophthalmic parameters.

Results: The study collected data from a total of 850 eyes of cynomolgus, with an age of 18.88 (±2.02). The macular volume was found to be 3.13 ± 0.37 in females and 3.18 ± 0.33 in males ($p = 0.025$), indicating a significant sex difference. Except for the superior sector of the outer rings, sex differences were observed in all other sectors. Univariate analysis revealed that age ($p = 0.024$), sex ($p < 0.001$), weight ($p = 0.003$), intraocular pressure (IOP) ($p = 0.007$), and spherical equivalent (SE) ($p = 0.024$) were associated with mean macular thickness. However, in the multivariate analysis, only age and SE were found to have a significant correlation with macular thickness.

Conclusions: This study provides valuable reference data on macular thickness in cynomolgus, which can be utilized in pre-clinical non-human primate experiments. Furthermore, the findings indicate that age and spherical equivalent (SE) are associated with macular thickness.

Poster No.: PO-388

Multidimensional Network Biomarkers System and Diabetic Retinopathy: A Propensity-Score-Matching Lipidomic Study

*First Author: Jingjing **ZUO***

Purpose: This study aims to characterize plasma lipidomic profiles of type 2 diabetes mellitus (T2DM) and screen ideal lipidomics-based multidimensional network biomarkers system (MDNBS) for DR early detection.

Methods: Propensity score matching and lipidomics-based multi-center case-control study. We recruited 69 pairs of T2DM patients with DR (cases) and T2DM without DR (controls). An ultra-high-performance liquid chromatography-high resolution tandem mass spectrometry platform was applied for plasma lipid metabolites assessments. Principal-components analysis, orthogonal partial least squares discriminant analysis, least absolute shrinkage, and selection operator regression were conducted to identify DR-related lipid biomarkers depending on the discovery set. We constructed a lipid risk score (LRS) with the identified lipid biomarkers and used restricted cubic spline models to evaluate the LRS-DR relationship. The final optimal MDNBS was determined by receiver operating characteristic (ROC) analysis based on the LRS. The same analyses were repeated in separate validation sets to evaluate the reproducibility of the screened MDNBS.

Results: A total of 499 and 436 lipid metabolites were identified in the positive and negative ion modes, respectively. Nine differential lipid metabolites (ACar 8:0, SM d38:0, TAG 53:4, OxPC 36:4+1O, LPG 18:1, FA 22:5, AcylGlcADG 64:16, PE 38:5, and LPC 17:0) were retained as the lipid biomarkers for DR after selection. Patients with higher LRS had a higher presence of DR. The AUC (95%CI), sensitivity and specificity were 0.81 (0.68, 0.94), 78.26%, and 82.61% according to the validation set, respectively.

Conclusions: Lipidomics is an effective approach for DR early detection, and the selected MDNBS has high performance and capability for DR early diagnosis.

Poster No.: PO-387

Nationwide Incidence and Blindness Trends in Patients With Diabetic Retinopathy Using Age-Period-Cohort Analysis

*First Author: Ju-yeun **LEE***
*Co-Author(s): Kunho **BAE**, Sangjun **LEE**, Sue K **PARK***

Purpose: To estimate the epidemiologic trends of blindness in patients with diabetic retinopathy (DR) and investigate the age-, period-, and cohort-specific effects on blindness.

Methods: A total of 1.5 million patients with DR aged 20 years or older were included from the National Health Claims database from 2005 to 2019. Non-proliferative DR/ proliferative DR (NPDR/PDR) cohorts were constructed separately. Participants were identified as having blindness in at least one eye. The incidence of blindness was calculated. Using a log-linear Poisson age-period-cohort (APC) analysis model, each effect on blindness was estimated for each study group.

Results: The incidence of blindness was 2162.36 per 100,000 in the NPDR group and 5339.29 in the PDR group. The blindness rate sharply decreased after 2011, with annual decreases of 5.6% and 4.4% in the NPDR and the PDR groups, respectively. People born between 1920 and 1930 had the highest overall risk of blindness, with the risk decreasing rapidly after that. For those born after 1980, the risk started to increase in both sexes. Among the APC models, the combination model of age, period, and cohort effects showed the highest explanatory power (0.96).

Conclusions: In this nationwide long-term study, blindness in DR was not due to a single epidemiologic cause but rather a combination of biological age, social determinants, and healthcare policies. The increased risk of blindness in individuals in their 20s and 30s may even increase in the future and should not be ignored. Therefore, vigilance of younger patients is recommended.

Poster No.: PO-393

Normative Profile of Retinal Nerve Fibre Layer Thickness and Lamina Cribrosa-Related Parameters in a Healthy Non-glaucoma Cynomolgus Monkey Colony

*First Author: Jian **WU***

Purpose: To investigate the normal range of ophthalmic parameters and the correlations between systematic and ocular parameters and retinal nerve fiber layer (RNFL) thickness among a healthy non-glaucoma cynomolgus monkey colony.

Methods: All included monkeys were given detailed ophthalmic examinations, including anterior and posterior segments. Furthermore, univariate and multivariate linear regression models were conducted to estimate the relationship between systemic and ophthalmic parameters and global RNFL thickness.

Results: A total of 349 non-glaucoma monkeys (18.69±2.88 years old) were collected. The global RNFL thickness was 94.61±10.13 μm, and sex-specific differences existed in all sectors. The decreasing trend of RNFL is as follows: infero-temporal, supero-temporal, infero-nasal, supero-nasal, temporal, and nasal. For LC-related parameters, cup depth ($p<0.01$), LC thickness ($p=0.014$) and Bruch's membrane opening- minimum rim width 2 ($p=0.002$) were greater in the male group. However, LC depth ($p=0.02$), anterior laminar insertion depth-1 ($p=0.009$) and mean anterior laminar insertion depth ($p=0.029$) of female monkeys were greater than those of male monkeys. In multivariate linear regression, only older age was significantly related to reduced global RNFL thickness ($p<0.001$).

Conclusions: Our findings suggest the differences in RNFL thickness distribution and sex between non-glaucoma cynomolgus monkeys and humans. Therefore, the impact of this difference on outcomes should be fully considered in laboratory animal studies. Our findings are also significant in terms of developing a normative OCT database in non-human primates.

Poster No.: PO-598

Presenting Near Vision Impairment in Fujian Eye Study

*First Author: Yang **LI***
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Purpose: To evaluate the prevalence and related factors of presenting near vision impairment (PNVI) among urban and rural adults over 50 years in a coastal province of Southern China.

Methods: A population-based cross-sectional study was performed in randomly sampled communities of Fujian Province from May 2018 to October 2019, and 8211 residents aged over 50 years underwent a questionnaire and a series of related examinations, such as presenting near visual acuity (PNVA). PNVA was measured using a logarithmic visual acuity chart at a distance of 30cm, and we defined PNVI as PNVA worse than 20/50.

Results: Of 8033 participants, 5509 (68.6%) had PNVI, of whom 3428 (62.2%) were female, 3057 (55.4%) were from urban area, 4300 (78.0%) were from coastal region, 4735 (86.0%) had any degree of education, and 3244 (58.9%) had any level of income. The prevalence of PNVI was 68.6%, and PNVI was significantly correlated with older age, less educated, lower income and higher refractive error, while sex, degree of urbanization, geographic location, smoking, alcohol consumption and tea consumption were not statistically significantly associated with PNVI.

Conclusions: There is a significant burden of PNVI in southeast China, which suggests more investment in accessible services and policies to enhance the eye health of the elderly with low educational levels and low incomes.

Poster No.: PO-392

Prevalence and Characteristics of Eye Diseases in Keerom Regency: The First Report From Easternmost Indonesia Without Ophthalmology Facilities

*First Author: Ivana **ALBERTA***

Purpose: Prevalence estimation of eye diseases in a given area is essential to plan eye care services. This study aimed to assess the prevalence of eye diseases among Keerom residents as an initial step in starting eye care provisions in easternmost Papua, Indonesia, where ophthalmology facilities are currently absent.

Methods: A community-based cross-sectional study was conducted in Keerom Regency, easternmost Papua, Indonesia, in August 2023. Data were collected using total sampling based on inclusion and exclusion criteria. Eye examination was done using an ophthalmoscope. All data were coded, entered, and analyzed using SPSS version 24.

Results: A total of 1,035 patients were included in this study. Mean age was 48.24±13.00 years old (range 3-82 years old), of which females accounted for 62.3%. The most prevalent eye disease was cataract (52.6%), which predominantly incipient cataract (20.9%). The second most were pterygium (6.7%) and refractive error (4.2%). Patients who have cataract and pterygium concurrently account for 4.3%. Other diseases (2.6%) were found, such as leucoma, retinopathy, and ocular trauma.

Conclusions: This report showed a need to establish and enhance eye care services, conduct community campaigns to raise awareness, and encourage proactive eye services-seeking behavior among the Keerom population.

Poster No.: PO-391

Prevalence and Risk Factors of Pterygium in the Social Healthcare Service of Ksatria Airlangga Floating Hospital in Frontier Southernmost Regions of Indonesia

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Purpose: We put up as the first prior studies to report the prevalence and to evaluate the risk factors of pterygium in the social healthcare service of Ksatria Airlangga Floating Hospital during its shipping to the frontier southernmost regions of Indonesia, Rote and Sabu islands.

Methods: This study is a descriptive cross-sectional study. The study subjects were pterygium patients from the social healthcare service of Ksatria Airlangga Floating to the Rote and Sabu islands in July 2023. All patients with pterygium in this study were carried out by total sampling method and were diagnosed by the ophthalmologist using slit lamp examination. The data was recorded and processed using SPSS version 25 statistical software. Chi-square test ($\chi 2$) was used to determine the most related variables.

Results: There were 55 patients consisting of female patients (61.2%) and male patients (38.2%). The mean age was 51.78 ± 10.98 (32-78) years. More than half of patients with pterygium have outdoor work (54.5%). From the examination, there were grade I, grade II, grade III, and grade IV pterygium that almost had the same proportion, 25.5%, 25.5%, 27.3%, and 21.8% respectively. Pterygium was independently associated with the presence of outdoor work (p =0.006; OR=12.0 (CI 95% 1.762-81.745)), meanwhile, sex (p=0.455), and age (0.424) were not significantly associated with pterygium.

Conclusions: There was a statistically significant association between outdoor work and pterygium formation in the Social Healthcare Service of Ksatria Airlangga Floating Hospital in the Rote and Sabu islands.

Poster No.: PO-390

Prevalence of Color Blindness in School-Going Children in Eastern Nepal

*First Author: Amit **SINGH***
*Co-Author(s): Kaushalya **DAHAL**, Purushottam **JOSHI**, Santosh **LABH KARN**, Aashish **PANT**, Ajay **RAY***

Purpose: There is paucity in the literature regarding the prevalence of color blindness in school-going children in Nepal, and only limited studies have been done worldwide. This study was done to evaluate the prevalence of color blindness among school-going children from a district in the eastern region of Nepal.

Methods: This was a community-based cross-sectional study carried out in the school-going children studying at different schools in Jhapa district, Koshi province, Nepal. After fulfilling the inclusion and exclusion criteria, the students were subjected to color vision test using Ishihara's color vision test plates. Appropriate informed consent for the study was taken from the parents of the students. Data entry was done in Microsoft Excel, and data analysis was done using IBM SPSS Statistics v25.

Results: The study included 28649 students from 6-18 years of age, with a mean age of 11.76 ± 3.58 years. There were 14127 male (49.31%) and 14522 female students (50.69%). Out of the 28649 students tested, color blindness was found in 486 students (1.69%). Deuteranomaly was the most common type of color

blindness (45%). Color blindness was 4 times more common in males (2.74%) than in females (0.68%).

Conclusions: The prevalence of color blindness in our study from the eastern region of Nepal was 1.69%, with a four-fold prevalence in males compared to females.

Poster No.: PO-394

Prevalence of Presenting Visual Impairment Among Children Across Elementary School in Rural Bali: A Cross Sectional Study

*First Author: Monica **MATTARUNGAN***
*Co-Author(s): Cisca **KUSWIDYATI**, Tania **TANIA***

Purpose: Visual impairment is a major healthcare burden worldwide. Epidemiological data regarding children's visual impairment in Indonesian rural areas are scarcely available, despite its significant importance in optimizing children's eye care. This study was conducted to measure presenting visual impairment among children across elementary schools in rural Bali.

Methods: This was the first vision screening programme done in our population, in which a cross-sectional study involving 19 elementary school students was done. All students underwent a basic visual acuity test using the Snellen's Chart at 6 meters. Visual impairment was defined according to the World Health Organization categorization. Children with visual impairment were referred to the ophthalmologist for further testing.

Results: The total number of study participants was 2,056 students. The mean age of the students screened was 9.43 ± 1.69 years and most of them were male (52.4%). The prevalence of presenting visual impairment was 4,1%, and only 7 students wore spectacles. The mean presenting visual acuity in the better eye was 0,96 ± 0,14. There was no significant difference in presenting visual acuity between gender, age, and grade level.

Conclusions: The prevalence of presenting visual impairment in rural Bali was 4,1%. Routine vision screening is recommended to prevent undetectable visual impairment in children and to find its possible risk factors. Further study is suggested.

Poster No.: PO-403

Socio-Demographic Distribution and Clinical Profile of Exotropia in India: Electronic Medical Records Driven Big Data Analytics Report

*First Author: Sampada **KULKARNI IRLEKAR***
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Purpose: To describe the demographics and clinical profile of exotropia from patient data obtained from a multi-tiered ophthalmology hospital network in India.

Methods: This cross-sectional hospital-based study included the data of 2,664,906 patients presenting to the hospital network from August 1, 2010, to January 31, 2021. Data were collected using an electronic medical record system. Data were collected regarding demographics, age at presentation, vision assessment with complete ophthalmic evaluation, and strabismus assessment.

Results: During this period, 31,333 (1.18%) patients were diagnosed with exotropia. There was an insignificant male (54.68%) and significant socio-economic status (82.21%) preponderance. The mean age was 23±19.66 years. However, most presented with exotropia in the first decade of life (10,904; 34.8%)). The most common occupation was students (16,109; 51.41%). The majority of (13,147; 41.96%) the patients were from rural areas. The most common type of exotropia was constant exotropia (12,106; 38.64%), followed by intermittent exotropia (11,574; 36.94%), secondary exotropia (4,533; 14.47%), and congenital exotropia (1,752; 5.59%). Associated pattern strabismus was seen in a minority (V-pattern: 457 (1.46%); A-pattern: 128 (0.41%)). Extraocular muscle surgery was performed on 4,477 (14.29%) patients.

Conclusions: Exotropia is more common in males in their first decade of life. As this is the most crucial age for binocular vision and sensory development, early and timely screening through trained pediatric ophthalmologists is a must in schools. This analysis showed that only a tenth of the affected patients underwent surgical correction for the treatment of exotropia, which needs poor awareness.

Poster No.: PO-397

Surgical Outcome of Expulsive Hemorrhage Caused During Intraocular Surgery

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Purpose: Expulsive hemorrhage (EH) during intraocular surgery is very rare and sometimes results in poor visual outcomes. In this study, we examined four cases of expulsive hemorrhage during intraocular surgery and were treated at our hospital afterwards.

Methods: Four eyes of 4 cases that had EH during intraocular surgery were treated at our hospital in from January 2006 to February 2023. We assessed the items below: age, sex, best-corrected visual acuity (BCVA), pre-and intra-operative risk factors (high myopia, systemic disease, and surgical complications), and terms from EH to reoperation.

Results: The 4 cases consisted of 2 males and 2 females, and their mean age was 74.8 years. All patients had hypertension during the primary operation. Preoperative risk factors were high myopia (3 cases), aphakia (1 case), and high intraocular pressure

(1 case). Cataract surgery (2 cases), vitrectomy for lens drop during cataract surgery (1 case), and trabeculotomy (1 case) were performed as primary surgery. Posterior capsule rupture (3 cases), wound enlargement (2 cases), aphakic eye (1 case), and intraoperative hypertension (all cases) were found as intraoperative risk factors. The mean term from primary to reoperation was 13.3 days. The mean visual acuity (logMAR) immediately after the onset of the expulsive hemorrhage was 1.52, the best BCVA after reoperation improved to 0.69, and the mean term to gain best visual acuity was 4.27 months.

Conclusions: We suppose that even when an expulsive hemorrhage occurs, it could be possible to preserve visual function if reoperation is performed at the appropriate timing.

Orbital and Oculoplastic Surgery

Poster No.: PO-427

A Clinical Study of Simultaneous Surgery of Orbital Decompression and Upper Eyelid Retraction Correction in Thyroid Eye Disease

*First Author: Jing **SUN***
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Purpose: To evaluate the outcome of simultaneous upper eyelid retraction surgery and orbital decompression for thyroid eye disease (TED) patients with moderate to severe upper eyelid retraction and moderate to severe exophthalmos.

Methods: A retrospective, comparative, non-randomized clinical audit of 44 eyes of 31 patients with thyroid orbitopathy was carried out. These patients all have ocular signs of moderate to severe upper eyelid retraction and moderate to severe exophthalmos. Patients were divided into a combined orbital decompression and correction of upper eyelid retraction group (Group 1) and an orbital decompression group (Group 2). We observed the immediate and intermediate postoperative results postoperative.

Results: Postoperatively, exophthalmos reduction was significant in both groups compared to the preoperative period (P<0.001). There was no difference between the exophthalmos reduction values of the two groups. Both groups showed statistically significant MRD1 improvement after the operation (P<0.001). Group 1 achieved a greater improvement in upper eyelid position correction compared to Group 2 (P<0.001). Conjunctival chemosis and corneal injury had a notable improvement in Group 1 (P<0.05) compared to Group 2 (P>0.05) at both 1 week and 1 month postoperative.

Conclusions: Orbital decompression alone and orbital decompression combined with upper lid retraction correction achieve similar exophthalmos reduction values. Compared to orbital decompression alone, combining orbital decompression with concurrent correction of upper eyelid retraction in TED patients resulted in better upper eyelid position improvement under a low incidence of complications. The combined surgery is more conducive to the postoperative recovery of the ocular surface injury.

Poster No.: PO-599

A Rare Case of Neonatal Osteomyelitis: Zygomatic Bone Infection Presenting as a Recurrent Lid Abscess With Discharging Sinus

*First Author: Sushant **ADIGA***
*Co-Author(s): Malita **AMATYA**, Dikshya **BISTA**, Hom **GURUNG**, Purnima **RAJKARNIKAR STHAPIT**, Rohit **SAIJU***

Purpose: To describe the approach and management of a patient with zygomatic bone osteomyelitis in a neonate.

Methods: Case report involving a 27-day-old girl who developed osteomyelitis of the zygomatic bone following a history of recurrent upper eyelid abscesses, ultimately resulting in the formation of a discharging sinus. The patient underwent an anterior orbitotomy procedure, during which a complete excision of the cystic cavity containing the abscess and the associated sinus tract was performed. Additionally, bony debridement, sequestrectomy, and saucerization were carried out to manage the condition. Additionally, a course of intravenous antibiotics was given for 12 days, followed by a 2-week course of oral antibiotics.

Results: The lid swelling completely resolved with no discharge, and the patient remained asymptomatic at three months follow-up.

Conclusions: When cases of recurrent lid abscess are encountered, it is crucial to consider underlying osteomyelitis of the zygomatic bone and promptly initiate appropriate medical and surgical management.

Poster No.: PO-424

A Rare Case of an Unusual Orbital Invader in Post Eviscerated Socket

*First Author: Prasansha **NARNOLI***
*Co-Author(s): Ruchi **MITTAL**, Samir **MOHAPATRA***

Purpose: To discuss an unusual case of orbital pythiosis.

Methods: A 41-year-old female presented to us with complete drooping of eyelid associated with periorbital swelling in her left eye for one month after undergoing evisceration at another institution. On clinical examination, there was mild proptosis, and the left

upper eyelid was ptotic with hyperemic and markedly edematous conjunctiva. On palpation, there was a hard, palpable mass infiltrating the entire periorbital area. Imaging was performed, which revealed an ill-defined, homogenous mass infiltrating the socket up to the orbital apex. Considering the above clinical and imaging findings, a differential diagnosis of infective versus infiltrating lesion was suspected, and the patient was posted for left socket exploration. Intraoperatively, a yellowish-grey mass was noted infiltrating the entire orbit up to the apex. Debulking was done up till the extent possible and tissue was sent for histopathological examination. Histopathological examination suggestive of pythium insidiosum. Special stains, including Gomori Methenamine Silver stain, Iodine -Potassium Iodide-Suphuric acid stain (IKI-H2SO4) and Periodic Acid-Schiff (PAS) stain, were performed. Diagnosis of Orbital pythiosis was confirmed. Lid-sparing exenteration was planned, considering the residual disease and its' invasive nature. The morphology of the inflammatory infiltrate and staining of the filamentous structures were similar to the debulked tissue.

Results: The socket healed well, and there were no clinical signs and symptoms suggestive of recurrence over a 6-month period. A repeat MRI of the brain with orbit showed no foci of infection.

Conclusions: The present case demonstrates the importance of early histopathological confirmation and prompt decision to perform exenteration in a rare case of ocular pythiosis.

Poster No.: PO-431

A Scar for a Scar - Scar Release With Full Thickness Skin Graft for Cicatricial Ectropion

First Author: Padmapriya ***V***
Co-Author(s): Sindhuja ***MURUGESAN***

Purpose: Ectropion causes watering, irritation, and pain and predisposes to exposure to keratopathy. Correction of senile ectropion is a relatively straightforward task. Cicatricial ectropion poses a bigger challenge. The presence of a scar, lack of availability of sufficient tissue, and tendency to fibrose and contract, all play an important role in making cicatricial ectropion a surgical nightmare.

Methods: A technique for the correction of cicatricial ectropion is releasing the scar to release the tension on the anterior lid lamellae, and placing a full-thickness skin graft to cover the defect. A retrospective study of 20 cases over 2 years was done to study the surgical outcomes with respect to patient satisfaction, cosmesis, post-operative care, and lid status in the follow-up period of 1 year. The study was done using a medical record system and photographic records.

Results: The technique provided good cosmesis and patient satisfaction. 20 patients were included, 3 lost to follow-up. Out of 17 patients, road traffic accidents were noted to be the most common etiology, the mean age being 34 years. Retroauricular skin graft was used in 16 cases, and supraclavicular graft was used for 1. Patients presented at an average of 77 months post-injury, with a mean pre-operative lagophthalmos of 3mm. Post-operatively, at 1 year, only 1 patient had lagophthalmos, and only 1 patient had graft necrosis, requiring regraft. Cosmetic results were satisfactory, with adequate lid apposition.

Conclusions: This surgical technique is easy to learn and perform, has a low complication rate, and can be practiced routinely in the management of cicatricial ectropion.

Poster No.: PO-442

A Successful Cases of Ocular Salvage in Globe Subluxations: A Case Series

First Author: Sros Romdoul ***LEANG***
Co-Author(s): Sreypeou ***KRIN****, Thorn* ***POK****, Mengsreang* ***SOUNG***

Purpose: To report three rare cases of globe subluxations presenting to the ophthalmology department. Patients 'reports included age, gender, diagnosis, surgical procedure, and post-management outcome (globe survival after reduction).

Methods: Among three cases, two cases were young boys of globe subluxated following by trauma, and another case was 32 gestational age of a pregnant woman of globe subluxated after severe nausea and vomiting. Her CT result revealed a retrobulbar orbital hematoma which was suspected of rupture of the orbital varicose vein. On arrival, their vision was completely lost, caused by the severity of the globe injured and delayed presenting onset. Two young boys of trauma were performed with globe reduction technique and tarsorrhaphy procedure. The pregnant woman was globe-reduced by a simple reducing maneuver. Post-globe reposition, all cases were observed closely for globe survival.

Results: According to our cases, a consequence of visual loss due to the optic nerve and extraocular muscles were avulsed or cut which may result from stretching extraocular muscles and globe ocular ischemia. Although patients lost vision after trauma, they had been eligible for good cosmetic. After reduction, their visual potential was not recovered, yet their globe survived with the functionality of extraocular muscle motility.

Conclusions: Early intervention of globe protrusion is completely a challenge and should be considered for the benefit of saving patients' sight. Emergency management of reduction should be performed immediately to prevent permanent vision loss. Some situations are not the right time for the enucleated

injured eye. It is genius to preserve patients' globe for cosmetic, which may enhance their quality of life.

Poster No.: PO-407

Adding Lacrimal Gland During Steroid Injection for Thyroid Eye Disease

*First Author: Fatema **ALJUFAIRI***
*Co-Author(s): Kelvin Kam-lung **CHONG**, Kenneth Ka Hei **LAI**, Calvin **PANG**, Jake Uy **SEBASTIAN***

Purpose: To compare the clinical, radiological and ocular surface outcomes of POS injection to the levator palpebrae superioris (LPS) alone versus additional injection to LG in TED patients with ULD.

Methods: Prospective, non-randomized, comparative series. This study included TED patients who underwent serial transconjunctival injections of triamcinolone (TA) 40mg to LPS alone (Group 1) or 20mg to LPS and 20mg to LG (Group 2) between January 2018 and December 2022.

Results: A total of 71 TED (N=97 eyes) patients were treated. Eyes in Group 1 (n=10, 10.3%) showed improved margin reflex distance 1 (MRD1) (P=0.020), while eyes from Group 2 (n=87, 89.7%) showed improvement in MRD1 (P<0.001), LAF (P<0.001), LAG (P=0.009), ULS and Clinical Activity Score (CAS) (P<0.001). These correlate with a reduction in coronal areas of LG (P<0.00001), LPS-superior rectus complex (LPS-SR)(P<0.00142), and inflammatory signals of LG (P=0.00062) and LPS-SR (P=0.0035) on coronal MRI. Only eyes in Group 2 showed improved fluorescein break-up time (FBUT) (P=0.00374), Oxford corneal staining score (P=0.0466), Schirmer's test (P=0.03156) and Ocular surface disease index (P=0.0466), but not eyes in Group 1.

Conclusions: Compared to single 40mg TA injection to the LPS, injecting 20mg TA to LG and LPS serially was found to have additional structural, functional and radiological benefits in patients with TED-related ULD and DED.

Poster No.: PO-445

Application of Reverse Measurement Method in Designing Incision for Double Eyelid Plasty in Patients With Irregular Upper Blepharochalasis: A Case Report

*First Author: Hui hui **LUO***

Purpose: A 55-year-old male patient came for consultation due to the bilateral loose upper eyelid skin blocking view for over a year. His bilateral levator palpebrae muscle strength was normal, and he was diagnosed with bilateral upper blepharochalasis. Since he underwent eyelid tumor resection 10 years ago due to bilateral Xanthelasma, the upper eyelid skin was irregularly loose and blocking the upper one-third of the pupils.

Methods: Double eyelid plasty was chosen for him, and a reverse measurement method was used to design the incision. The patient lay flat and closed the eyes, 1. draw the bottom line on the upper eyelid in the proposed height; 2. use the bottom line as the baseline, press two toothpicks against each other to tighten the loose skin, and mark the highest point; then, use the highest point as the base point, flatten the nearby skin and mark the amount of skin to be retained in reverse with a ruler (the amount of skin retained in this patient was 8mm middle and outer, 10mm inner); 3. connect the marked points measured in reverse into a smooth line, and connect the beginning and end of this line to the bottom line. The patient then underwent routine double eyelid plasty.

Results: One week after surgery, the width of the dominant double eyelid was about 2mm symmetrically on both eyes. The view was not blocked, and the patient was satisfied.

Conclusions: The reverse measurement method is effective in designing incisions for double eyelid plasty in patients with irregular upper blepharochalasis.

Poster No.: PO-417

Atypical Presentation of Rhino-Orbital-Cutaneous Mucormycosis in a Young Immunocompetent Adult Proposed Challenging Diagnosis and Radical Measures

*First Author: Ni Putu Ayu **DHIYANTARI***
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Purpose: Mucormycosis is a rare opportunistic infection caused by Mucorales fungi. Cutaneous mucormycosis typically presents as a chronic indolent infection, whereas rhino-orbital mucormycosis is a rapidly progressive disease that often invades adjacent cerebral tissue and is associated with high mortality. This case represents the atypical clinical history of rhino-orbital-cutaneous mucormycosis.

Methods: The patient was presented with a right orbital cellulitis associated with an extensive multiple suppurative deep cutaneous infection and worsening headache. The skin lesion was initiated from a localized abscess at the right periorbital area nine months before admission. The patient was initially treated with broad-spectrum IV antibiotics and surgical evisceration of the right eye. Suspicion of fungal infection was raised after weeks of non-responsive treatment. Aggressive measures with exenteration of the right orbit and surgical debridement were undertaken. Periodic acid Schiff staining from healthy periorbital tissue revealed ribbon-like hyphae with pauciseptate and 90˚ branching identified as the Mucoraceae family. A resolution was seen after four weeks of antifungal treatment with Amphotericin B.

Results: Diagnosis establishment in this case was very challenging due to the atypical presentation and rarity

of the case reported in Indonesia. The orbital apex syndrome in the case presented was fully blown, but the only nasal symptom reported was nasal stuffiness. Multiple deep cutaneous abscesses and fistula formations suggest that the fungal infection originated from the skin lesion.

Conclusions: Mucormycosis is challenging in terms of both diagnosis and treatment. Early suspicion of fungal infection leads to prompt surgical and medical treatment. It may also warrant a better prognosis.

Poster No.: PO-444

Basal Cell Nevus (Gorlin) Syndrome in a 41-Year-Old Asian Female

*First Author: Mary Ellaine **DIAZ***
*Co-Author(s): Fatima **REGALA**, Marco **TUMALAD***

Purpose: Gorlin syndrome, or basal cell nevus syndrome, is a rare, autosomal dominant neurocutaneous disease with an estimated prevalence of 1/57,000 to 1/256,000, with a higher incidence among Caucasians. Currently, there is no systematic epidemiological study in Asia, with only 13 reported cases here in the Philippines.

Methods: This is a case report on a 41-year-old Filipino female with Gorlin syndrome.

Results: Gross examination showed a 3 cm darkly pigmented, elevated, non-tender mass with telangiectasias on the left temporal side, as well as multiple hyperpigmented lesions with varying sizes on the face. Biopsy results of these masses were all consistent with basal cell carcinoma. Multiple, soft, cystic masses were noted on both upper eyelids as well as a large, firm, non-tender mass on the right mandibular area. She had coarse facial features with a broad nasal bridge. Calcification of the falx cerebri was also present. This patient has fulfilled at least 2 major diagnostic criteria for Gorlin syndrome. She subsequently underwent wide excision of the left temporal mass with reconstruction using skin grafts. Moh's surgery was done for the other hyperpigmented masses.

Conclusions: Early diagnosis and prompt management of clinical manifestations of Gorlin syndrome provide a better prognosis and quality of life for these patients. This case ultimately highlights the need to see the patient as a whole and not just the ophthalmologic presentation. Losing sight of the larger picture can make us miss a rare, and more complex disease entity.

Poster No.: PO-425

Beneath the Surface: A Case Report on Subepidermal Calcified Nodule

*First Author: Arlan Manuel **VENERACION***

Purpose: To discuss the definition, findings, management, and prognosis of Subepidermal calcified nodule (SCN).

Methods: An 11-year-old male presented with a 2-year history of a white papule at the medial third of the right upper lid. His mother pricked the papule, causing minimal bleeding, but there was persistence of the papule. The lesion gradually enlarged until he noted the lesion in his field of view. He had no other medical conditions and no family history of similar lesions. Vital signs were within normal limits, and on ophthalmologic examination, visual acuity was 20/25 without correction, improving to 20/20-2 on pinhole. In the right eye, there was a solitary, white, moveable, rubbery, non-tender papule with well-defined borders and telangiectasia over the surface, measuring 4mm x 3mm. The rest was unremarkable. Excision of the nodule revealed a tan-brown, irregular, doughy to firm tissue measuring 0.6x0.5x0.4cm. Microscopically, with keratinized stratified squamous epithelium and dermis, and a homogenous basophilic deposit located at the subepidermal layer. Histopathology assessed the lesion to be a subepidermal calcified nodule. Serum calcium levels were elevated hence referral to pediatrics for systemic management.

Results: SCN is a rare condition, predominantly in young males, and its specific etiology and pathogenesis are still unknown.

Conclusions: SCNs typically present as a solitary, firm, white, verrucous, 3-10mm papule on the head and neck, sometimes with ulceration and chalky excretions, usually asymptomatic. Lesions usually do not resolve without intervention and are removed surgically once symptomatic, or for cosmesis. Post-operatively, no other management is needed, and recurrence is uncommon.

Poster No.: PO-443

COVID-19-related Rhino-Orbital-Cerebral Mucormycosis With Angioinvasion: A Lethal Sequela

*First Author: Nur Syazwani **REDZUWAN***
*Co-Author(s): Andrea **BARR**, Wan Mariny **KASIM**, Safinaz **MOHD KHIALDIN***

Purpose: The purpose of this study is to report a rare case of orbital apex syndrome secondary to COVID-19-related rhino-orbital-cerebral mucormycosis with angioinvasion.

Methods: A case report.

Results: A middle-aged man with multiple comorbidities, including uncontrolled diabetes mellitus, presented with shortness of breath and lethargy for six days. He was admitted for COVID-19 pneumonia, requiring high cumulative steroid therapy. After 15 days of treatment, he developed a sudden reduction in the right eye vision associated with ptosis. Examination showed a characteristic manifestation of right orbital apex syndrome with the presence of right central retinal artery occlusion. Extensive involvement of mucormycosis over bilateral paranasal sinuses extending to the right orbit was revealed on further investigations. The infection progressed rapidly despite systemic anti-fungal therapy, sinus debridement along with local transcutaneous retrobulbar amphotericin B injection. Due to the progression of the disease, right orbital exenteration had to be performed with repeat endoscopic sinus surgery. Unfortunately, he succumbed to multiple complications post-operatively.

Conclusions: This case revealed the challenges faced during the treatment of the deadly mucormycosis in concurrent COVID-19 infection with uncontrolled diabetes mellitus. Close monitoring for secondary invasive fungal infection and judicious use of immunomodulators in COVID-19 treatment is crucial, especially in high-risk patients.

Poster No.: PO-441

Canaliculo-Dacryocystorhinostomy Surgery in Nepal: Surgical Success and Patient Satisfaction

*First Author: Suresh **RASAILY***

Purpose: This study focuses on the management of lower canalicular or common canalicular blockages causing troublesome Epiphora. While no perfect technique exists for treating such obstructions, addressing them is vital for enhancing quality of life. The study aims to evaluate the effectiveness of canaliculo-dacryocystorhinostomy (CDCR) surgery in Nepal in terms of surgical success and patient satisfaction.

Methods: Conducted with ethical clearance from the Nepal Health Research Council's Ethical Review Board, the prospective nonrandomized interventional study spanned six months. It included consecutive cases of symptomatic epiphora caused by common or lower canalicular obstructions. A single surgeon performed all surgeries, and outcomes were assessed six months post-surgery. Surgical success was defined as symptom resolution and patency upon irrigation. Patient satisfaction was measured through surveys using the Munk score, Glasgow Benefit inventory score, and social impact score. Demographic, clinical, and surgical data were analyzed descriptively.

Results: The study enrolled 14 cases, with 57.1% having lower canalicular obstruction and 42.9% having common canalicular obstruction. The mean age was 52.5 +/- 20.1 years, with a majority of females (57.1%). Most cases (80%) reported watering as the primary symptom. Surgical success was achieved in 85.7% of cases after six months, with only one puncta-related complication. Patient satisfaction, assessed through the GBI total score, was notably high. The pre-operative mean Munk score significantly decreased post-surgery, indicating positive outcomes.

Conclusions: Canaliculo-dacryocystorhinostomy surgery displayed substantial success in Nepal, aligning with global standards. The procedure effectively managed canalicular obstructions, significantly improving patient symptoms and quality of life.

Poster No.: PO-408

Ciliary Body Mass – Distinguishing the Doppelgangers!

*First Author: Shalin **SHAH***
*Co-Author(s): Ruchi **GOEL***

Purpose: Ciliary body tumors are a rare entity. Pigmented melanomas, nevi, and non-pigmented leiomyomas are described in the literature.

Methods: A 48-year-old female presented with diminished vision in her right eye for 2 years. Visual acuity was hand movements. Slit-lamp examination revealed superiorly dislocated cataractous lens+uneven shallowing of the anterior chamber inferotemporally. A dilated examination showed a pigmented intraocular mass in the inferotemporal globe. Pars plicata was visible on the surface of the lesion. Ultrasound biomicroscopy showed vascular mass arising from supra-choroidal space, adherent to the sclera, with intact choroid over it, no extra-scleral extension. Ultrasound was anechoic. No secondary glaucoma. MRI revealed a classical yin-yang appearance. PET scan showed an 18x15 mm metabolically highly active lesion, with no orbital or systemic spread. Provisional diagnosis-ciliary body melanoma T3cN0M0. The patient underwent a primary enucleation, after refusing brachytherapy.

Results: Histopathology showed a solid, non-pigmented mass arising from the ciliary body. Spindle cells, in whorls and fascicles, perivascular hyalinisation, SMA+, desmin+, S100 negative, suggestive of leiomyoma. The patient is on a 6-month follow-up with no recurrence and good cosmesis.

Conclusions: Ciliary body leiomyoma is close mimicker of melanomas. Both are metabolically highly active lesions, show extra-scleral extension, yin-yang MRI appearance, and present as masquerade with dislocated cataract.

Poster No.: PO-434

Clinical Characteristics and Imaging Features of Patients With Wooden Intraorbital Foreign Body Injuries

*First Author: Son **BUI***

Purpose: To describe the clinical characteristics and imaging features of patients with wooden intraorbital foreign body injuries.

Methods: A case series study on 07 eyes of 07 patients diagnosed with wooden intraorbital foreign body injuries examined and treated at Eye Trauma Department in Vietnam National Eye Hospital from September 2020 to April 2023

Results: Of the 07 patients reviewed in the study, 5 (71.4%) were male. The mean age at presentation was 32.7 (range 9 - 46). Domestic accidents were the most common cause of trauma (85.7%). Natural wood (tree branch, wood chip) consisted of 85.7% of cases. Most of the patients (71.4%) presented within 1 week of injury. The entrances were skin (57.1%) and conjunctiva (42.9%). The major clinical characteristics were eyelid and conjunctival congestion and edema (85.7%) and proptosis (57.1%). Infection occurred in 28.6% of cases, in which 01 case had a severe infection. 42.7% of patients had no light perception VA. Computerized tomography (CT) features depended on injury timing: low-density signals like air or fat in the acute stage and high-density signals in the chronic stage.

Conclusions: Wooden intraorbital foreign body injuries have various and complicated clinical manifestations and can lead to severe complications which need early diagnosis and prompt treatment. CT scan plays an important role in diagnosis, treatment and prognosis.

Poster No.: PO-414

Clinical Spectrum of Bulbar Conjunctival Rhinosporidiosis

*First Author: Prasansha **NARNOLI***
*Co-Author(s): Devjyoti **TRIPATHY***

Purpose: To report the clinical spectrum of bulbar conjunctival rhinosporidiosis.

Methods: Retrospective chart review of biopsy-proven ocular adnexal rhinosporidiosis over a five-year period (2017 – 2022). Demographic details, clinical presentation, management interventions, and outcomes in cases with bulbar conjunctival rhinosporidiosis were documented and analysed.

Results: A total of 63 cases of biopsy-proven ocular adnexal rhinosporidiosis were included – 32 cases involved the lacrimal sac (50.8%), 30 involved the conjunctiva (47.6%), and one involved the cornea (1.6%). Of the conjunctival cases, 14 were tarsal (46.7%), 14 were bulbar (46.7%), and 2 were forniceal (6.7%). The bulbar conjunctival cases comprised 22.2% of all adnexal cases. All bulbar cases underwent excision, with five (35.7%) requiring a patch graft for scleral thinning. The remaining (64.3%) had a good outcome on medium to long-term follow-up.

Conclusions: Tarsal conjunctival involvement is reported as the commonest form of conjunctival rhinosporidiosis. However, in our series, bulbar conjunctival involvement comprised nearly half of all conjunctival cases, and over 20% of all adnexal cases. Though most do well with excision of the granuloma, some may progress to scleral thinning with staphyloma formation that may need major tectonic intervention to protect the integrity of the eyeball. The majority appear to do well on medium to long-term follow-up.

Poster No.: PO-421

Congenital Orbitopalpebral Cyst: Our Experience of This Rare Entity

*First Author: Shaifali **CHAHAR***

Purpose: Clinical presentation, systemic associations, management and outcomes in orbitopalpebral cysts.

Methods: Retrospective interventional case series of 12 eyes of 10 patients.

Results: Age varied from 2 months to 26 years. Bilaterality was seen in 2 (20%) cases. The majority were males (80%). The clinical presentation was a cystic mass in all cases. Imaging with a B-scan and CT scan or MRI aided in clinical diagnosis and revealed the associated brain anomalies. Severe microphthalmos was seen in all. The other eye was normal in 5 (62.5%) and associated with coloboma in 2 (25%). Management included cyst aspiration followed by sclerotherapy in 11 (91.6%) and enucleation with cyst excision and implant in 1 (8.3%), followed by socket expansion with serial conformers and customized ocular prosthesis. All the patients had gratifying cosmetic outcomes.

Conclusions: Orbitopalpebral cyst is a rare entity with no standardized treatment protocol. Staged management seems to provide gratifying outcomes.

Poster No.: PO-422

Evaluation of Collagen Matrix Implant in Ocular Surface Reconstruction for Moderate to Severe Symblepharon – A Pilot Study

*First Author: Kavya **S***
*Co-Author(s): Rachna **MEEL***

Purpose: To evaluate the treatment outcome of ocular surface reconstruction with collagen matrix implant in cases of moderate-severe symblepharon.

Methods: It is a prospective interventional study of 10 patients with symblepharon secondary to chemical injury sequelae.

Results: Demographic data: (1) Mean age of patients - 21 years (10-31 years) (2) Laterality 50% - Right eye, 50% - Left eye (3) 80% chemical injury sequelae due to limestone, 10% Acid injury, 10% Cement splash injury (4) 40% moderate symblepharon, 60% severe symblepharon (5) 100% Males mean Pre-op forniceal depth -4.4 mm. Mean Post-op Forniceal depth- 9.95 mm. Mean improvement of forniceal depth- 5.65mm. Excellent results >70% depth correction achieved in all quadrants Mean percentage improvement of forniceal depth-97.842%.

Conclusions: Ocular surface reconstruction with collagen matrix implant is a safe and effective alternative in cases of moderate to severe symblepharon.

Poster No.: PO-416

Evaluation of Factors Associated With Corneal Epithelial Disorders After Blepharoptosis Surgery

*First Author: Miho **NONOMURA***
*Co-Author(s): Yuki **FURUSAWA**, Hiroaki **OKU**, Akihide **WATANABE***

Purpose: To investigate factors contributing to corneal epithelial disorders following surgical correction of involutional blepharoptosis.

Methods: This study involved patients diagnosed with involutional blepharoptosis who underwent levator advancement between August 2011 and October 2022 and who were followed for up to 6 months postoperative. We assessed margin reflex distance-1 (MRD-1), tear meniscus volume, and 7 parameters of spontaneous blinking, and analyzed the frequency and progression of superficial punctate keratitis (SPK) prior to surgery and at 3- and 6-months postoperative. Patients were divided into SPK exacerbation and non-exacerbation groups at 3 months postoperative, and factors influencing SPK exacerbation were investigated.

Results: In the 183 eyes included in the study, the frequency of SPK prior to surgery and at 3- and 6-months postoperative was 20.8%, 23.0%, and 15.3%, respectively, thus showing a tendency of exacerbation at 3 months postoperative and a trend of improvement at 6-months postoperative. At 3 months postoperative, there were 29 eyes in the SPK exacerbation group and 154 eyes in the non-exacerbation group, and a significant MRD increase was noted in the SPK exacerbation group, yet without any significant changes in eyelid closure distance, thus indicating a relative failure of eyelid closure.

Conclusions: Following blepharoptosis surgery, there was a trend of SPK exacerbation at 3 months postoperative, and the relative failure of eyelid function at that time-point may have contributed to the exacerbation in the worsening group. However, considering the overall data, SPK showed improvement by 6 months postoperative.

Poster No.: PO-432

Eyespirator - A Novel Do-It-Yourself Suction Apparatus

*First Author: Padmapriya **V***
*Co-Author(s): Shafeena **P***

Purpose: Surgery, by nature, involves blood loss, and hence suction plays an important role in ensuring a clean operating view and ease of access. In ophthalmology, there is a void for an efficient and flexible suction apparatus that is yet to be filled.

Methods: Our innovation, the Eyespirator, is made using recycled or inexpensive parts, is easy to assemble, and can serve as a cost-effective alternative to the current apparatus under use. It works on the creation of a vacuum by a simple water pump and is regulated by a foot pedal.

Results: It helps to overcome the difficulties caused by large instruments and non-pliable suction tips, unregulated generation of vacuum, and high pressures generated, causing trauma to the delicate structures and can prove to be of immense use in fields such as ophthalmology where the small surgical field is a big challenge.

Conclusions: Eyespirator is a unique, do-it-yourself, frugal, mobile, and easy-to-use suction instrument and proves to be an effective solution to the unique challenge of fluid or blood suctioning in ophthalmology surgical practice. This can be deployed even in rural settings, and small modifications can allow its usage in a wide variety of surgical fields.

Poster No.: PO-433

Favorable Clinical Outcome Following Early Management in Traumatic Globe Luxation and Traumatic Optic Neuropathy: a Case Report

*First Author: Agung **NUGROHO***
*Co-Author(s): Hisar **DANIEL**, Salmarezka **DEWIPUTRI**, Kiara **NURMATHIAS**, Rianti **PRATIWI**, Muhammad **SHAFIQ ADVANI***

Purpose: Spontaneous globe luxation following trauma is a rare condition that appears in a dramatic fashion and leads to anxiousness for the patient and ophthalmologist. It is characterized by anterior dislocation of the eyeball. The prolapse can predispose to optic nerve avulsion, which results in poor visual outcomes. The case intends to demonstrate the importance of timing in globe reposition and the combination of surgical and non-surgical management in globe luxation and traumatic optic neuropathy cases.

Methods: An 11-year-old boy presented to the ER with his right eye spontaneously popping out since three hours following a bicycle accident. The ophthalmic examination revealed severely restricted ocular motility, visual acuity of 3/60, intraocular pressure (IOP) of 30 mmHg, exposure keratopathy, sluggish pupil, and hyperemia at the nasal optic nerve head of the right eye. The globe reposition, canthotomy, cantholysis, and tarsorrhaphy were performed under general anesthesia nine hours after the incident due to the patient's refusal. Orbital CT scan showed optic nerve stretch. The patient then received intravenous methylprednisolone 4x250 mg for three days. The ophthalmic examination one week after the hospitalization, best corrected visual acuity (BCVA) 6/12, good ocular movement, normal IOP and normal fundus.

Results: This case represents an emergency condition that requires immediate management. The timing of the globe reposition is essential to restore its structure and function. Methylprednisolone administration is necessary for the condition of optic nerve injury and can provide a favorable visual prognosis.

Conclusions: Prompt globe reposition and methylprednisolone administration may result in satisfactory clinical results of globe luxation and traumatic optic neuropathy.

Poster No.: PO-450

Flaps Used in Eyelid Reconstruction

*First Author: Naz **JEHANGIR***

Purpose: Different eyelid flaps were performed in our patients after the removal of eyelid tumors.

Methods: Case Series.

Results: Lid tumors are not very uncommon and often present very late in our setting because of their slow growth pattern. Depending on the involvement of anterior lamella/posterior lamella and the size of the defect, different flaps and or grafts can be performed after excision of these tumors. We presented a few cases that presented to us at our hospital with lid carcinomas and how we managed each one of them. It also includes some infants with congenital lid deformities.

Conclusions: Congenital lid problems at birth and lid tumors in adults are very common in our setting and often present very late. There are different types of flaps that can be done in these patients after the removal of tumors, and they can be managed well with grafts/flaps in infants with congenital lid issues.

Poster No.: PO-430

I-Verter – A Lid Eversion Tool

*First Author: Padmapriya **V***

Purpose: Eversion of the eyelid is an essential step of examination in patients where the sub tarsal conjunctival examination is required in diagnosis and management. It is a skill that varies from clinician to clinician and can be difficult initially if the patient is anxious or distressed or through fear of causing harm. The I-verter is a simple, cost-effective tool used for upper lid eversion with no direct contact with the ocular surface.

Methods: We compare the efficacy of both methods for upper lid eversion based on three criteria- comfort, speed & area of palpebral conjunctiva exposed. 50 participants underwent both techniques by the same clinician. After each technique, the clinician underwent a swab culture of the fingers to test hand hygiene for each. The participants were given a questionnaire after the procedure, which comprised the degree of comfort of each technique on a visual analogue scale. The time taken to complete the procedure was timed, the area of exposed palpebral conjunctiva was captured, and the number of tries for lid eversion.

Results: No statistical significance between the 2 lid eversion techniques in terms of comfort ($p=0.612$), time ($p=0.08$) and area exposed ($p=0.13$). The index finger eversion ($p<0.05$) had a significantly higher infectious load than the other.

Conclusions: Te iverter tool-based lid eversion proved to be superior compared to the index finger-based lid eversion in terms of the comfort of the patient and clinician, minimal pain experienced by the patient and minimal time difference to perform the technique. It also proved to be safer and easily disposable.

Poster No.: PO-448

Indications for Eye Removal Procedures at a Level 1 Trauma Center - Impact of the COVID-19 Pandemic

*First Author: Joyce **MBEKEANI***
*Co-Author(s): Sruthi **KODALI**, Afshin **PARSIKIA**, Yael **STEINBERG***

Purpose: To compare rates and indications for eye removal surgeries before and after the COVID-19 pandemic.

Methods: A retrospective chart review was conducted on patients who had eye removal surgery, including evisceration, enucleation, and exenteration over 15 years (2007-2022). Patient demographics and indications and types of surgery were documented. The data was divided into pre- and post-pandemic groups. Statistical analysis was performed on STATA-17 software. Significance was set at $P<0.05$.

Results: Fifty-nine patients who underwent eye removal procedures were identified to have had enucleation (69%), evisceration (27%), and exenteration (3%). Mean (SD) age was 55.9 (19.4) years and 69% were male. Race/ethnicity was Black (47%), Hispanic (27%), White (5%), and other (20%). Common indications were trauma (41%), blind painful eye (34%), and infection/inflammation (24%). Types of traumas included: assault (55%), accidental (39%), and self-inflicted (6%). During the COVID-19 pandemic, mean (SD) monthly eye removal rates increased from 0.25 (0.50) to 0.77 (0.91) (P<0.001). Both males (P=0.003) and females (P=0.001) experienced higher removal rates. Black patients exhibited the greatest increase compared to other races/ethnicities [0.42 (0.76); P<0.001]. Blind painful eyes [0.35 (0.75); P<0.001] and trauma [0.31 (0.47); P=0.051] increased most as indications.

Conclusions: In this population, eye removal procedures increased during the recent pandemic. Delayed care of chronic eye conditions may have contributed to increased rates of blind, painful eyes. Increased trauma indications may be related to the spike in violent assaults noted in New York City during this time. More research is needed to study the broad consequences of the COVID-19 pandemic on ocular conditions and their management.

Poster No.: PO-409

Inferior Orbital Mass in Treacher Collin Syndrome – the Mystery of a Lost Sac!

*First Author: Shalin **SHAH***
*Co-Author(s): Ruchi **GOEL***

Purpose: Treacher Collin syndrome is a congenital craniofacial abnormality associated with antimongoloid slant, lower-lid colobomas, and dermoids. Inferior punctal and canalicular agenesis are reported in literature. We present a case of displaced lacrimal sac into inferonasal orbit, presenting as an inferior space-occupying lesion (SOL).

Methods: An 8-year-old male presented with an upward displacement of the right globe since birth, accompanied by watering and purulent discharge. No relief in watering was noted despite Crigler massage. Past history of repair of cleft lip and cleft palate. Bilateral lower lid coloboma, with inferior canalicular disruption, and medial canthal symblepharon noted. Bilateral ROPLAS positive. The right soft-firm cystic mass was palpated in inferior orbit, with vertical dystopia 6mm, right globe pushed upwards. Compression of the mass showed regurgitation of mucoid discharge from inferior puntum. Computed tomography showed a circumscribed mass, isodense to orbital fat, extending to mid-inferior orbit, communicating with naso-lacrimal duct. No bony or nasal anomalies were noted. Surgical excision of the dacryocystocoele was performed with an external dacryocystorhinostomy surgery.

Results: Fair resolution of watering was noted. Dystopia resolved with no secondary diplopia or amblyopia. Histopathology confirmed non-ciliated pseudostratified columnar epithelium with goblet cells. The patient is on 12-month follow-up with no recurrence or failure of surgery.

Conclusions: Dacryocystocoele in a displaced sac, should be kept as a differential diagnosis for inferonasal and inferior orbital SOL, especially in cases of craniofacial dysplasias.

Poster No.: PO-451

Late Presentation of Basal Cell Carcinoma of the Eyelids

*First Author: Sofia **IQBAL***

Purpose: To present a few cases of eyelid tumors that presented very late with extensive involvement.

Methods: Case Series.

Results: Eyelid tumors usually have a slow growth pattern, and patients usually present late, mostly due to ignorance in our part of the world. All the cases were presented very late to us, and these tumors were removed surgically depending on the extent of involvement of the lid and spread into the orbit, brain, and other adjacent structures and distant metastases. Depending on the biopsy report and the location and extension of the tumors, some were reconstructed with flaps and grafts. Others that had spread required orbital exenteration as part of the management, followed by chemo/radiation based on the decision of oncologists.

Conclusions: Early presentation is the key to better management of lid tumors. The management involved removal of the tumor followed by biopsy and reconstruction or exenteration depending on the extent of the tumor, metastasis, and general health of the patient.

Poster No.: PO-418

Mirroring and Navigation: Role in Reducing the Incidence of Post-operative Enophthalmos in Unilateral Orbital Wall Fractures

*First Author: Gargi **WAVIKAR***
*Co-Author(s): Deepak **SONI**, Komal **SAWARKAR***

Purpose: Assessing the impact of pre-operative Mirroring and Computer Assisted Surgical Navigation System (CASNS) in reducing the incidence of post-operative enophthalmos in patients undergoing repair of unilateral Orbital Wall Fractures (OWF).

Methods: Thirty-four patients who attended our hospital from 2019-2022 for repair of traumatic OWF were included in the study. They were divided into the Navigation group (18 patients) who underwent CASNS-

guided OWF repair, and the Conventional Group (16 patients) who underwent OWF repair by freehand method based on surgeon's experience. Enophthalmos correction and orbital cavity volume (OCV) were assessed pre-operatively and 1 month, 3 months, and 1 year post-operatively in all patients.

Results: The differences between eyeball projection and OCV of operated and unaffected orbits were significantly lesser in the Navigation group compared to the Conventional group ($p<0.05$). While only 1 patient had post-operative enophthalmos in the Navigation group, 4 patients had post-operative enophthalmos in the Conventional group. A secondary assessment of post-operative diplopia and duration of surgery yielded that while there was no significant difference in the duration of surgery between the two groups, the incidence of post-operative diplopia was significantly lesser in the Navigation group ($p<0.05$).

Conclusions: CASNS plays an instrumental role in a more precise reconstruction of the fractured orbit with a better over all cosmetic and functional outcome as indicated by lesser incidence of post-operative enophthalmos and diplopia and restored OCV.

Poster No.: PO-449

Ocular Adnexal Mantle Cell Lymphoma: An Uncommon Tumour at a Common Site

First Author: Siti Aeisyah ***AYOB***

Purpose: To report a case of Mantle Cell Lymphoma in a patient with bilateral upper lid mass. Diagnosis of a condition that presents with an eyelid mass may be from an array of possibilities, from the most benign to detrimental forms of malignancies. Detailed history with a comprehensive systemic examination aids in identifying the correct diagnosis and preventing treatment delay.

Methods: Case report.

Results: A healthy 50-year-old man presented to the eye clinic with a 5-month history of painless bilateral upper lid swelling. He denied having visual disturbances, fever, night sweats or weight loss. Examination revealed multiple glandular enlargements in his submandibular, cervical and inguinal regions. Computed Tomography (CT) scan showed a widespread of enlarged matted lymph nodes. Tumour marker CA-125 was also raised. Preliminary diagnosis was lymphoproliferative disorder, however, disseminated tuberculosis and other malignancies must be excluded. Incisional biopsy of the lacrimal gland then revealed SOX11 positive malignant lymphoid cells with Ki67 30% proliferative index, suggestive of aggressive Mantle Cell Lymphoma (MCL). Upon establishment of diagnosis, he was referred to the Haematology Department for further treatment.

Conclusions: Malignant lacrimal gland lymphoma is rare, constituting about 7-26% of ocular adnexal lymphomas. MCL, a form of B cell non-Hodgkin lymphoma, is a rare subtype accounting for about 11% of cases. Diagnosis is challenging due to the morphologic variants and clinical presentations. Bilateral lid masses should raise the concern of malignancy, especially when associated with other systemic findings. Timely diagnosis is vital in order to initiate proper treatment.

Poster No.: PO-412

Orbital Decompression in Sight-Threatening Thyroid Eye Disease With Corneal Breakdown: Presentation and Outcomes Over a Decade (2011–2023)

First Author: Prasansha ***NARNOLI***
Co-Author(s): Suryasnata ***RATH***

Purpose: Corneal breakdown (CB) in thyroid eye disease (TED) is an ocular emergency necessitating expeditious orbital decompression. This study aimed to assess the outcome after orbital decompression in TED with CB.

Methods: All consecutive TED patients who underwent orbital decompression in the presence of corneal breakdown between Nov 2011 and May 2023 were included in this retrospective audit. The primary outcome measure was best corrected visual acuity (BCVA) in the logarithm of the minimum angle of resolution, while secondary outcome measures included proptosis, clinical activity score (CAS), and proportion of globe salvage.

Results: In all 22 patients (32 eyes) were included in this study. The mean age was 44 + 15.24 (range 17-72) years, of which 15 were male (68%). At disease onset, 20 (90%) were hyperthyroid. CB in TED was categorized as superficial punctate keratopathy in 14, Microbial keratitis in 12, microbial keratitis with thinning in 4, and microbial keratitis with perforation in 2 eyes. The mean BCVA before orbital decompression was 1.13 + 0.94. The mean degree of proptosis was 25.5 + 3.67mm and the mean CAS was 3.4 + 1.90. At a median follow-up of 10 months (range 1- 60 months) after decompression, the mean BCVA had improved to 0.68 + 0.91, mean proptosis measured 21.5 + 2.46, and CAS was 0.15 + 0.37. The mean difference of vision and proptosis was found to be significant ($p < 0.05$). At the final follow-up, 30 (94%) achieved globe salvage while two eyes were eviscerated.

Conclusions: Expeditious Orbital decompression in TED with CB achieves high globe salvage and good visual outcome.

Poster No.: PO-423

Outcomes of Suture-Assisted Punctoplasty in the Treatment of Lacrimal Punctal Stenosis

*First Author: Le **LIEU***

Purpose: To describe the clinical characteristics of lacrimal punctal stenosis and to evaluate the outcomes of the suture-assisted punctoplasty technique.

Methods: A clinical prospective study without a control group was conducted on 42 eyes of 22 patients diagnosed with lacrimal punctal stenosis treated with suture-assisted punctoplasty from April 2021 to October 2022. The punctal size was measured pre- and post-oprative with optical coherence tomography.

Results: The mean age of patients was 48 ± 3, and 82% were female. The duration of excessive tearing was 26.5 ± 11.3 months. The majority of cases (91%) were classified as epiphora grade V. The type of punctal stenosis most observed was membranous (60%). The average pre-treatment punctal size was 158.8 ± 49.8 µm. After treatment, the punctal size increased to 346.6 ± 346.6 µm, and the percentage of grade V epiphora was reduced to 0%. The functional success rate was 90.9%, and the anatomical success rate was 92.9% after 6 months.

Conclusions: Lacrimal punctal stenosis predominantly affects middle-aged females, often in the form of membranous stenosis. The suture-assisted punctoplasty technique demonstrates a high success rate with low costs and short postoperative recovery.

Poster No.: PO-429

Primary Orbital Basal Cell Carcinoma Without Skin Lesions: A Case Report

*First Author: Kyle Nico **ANCHETA***
*Co-Author(s): Edward Victor **DE JUAN**, Mark Anthony **IMPERIAL**, Honeylen Maryl **TEO***

Purpose: To present a case of primary orbital basal cell carcinoma (BCC) without skin involvement.

Methods: This is a case report.

Results: A 40-year-old Asian woman presented with a 15-month history of slowly progressing proptosis of the left eye associated with eye redness, lagophthalmos, and diplopia on the left gaze, with no headache and orbital pain. The right eye visual acuity was 20/32 while the left was 20/50 with restricted adduction, infraduction, up-right gaze, down-right gaze, down-left gaze; five-mm relative proptosis; temporal bossing; three-mm lagophthalmos; mildly diffused hyperemic conjunctiva. There was no periocular skin lesion. The rest of the exam was unremarkable. A plain orbital computed tomography scan revealed a 2.7x2.2cm heterogeneous, non-calcified, slightly hyperdense extraconal soft tissue mass extending throughout the entire length of the lateral rectus, surrounding without indenting the lateral part of the globe, causing its anteromedial displacement. Having orbital malignancy as the primary consideration, an incision biopsy via lateral orbitotomy revealed a firm brown nonencapsulated mass extending from the superotemporal to the inferotemporal orbit with lateral wall lytic bone changes. Histopathology showed BCC with irregular nests of basaloid cells, surrounding retraction artifact, and peripheral nuclear palisading, without lymphovascular and perineural invasion. The patient was lost to follow-up. Six weeks post-surgery, she presented with an enlarged mass. She underwent orbitotomy for mass debulking. Radiotherapy was started, significantly improving the clinical features.

Conclusions: To our knowledge, this is the first reported case of primary orbital BCC with an absence of skin involvement. Surgery for biopsy is diagnostic and provides guidance for further management.

Poster No.: PO-438

Risk Factors for Active Thyroid Eye Disease in an Asian Cohort

*First Author: Valencia **FOO***
*Co-Author(s): Chiaw Ling **CHNG**, Lay Leng **SEAH***

Purpose: To examine risk factors associated with active thyroid eye disease (TED) in Asians.

Methods: Data of patients seen in a multidisciplinary TED clinic in a tertiary institution from 2016 to 2023 were collected from the study. Patient demographics, medical history, VISA activity score, TED symptoms, presence of dysthyroid optic neuropathy (DON), strabismus, exposure keratopathy, proptosis, raised intraocular pressure (IOP) and treatment prescribed were collected at the first clinic visit.

Results: A total of 414 patients were included in this study. There were 74 (17.6%) active and 341 (82.4%) inactive TED patients. The most common symptoms in active TED patients were eyelid swelling (52.7%), proptosis (50%), and diplopia (48.6%). 21.9% of active TED patients had DON, 38.4% had strabismus, and 32.9% had raised IOP. Patients with active TED were more likely to have a shorter duration of thyroid disease (24.79+44.9 vs 39.6+68.1 months, p=0.02) and TED-related symptoms (8.11+16.69 vs 19.52+53.94 months, p=0.001), be hyperthyroid at presentation (60.3% vs 50.7%, p=0.015) or hypothyroid (24.7% vs 16.4%, p=0.02) and have higher TSI levels (Thyroid Stimulating Immunoglobulins) levels (3970+1553.43 vs 2663.52+1693.02, p=0.004) than those with inactive disease. In the multivariate regression model adjusted for age, hypothyroid status (OR 20.23, 95% CI 1.74—234.78) and higher TSI levels (OR 1.00, 95% 1.00 – 1.01) were significantly associated with active TED.

Conclusions: Hypothyroid status and higher TSI were associated with active TED. Early recognition of these

risk factors in TED patients will guide the frequency of monitoring for TED activity.

Poster No.: PO-428

Role of Orbicularis Oculi Muscle Resection in External Levator Advancement for Aponeurotic Blepharoptosis: A Prospective Randomized Controlled Trial.

*First Author: Sira **ROJANASAKUL***
*Co-Author(s): Bunyada **PUTTHIRANGSIWONG***

Purpose: The removal of the skin and the preseptal orbicularis oculi muscle is the initial step in upper eyelid surgery. Orbicularis oculi muscle removal has been considerably associated with dry eye symptoms due to sluggish eyelid closure and lagophthalmos. We aim to investigate the effects of external levator advancement (ELA) surgery with or without orbicularis oculi muscle resection on dry eye syndrome and morphological appearance in Asian populations.

Methods: This prospective randomised controlled trial was conducted in twenty (forty eyes) Thai patients with aponeurotic blepharoptosis undergoing ELA surgery. Patients were randomised into skin-muscle excision group (group A) or skin-only excision group (group B). The primary outcome measure was dry eye symptoms and tear film evaluation using tear break up time (TBUT), Oxford grading system and Ocular Surface Disease Index (OSDI) score. Secondary outcome measures were postoperative marginal reflex distance (MRD) 1 and lagophthalmos. All parameters were assessed preoperatively and postoperatively on the seventh, the thirtieth and the ninetieth days.

Results: The effects of external levator advancement (ELA) surgery with or without orbicularis oculi muscle excision on dry eye parameters were not statistically significant in terms of TBUT (p=0.55), Oxford grading scale and OSDI scores (p=0.17). Postoperative MRD1 was improved without notable lagophthalmos in both groups. No significant difference in mean postoperative MRD1 was detected (p=0.99).

Conclusions: ELA surgery with or without orbicularis oculi muscle resection is a safe and predictive surgery for patients with aponeurotic blepharoptosis. No association was found between the two techniques on dry eye symptoms and eyelid appearance.

Poster No.: PO-436

Salvaging the Eye in a Bilateral Tessier Cleft Palate Type 3: A Tough Lesson Learnt

*First Author: Gladys **KUSUMOWIDAGDO***
*Co-Author(s): Yunia **IRAWATI**, Agung **NUGROHO**, Gustiandari Fidhya **PERMANIK***

Purpose: Tessier cleft palate is a very rare congenital craniofacial defect. It is often accompanied by coloboma of the lid, causing lagophthalmos and ectropion, which cause exposure of the ocular surface. Such cases require a multidisciplinary approach where protecting the eyes is imperative. Exposed ocular surface requires continuous lubrication which might often be neglected and causes sight-threatening damage. We aim to report our successful experience in correcting ectropion and lagophthalmos in a one-eyed boy with Tessier cleft palate type 3.

Methods: A 1-year-old baby boy came after palate correction. The patient came with both eyes wide open and, regrettably, a non-functional left eye (LE) after uveal prolapse due to an exposed ocular surface. Vertical palpebral fissure of right eye (RE) was 22 mm. We also found ectropion, lower lid coloboma, and lagophthalmos with 10 mm corneal exposure along with corneal ulcer. Palpebral reconstruction using a skin flap and retro auricular skin graft was performed for the lower palpebral defect. Two months after correction, all sutures were removed, minimal residual lagophthalmos could be observed, a skin graft was viable, and the cornea was completely healed.

Results: This case presented a challenging approach for a craniofacial defect in a baby. A multidisciplinary approach is essential in such cases in which we might salvage both eyes while performing one-step surgery along with lip and palate repair. The use of skin flap and skin graft in such cases after releasing the original tissue was successful in giving the patient a favorable outcome.

Conclusions: Future one-step surgery might be beneficial in such a craniofacial defect to protect the eyes.

Poster No.: PO-415

Supra Maximum Levator Resection Combined With Medial V-Y Canthoplasty: A Simpler One-step Surgical Approach for Blepharophimosis Syndrome

*First Author: Indra **PAMBUDY***

Purpose: Blepharophimosis is a rare dysmorphic syndrome that involves blepharophimosis, telecanthus, epicanthus inversus, and ptosis. This case report describes successful surgical management using supramaximum levator resection and medial canthoplasty employing VY-plasty under local anesthesia in an adult patient with blepharophimosis syndrome.

Methods: A case report of surgical management in a patient with blepharophimosis syndrome.

Results: A 65-year-old female with both upper eyelids drooping, blepharophimosis (horizontal palpebral fissure [HPF] 22 mm), epicanthus inversus, and ptosis (marginal reflex distance [MRD] 0 mm) and telecanthus (intercanthal distance [ICD] 35 mm with pupillary distance 60 mm) since childhood. The clinical findings fulfilled the criteria of blepharophimosis syndrome.

The patient underwent medial canthoplasty using VY-plasty to correct epicanthus inversus and telecanthus. Supramaximal levator resection (resected 2 mm above Whitnall ligament) to achieve optimal MRD. The lid margin sits at the upper limbus during surgery to anticipate lid drop after surgery. All were done in a single surgery, under local anesthesia. Six months after surgery, ptosis and telecanthus were corrected satisfactorily; in both eyes, MRD was 3 mm, ICD was 30 mm, epicanthus was corrected, and HPF in both eyes was 24 mm.

Conclusions: Blepharophimosis syndrome can be treated in one step simpler surgical approach employing supramaximum levator resection and medial canthoplasty using VY-plasty, especially in milder cases.

Poster No.: PO-447

Surgeon Experience and Surgical Workload as Predictors of Outcome of Dacryocystorhinostomy Surgery in Nepal – Nepalese Society for Oculoplastic Surgeons' Initiative

*First Author: Suresh **RASAILY***
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Purpose: Dacryocystorhinostomy surgery aims to treat nasolacrimal duct obstruction and is often performed by general ophthalmologists in developing countries. The aim of this study is to estimate the clinical burden, surgeon's experience, and outcome of dacryocystorhinostomy surgery.

Methods: A cross-sectional survey of Nepalese Ophthalmologists registered with the Nepal Ophthalmic Society was conducted after ethical clearance from the Nepal Health Research Council. The survey form consisted of a single mail-shot questionnaire with information including age, experience, average case per month, and participant-reported post-operative complications and failures. Data were entered into Microsoft Excel (Microsoft Corp) and analyzed using SPSS 22.0. The data were presented in graphical and tabular format and appropriate statistical tools were employed for the analysis.

Results: Out of 300 practicing ophthalmologists, 135 (45%), comprising 60 males (44.4%) and 75 females (55.6%), responded to the survey. The majority of respondents were general ophthalmologists (37, 41.6%), followed by oculoplastic surgeons (27, 30.3%) and other subspecialties (25, 28.1%). More than 70% of respondents perform 1-10 surgeries /month, and only 3% perform >50 surgeries /month. A success rate of 75-90% was reported by 45 (50%) respondents, whereas > 90% success rate by 41 (46.1%). More than 80% of surgeons experienced an infection rate of <1% regardless of the intubation status.

Conclusions: This cross-sectional survey revealed huge differences in surgery practice patterns among ophthalmologists in Nepal. The surgical success rate and post-operative complication rate depended upon surgeons' experience and workload as well. Moreover, uniform surgery protocols and training budding ophthalmologists/ young Oculoplastic surgeons in the best modern dacryocystorhinostomy surgery are required.

Poster No.: PO-435

Surgical Outcome of the Plexiform Neurofibromatosis-Induced Ptosis

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Purpose: To analyze clinical trends, determine ptosis correction effectiveness, and track disease progression.

Methods: From 2015 to 2020, an observational study was conducted in tertiary eye care in Bangladesh. The study included all patients who received surgical correction for mechanical ptosis caused by neurofibromatosis. The primary approach was to excise/ debulk the lesion, followed by ptosis correction, either Frontalis Brow Suspension (FBS) or Levator palpebral superioris (LPS) reattachment. The results were assessed based on the extent of lesion reduction, the correction of ptosis, and the likelihood of progression. The grading system includes poor, fair, and satisfactory scores.

Results: Forty-eight cases were examined, and their average age was 19.21. An S-shaped PN was accompanied by mild ptosis in 29% of the cases. About 31% of individuals experienced moderate ptosis, and the rest, 40%, were severe ptosis cases. The average preoperative Upper Lid Margin-Reflex Distance MRD1 was -0.819 mm in patients who underwent LPS resection, compared to -0.929 mm in the FBS group. Following a six-month surgical procedure, the average MRD1 measurements were +1.208 mm for LPS resection cases and +0.750 mm for FBS cases. The outcome was better in LPS resection than in FBS. Progression of the disease is common among young individuals.

Conclusions: An effective surgical solution for achieving desired results and improving appearance requires a thorough evaluation of the affected area. This is followed by removing the lesion through excision or debulking surgery and correcting any ptosis in a single procedure.

Poster No.: PO-439

The Necessity of Incision and Drainage in Lacrimal Sac Abscess: A Case Series

*First Author: Gladys **KUSUMOWIDAGDO***
*Co-Author(s): Hisar **DANIEL**, Gustiandari Fidhya **PERMANIK***

Purpose: Lacrimal sac abscess is often found in patients with chronic dacryocystitis. In such cases, systemic antibiotics and incisional drainage and external dacryocystorhinostomy (DCR) could be performed. However, external DCR could result in cutaneous scar formation and disruption of medial canthal anatomy. We aim to share our experience in the successful treatment of lacrimal sac abscess by incisional drainage followed by smoother external DCR within two-weeks' interval.

Methods: Four patients came to our clinic with lacrimal sac abscesses: a 30-year-old, a 41-year-old female, a 44-year-old female, and a 62-year-old female. All patients came with a lacrimal sac abscess with a hyperemic appearance on the sac area. All patients had radiological examination results of lacrimal sac abscess and obstruction of the nasolacrimal duct. For all patients, incisional drainage was performed, and they were given systemic antibiotics. They were further treated with external DCR within a two-week-window period. A two-month follow-up revealed all patients had satisfactory results with patent nasolacrimal ducts.

Results: We found that through this method, there was less bleeding, better surgical-view and thus, shorter surgery duration after drainage. We were able to observe the condition of the sac, easily identify the fistule and ensure that there was no mass. Patients experienced better cutaneous scar formation. Long-term follow-up also showed favourable outcomes.

Conclusions: Incisional drainage could be effective in lacrimal sac abscesses before performing external DCR with an easier surgical procedure and better outcomes.

Poster No.: PO-446

The Oculoplastic Surgeon and Social Media Engagement: Results of a Survey From India

*First Author: Akshay **NAIR***

Purpose: To assess the practice patterns regarding social media engagement among oculoplastic surgeons in India.

Methods: An anonymised online survey was sent to members of the Oculoplastic Association of India (OPAI), and the responses were tabulated.

Results: A response rate of 36% was seen. 28.6% (72/252) had their own website. When asked if they felt SM engagement was an important part of practice building - 73% agreed, 9% disagreed, and 19% were unsure. However, only 34% (86/252) of the respondents had an SM presence related to their practice / professional account. Of those with a social media presence, the most popular platform was Facebook (77%) & Instagram (72%). 81% managed their own accounts, and the rest outsourced them to an SM professional. In all, 52/86 (61%) of the surgeons reported that social media posts had translated into patient visits. Ptosis and blepharoplasty were the most popular posts that resulted in patient visits. Of those who did not have an SM presence, constant pressure to post content regularly and technical unfamiliarity were the reasons cited. 65% of the respondents under 40 years of age reported having a professional practice-related social media profile as compared to 31% of those above 40 ($p<0.0001$).

Conclusions: While OPAI members see social media engagement as an important part of practice, unfamiliarity with the platform and pressure to post content are challenges reported. Facebook and Instagram are the most popular platforms, and the proportion of surgeons below 40 years old who are active on social media is significantly higher than those over 40 ($p<0.0001$).

Poster No.: PO-419

The Prognosis of Endoscopic Dacryocystorhinostomy Concurrent With Nasal Septoplasty for Chronic Dacryocystitis With Moderate Nasal Septum Deviation

*First Author: Shuai **MING***
*Co-Author(s): Bo **LEI***

Purpose: To investigate whether a concurrent septoplasty for moderate nasal septum deviation (NSD) improves the prognosis of endoscopic dacryocystorhinostomy (EN-DCR) in chronic dacryocystitis (DC) patients.

Methods: A retrospective cohort study was designed in a real-world setting. Consecutive CD patients with moderate NSD who underwent EN-DCR were classified into groups of septoplasty (n = 32) and non-septoplasty (n = 126). Postoperative FICI DCR ostium grading score and functional and anatomical success information were collected by chart review at 1-month, 2-month, 3-month, and 6-month visits. Univariate and GEE multivariate analyses were performed to compare outcomes between the two groups.

Results: The total FICI DCR ostial scores in septoplasty and non-septoplasty groups were highest at month 1 (4.97 ± 0.177 vs. 4.97 ± 0.176, $P > 0.05$) and lowest at months 6 (4.41 ± 1.341 vs. 4.50 ± 1.355, $P > 0.05$). A comparable percentage of patients in two groups (6.3% vs. 7.1%, $P > 0.05$) needed definitive intervention to ostium at the end of follow-up. Two groups achieved similar functional (87.5 - 90.6% vs 90.5 - 92.1%, $P > 0.05$) and anatomical success (93.8% vs. 92.9 - 94.4%, $P > 0.05$) after tube removal. The non-septoplasty group

experienced nasal mucosal adhesion (3.2%, 4/126), which did not occur in the septoplasty group.

Conclusions: In DC patients with moderate NSD, the addition of a septoplasty yielded comparable outcomes to EN-DCR alone. Thus, concurrent septoplasty should be cautiously performed when solely for facilitating the EN-DCR.

Poster No.: PO-413

Three-Snip Punctoplasty With Silicone Tube Implantation: A Simple Procedure for Punctal Disorders

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Purpose: To report the outcome of a simple 3-snip punctoplasty in two different punctal disorders.

Methods: Observational case series.

Results: Cases 1 & 2: Two females aged 8 and 30 years presented with discharge and tearing from the left eye since birth. Ophthalmology examination revealed imperforate both superior and inferior lacrimal puncta of the left eye. The dye disappearance test (DDT) showed decreased outflow in the left eye. Both patients were diagnosed with Punctal Atresia. Case 3: A 40-year-old female presented with a red and painful lump on her right medial lower eyelid that occurred in the past 3 months. Palpation of the lump expressed a yellowish discharge onto the eye through the punctum. Ophthalmology examination showed a hyperemic mass and pouting in the punctal area, and was covered with granulomas. The patient was diagnosed with Chronic Canaliculitis. Three patients underwent 3-snip punctoplasty with pigtail probe and silicone tube implantation. Three-month follow-up showed improvements, as promising functional and cosmetic results were found in two patients, with normal washout in DDT, and one patient showed improvement in the second month follow-up period.

Conclusions: The 3-snip procedure with a silicone tube is one of the recommended management due to its simplicity and promising functional and cosmetic result, especially for general ophthalmologists in areas with limited facilities.

Poster No.: PO-607

Topography of the Frontal Branch of the Facial Nerve and Its Clinical Implication for Temporal Direct Browplasty

*First Author: Hyun Jin **SHIN***

Purpose: Due to anatomic proximity to the surgical site, iatrogenic trauma to the frontal branch of the facial nerve (FbFN) with resultant brow paralysis is a recognized major complication of temporal direct browplasty. This study aimed to elucidate the course of the FbFN in the area superolateral to the brow in order to facilitate safer temporal direct browplasty by preventing facial nerve injury.

Methods: Forty-five hemifaces from 32 embalmed Korean cadavers were dissected. A horizontal line connecting the tragion to the lateral canthus was established. Then, an oblique line passing through the lateral canthus and 45 degrees to the horizontal line was used as a reference line. The mean distance from the lateral canthus to the points where the FbFN crossed the reference line was measured. The angle between the FbFN and reference line at the crossing points was also recorded.

Results: After crossing the zygomatic arch, FbFN continues in an anteriorly inclining curve across the temporal region, passing near the lateral end of the brow as it heads toward the frontalis muscles. During the course, the FbFN laying in the innominate fascial layer was divided into 3 branches. The anterior and posterior branches of FbFN crossed the reference line superiorly and laterally at 3 and 4 cm from the lateral canthus, respectively.

Conclusions: In conclusion, the oculofacial surgeon must bring the dissection plane of the forehead tissue more superficially around the 3 cm superolaterally to the lateral canthus in the direction of 45 degrees from the horizontal line in order to avoid nerve injury.

Poster No.: PO-420

Transconjunctival Entropion Repair: A Surgical Outcome Overview

*First Author: Nur Hanisah **MOHAMAD KANI***
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Purpose: To evaluate the surgical outcome and efficacy of transconjunctival entropion repair in correcting lower eyelid involutional entropion.

Methods: A retrospective case series.

Results: The case series involved 15 eyes of 15 patients with lower eyelid involutional entropion who underwent transconjunctival entropion repair under local anesthesia. There were 9 male patients (60%) and 6 female patients (40%) with a median age of 77 years (range 67-82 years old) who underwent the surgical repair. All patients had unilateral eye surgery. Every patient underwent each of the three technical procedures that consist of tightening the horizontal lid laxity by lateral canthotomy, inferior cantholysis, and lateral canthopexy, reattachment of the lower eyelid retractor, and preseptal orbicularis myectomy. There were no additional procedures performed in all cases. As a result, all cases demonstrated resolution of entropion after the transconjunctival entropion repair. A single postoperative recurrence was observed at 9 weeks following the operation, while no recurrences were identified in the remaining cases. There was no

post-operative overcorrection, secondary ectropion, lid retraction, or scleral show observed following the surgery. The transconjunctival approach also demonstrated good aesthetic outcomes with no hypertrophic scar or unnatural folding of the skin observed.

Conclusions: Transconjunctival entropion repair is a stable approach with favorable surgical outcomes that are characterized by a low recurrence rate and good postoperative cosmesis.

Poster No.: PO-411

Transcranial Orbitotomy in Optic Nerve Meningioma

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Purpose: Optic nerve meningioma is a benign neoplasm originating from the meningothelial cells of the meninges surrounding the optic nerve. Imaging can be done to distinguish from other tumors. The tumor excision was performed by orbitotomy with a transcranial approach. This study aims to determine the diagnosis and considerations in the management of optic nerve meningioma.

Methods: Diagnosis is made based on history taking, complete ophthalmology examination, MRI, and histopathology. Upon the examination of the location and size of the tumor, transcranial orbitotomy is the recommended approach.

Results: A 40-year-old woman came to the hospital with left eye proptosis and blurred vision since 2 years ago. Upon ophthalmometric examination, the left eye was found to be 7mm more prominent than the fellow eye and the visual acuity examination obtained no light perception. On MRI examination, an extra-axial solid mass was found in the sinistra intraconal region measuring 2.7 x 2.5 x 1.5 cm. Based on these findings, we diagnosed the patient with optic nerve meningioma. The tumor excision was performed by transcranial orbitotomy and assisted by a neurosurgeon. On the 14th day of follow-up, there was no difference between the two eyes on the ophthalmometric examination. The histopathological finding was a spindle mesenchymal tumor with meningioma as a differential diagnosis.

Conclusions: Optic nerve meningiomas were diagnosed based on ophthalmological examination and imaging findings of the tumor. Based on the size and location, transcranial orbitotomy can be considered as a chosen procedure.

Poster No.: PO-426

Unilateral Proptosis as an Initial Presentation in a Metastatic Hepatocellular Carcinoma: A Case Report

*First Author: Syarul Haziq **MOHD SHAH***
*Co-Author(s): Hanida **HANAFI**, Nor Fadhilah **MOHAMAD**, Sylves **PATRICK***

Purpose: Hepatocellular carcinoma (HCC) is the most common primary liver malignancy. HCC commonly metastasizes to the lung. Here, we report a rare case of unexpected orbital malignancy secondary to hepatocellular carcinoma (HCC).

Methods: Case report.

Results: A 39-year-old gentleman with newly diagnosed hepatitis B presented with right eye (RE) swelling associated with diplopia and headache for one month. He did not have constitutional and chronic liver disease symptoms. On examination, the RE showed periorbital swelling, proptosis, hypoglobus, complete ophthalmoplegia, chemosis, conjunctival redness, severe exposure keratopathy, and positive relative afferent pupillary defect (RAPD) with no fundus view. The visual acuity was counting fingers on the RE and 6/6 on the left eye (LE). LE anterior and posterior segments examination was unremarkable. Besides, he had no stigmata of chronic liver disease. Liver function was normal on presentation. A contrast-enhanced computed tomography scan revealed RE orbital mass with intracranial and paranasal sinus extensions. The incisional biopsy taken was consistent with fungal infection and was treated with systemic Fluconazole. Orbitozygomatic craniotomy was done to remove the mass, and surprisingly, histopathological examination (HPE) showed hepatocellular carcinoma that was only known 6 weeks later. He was co-managed with general surgery, neurosurgery, and oncology teams for further treatment.

Conclusions: A metastatic orbital HCC with initial ocular presentation is atypical and rare. Besides, a prompt HPE result is essential in any second biopsy that may differ from the 1st HPE, which may improve the survival rate with early treatment in a case of malignancy.

Poster No.: PO-410

Use of 2 Octyl Cyanoacrylate Skin Adhesive (Dermabond®) in Pediatric Eyelid Surgery

*First Author: Jisang **HAN***
*Co-Author(s): Eunhui **JO**, Junghwan **NOH**, Wonjin **YANG***

Purpose: To investigate the effect of 2 octyl cyanoacrylate skin adhesive (Dermabond®) to replace fast-absorbing surgical gut suture material in pediatric eyelid surgery.

Methods: We retrospectively reviewed the medical records of 15 pediatric patients and 30 eyes who underwent epiblepharon repair using 2 octyl cyanoacrylate skin adhesive. After the subciliary incision, 3 to 4 points of buried sutures were done between the tarsal plate and the subcutaneous tissue of the upper skin flap of the lower lid or lower skin flap of the upper lid with 6-0 nylon. Temporary skin suture with 6-0 prolene with Connell pattern was done before applying 2 octyl cyanoacrylate skin adhesive. 6-0 prolene was removed after 2 minutes after applying 2 octyl cyanoacrylate skin adhesive. The dry 2-octyl cyanoacrylate skin adhesive was left on until it fell off on its own. No ointment was applied on dry Dermabond®.

Results: The average age was 7.8 years. The average follow-up period after surgery was 8.7 months. One patient had a wound dehiscence limited to 2 mm, but it recovered without any additional measures. Dehiscence was not observed in other patients. No complications, such as contact dermatitis, infection, or inflammation, occurred after surgery in any of the patients. There were no patient complaints about scarring. There was no recurrence of epiblepharon after surgery.

Conclusions: Suturing the skin using 2-Octyl Cyanoacrylate skin adhesive is a safe and effective method when performing epiblepharon repair and eliminates the inconvenience of removing suture materials in pediatric patients.

Poster No.: PO-440

"Injecting Hope" - Intralesional Transcutaneous Retrobulbar Voriconazole Injection for Orbital Fungal Granuloma

*First Author: Sruthi **R S***

Purpose: To highlight how intralesional transcutaneous retrobulbar voriconazole injection helped heal an orbital fungal granuloma caused by Aspergillus fumigatus.

Methods: A 52-year-old gentleman presented to us with protrusion and a diminution of vision in his right eye since 2 months. His right eye had a vision of counting fingers at 1 meter with ocular motility restriction (depression, elevation and adduction). Left eye vision was 20/20, and ocular motility was normal. CT scan of the orbit revealed a Sino-orbital mass. Previous reports of endoscopic biopsy done elsewhere were inconclusive. The patient underwent an incision biopsy via a trans-caruncular approach here. Histopathology and microbiology reports suggested a fungal granuloma (Aspergillus fumigatus).

Results: The patient was treated with 3 retrobulbar injections of Voriconazole along with Oral Voriconazole. Eventually, his vision improved from CF1m to 20/20p in the right eye, and he regained full ocular motility with almost complete resolution of the lesion in the recent CT Orbit scan.

Conclusions: This case emphasizes the essence of interpretation of imaging, identifying the lesion and shows how localized intralesional transcutaneous retrobulbar injection of Voriconazole saved the vision and eye of our patient.

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Poster No.: PO-608

3D Printing From Micro-CT Images of the Trochlea of the Superior Oblique Muscle and Its Future Applications

*First Author: Hyun Jin **SHIN***
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Purpose: To determine the detailed microstructure of the trochlea of the superior oblique muscle (SOM) using micro-computed tomography (micro-CT) and modeling of a potential prototype for a trochlea implant using three-dimensional (3D) printing.

Methods: We dissected 15 embalmed cadavers. The specimens were stained by immersion in a 15% Lugol solution. Images were reconstructed using conventional scanner software. Measurement points were determined for the middle cross-section. Points P1 and P2 were selected where the SOM adjoined the curvature of the inner trochlea. They defined the inner contact points of the SOM in the inner part of the trochlea curvature. On the back of the trochlea, points P3 and P4 were selected at the uppermost and lowest points in the inner parts of the straight trochlea, respectively. Origin O was defined on the arcuate line of P1P2 to generate the smallest-diameter circle consisting of P1, O, and P2. We then measured the angle from OP1 to OP2 and from OP3 to OP4. We also measured the distances OP1, OP2, OP3, and OP4.

Results: The distances OP1, OP2, OP3, and OP4 were 2.2 ± 0.7, 1.4 ± 0.5, 2.7 ± 0.9, and 2.5 ± 0.4 mm (mean ± SD), respectively. The angles from OP1toOP2, from OP2to OP4, and from OP3toOP4 were 100.7 ± 14.4, 66.3 ± 18.0, and 98.9 ± 24.9 degrees, respectively.

Conclusions: The present investigation demonstrates that high-resolution CT is a powerful imaging technique for defining the true 3D geometry of a specimen and can potentially be used to create a 3D-printed trochlea implant.

Poster No.: PO-480

A Prospective Study of the Effects of General Anesthesia on Intraocular Pressure in Healthy Children

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Purpose: To determine the effect of general anesthesia on intraocular pressure (IOP) in children with no intraocular pathology and determine which post-anesthetic time point is most predictive of pre-induction IOP.

Methods: Prospective observational study of children ≤18 years scheduled for general anesthesia. Participants underwent a standardized general anesthetic protocol using sevoflurane mask induction and propofol maintenance. IOP was measured at 7 time points: pre-induction, post-induction minutes 1, 3, and 5, and post-airway placement minutes 1, 3, and 5. A generalized estimating equation was used to evaluate the effect of anesthesia on IOP and the effect of patient factors on pre- and post-anesthetic IOP. An IOP prediction model was developed using the post-anesthesia IOP measurements for predicting pre-induction IOP.

Results: Eighty-five children were enrolled, mean ± standard deviation (SD) age 7.5±2.9 years. Mean±SD pre-induction IOP was 20.1±3.7 mmHg. Overall, IOP was lowest 3 minutes post-induction, decreased to a mean of 13.4±3.7 mmHg ($p<0.001$). After this, IOP rose 5 minutes post-induction to 16.5±4.2 mmHg, which did not reach pre-induction IOP levels ($p<0.001$). The IOP prediction model showed that combining 1 minute post-induction and 3 minutes post-airway was most predictive ($R2=0.13$), while 1 minute post-airway was least predictive of pre-induction IOP ($R2=0.01$).

Conclusions: After the induction of general anesthesia in children, IOP temporarily decreases with a trough at 3 minutes post-induction before increasing and remaining stable just below pre-induction levels. IOP measurements taken 1 minute after induction with 3 minutes after airway placement are most predictive of pre-induction IOP, though the predictive value is relatively low.

Poster No.: PO-461

A Tale of Shaky Eyes in Three Siblings: COL2A1 and COL11A2- a Rare Genetic Mutation

*First Author: Hennaav **DHILLON***
*Co-Author(s): Mahakleen Kaur **GILL**, Smita Vittal **PRAVEEN***

Purpose: To present a case series of three siblings presenting with a rare genetic mutation causing severe and progressive visual impairment.

Methods: All three siblings were evaluated thoroughly for ophthalmic conditions and systemic associations. They underwent a complete pediatric, neurological, and radiological evaluation and genetic testing.

Results: Genetic testing was suggestive of the COL11A2 and COLA21 gene mutation in the eldest sibling. On a comprehensive systemic evaluation, all three siblings had reduced bone density and osteoporosis. They were managed conservatively with supplemental medication. All three children presented craniometaphyseal dysplasia along with optic atrophy secondary to canal compression. The two elder siblings were managed with low vision rehabilitation, whereas the youngest sibling was referred to a neurosurgeon and was advised of optic nerve decompression.

Conclusions: Such children require a multidisciplinary approach due to defects in collagen synthesis affecting various parts of the body. These children need early low vision rehabilitation due to the progressive nature of the disease. Early intervention in younger siblings can lead to the preservation of some gross visual function in the early years, making rehabilitation easy.

Poster No.: PO-464

Acute Esotropia Secondary to Orbital Myositis Concurrent With Orbital Cellulitis in a 5-Year-Old Female

*First Author: Janin Lou **BILLANO***
*Co-Author(s): Melissa Anne **GONZALES***

Purpose: To report a case of acute esotropia associated with orbital myositis concurrent with orbital cellulitis in a child.

Methods: Case report.

Results: A 5-year-old female, admitted by the general pediatric service, presented with bilateral periorbital swelling, erythema, and eye pain for two days, associated with high-grade fever and lethargy. Visual acuity, extraocular movements, and fundus examinations were not documented on admission. Computed tomographic images showed thickening and enhancement of the left medial rectus muscle and tendon with periorbital inflammatory changes and maxillary and sphenoid sinusitis. Blood and eye discharge yielded positive for Staphylococcus aureus. She was managed as a case of orbital cellulitis, hence initiated on intravenous vancomycin, ceftazidime, and ciprofloxacin. Within 14 days, there was the resolution of eye swelling, erythema, and pain. However, there was a note of 35 PD incomitant esotropia and abduction deficit on the left eye, hence the referral to the ophthalmology department. A repeat contrast-enhanced CT scan showed partial resolution of the medial rectus muscle and tendon enlargement. All other etiologies, such as autoimmune, hematologic, or neoplastic etiologies, were ruled out. She was then started on oral corticosteroids, 1mg/kg/day. After

one week on steroids, esotropia and abduction deficit improved. By the sixth week of steroid treatment, the deviation resolved to 8-10 PD esophoria.

Conclusions: Orbital myositis complicating a systemic or ocular infectious process is a rare entity in literature, but has now been widely recognized; hence, prompt consideration and management must be carried out. Knowledge and awareness of this overlapping condition are needed to circumvent adverse ophthalmologic sequelae.

Poster No.: PO-474

Anterior Segment Optical Coherence Tomography Guided Surgical Approach in Slipped Medial Rectus Muscles

*First Author: Amar **PUJARI***
*Co-Author(s): Sudarshan **KHOKHAR***

Purpose: To discuss the novel swept-source anterior segment optical coherence tomography (SS-ASOCT) guided surgical approach in slipped medial rectus muscles.

Methods: Prospectively (between February 2020 to July 2022), a total of six patients with a clinical suspicion of slipped medial rectus muscle are recruited. After complete ophthalmic and orthoptic evaluation, the missing medial rectus muscle is screened using ASOCT. In presence of a traceable muscle, its morphology, depth, and distance from fixed landmark are noted, in its absence, status of other recti are noted. Intraoperatively, the features are confirmed, and the intended intervention is completed.

Results: The mean age of six patients is 25.66+/-9.72 years, with two with surgical trauma and four with penetrating trauma (66.66%). In five patients, ASOCT traced the slipped medial rectus muscle successfully (83.33%), intraoperatively, the same is confirmed (within 1-2 millimetres) with favourable outcomes. ASOCT made a significant contribution in all subjects by reducing the number of interventions and muscle surgeries.

Conclusions: In eyes with slipped medial rectus muscle, especially those that are within a finite distance from an angle, can be traced using ASOCT. This approach impacts the outcomes in many ways.

Poster No.: PO-462

An Uncommon Case of Pediatric Bilateral Optic Neuritis Following Typhoid Fever

*First Author: Sidika **MUYASYARAHMA***
*Co-Author(s): Niken Indah **NOERDIYANI***

Purpose: Post-typhoid optic neuritis involving both eyes is an uncommon complication requiring early diagnosis and treatment.

Methods: We discuss the case of an eight-year-old boy who experienced a sudden, painless loss of vision in his left eye a week after having typhoid fever. His visual acuity measurements were 6/12 in his right eye, and counting fingers at 4 meters in his left eye, vision was not improved by the pinhole test. The disc margin was hyperemic and had a fuzzy edge, according to a fundus examination. An OCT performed on the patient prior to commencing therapy indicated swelling in both of his eyes. He was administered intravenous methylprednisolone 250 milligrams twice daily after being admitted to the hospital. An improvement in visual acuity was noticed after receiving the first dosage of intravenous methylprednisolone.

Results: The tissues throughout the body may experience toxic and degenerative changes as a result of acute infectious typhoid fever. As a result, it is unusual for this illness to impact the eyes. Ocular signs often appear 3–4 weeks after the typhoid fever episode, according to a prior study. Eye involvement may be caused by an immune-mediated phenomenon or a direct invasion. Intravenous corticosteroids should be considered, especially when there is bilateral and significant vision loss.

Conclusions: Ophthalmologists should be aware of post-typhoid optic neuritis in children, even though it is an uncommon occurrence. If detected and treated early, pediatric optic neuritis has a better visual prognosis than optic neuritis in adults.

Poster No.: PO-465

Bilateral Enhanced Intermediate Vision Monofocal IOL Implantation in a 13-Year-Old With Acquired Cataract Secondary to Diabetes Mellitus Type 1

*First Author: Jo Michael **MANIWAN***
*Co-Author(s): Joanne **BOLINAO**, Patricia **CABRERA**, James Abraham **LEE**, Anna Karen **LEE-ONG***

Purpose: With the growing interest in addressing post-operative distance and near visual acuity after cataract surgery among children, this report describes the outcome of the Tecnis Eyhance ICB00 in a case of acquired cataract. This is a case of a 13-year-old patient who underwent bilateral lensectomy with implantation of enhanced intermediate vision intraocular lenses for bilateral dense white cataract secondary to diabetes mellitus type 1.

Methods: A 13-year-old female patient presented at our clinic with a 1-year history of bilateral white cataract. A systemic review of symptoms revealed the presence of polyphagia, polydipsia, and polyuria; hence, diabetes mellitus was suspected and was confirmed by an elevated hemoglobin a1c (Hba1c) and fasting blood sugar, which prompted a referral to pediatrics. Physical examination of the patient revealed uncorrected visual acuity of hand movement

with a good light projection of both eyes with the presence of a dense white cataract for both eyes. B-scan ultrasonography of both eyes was unremarkable.

Results: The patient underwent bilateral lensectomy with IOL implantation with Tecnis Eyhance (ICB00), a higher-order aspheric monofocal IOL. During the 1 month postoperative period, distance visual acuity was 6/6 for both eyes and distance corrected visual acuity was J2 for both eyes. Refraction had a spherical equivalence of +1.00sph for both eyes.

Conclusions: Other than multifocal IOLs, the Tecnis Eyhance (ICB00) may be considered an option to address the stigma associated with the use of thick bifocal spectacles to compensate for the loss of accommodation post-operatively among children with acquired cataract.

Poster No.: PO-467

Case Report on Heavy Eye Syndrome

*First Author: Nisha **AHUJA***
*Co-Author(s): Priyanka **DHANDE**, Madhulika **LADHA**, Neel **SHAH***

Purpose: In high myopia, acquired esotropia can be present as strabismus fixus convergence, also known as heavy eye syndrome (HES). Although exotropia and hypertropia have been reported, patients typically present with diplopia due to increasing esotropia and hypotropia with limitations on abduction and elevation.

Methods: We reported two cases of HES based on history and clinical examination, which includes anterior and posterior segment examination and squint evaluation. The MRI of both patients showed displacement of the lateral rectus inferiorly and nasal shifting of the superior rectus. In both cases, the forced duction test (FDT) was positive for the affected medial rectus (MR) when performed under local anesthesia. Subsequently, they underwent loop myopexy of the superior rectus (SR) with medical rectus (MR) along with MR recession for the affected eye.

Results: Postoperatively, Case 1 had a residual esotropia of 18 prism dioptre (PD), and Case 2 had 40 PD compared to preoperatively 70 and 80 PD respectively, measured with the Krimsky test.

Conclusions: Axial length lengthening and herniation of the sclera between the SR and LR muscles are the two main contributors to HES. To stop additional herniation, the inter-muscular link must be restored. Loop myopexy is an elegant and effective procedure to achieve good cosmetic and functional results for HES.

Poster No.: PO-463

Cataract Surgery Outcomes in Children and Adolescents With Type-1 Diabetes Mellitus

*First Author: Sumita **AGARKAR***
*Co-Author(s): Akila **CHANDRASHEKHAR***

Purpose: To report the outcomes of cataract surgery in children and adolescents with type 1 diabetes mellitus.

Methods: It is a retrospective observational study conducted in a tertiary care center in India. The medical records of all patients less than 20 years of age with a diagnosis of type 1 diabetes mellitus who had undergone surgery for cataract between January 2000 and December 2019 at a tertiary care center were reviewed retrospectively. Data collected included demographic details, visual acuity pre and post-surgery, details of retinal evaluation were noted. We also noted details of surgical procedures done, and intraoperative complications, if any.

Results: Twenty-seven eyes of 15 patients who met the inclusion criteria were included. The median age at cataract surgery was 13 ± 6.5 years. The median follow-up duration of the study cohort was 3.8 ± 5.95 years, with 11 of 27 eyes followed for more than 5 years. Visual acuity improved from a median preoperative value of 0.8 ± 0.75 logMAR to 0.15 ± 0.45 logMAR at final follow-up in our study cohort. Visual axis opacification in 40.7% and diabetic retinopathy in 14.8 % were the common complications encountered which needed additional intervention like laser capsulotomy and pan retinal photocoagulation respectively.

Conclusions: Cataract surgery in children and adolescents with type 1 diabetes leads to improvement in visual acuity. Proliferative diabetic retinopathy and optic atrophy of DIDMOAD syndrome can lead to poor visual outcomes in these children. Visual axis opacification occurs at similar rates with or without primary posterior capsulorhexis.

Poster No.: PO-471

Clinical Profile, Risk Factors, Visual and Prognostic Implications of Posterior Staphyloma in Chinese Patients With Albinism and Correlation With Parental Refractive Error

*First Author: Karthikeyan **ARCOT SADAGOPAN***
*Co-Author(s): Zhuldyz **AKHMETOVA**, Dennis **LAM**, Ding Ling **LIN***

Purpose: To evaluate the incidence, clinical profile, risk factors, associated ocular findings, complications, and clinical and surgical implications of posterior staphyloma (PS) in Chinese albinism children.

Methods: In a retrospective consecutive case series, the charts of albinism children seen over a 2-year period were evaluated. Age, refractive error, BCVA, and

clinical and imaging findings were analyzed. In children with PS, additional data included laterality, type of PS, axial length, B-scan and keratometry. Children with myopia in one eye and hyperopia in the other eye were excluded. We prospectively obtained refractive error for parents of 109 albinism children seen during the same time period and used Chi square test to find an association between the child's and their parent's refractive error.

Results: Seven patients (6 OCA1 patients and 1 HPS) had PS. The mean age at presentation was 7.5 years. PS was bilateral in 4 and unilateral in 3 patients. The mean axial length of 11 eyes with PS was 27.08 mm, and the mean spherical equivalent was (-12.10D). The mean keratometry was 43.60. In 5 of these children, at least one of the parents had myopia. Overall, in 70.6 % of those with high myopia, at least one parent had myopia.

Conclusions: Albinism increases the risk of developing PS in its myopic subjects. OCA1, high myopia, early age at onset of myopia, longer axial lengths, parental myopia, and Chinese ethnicity are risk factors for developing PS. Poor visual acuity, anisometropia, strabismus often exotropia, poor convergence, and vertical nystagmus, were more common in albinism patients with PS.

Poster No.: PO-476

Combined Papillectomy and Autologous Conjunctival Membrane Graft As Management for Severe, Refractory Palpebral Vernal Keratoconjunctivitis: A Case Report

*First Author: Devina **ANNISA***
*Co-Author(s): Hasiana Lumban **GAOL**, Hernawita **SUHARKO**, Viona **VIONA***

Purpose: The report aims to highlight the challenges in managing severe and refractory vernal keratoconjunctivitis (VKC). This condition can lead to significant discomfort, vision-threatening complications, and a reduced quality of life for the affected individuals.

Methods: Despite initial interventions, including oral and topical medications, the patient experienced recurrent episodes, leading to the formation of giant papillae (GP) and corneal ulcers. Previous attempts at resolution through triamcinolone injections and papillectomy combined with amnion membrane transplantation failed after a year. There was a recurrence of symptoms with gradual enlargement of papillae, leading to chronic irritation. Additionally, the patient exhibited giant cobblestones causing pseudoptosis, along with an increase in astigmatism in the refractive measurements. In response, a combined papillectomy and autologous conjunctival membrane graft were performed.

Results: After the surgical procedure using the combined papillectomy and autologous conjunctival membrane, continuous monitoring showed a notably smoother upper tarsal conjunctiva during the 2-year follow-up. This led to decreased mechanical ptosis, maintained clarity of the corneal surface in both eyes, and the absence of GP recurrence. Consequently, the patient's symptoms were effectively controlled using topical medications.

Conclusions: This case highlights the potential benefits of surgical techniques, such as papillectomy and autologous conjunctival membrane graft, in managing severe and refractory VKC cases with a history of previous surgical procedure failure. However, it is essential to recognize that exposure avoidance and allergic control remain fundamental in VKC management.

Poster No.: PO-456

Comparative Evaluation of the Effect of Inferior Rectus Plication Versus Superior Rectus Recession in Cases of Dissociated Vertical Deviation

*First Author: Zakia **ANWER***
*Co-Author(s): Swati **PHULJHELE**, Pradeep **SHARMA***

Purpose: To compare inferior rectus (IR) plication vs various superior rectus (SR) recession procedures (SR recession, SR recession with posterior tenectomy of superior oblique (PTSO) and SR recession with Y-split) for correction of Dissociated Vertical Deviation (DVD) in primary position.

Methods: This prospective study included patients aged >6 years, with pre-op hypertropia >8PD (with or without associated horizontal deviation) measured via the prism bar undercover test, from January 2019 to January 2021. Twenty-one Patients (29 eyes) were included, randomly divided into two groups.

Results: IR Plication group (n=16) and SR Recession group (n=13), (4 in SR Recession, 4 in SR Recession with PTSO and 5 in SR Recession with Y-split) were analyzed. Mean age and pre-op deviation in the two groups were 19.23 years and 15.6 years (p=1.00) and 18.25 ± 7.22PD and 21 ± 9.81PD (p=0.61) respectively. Post-op deviation at 3 months was 3.56 ± 2.06PD and 3.54 ± 1.56PD (p=0.77) respectively, (4 ± 1.83PD, 4.25 ± 1.71PD and 2.6 ± 0.89PD (p=0.19) for the 3 SR Recession procedures). The mean amount of plication/recession done during surgery in the two groups was 4.84 ± 0.60mm and 5.92 ± 1.08mm, and consecutively, the amount of correction achieved per mm was 3.11 ± 1.62PD and 2.83 ± 1.26PD (p=0.24) respectively (2.33 ± 1.01PD, 2.89 ± 0.70PD and 3.89 ± 1.80PD (p=1.00) within the SR Recession subgroup). 1 case in each group required secondary correction for residual deviation.

Conclusions: Both surgeries had similar outcomes, hence IR-plication can be considered an effective option for DVD correction, due to its surgical ease and easy reversibility.

Poster No.: PO-460

Congenital Anterior Staphyloma in a Newborn: A Rare Case Report

*First Author: Herdina **RAMADHANI***
*Co-Author(s): Rozalina **LOEBIS**, Sutjipto **SUTJIPTO***

Purpose: Congenital anterior staphyloma is a rare ocular abnormality that is characterized by an opaque cornea protruding between the eyelids and partial or complete absence of Descemet's membrane and endothelium with a thin layer of uveal tissue lines the posterior cornea.

Methods: A 2-day-old male infant presented with an opaque and protruding left eye since birth. He was delivered by cesarean section with a birthweight of 2000 grams. He was the firstborn child. Ocular examination revealed no blink reflex in the left eye. Anterior segment evaluation showed corneal bulging forward and extending anteriorly through the lid fissure. The corneal surface was white, thinning and neovascularization. The conjunctiva was not clearly seen. No structures could be seen behind the cornea. The right eye was within normal limits with a corneal diameter of 11x10,5 mm. CT scan of the orbit demonstrated that the anteroposterior diameter of the left eye was longer than the right eye. Blepharorraphy was done to protect the left eye. The patient was diagnosed with congenital anterior staphyloma in the left eye.

Results: Protrusion of an opaque cornea through the eyelids at birth is a very rare condition which may be due to congenital anterior staphyloma. Congenital corneal opacities are uncommon disorders. Congenital anterior staphyloma may account for about 11% of congenital corneal opacities. The management is challenging between enucleation or evisceration in severe or penetrating keratoplasty in milder forms.

Conclusions: Congenital anterior staphyloma is a rare case. Deep investigation and a comprehensive multidisciplinary approach should be achieved to get better treatment and quality of life for the patient.

Poster No.: PO-473

Congenital Rubella Syndrome-a Case Report

*First Author: Sidratul **NAZNIN***
*Co-Author(s): Mohammad **MOSTAFA HOSSAIN***

Purpose: Congenital rubella syndrome (CRS) is an illness in infants resulting from maternal infection with rubella virus during pregnancy. Patients suffer from some complications, including deafness, cataract, heart defects, mental retardation, bone alterations, and liver and spleen damage. The purpose of this study is to create attention, early identification, and keep special concern in the management of such cases.

Methods: 15 A 15-year-old orphan girl presented with a dimness of vision since childhood. Her mother had a history of fever and skin rash during the prenatal period. She had mental retardation, deafness, dumbness, thin stature, and microcephaly. Unaided vision was fixed and followed in both eyes. Anterior segments showed bilateral microphthalmos, nystagmus, microcornea, and aphakia. Intraocular pressure was 40 mm of Hg in each eye. Color fundus photograph showed a myopic crescent with a tessellated fundus. The echocardiogram showed pulmonary stenosis. Ultrasonography of the whole abdomen revealed chronic hepatitis. LDH level was 380 units/L. She had hyperthyroidism. Her sensory neural hearing loss was detected by audiometry. She was referred to a glaucoma clinic for raised ocular pressure, a low vision clinic for visual rehabilitation, and a medicine specialist for cardiac problems, liver problems, and hormonal imbalances.

Results: All presenting features revealed that it was a case of congenital rubella syndrome as the girl had deafness, cardiac problem, and ocular abnormality, which are the triad of CRS.

Conclusions: Early diagnosis, timely management, and proper counseling to the patient and guardian will consequently increase the quality of this patient's life. National awareness should be increased for full coverage of antenatal check-ups with MMR vaccination in all health care centers of developing countries.

Poster No.: PO-475

Congential Cystic Eye: A Case Report and Literature Review

*First Author: Kai Ching Peter **LEUNG***
*Co-Author(s): Callie **KO***

Purpose: To illustrate a case of congenital cystic eye (CCE) presented in a newborn of Chinese origin.

Methods: A case report and literature review have been conducted.

Results: A full term newborn was presented to the ophthalmology team with an abnormal eye. Examination revealed an 'eyeball' with conjunctivalised cystic appearance without cornea. No signs of buphthalmos, tumorous lesion, nor discharge were noted. Transillumination of the eye was demonstrated. The contralateral eye and generalised examination were normal. The investigation, including TORCH screen, was negative. Ultrasound orbit showed the presence of optic nerve and disorganised ocular content. MRI orbit showed remnant optic nerve, cystic structure within the left globe and normal bony structures. There was no communication between intracranial spaces. Retinoblastoma has been ruled out.

The parents were briefed about poor visual prognosis and educated to protect both eyes. Subsequent visits until the age of 3 years old revealed similar sizes of CCE without proptosis, shrinkage or facial asymmetry. Contrary to cases in the literature, our proband did not show any secondary development of meningo-encephalocoele.

Conclusions: We present the first case of CCE in a Chinese proband. CCE is an ultra-rare ophthalmic anomaly and only 52 cases have been reported with variable outcomes. The pathophysiology is believed to be the failure of the optic cyst to involute at the fourth week, resulting in a cyst. The natural history of CCE includes progressive shrinkage, rapid growth, rupture or secondary meningo-encephalocoele. Management shall depend on its progression with an aim to promote facial growth, improve cosmesis and reduce stigmatisation.

Poster No.: PO-469

Duane Syndrome Type II With Significant Downshoot: A Case Report

*First Author: Hang **TRAN***
*Co-Author(s): Nguyen **VAN HUY***

Purpose: To evaluate the clinical findings and the outcomes of lateral rectus Y-splitting combined unilateral horizontal rectus recession in Duane retraction syndrome (DRS) with significant downshoot.

Methods: We report the case of a 5-year-old boy who was taken to the hospital because he was unable to move his right eye adduction with an abnormal head posture from birth.

Results: The examination showed an inability to adduct unilaterally, with narrowing of the palpebral fissures on attempted adduction and downshoot. The patient was diagnosed with unilateral type II DS and received Y-splitting of LR muscle when recession. He showed improvement in downshoot and abnormal head posture.

Conclusions: Treatment is individualized on a case-by-case basis. For our patient, recession of the lateral rectus muscle with Y-splitting is an extremely effective procedure in the treatment of significant downshoot associated with abnormal head posture.

Poster No.: PO-481

Impact of Online Vision Therapy on Functional Vision of Children with Multiple Disabilities

*First Author: Sahithya **BHASKARAN***
*Co-Author(s): Jeyaseeli **FLORA**, P **VIJAYALAKSHMI***

Purpose: To study the impact of online vision therapy (VT) on functional vision of children with multiple disabilities (MD) during the COVID-19 pandemic.

Methods: Retrospective analysis of the functional vision of 15 children with MD under in-office VT, who subsequently adopted online VT. Functional vision was measured during each visit. Also, parents were given a questionnaire to assess their perception of online VT.

Results: The mean age of children was 4.1 years. 53.3% were male and 46.7% were female. Discontinuity of in-office VT during the first lockdown resulted in deterioration of functional vision where VA decreased from 1.5 to 0.9 CPD (P = 0.012) and contrast (CS) decreased in 8 children. Upon lockdown relaxation, resumption of in-office VT showed improvement of functional vision where VA improved from 0.9 to 1.7 CPD (P=0.009) and CS improved in ten children. During the second lockdown, online VT was instituted to provide uninterrupted intervention. At the end of 25 online sessions, both VA and CS6 were achieved before the second lockdown was maintained. The results from the questionnaire also showed a high satisfaction level of online VT among parents in terms of adequacy of professional help, effectiveness, and its impact on the functional vision of children.

Conclusions: Though the benefits of in-office VT are unquestionable, functional vision outcome and high satisfaction level of online VT among parents encourage us to integrate it along with in-office sessions whenever required to provide uninterrupted intervention, which is important for the global development of children with MD.

Poster No.: PO-472

Long-Term Visual Outcomes in Children With Regressed Retinopathy of Prematurity

*First Author: Dong Gyu **CHOI***
*Co-Author(s): Sehie **PARK***

Purpose: To evaluate long-term visual outcomes in children with regressed retinopathy of prematurity (ROP) and the correlations between visual acuity (VA) and clinical variables, including fundus findings.

Methods: In this retrospective study, we reviewed the medical records of 57 consecutive patients diagnosed with ROP. We analysed the correlations between best-corrected VA and anatomical fundus findings, such as macular dragging and retinal vascular tortuosity, after ROP regression. The correlations between VA and clinical variables such as gestational age (GA), birth weight (BW), and refractive errors (hyperopia and myopia in spherical equivalent [SE], astigmatism, and anisometropia) were also evaluated.

Results: Of 110 eyes, 33.6% had macular dragging; the presence of macular dragging and poor VA were significantly correlated (p=0.002). Patients with larger macula-to-disc distance/disc diameter ratios had significantly poorer VA (p=0.036). However, no significant correlation was observed between the VA and vascular tortuosity. Patients with smaller GA and

BW had poorer visual outcomes (both, p=0.007). The larger SE in absolute values, myopia, astigmatism, and anisometropia were significantly associated with poorer visual outcomes as well (all, p<0.001).

Conclusions: In children with regressed ROP, macular dragging, small GA and BW, large SE in absolute values, myopia, astigmatism, and anisometropia may be predictors of poor visual outcomes at early ages.

Poster No.: PO-459

My 10 Month-Old Baby Has White Patches on His Cornea!

First Author: Sean Pua Xieh ***TAY***
Co-Author(s): Hong Nien ***LEE***

Purpose: To highlight the presence of pterygium congenitally. Congenital pterygium is rarely reported. The peak incidence of primary pterygium is between 20 and 40 years old. It is rarely seen in children. Numerous studies suggest a genetic predisposition of keratoblast migration prompted by vimentin. An increased P53 expression with a tumour suppressor gene can facilitate pterygium growth. Type 1 hypersensitivity plays a role in the formation too.

Methods: Case report. A young mother sought medical attention after noticing white patches on her 10-month-old boy. Looking back at the old photographs, the patches were there at birth and gradually took notice. No significant ocular history nor family ocular history. The child is otherwise active with no noticeable abnormalities.

Results: Cyclorefraction showed normal with age, fully neutralised with spherical correction. A triangular translucent mass with an apex growth on the cornea was seen on the nasal limbus of both eyes. The unaffected parts of the cornea were clear and had no abnormality. The rest of the ocular adnexa appeared normal.

Conclusions: Congenital pterygium is uncommonly seen. Management of pterygium in children is generally the same as in adults. The recurrent rate was reported as high as 36.1% in children. A long term follow up is generally required.

Poster No.: PO-477

Novel CAPN5 Mutation Within the Regulatory Domain of Calpain-5 Is Associated With Early-Onset Autosomal Dominant Neovascular Inflammatory Vitreoretinopathy

First Author: Ma.Patricia ***RIEGO DE DIOS***
Co-Author(s): Manuel Benjamin ***IBANEZ***

Purpose: CAPN5 is the gene implicated in Autosomal Dominant Neovascular Inflammatory Vitreoretinopathy (ADNIV). The majority of CAPN5 mutations causing ADNIV are in the catalytic domain. This report discusses the case of a 9-year-old Filipino male with a novel CAPN5 variant located in the regulatory domain, presenting with a phenotype of early-onset retinal dystrophy and mild inflammation.

Methods: After clinical examination, ancillary tests were requested, which included fundus photos, fundus autofluorescence, optical coherence tomography of the macula, full-field electroretinogram, and complete blood count (CBC). The patient also underwent genetic testing via next-generation sequencing.

Results: A 9-year-old male came in for nyctalopia. Upon presentation, the patient was found to have a best-corrected visual acuity of 20/30 in both eyes. Ocular examination revealed vitreous cells and bony spicule-like pigmentary changes in the retinal periphery, similar to those seen in retinitis pigmentosa. Ancillary testing was consistent with a rod-cone-like dystrophy. CBC showed an inflammatory process. Genetic testing revealed the patient to be heterozygous for a novel variant in CAPN5 c.1826C>G (p. Thr609Ser). This variant is not found in the population database (gnomAD), and the amino acid is highly conserved among species.

Conclusions: This study reports a novel CAPN5 variant associated with a mild ADNIV and rod-cone dystrophy-like phenotype. Identifying new CAPN5 variants and ADNIV phenotypes such as the one presented here will help further the understanding of this rare disease.

Poster No.: PO-606

Our Early Experience in Intraarterial Chemotherapy for Retinoblastoma in Indonesia: A Case Report

First Author: Muhammad ***SHAFIQ ADVANI***
Co-Author(s): Sahat ***MATONDANG****, Jacub* ***PANDELAKI****, Rita S.* ***SITORUS***

Purpose: In the last decades, intraarterial chemotherapy (IAC) has been widely used as an effective treatment to preserve the globe with an overall rate of 74% – in which all cases of grade B-C RB were salvaged successfully – compared to intravenous chemotherapy (IVC) with 67% of globe salvage rate. Routine IAC treatment is not feasible yet in Indonesia due to some limited circumstances. Here, we report one of the first cases of RB treated with IAC in Indonesia.

Methods: Our patient was a 1.5-year-old boy diagnosed with unilateral grade B juxtapapillary RB of the left eye. Three consecutive cycles of IVC – with a regimen of vincristine, etoposide, and carboplatine – and a series of focal laser treatments with the macular sparing technique were done. A secondary IAC was then administered following the previous IVC cycles. Follow-up Retcam examination and fundus fluorescein angiography (FFA) were performed to evaluate the tumor response.

Results: Three cycles of IVC and a series of laser treatments were performed, resulting in partial tumor regression, although the macular sparing area was still active. IAC was then administered to cover the tumor in the macular area that was not possible to be targeted with laser therapy. Tumor thickness was notably reduced following the IAC administration.

Conclusions: IAC could be an option of modality to avoid destruction of the fovea when treated with laser therapy. Long-term follow-up is required to keep the tumor under control.

Poster No.: PO-468

Prevalence of Pediatric Eye Conditions Over a Five-Year Period: A Study Conducted Across Multiple Centers in China

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Purpose: Investigating the occurrence and seriousness of notable eye disorders in children using an extensive database and a prolonged monitoring investigation that encompasses a substantial dataset sourced from the Futang Research Center of Pediatric Development.

Methods: A total of 104,927 patients' medical records were reviewed, all dated between January 2016 and December 2021. For each in-patient admission, information such as age at admission, gender, and admission diagnosis with corresponding ICD-10 codes, as well as treatment details and corresponding costs, and living and treating area were retrieved from the home page of inpatient medical records.

Results: Regarding age at admission, the proportion of children aged 3 to 6 years old was relatively high in central, northeast, and southwest regions, and in the eastern, central, and southern regions in China, the age groups mainly concentrated on 3 to 12 years old (69.15%), which roughly mirrored the population distribution in China. The proportions of orbital, eyelid diseases, strabismus and amblyopia were roughly the same in all regions of China. The proportion of lacrimal diseases was higher in the central (25.1%), northeast (36.7%) and southwest (38.2%) regions, with statistical significance. Lacrimal diseases (65.7%) and vitreoretinopathy (23.6%) exhibited a higher proportion in the infants' group.

Conclusions: Our research addresses a significant void in the existing literature by presenting a structured overview of the percentage of visual abnormalities in children and adolescents spanning a broad spectrum of ages.

Poster No.: PO-479

Quality of Life in Intermittent Exotropia for Korean Children and Their Parents

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Purpose: We aim to assess the health-related quality of life (HRQOL) concerns in children with intermittent exotropia (IXT) using the Intermittent Exotropia Questionaire (IXTQ), and their associations with the clinical severity of IXT and the parents' HRQOL concerns.

Methods: The final IXTQ score is calculated using the mean score for all items, and ranges from 0 (worst HRQOL) to 100 (best HRQOL). The correlations of child IXTQ scores with their deviation angle and stereoacuity were measured, as were those with their parent's IXTQ scores.

Results: One hundred twenty-two children with IXT (aged 5–17 years) and one parent for each child completed the child and parent IXTQ, respectively. The greatest HRQOL concern for each child with IXT and their parent was "Worry about eyes". Lower child IXTQ scores were associated with a larger distance ($r = 0.24$) and near deviation angle ($r = 0.2$). "It bothers me because I have to wait for my eyes to clear up" and "Waiting for their eyes to clear up" were more common in children with a larger deviation angle. The parent IXTQ scores (52.1 ± 25.3) were lower than the child ones (79.7 ± 15.8) and showed a positive correlation with child IXTQ scores ($r = 0.26$). Lower parent IXTQ scores were associated with poor distance stereoacuity ($r = 0.23$).

Conclusions: The HRQOL of IXT children was positively related to that of their parents. A larger deviation angle and worse distance stereoacuity function may predict more negative impacts on children and their parents, respectively.

Poster No.: PO-470

Ranibizumab for Zone II Stage 2 With Plus Disease Retinopathy of Prematurity

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Purpose: Zone II stage 2 with plus disease (II2+) is a common phase in advanced retinopathy of prematurity (ROP). In recent years, anti-VEGF therapy has become the mainstay of treatment for ROP, with indications generally based on the criteria of ETROP study. However, in the RAINBOW trial (Lancet. 2019), representative clinical research showing the usefulness of intravitreral ranibizumab treatment (IVR) for ROP, II 2+ was considered off-label. Therefore, in this study, we retrospectively evaluated the efficacy of IVR in II2+ ROP.

Methods: Twenty-four eyes (13 patients) treated with IVR (0.2 mg) for II 2+ ROP at our institution were included. IVR was repeatedly administered for any reoccurrence after treatment, and patients who remained untreated for at least 3 months were considered to be in remission. The rate of reoccurrence and remission were calculated. Statistical analysis was performed between single-treatment and multiple-treatment groups with various factors.

Results: The median gestational age at birth was 25 weeks and 6 days, and the mean birthweight was 703.5 grams. Eight eyes (33.3%) relapsed, requiring additional IVR, and only one eye required a third dose. All patients had a 100% remission rate without any complications. Among various factors, only the duration of oxygen administration was significantly different between the single-treatment and multiple-treatment groups (P=0.001).

Conclusions: IVR for II2+ ROP was considered to be highly effective, with all patients achieving remission despite the need for repeat dosing in approximately 33% of patients. In addition, the duration of postnatal oxygen administration was significantly longer in patients who required repeat IVR.

Poster No.: PO-453

Refractive Surgery in Children With Accommodative and Partially Accommodative Esotropia

*First Author: Igor **AZNAURYAN***
*Co-Author(s): Satenik **AGAGULIAN**, Victoria **BALASANYAN***

Purpose: To prove the effectiveness of refractive surgery for correcting the position of the eyes in patients with accommodative and partially accommodative esotropia.

Methods: The study included 38 people (76 eyes) with a spherical equivalent of refraction over 3.0 D treated in the Association of Pediatric Ophthalmology Clinics "Yasnyi Vzor" from 2016 to 2019 for accommodative or partially accommodative esotropia. The mean age of patients was 10.6±3.0 (5-18) years. An equal number of patients (19) were female and male. The mean spherical equivalent of the right eye was 6.4±1.4 D (range 3.9 to 9.8 D). Mean spherical equivalent of the left eye was 5.5±1.4 D (from 3.1 to 8.9 D). Thirty-six patients underwent surgery for esotropia prior to refractive surgery. All patients underwent standard ophthalmologic examination, corneal topography, pachymetry and optical coherence tomography of the anterior segment, Schirmer test, examination of binocular functions on the synoptophore, Worth test, ultrasound A- and B-scanning. We performed PRK under general anesthesia. In the postoperative period, patients used antibacterial drops; after PRK dexamethasone drops were prescribed for 6 weeks according to the standard scheme. Patients were followed for 18 months.

Results: After the surgery, the mean spherical equivalent was 2.9±1.8 D in the right eye and 2.3±1.6 D in the left eye.

Conclusions: Refractive surgery in children with accommodative and partially accommodative esotropia can be a treatment option.

Poster No.: PO-452

Strabismus Surgery With Innovative Strabo Soft Technology

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Purpose: To evaluate the results of interventions on the oculomotor muscles performed using the "Strabo soft" program, taking into account individual parameters (strabismus angle, axial length, transverse eye size, corneal diameter, refraction, DPP) in children with convergent concomitant strabismus in comparison with the scheme for calculating the operation according to Avetisov E.S. and Makhkamova H.M.

Methods: The analysis included 145 children aged 3 to 8 years with concomitant esotropia. The recession of the internal rectus and the plica of the external rectus muscles in one eye was performed. In the main group (73 children), dosing was performed using the "Strabo soft" program. In the comparison group, 72 children were operated on according to the scheme for calculating the operation according to Avetisov E.S. and Makhkamova H.M.

Results: According to the dosing method, "Strabo soft", orthotropia in the main group was achieved in 100% of cases (73 children). No unscheduled surgical interventions were required in any of the cases. In the comparison group, orthotropia was achieved in 87% of cases (63 patients); in 7 children, residual esotropia was more than 7°; in 2 children, postoperative exotropia was 5°.

Conclusions: The new individual dosing method, "Strabo soft", provides a high efficiency of predicting the effect of the surgery in the treatment of concomitant non-accommodative strabismus in children. The use of the original dosing technique "Strabo soft" seems to be a promising direction in the surgical treatment of strabismus in children.

Poster No.: PO-466

The Clinical Characteristics and Genetic Study of Dominant Stickler Syndrome in Chinese Children

*First Author: Yi **JIANG***
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Purpose: This study aims to illustrate the clinical and genetic features of COL2A1-associated Stickler syndrome in Chinese children.

Methods: The 32 unrelated probands with heterozygous COL2A1 variants detected from in-house exome sequencing data, were recruited in this study in the last five years. Furthermore, these variants underwent multi-step in-silico tools prediction, Sanger sequencing confirmation, co-segregation analysis, and the associated clinical data were collected.

Results: Thirty potential pathogenic COL2A1 variants were identified in this Chinese cohort. These patients had a mean age at the first visit of 5.78±8.31 years. The mean axial length and refraction for the right eye were -9.39 ± 4.75 diopters and 25.9 ± 1.7 mm, respectively, while for the left eye, they were -9.2 ± 4.5 diopters and 26.3 ± 2.1 mm. The vitreous opacity was observed in 12 probands. The classic myopic fundus C1 (58%) and C2 (25.8%) were observed in most of the probands. Except for three probands diagnosed with Stickler syndrome, the referring diagnosis of probands during their first visit was predominantly simple high myopia (65.6%). The specific peripheral retinal changes were observed in 47.8% of probands. The extraocular symptoms were only identified in six probands including skeletal and facial abnormalities, auditory dysfunction, or cleft palate.

Conclusions: This study suggests that the fundus changes and extra-ocular manifestations observed in children with Stickler syndrome were not as significant as those found in adults. The careful examination of peripheral and genetic testing is recommended for children with high myopia to reduce the risk of serious consequences associated with Stickler syndrome.

Poster No.: PO-458

The Demographic and Clinical Profile of Pediatric Patients Referred From Tertiary Pediatric Centers to a Tertiary Eye Care Center and the Significance of Referral in a Cohort of 939 Patients From South India

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Purpose: To report the demographic and clinical profile of pediatric patients (<16 years) referred from tertiary pediatric centers to a tertiary eye care center from January 2019 to June 2023 and to analyse the referral significance.

Methods: Electronic medical records of 939 patients were analysed. Demographic data, perinatal history, systemic history, detailed systemic & ocular examination, systemic & ocular investigations and treatment provided were documented for all the patients. Clinical profile and referral values (diagnostic, prognostic, therapeutic and lifesaving) were assessed. Data was analysed in Microsoft Excel version 2013.

Results: The mean+/- SD age was 7.7+/-4.4 years (range 0-16 years). 59% were males. Parental consanguinity was present in one-third of the cases. 62% of patients had an eventful perinatal course. The most common systemic diagnosis was cerebral palsy spectrum (31%), followed by encephalopathy (18%) and metabolic syndromes (14%). 17.3% of patients had significant refractive error. Cerebral visual impairment (53%), optic nerve pathologies (32%), strabismus (15%) and retinal pathologies (8.8%) were the common ocular findings. 3.5% of patients needed acute medical ocular care, whereas 3.4% needed an ocular (or extraocular) surgical intervention. The significance of referral in this cohort was – 37% had ocular diagnostic + therapeutic value, 30% had ocular diagnostic + prognostic value, 8.4% had systemic diagnostic +/- therapeutic value. In 3% of cases, the ocular screening aided in the detection of underlying life-threatening conditions.

Conclusions: A good memorandum of understanding and prompt referral within these tertiary care facilities can serve as a critical diagnostic, therapeutic and prognostic tool for both specialties.

Poster No.: PO-454

The Serendipitous Cherry Red Spot!

*First Author: Henal **JAVERI***
*Co-Author(s): Divyansh **MISHRA**, Mahesh Shanmugam **PALANIVELU**, Rajesh **RAMANJULU***

Purpose: To report a rare case of storage disease diagnosed with the help of ophthalmic findings, noted on routine Retinopathy for prematurity (ROP) screening.

Methods: A 36-week late preterm child was enrolled with us for Retinopathy for prematurity (ROP) screening. The retina was near normal vascularized with a narrow avascular temporal strip in both eyes at week 40. On a subsequent follow-up 4 weeks later, both eyes revealed a cherry red spot. The retinal vasculature was normal appearing and mature with no ROP. The child had a history of repeated respiratory infections along with an atrial septal defect and pulmonary hypertension for which he was on oral sildenafil. Hyper-pigmented patches were noted on the back and extensor aspects of the extremities. The role of sildenafil in vascular occlusions was explored initially, but the pediatrician was advised to undertake a storage disease evaluation.

Results: The metabolic panel evaluation divulged a GM1 gangliosidosis and mucopolysaccharidosis type IV disorder.

Conclusions: The eye is rightly referred to as the window to the body. Ophthalmic signs and symptoms can appear before typical systemic manifestations and can help to clinch the diagnosis for prompt treatment and prognostication of such conditions.

Poster No.: PO-457

Three-Year Experience of Retinopathy of Prematurity (ROP) Screening at Tertiary Care Eye Hospital in Rawalpindi, Pakistan

*First Author: Sumaira **ALTAF***

Purpose: To assess the sensitivity and specificity of the current recommendations for ROP screening in Pakistan.

Methods: The National Screening guidelines for ROP place the inclusion criteria at 35 weeks of gestation or less and a birth weight of 2000 gm or less. We retrospectively studied 519 infants of gestational age (GA) 35 weeks or less with a birth weight of 2000 gm or less over a period of 3 years at a tertiary eye care centre.

Results: 25.22% of the screened cases developed ROP, out of which 10.27% needed treatment, while 5.04% regressed spontaneously. 7% of the screened infants had stage 5 ROP at presentation. 7 infants with GA between 32 and 35 weeks developed ROP.

Conclusions: In developing countries like ours, where neonatal services are not well developed, ROP has been seen in older and heavier preterm infants, and the results in our study reflect the same. Further studies in other parts of the country are needed to achieve consensus regarding ROP Screening criteria for Pakistan. Also, due to a lack of proper and timely screening, a large number of children (7% in our study) have end-stage ROP at presentation, causing a significant rise in untreatable blindness in children.

Poster No.: PO-455

To Determine the Clinical Profile of Newly Diagnosed Strabismus

*First Author: Chitransha **JALUTHARIYA***
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Purpose: To investigate the distribution of different types of strabismus along with the clinical and ocular associations in a single tertiary center of north India in the north Indian population.

Methods: Newly diagnosed patients of all age groups presenting to the strabismus clinic over a period of 3 months were included in the study. Clinical profile (type, pattern, age of onset, family history, birth history) and associations (trauma, systemic illness, ethnicity, background, ocular associations: diplopia, nystagmus) were quantified by using an interviewer-based pro forma devised for this study.

Results: Out of a total of 293 newly diagnosed cases (182 Males and 111 Females), 223 patients have comitant strabismus, exotropia being the most common type (140). Congenital onset was noted in 63 patients, and the most common age group presenting to us was 1-15 years (150). One-thirty-nine patients belonged to rural backgrounds. A family history of squint was noted in 17 patients. Amblyopia showed a strong association (46) with strabismus, although the association with diplopia (33), nystagmus (13), and ocular trauma (32) was noted as well. Pre-maturity (14) turned out to be the most significant birth-related complication associated with strabismus.

Conclusions: The results of the study define various clinical patterns of strabismus prevalent in this part of the world. The importance of early screening, especially in children who are preterm with systemic co-morbidities.

Refractive Surgery

Poster No.: PO-483

A Novel Discovery of Influence of Corneal White-to-White-Diameter (WTW) in Topographical Interpretation: Size Does Matters!

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Purpose: To study the relationship between corneal WTW and corneal tomography in children.

Methods: A retrospective study was conducted in a tertiary care hospital after approval by the Institutional Research and Ethics Committee and conducted in accordance with the tenets of the Declaration of Helsinki. White-to-white (WTW) both in horizontal (hWTW) and vertical (vWTW) meridian (in mm) for 683 eyes of children aged between 5-17 years correlated with the keratometry (K) indices- flat K, steep K and K max (in D) and BADD (Belin/Ambrósio Enhanced Ectasia Display) obtained from Pentacam HR. Statistical analyses were performed using MedCalc statistical software version 19.3 (MedCalc Software, Inc., Mariakerke, Belgium). Multiple regression analysis was used to study the correlation between the indices (P-value < 0.001 significant).

Results: A total of 683 eyes were included in the study. The regression analysis showed a significant correlation (p< 0.001) for both hWTW and vWTW

with flat, steep, mean, and max keratometry indices inversely. The relationship with kmax was = 59.36 -1.29*hWTW (r=0.37, p <0.001) and = 49.72 – 0.54*vWTW (r=0.24, p <0.001). The relationship with K1 was= 58.01 – 1.28*hWTW (r=0.38, p <0.001) and = 48.95 -0.55*vWTW (r= 0.22, p <0.001). Similarly, the relationship with K2 was = 58.10 -1.14*hWTW (r=0.48, p <0.001) and = 50.51– 0.53*vWTW (r=0.22, p <0.001). The same for Belin/Ambrósio Enhanced Ectasia Display (BAD D) was 5.72-0.3*hWTW-0.11*vWTW (r=0.34, p<0.001).

Conclusions: White-to-white diameter is a significant factor in the tomographical assessment of the cornea.

Poster No.: PO-497

A Review on Outcome of Medicontour Bi-flex T 677TA Toric Intraocular Lens Implantation – A Retrospective Study

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Purpose: The purpose of this study was to evaluate the visual outcomes of patients who underwent cataract surgery with the implantation of a toric intraocular lens (IOL) model, specifically the Medicontour Bi-flex T 677TA.

Methods: A retrospective analysis was conducted on 57 eyes of 53 patients who had regular corneal astigmatism ranging from -1.5D to -5.2D. The patients underwent phacoemulsification surgery with toric IOL implantation performed by a single surgeon. Preoperative and postoperative assessments were performed with a follow-up period of 6 weeks. The main outcome measures were uncorrected and corrected distance visual acuity, spherical equivalent refraction, and residual astigmatism.

Results: All eyes achieved a corrected distance visual acuity (CDVA) of at least 20/40 or better at the 6-week postoperative visit. Approximately 72% of eyes had a mean postoperative spherical equivalent within 0.50 D. Furthermore, 84% of eyes exhibited a postoperative refractive cylinder of ≤-1.0 D. One eye (1.75%) experienced an IOL-related complication, specifically IOL rotation.

Conclusions: The findings of this study demonstrate that the Medicontour Bi-flex T 677TA IOL emerges as a cost-effective solution within the local market, exhibiting substantial improvements in visual acuity and astigmatism post-operatively. Importantly, the study demonstrates a statistically significant achievement of an acceptable range of final spherical equivalent (p<0.05).

Poster No.: PO-499

Accuracy of Predictive Refraction in Transscleral Fixation of Intraocular Lens in Trabeculectomized Eyes

*First Author: Iksoo **BYON***

Purpose: To investigate the accuracy of predictive refraction and the changes of intraocular pressure in transscleral fixation of intraocular lens (IOL) in trabeculectomized eyes with glaucoma.

Methods: We retrospectively reviewed the medical records of patients who underwent transscleral fixation of IOL due to IOL dislocation from January 2010 to July 2022. Of them, eyes that had previously undergone trabeculectomy and controlled intraocular pressure (IOP) were included. All transscleral fixation of IOL surgeries was done using the Ab externo technique. The predictive refraction was calculated by using the SRK/T formula. The refractive errors were converted into spherical equivalents. The main outcome measures were the accuracy of predictive refraction and change in IOP.

Results: Eleven eyes were included. The mean age was 67.27 years old. The axial length was 23.64 mm. The predictive refraction was -0.02 ± 0.46 D. The postoperative refraction was -0.80 ± 0.98 D. There was a significant difference between predictive refraction and postoperative refraction outcome (p=0.029). The postoperative refraction outcome showed a tendency toward myopia of -0.78 ± 1.11 D, compared to the predictive refraction. The accuracy of predictive refraction was 36.4% for ±0.5 D and 72.7% for ±1.0 D. The IOP did not change during the follow-up period.

Conclusions: In trabeculectomized eyes, transscleral fixation of IOL did not affect IOP. The postoperative refraction outcome became myopic shift, compared to the predictive refraction. Therefore, the target power of IOL should be determined regarding this condition when performing transscleral fixation of IOL in the trabeculectomized eyes.

Poster No.: PO-484

Analysis of Patient's Approach for Further Treatment After Rejection for Corneal Based Refractive Surgery

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Purpose: To analyze the various reasons for the rejection of cornea-based refractive surgery in a tertiary eye care hospital. To analyze the patient's perspectives on further treatment modalities and their uptake level.

Methods: All patients who approached for spectacle independence by cornea based refractive surgery but

were rejected due to various reasons were included in the study. Their clinical and demographic details were recorded. Pentacam characteristics were recorded, and screening of keratoconus and other subclinical ectatic disorders was done. A validated questionnaire was administered to analyse the patient perspectives, knowledge, and uptake of alternative treatment approaches like lens-based refractive procedures and reverting back to their conventional mode of treatment. Then, patients were given information about the various other modalities of refractive surgery, and they were counselled about the same.

Results: In our study population, the average rate of rejection was 27.8%. The most common reason for rejection was thin corneas, followed by keratoconus suspect and high refractive error. 26% of our study participants were partially aware of the phakic IOL procedure. However, only 4% of our patients were willing to opt for a phakic IOL procedure. Only 4.65% were partially aware of the refractive lens exchange procedure and very few were ready to opt for the refractive lens exchange procedure. Only 40% were ready to continue with their glasses.

Conclusions: Our study holds significance for both clinicians and patients alike. It stresses the potential to improve refractive surgery practice, enhance patient counselling protocols, and contribute to the overall improvement of refractive surgery outcomes.

Poster No.: PO-496

Clinical Outcomes of Sedeo Excimer Laser – Revolutionary Surface Ablation in Upright Seated Position

*First Author: Vandhana **SUNDARAM***
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Purpose: This was a prospective, single-center, study of the SEDEO Excimer laser system used to perform trans-epithelial photorefractive keratectomy (PRK) and phototherapeutic keratectomy (PTK) on patients in an upright seated position.

Methods: Patients greater than 21 years of age with overall spherical equivalent for myopes <10D and Hyperopes < 6D fit to undergo PRK were included in the study. Patients with Bowman's membrane and stromal dystrophy indicated for Trans PTK were also included. All patients underwent detailed ophthalmological evaluation, which included corneal tomography and anterior segment optical coherence tomography. Patients underwent surface ablation in an upright sitting position at the SEDEO system, following which Mitomycin C was applied and a BCL was placed. Post-operatively, patients were started on topical antibiotics, steroids, and lubricant eyedrops, which were tapered over one month. The study subjects were followed up on Day 1, 7, 1 month, and 3 months postoperatively. The percentage of treated eyes within +/- 0.50D of target refraction was calculated.

Results: This study included 46 eyes out of which Trans PRK was performed on 40 eyes and Trans-PTK was performed on 6 eyes. There was a significant improvement in visual acuity noted in all the treated eyes at 1 month postoperatively ($p<0.05$) with greater than 90% of treated eyes within the target refraction of +/- 0.50D. No adverse events were noted.

Conclusions: Thus the SEDEO excimer laser system is a safe and effective treatment option for surface ablation procedures as it provides cyclotorsion-free ablation with good patient comfort.

Poster No.: PO-495

Corneal Epithelial Remodeling in Different Degrees of Myopic Astigmatism After Small Incision Lenticule Extraction

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Purpose: This study aims to evaluate corneal epithelial remodeling and its impact on undercorrection and visual outcomes in small incision lenticule extraction (SMILE) for different degrees of astigmatism.

Methods: This study included 169 right eyes from 169 patients undergoing SMILE were categorized into four groups based on preoperative astigmatism: 1) control group (≤0.25D), 2) low astigmatism (LA) group (0.50 to 0.75D), 3) middle astigmatism (MA) group (1.00 to 1.25D), and 4) high astigmatism (HA) group (≥1.50D). Corneal epithelial thickness (CET) was mapped in a 9mm diameter area with 25 sections over a period of 3 months after SMILE. Pearson correlations were used to determine the association between residual astigmatism and other parameters.

Results: At 3 months postoperatively, there were no differences in clinical outcomes and vector analysis results among the groups. CET in the midperipheral zone (5 to 7mm) exhibited an astigmatism-dependent pattern, with a significant increase in CET from the control group to the HA group after SMILE surgery, from 53.6±2.99 µm in the control group to 56.1±4.54µm in the HA group (p-trend<0.001). Furthermore, residual astigmatism at 3 months postoperatively showed a significant correlation with baseline cylinder errors ($r = 0.22$, $p = 0.004$) and the relative CET hyperplasia in midperipheral zone ($r = -0.17$, $p = 0.033$).

Conclusions: These findings demonstrate that the CET hyperplasia in the midperipheral zone is associated with astigmatism and residual astigmatism. These findings aid refractive surgeons in optimizing SMILE outcomes for astigmatism correction.

Poster No.: PO-498

Corneal Epithelial and Stromal Thickness Profile After Photorefractive Keratectomy (PRK) Using Anterior Segment Optical Coherence Tomography (AS-OCT)

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Purpose: To study the epithelial remodeling after photorefractive keratectomy (PRK) using Anterior segment Optical Coherence Tomography (AS-OCT).

Methods: This prospective observational study was performed from October 2018 to March2020.85 eyes with simple myopia in the age group of 21-38 years and spherical equivalent range of -2.25 to -6 underwent PRK with Mytomicin-C (MMC). Epithelial and corneal thickness maps were acquired by AS-OCT preoperatively and postoperatively at 1 week,1 month,3 months and 6 months.

Results: The visual acuity of all patients was 0 LogMAR until 6 months. We observed epithelial thickening of the cornea at 1 week followed by a decrease at 1 month and a slight increase at 3 months and 6 months. The mean corneal thickness increased from the baseline values in the central 2mm 2 to 5mm and 5 to 7mm zones at 6 months respectively ($p<0.001$).

Conclusions: The corneal epithelial thickness increased up to 6 months after PRK-MMC and did not have any significant effect on the visual acuity.

Poster No.: PO-487

Correlation of Opaque Bubble Layer With Corneal Biomechanics and Densitometry in Eyes Undergoing Smile With Visumax 800 for Myopia Correction

*First Author: Janki **BHAYANI***
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Purpose: The purpose was to evaluate OBL pattern using an optimized energy setting, produced by the new laser, which fires at a pulse repetition rate of 2 MHz versus its predecessor VisuMax 500 with a frequency of 500 kHz.

Methods: Patients underwent CORVIS ST and Pentacam HR for pre-op evaluation. VisuMax 800 with 2 MHz frequency was used to perform SMILE. The OBL pattern was graded from 0-100% by an independent observer from the treatment PDF using a transparent overlay divided into zones assigned different numbers depending upon the density of OBL. Corvis biomechanical index (CBI), Tomographic biomechanical index (TBI), densitometry values, and post-operative day 1 Objective Scatter Index (OSI) were correlated with OBL. Pearson correlations were found, and their significance was tested.

Results: Eighty-eight eyes of 88 patients, with a mean age of 26.86 ±4.20 years and the spherical equivalent of -4.98±2.63 D, were evaluated. The mean OBL grade observed was 57.61±18.88%. The mean values of densitometry, CBI, TBI, and post-op OSI were 18.28±1.51, 0.41±0.26, 0.23±0.23 and 1.70±0.98 respectively. A significant positive correlation was found between OBL with pre-op densitometry, R- score=0.286, $p<0.001$, and post-op OSI score, R-score=0.413, $p<0.001$. A significant negative correlation of OBL with CBI was observed, R-score= -0.224, $p=0.03$. A negative correlation of OBL was observed with TBI, however (R-score= -0.140, $p=0.19$).

Conclusions: The occurrence of OBL in SMILE could be influenced by various factors like CBI, TBI, and densitometry. Based on these results, existing nomograms for energy and spot settings may be revised, which may improve the immediate post-op recovery after the procedure.

Poster No.: PO-489

Correlation of Treatment Decentration With Post-op Induced Aberrations Following SMILE Performed With 2 MHz Femtolaser Equipped With a Centration Guide

*First Author: Dhatri **KARANAM***
*Co-Author(s): Malvika **KRISHNAN***

Purpose: To study the correlation between treatment decentration with post-op induced aberrations following SMILE performed with a 2 MHz femtolaser equipped with a centration guide.

Methods: In this prospective study, SMILE was performed using a 2MHz femtolaser (VisuMax 800), in which the treatment centration is guided by CentraLign software, based on the x and y coordinates of the pupil. At the end of the procedure, the machine calculates the treatment decentration based on the degree of offset from the targeted point of centration.

Results: Fifty eyes from 50 eligible patients underwent SMILE for myopia ranging from -1 to -10 D SE, with astigmatism up to -3 D using 120 microns cap thickness and 2 mm superior access incision. The mean treatment decentration was 0.14 ±0.08 mm. The mean pre-op total Higher order aberrations (HOA), Spherical aberrations (SA), and coma aberrations were 0.16 ± 0.15, 0.01 ± 0.04 and 0.08 ± 0.08 microns, which changed to 0.19 ± 0.12, -0.02 ± 0.04 and 0.13 ± 0.12 microns respectively 3 months post-op. Pearson-correlation derived R-square values for HOA, SA and coma when correlated, which did not show any statistically significant correlation. No intra-operative complications were noted.

Conclusions: No significant correlation of treatment decentration with post-op induced aberrations was noted for SMILE performed with a faster 2 MHz femtolaser with centration guide, suggesting that

the observed treatment decentration may not be significant enough to result in a remarkable induction of higher order aberrations, especially coma.

Poster No.: PO-488

Epithelial Changes and Biomechanically Corrected IOP in Diagnosing Subtle Steroid Response Post Smile- Case Report

*First Author: Janki **BHAYANI***
*Co-Author(s): Sheetal **BRAR**, Sri **GANESH**, Dr.Deepak **SWAMY***

Purpose: To report a post-SMILE case presenting with subtle steroid response and associated epithelial thickness and biomechanically corrected IOP (b-IOP) changes.

Methods: A 26-year-old male presented with blurriness in both eyes after an uneventful SMILE procedure 5 weeks post-operatively. His uncorrected distant visual acuity dropped to 20/40 OD and 20/60 OS, which improved to 20/30 OU with a subjective acceptance of -0.75 DS OD and -0.75/-0.75 @ 140 OS. Non-contact tonometer values of IOP were 18 and 20 mmHg, while the b-IOP measured 22 and 23 mmHg in OD and OS, respectively. AS-OCT revealed minimal interface fluid with epithelial thickening (OS>OD). Topical steroids were discontinued and antiglaucoma medications were prescribed. One week later, the b-IOP decreased to 17 mm Hg OU, interface fluid and epithelial changes resolved, and UDVA recovered fully.

Results: Epithelial thickness and b-IOP may be sensitive indicators to diagnose subtle steroid response post-SMILE.

Conclusions: Epithelial thickness and b-IOP may be sensitive indicators to diagnose subtle steroid response post-SMILE.

Poster No.: PO-494

Evaluation of Intraocular Formulas and Total Keratometry in Eyes After Laser Refractive Surgery

*First Author: Jasmine **GE***

Purpose: Comparative study of the accuracy of various IOL formulas and whether incorporation of total keratometry (TK) from IOLMaster 700 improves the precision of IOL power calculation in patients who have undergone previous myopic refractive surgery.

Methods: Two hundred and five eyes with previous myopic laser refractive surgery were evaluated 1 month after uneventful cataract surgery. A comparison of the prediction error was made between no clinical history post-laser refractive surgery formulas (Barrett True-K, Haigis-L, Shammas-PL, ASCRS average) and conventional formulas (EVO) with and without TK values.

Results: The mean absolute error (MAE) was 0.443, 0.457, 0.472, 0.483, 0.498, 0.609, 0.678 and 0.716, and median absolute error (MedAE) was 0.319, 0.333, 0.330, 0.379, 0.395, 0.508, 0.563, and 0.584 for EVO TK, EVO, Barrett True-K TK, Haigis TK, Barrett True-K, ASCRS average, Shammas-PL, Haigis-L respectively. EVO TK followed by EVO then Barrett True-K TK achieved the highest percentages of patients with absolute prediction error within 0.50 and 1.00 D (64.53%, 51.58%, 63.05%; and 88.67%, 88.18% and 87.19% respectively).

Conclusions: The most accurate formulas for post-myopic refractive surgery patients for our set of patients were found to be EVO TK followed by EVO then Barrett True-K TK. In addition, formulas combined with TK achieved better results.

Poster No.: PO-485

Incidence and Clinical Outcomes Following Management in Eyes Presenting With Diffuse Lamellar Keratitis (DLK) Post SMILE

*First Author: Dhatri **KARANAM***
*Co-Author(s): Malvika **KRISHNAN***

Purpose: To report the incidence, management strategies, and clinical outcomes following resolution in cases of DLK post-SMILE from a high-volume refractive surgery center in India.

Methods: This retrospective study reviewed patients operated for SMILE for varying degrees of myopia, presenting with signs of DLK. The pre-operative clinical characteristics, intraoperative parameters, postoperative treatment, overall incidence, severity, and clinical outcomes after resolution were recorded. Uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA) and objective scatter index (OSI) by HD analyzer (HDA) were monitored from presentation till resolution.

Results: A total of 1313 eyes were analyzed, of which 18 eyes were observed to develop DLK with incidence of 1.37 %. Of 18 eyes, 11 eyes of grade 1 DLK were managed by topical steroids, while the remaining 7 eyes of grade 2 DLK were intervened by an interface wash. The mean UDVA and CDVA at presentation were 0.18 ±0.16 and 0.16 ±0.17 LogMAR respectively, which improved to 0.01 ±0.14 and -0.03 ±0.10 LogMAR by the end of resolution, ($p<0.001$). The mean time of presentation was 2.72 days and the mean resolution time was 8.94 days. The mean OSI at presentation was 2.96±1.95, which improved to 1.28±0.75 upon resolution ($p<0.05$).

Conclusions: DLK post-SMILE, when recognized and managed early, results in satisfactory outcomes with no permanent effects on visual acuity.

Poster No.: PO-491

Intraocular Lens Power Calculation for Eyes With a History of Myopic Laser Keratorefractive Surgery: A Comparison of 7 Formulas

*First Author: Aaron **NG***
*Co-Author(s): Stephen **STEWART**, Tun Kuan **YEO***

Purpose: This comparative study aimed to compare the prediction accuracy of current no clinical history post-laser refractive surgery intraocular lens power calculation formulas.

Methods: One hundred and forty-eight eyes of 87 patients were included in this study. All eyes had previously undergone myopic LASIK or PRK. IOL power calculations were performed retrospectively using preoperative data from the IOLMaster 700 biometer. The IOL power formulas used either standard keratometry (Barrett True-K, EVO, Haigis-L, Shammas-PL) or total keratometry values (Barrett True-K TK, EVO TK, Haigis-TK). Refractive prediction errors were calculated based on the predicted postoperative refraction given the implanted IOL power, and the achieved postoperative manifest refraction.

Results: The mean absolute error (MAE) was 0.465, 0.438, 0.435, 0.414, 0.570, 0.472 and 0.571D and median absolute error (MedAE) was 0.383, 0.348, 0.348, 0.305, 0.528, 0.372 and 0.499D for Barrett True-K, Barrett True-K TK, EVO, EVO TK, Haigis-L, Haigis-TK and Shammas-PL respectively. EVO TK and Barrett True-K TK achieved the highest percentages of patients with absolute prediction error within +0.25 and +0.50D (42.57%, 69.59% and 37.84%, 68.24% respectively). Pairwise post-hoc analysis revealed differences in absolute prediction error for: EVO vs Haigis-L, EVO vs Shammas-PL, EVO TK vs Haigis-L, EVO TK vs Shammas-PL, Barrett True-K vs Haigis-L, Barrett True-K vs Shammas-PL, Barrett True-K TK vs Haigis-L, Barrett True-K TK vs Shammas-PL ($p<0.001$).

Conclusions: Adding posterior corneal power measurements improves the prediction accuracy of post-LASIK IOL power calculations.

Poster No.: PO-486

Long-term Visual and Refractive Outcomes of Eyecryl® Phakic Intraocular Lens Implantation for Management of High Myopia and Myopic Astigmatism

*First Author: Riya **CHOPRA***
*Co-Author(s): Dr.Shubhangi **SHEVALE***

Purpose: To evaluate the long-term outcomes of Eyecryl phakic intraocular lens (pIOL) implantation for high myopia and myopic astigmatism.

Methods: Electronic Medical records of patients who had implantation of Eyecryl pIOL or Eyecryl phakic Toric IOL from Aug 2017 to July 2022 were retrospectively reviewed. Patients with a follow-up period of a minimum of 12 months were included in the study. Visual and refractive results, endothelial cell density, central vault, and complications were evaluated.

Results: A total of 186 eyes from 106 patients (mean age=30.07 years) were analysed. Thirty-three spherical and 153 toric phakic IOLs were implanted. The mean follow-up was 37.04±13.60 months (3.08 years). The preoperative sphere, cylinder, SE reduced significantly from -9.91 ±5.22 D, -1.67±1.15 D and -10.75 ± 5.35 D to -0.03± 0.29D, -0.09± 0.32D, -0.07 ± 0.35D respectively (p- value>0.05). The mean efficacy and safety indices were 1.02 and 1.01, respectively. The mean central vault was 497.86±167.75µ at 2 weeks, which reduced to 481.49±162.07 µ at 3.08 years,(p- <0.001). Endothelial cell (EC) loss was 2.4 % in the first 12 months. Two eyes of toric pIOL required realignment. No eye developed cataract, glaucoma, retinal detachment or severe inflammation.

Conclusions: At the end of 37.04±13.60 months (3.09 years) follow-up, Eyecryl pIOL implantation was found to be a safe and effective surgical procedure for the correction of high myopia and myopic astigmatism.

Poster No.: PO-482

Nerve Tracking and Regeneration Post Lenticule Procedure With a New Femtosecond Laser

*First Author: Sanjri **MALHOTRA***
*Co-Author(s): Durgalaxmi **MODAK***

Purpose: To evaluate corneal nerve regeneration after lenticule extraction with a new femtosecond laser platform (NFS) and compare with small incision lenticule extraction (SMILE).

Methods: Invivo confocal microscopy (IVCM) of cornea was done in eyes undergoing lenticule extraction with NFS (n=42) and SMILE (n=42) to evaluate the treated central cornea. Corneal nerve fibre density (CNFD) and corneal nerve fibre length (CNFL) were assessed via CCMetrics software. Pre to post-operative change in the parameters was calculated and compared.

Results: Preoperative CNFD and CNFL were similar in both groups. The change in CNFD was significantly lesser in the NFS group compared to SMILE at 1, 3, and 6 months postoperatively. Similarly, change in CNFL was lesser in the NFS group compared to SMILE.

Conclusions: The NFS group showed a lesser change in CNFD and CNFL, indicating lesser nerve damage and faster nerve regeneration. This may hasten the post-operative recovery of ocular surface balance and dry eye symptoms.

Poster No.: PO-493

Ophthalmic Mavericks and Their Refractive Picks: Preference of Refractive Correction Amongst Ophthalmologists

*First Author: Saloni **JOSHI***
*Co-Author(s): Vinitha **JOHN**, Apurva **NAGTODE**, Josephine Christy **SUSAI***

Purpose: 1. To find out which type of refractive correction - spectacles, contact lenses or refractive surgery is the most popular among Ophthalmologists. 3. To find out if there is any difference in the preference and advice between males and females for refractive correction 4. To find out if there is any difference in preference of medical Ophthalmologists and surgeons.

Methods: A self-administered, validated questionnaire consisting of 25 questions was given to all ophthalmologists, including trainees and practising ophthalmologists, in India. Details regarding demographic details, preference between spectacles, contact lenses and refractive surgery were included in the questionnaire. The factors influencing the same and in-depth questions regarding spectacles, contact lenses, and refractive surgery were included.

Results: Among the total 277 ophthalmologists surveyed, 91% were practicing both medical and surgical, the maximum being females (62%) (30-40 years). 77% of the study population had a refractive error, and 70% preferred spectacles due to ease of use and less worry about hygiene, which were the reasons for the unpopularity of contact lenses (20%). Only 30% were ready to advise refractive surgery for their family and friends. The most popular refractive surgeries in recent times are SMILE and FLEX. However, Femto LASIK was the procedure that most surgeons preferred to advise (22%). Interestingly, 56% believed that a patient's choice for refraction is influenced by their doctor's choice.

Conclusions: Though refractive surgeries are very popular and known for their best visual outcomes, spectacles are still the preferred choice of correction for most Ophthalmologists. Their choice and attitude towards their own correction highly influence their decisions for patients.

Poster No.: PO-492

Troubled Waters and Unwelcome Guests: Interface Fluid Syndrome and Epithelial Ingrowth As Late Complications 12 Years Post-LASIK

*First Author: Diannisa **SUSANTONO***
*Co-Author(s): Faraby **MARTHA**, Jessica **ZARWAN***

Purpose: To report a rare case of Interface fluid syndrome (IFS) and epithelial ingrowth (EI) as late complications of laser-assisted in situ keratomileusis (LASIK).

Methods: This study explores a case of IFS and EI post-LASIK, followed by a systematic literature review for the potential management.

Results: A male, 53 years old, came with a chief complaint of blurry vision in the right eye since 2 years ago. The patient underwent a LASIK operation of the right eye 12 years prior and cataract surgery 2 years prior. Physical findings of the right eye include visual acuity of 0.5/60 and intraocular pressure (IOP) of 14 mmHg. The cornea was oedematous with a circular corneal scar, also fluorescein pooling was found. On anterior segment optical coherence tomography (AS-OCT), an area of fluid and EI was seen under the flap. IFS and EI as dual complications post-LASIK are rare, and the numbers are undocumented. Within this case, we hypothesize the use of steroids post-cataract surgery caused an increase in IOP, leading to fluid filling the potential space created post-LASIK. As a fluid-filled pocket forms under the flap, EI is facilitated within the space. Treatment of IFS includes cessation of steroids and IOP lowering drops, bearing in mind an inaccurately low IOP reading is common. Following IFS management, treatment of vision-threatening EI is mechanical debridement. Additional strategies to reduce recurrence rates include fibrin glue and suturing.

Conclusions: Post-LASIK IFS and EI are complications ophthalmologists must be aware of even a decade after surgery.

Poster No.: PO-490

Visual and Refractive Outcome of New Generation Small Incision Lenticule Extraction (SMILE) in Compound Myopic Astigmatism

*First Author: Dini **DHARMAWIDIARINI***
*Co-Author(s): Farida **MOENIR**, Sahata **NAPITUPULU**, Rizqi **PUTRI***

Purpose: To report the visual and refractive outcome of New Generation SMILE in compound myopic astigmatism with high astigmatism value.

Methods: This is an observational prospective study of eyes treated by New Generation SMILE using Visumax 800 without manual cyclotorsion compensation and normogram adjustment. The inclusion criteria were compound myopic astigmatism patients with astigmatism value ≥ 2 D, minimum age of 18 years old, pre-operative best corrected visual acuity (BCVA) was 20/20 or better, and follow-up visits were at 1-day, 1-week, and 1-month post-surgery. Pre and post-operative outcome measurements included uncorrected visual acuity (UCVA), BCVA, spherical equivalent (SE), and astigmatism value.

Results: The study comprised 8 eyes of 5 patients. The mean age was 18.4 ± 0.55 years old. The mean post-operative UCVA was significantly improved to 0.09 ± 0.06 logMAR at 1 day, 0.05 ± 0.08 logMAR at 1

week, and 0.04 ± 0.05 logMAR at 1-month follow-up compared to pre-operative UCVA 1.22 ± 0.11 logMAR (p=0.011). At 1 month post-operation, 63% of eyes had UCVA 20/20, and 100% of eyes had no BCVA loss. The mean refractive spherical equivalent significantly changed from -3.69 ± 0.43 D preoperatively to -0.36 ± 0.95 D at 1-month follow-up (p=0.011). The mean refractive astigmatism decreased from -2.25 ± 0.50 D preoperatively to -0.50 ± 0.38 D at 1-month follow-up (p=0.011).

Conclusions: The New Generation of SMILE has been shown as an effective and safe treatment for the correction of compound myopia astigmatism eyes with high astigmatism value.

Retina (Medical)

Poster No.: PO-538

A Case of Ruptured Retinal Microaneurysm After Corona Vaccination

*First Author: Tatsuya **SAKAMOTO***
*Co-Author(s): Yoshinori **MITAMURA**, Daisuke **NAGASATO**, Tomoki **SHIRAKAMI**, Hitoshi **TABUCHI**, Hayato **TANAKA***

Purpose: This study explores a previously reported relationship between the COVID-19 vaccine and ocular diseases, focusing on a case of ruptured retinal microaneurysm after vaccination.

Methods: We report a patient who experienced retinal microaneurysm rupture following SARS-CoV-2 mRNA vaccination.

Results: A 56-year-old male experienced vision loss in his right eye several hours after receiving his third dose of Pfizer's BNT162b2 vaccine. His best-corrected visual acuity (BCVA) in the right eye decreased to hand motion level, and a fundus examination revealed vitreous hemorrhage and extensive retinal hemorrhage in the posterior pole, including the macula. Six months prior, the patient's diabetes was poorly controlled (HbA1c: 9%), and he was referred to our clinic for a comprehensive ophthalmologic examination. His BCVA in the right eye was 20/16 at that time. As for the treatment, pars plana vitrectomy was performed, which revealed a ruptured microaneurysm. Despite initial surgery, vitreous hemorrhage persisted, necessitating the second vitrectomy. One year post-surgery, his BCVA was 20/32 in the right eye.

Conclusions: We report a case of ruptured microaneurysm following SARS-CoV-2 mRNA vaccination, indicating the potential for vaccine-related effects on blood vessels and clot formation.

Poster No.: PO-501

A Cure Turned Into a Culprit: Macular Toxicity of Intravitreal Ganciclovir in a Case of Cmv Retinitis

*First Author: Akanksha **PANDIT***
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Purpose: To report the toxicity of a higher dose of Ganciclovir (6mg).

Methods: A 56-year-old male presented with chief complaints of diminution of vision (DOV) in both eyes (BE) for 5 days. Systemically known case of diabetes, hypertension, pulmonary TB on ATT, and HIV on ART since 1 week. Vision in his right eye was (RE) 6/9 and left eye (LE) 6/12. On examination, he was diagnosed with Cyto Megalo Virus (CMV) retinitis and started on oral Valganciclovir 900mg (induction dose) BD and intravitreal injection of Ganciclovir 2mg/0.1ml in BE twice a week. An increase in the size of the lesion was noted after 2nd injection. Suspecting progression of retinitis, the dose of intravitreal ganciclovir was increased to 4mg twice a week for 1 week. On physicians' advice, valganciclovir was stopped after the 4th injection. The patient complained of DOV after 6th injection. BCVA in RE dropped from 6/9P to 6/24, LE 6/12P to 6/18P. Considering the unresponsiveness of the treatment, intravitreal Ganciclovir 6mg was administered, post-injection the patient complained of a profound vision drop with BCVA of 6/60 in BE. Re-evaluating the situation, higher dose retinal toxicity was suspected, injections were stopped, and he was restarted on oral valganciclovir. Vision improvement was noted 3 weeks post-injection stoppage with BCVA of RE 6/36, LE 6/18. On 5-month follow-up, BCVA was RE 6/24, LE 6/18, thus signifying improvement in vision.

Results: A higher dose of intravitreal Ganciclovir can lead to macular toxicity.

Conclusions: Proper drug dose titration and careful monitoring are a crucial part of disease management and also detect features of toxicity and avoid macular damage.

Poster No.: PO-522

A Masquerade of Central Serous Chorioretinopathy

*First Author: Wei Kiong **NGO***
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Purpose: To describe multimodal imaging and visual electrophysiology findings in a patient with a genetic condition masquerading as central serous chorioretinopathy (CSC).

Methods: Case report of a 49-year-old woman with pre-existing diagnosis of chronic CSC who was seeking a second opinion.

Results: Visual acuity was 6/12 bilaterally. Colour fundus photograph showed shallow, dome-shaped neurosensory detachments bilaterally, confirmed on optical coherence tomography (OCT) scans. In addition, choroidal pachyvessels were present in the OCT b-scans bilaterally. Short-wavelength autofluorescence (FAF) imaging revealed bilateral speckled hypoautofluorescence centrally with a hyperautofluorescence rim coinciding with the edges of the neurosensory detachment. Fluorescein angiography revealed bilateral macular stippled hyperfluorescence with leakage. Indocyanine green angiography demonstrated prominent pachyvessels in the macula bilaterally. She was using long-term steroid inhalers for asthma. She underwent two episodes of photodynamic therapy with verteporfin and a trial of eplerenone but had persistent subretinal fluid. Pattern electroretinograms (ERGs) to standard and large field stimuli were subnormal bilaterally. Full-field ERGs were normal bilaterally. The electrooculogram showed a light rise of 115% on the right and 135% on the left. Genetic sequencing of the BEST1 gene revealed a pathogenic heterozygous variant, c.584C>T (p.Ala195Val) and a heterozygous variant of uncertain significance, c.59T>C (p.Leu20Pro).

Conclusions: Genetic testing confirmed a diagnosis of Best vitelliform macular dystrophy. Phenotypic presentations of bestrophinopathies bear much resemblance to CSC. Additionally, many of these eyes are hyperopic and have thick choroids similar to eyes in the pachychoroid spectrum. A high index of suspicion is necessary, especially in bilateral, treatment-resistant cases.

Poster No.: PO-542

A Novel Quantification Method for Choroidal Neovascularization to Evaluate Therapeutic Response After Anti-VEGF Therapy in Age-Related Macular Degeneration

*First Author: Tsai-chu **YEH***
*Co-Author(s): Yu-bai **CHOU**, Shih Jen **CHEN***

Purpose: Quantifying choroidal neovascularization (CNV) of 3D volume-rendered OCTA can help in monitoring disease progression and evaluating treatment efficacy. We propose a novel voxelized quantification method for CNV before and after anti-VEGF therapy, which involves subsequent analysis of voxel intensity, texture, and spatial distribution.

Methods: Eyes with neovascular age-related macular degeneration (nAMD) were imaged at two time points: baseline and 1 month after anti-VEGF therapy. OCT angiography (OCTA) scans were performed with RTVue-XR Avanti system, and a novel voxelized topological analysis algorithm was used to quantify CNV volume. The mean volume changes of intraretinal fluid (IRF), subretinal fluid (SRF) and CNV and the corresponding best-corrected visual acuity (BCVA) at 1 month were analyzed.

Results: One month after treatment, the mean change in BCVA was -0.097 in logMAR. The mean change in volume of CNV lesions was 47.52%; the mean change in volume of IRF and SRF was 95.32%. Changes in CNV volume were associated with greater improvements in visual acuity after 1 month ($p<0.05$). Our results showed that the voxelized quantification method had high inter-observer and intra-observer reliability and demonstrated a strong correlation with the semi-automated approach (Pearson correlation coefficient $r=0.93$, $p<0.001$).

Conclusions: Our results suggest that changes in CNV volume are associated with visual outcomes after anti-VEGF therapy. The results demonstrate that this novel voxelized platform can provide reliable and accurate CNV volume quantification, which could aid in the monitoring of disease progression, ultimately leading to better patient outcomes.

Poster No.: PO-536

A Rare Case of Radiation Retinopathy Presenting as Central Foveal Retinal Angiomatous Proliferation in a Young Filipino After Radiotherapy for Salivary Gland Adenocarcinoma

*First Author: Sharmaine Anjanette **NG***
*Co-Author(s): Marie Joan **LOY***

Purpose: To describe a case of radiation retinopathy (RR) presenting as central foveal retinal angiomatous proliferation (RAP) in a young Filipino.

Methods: A 46-year-old non-hypertensive, non-diabetic, known case of right salivary gland adenocarcinoma stage IVC underwent external beam radiotherapy without a barrier (25 sessions) followed by Cisplatin and Docetaxel chemotherapy (18 cycles), presented with the two-year progressive blurring of vision and metamorphopsia of the right eye noted few months after completing radiotherapy.

Results: Best-corrected visual acuity (BCVA) of 20/63 with central negative scotoma and metamorphopsia on the right. On dilated fundus examination, a 2-disc diameter (DD) blister-like elevation with 1/4 DD central subfoveal hemorrhage was noted. Fluorescein angiography showed a hyperfluorescent dot which increases in size and intensity, and leakage of undetermined source. Optical coherency tomography (OCT) showed intraretinal hyporeflective cystic spaces, optically clear space between the NSR and RPE, and a focal hyperreflective area with posterior shadowing which corresponds to the reddish patch. OCT Angiography showed abnormal vessels with high flow

signals seen in the deep capillary plexus and avascular layer. The patient underwent three monthly intravitreal injections of aflibercept. BCVA improved from 20/63 to 20/32 one month after the third injection. Repeat OCT done one month after the third injection showed good foveal contour, well-delineated retinal layers, and resolution of intraretinal and subretinal hyporeflective space.

Conclusions: RR in the form of RAP may develop as a rare complication of radiation retinopathy. A high index of suspicion, multimodal imaging, and timely management can be sight-saving among these patients.

Poster No.: PO-551

Adiponectin Receptor Activator (Arctiin) Promotes Treg Cell Differentiation and Ameliorates Experimental Autoimmune Uveitis

*First Author: Xiaoe **FAN***

Purpose: we investigated the effects of an adiponectin receptor activator on Treg cell fate in vitro and in vivo, and identified its precise molecular mechanisms in the context of EAU.

Methods: Collect plasma and peripheral blood mononuclear cell (PBMC) samples from VKH patients and investigate the expression levels of adiponectin and its receptor in uveitis. Induce experimental autoimmune uveitis (EAU) and administer arctiin at different stages of the disease. Induce differentiation of CD4+ T cells into Th1, Th17, and Treg cells in vitro and treat them with adiponectin and its receptor activator to investigate the effect of receptor activation on T cell differentiation. Finally, sort Treg cells in vitro and in vivo, and use techniques such as transcriptomics, metabolomics, protein chips, and ChIP-seq to explore the molecular mechanisms by which adiponectin receptor activation regulates Treg cell fate.

Results: The plasma levels of adiponectin were decreased in VKH patients, and the expression of adiponectin receptors was decreased in peripheral blood Treg cells. In the EAU model, injection of adiponectin receptor activator (arctiin) significantly reduced the clinical score of EAU. In the T cell differentiation experiment in vitro, adiponectin receptor activator (arctiin) significantly promoted the differentiation of Treg cells. Transcriptomics and metabolomics analysis showed that adiponectin and its receptor activator (arctiin) could activate the PPAR-γ signaling pathway of Treg cells.

Conclusions: The signaling pathway regulated by adiponectin and its receptor, by activating the adiponectin receptor and regulating mitochondrial fatty acid metabolism-driven oxidative phosphorylation, can promote the differentiation and function of Treg cells.

Poster No.: PO-543

Alteration of Perivascular Reflectivity on Optical Coherence Tomography of Branched Retinal Vein Obstruction

*First Author: Boeen **HWANG***
*Co-Author(s): Young-hoon **PARK***

Purpose: This study aimed to evaluate perivascular reflectivity in patients with branched retinal vascular obstruction (BRVO) using en-face optical coherence tomography (OCT).

Methods: The study retrospectively analyzed 45 patients with recurrent BRVO, 30 with indolent BRVO, and 45 age- and sex-matched controls. Using a 3.0 × 3.0-mm deep capillary plexus slab on macular scans, OCT angiography (OCTA) and structural en-face OCT scans were divided into four quadrants. Obstructive quadrants of OCTA scans were binarized using a threshold value of mean + 2 standard deviation. The selected area of high signal strength (HSS) was applied to the structural en-face OCT scans, and the corrected mean perivascular reflectivity was calculated as the mean reflectivity on the HSS area/overall en-face OCT mean reflectivity. The same procedure was performed in the quadrants of the matched controls. Regression analysis was conducted on several factors possibly associated with corrected perivascular reflectivity.

Results: The perivascular reflectivity in the obstructive BRVO quadrant was significantly higher than in the indolent BRVO and control quadrants (P=0.009, P=0.003). Both univariate and multivariate regression analyses showed a significant correlation between the average number of intravitreal injections per year and refractive errors and image binarization threshold and perivascular reflectivity (P=0.011, 0.013, <0.001/univariate; 0.007, 0.041, 0.005/multivariate, respectively).

Conclusions: En-face OCT scans of the deep capillary plexus slab revealed higher perivascular reflectivity in recurrent BRVO eyes than in indolent BRVO and control eyes. The results also indicate a remarkable correlation between perivascular reflectivity and the average number of intravitreal injections, suggesting a link to recurrence rates.

Poster No.: PO-524

Association of Hemoglobin and Glycated Hemoglobin Levels With Severity of Diabetic Retinopathy

*First Author: Ashma **KC***

Purpose: To study the association of Hb and HbA1c with severity of diabetic retinopathy.

Methods: This hospital-based, cross-sectional observational study was conducted during a period of 12 months from January 2019 to January 2020.

Diagnosed cases of Diabetic Retinopathy were evaluated for severity with associated Hemoglobin and Glycated Hemoglobin levels.

Results: There were a total of 112 patients enrolled in the study. The mean age of the patients was 56.8 (SD ± 7.63) years with male to female ratio of 2:1. Of the total, 89.4% had non proliferative diabetic retinopathy and rest had proliferative and advanced retinopathy. Higher hemoglobin (more than 12 g/dl, P<0.05) was found to be associated with milder forms of DR. Higher levels of HbA1c (more than 9%, P<0.05) were associated with eyes with more severe forms of diabetic retinopathy. Lower Hb to HbA1c ratios (less than1.28, P<0.05) were associated with severe forms of DR.

Conclusions: HbA1c levels remain one of the most reliable predictors of glycemic control and are likely to remain the same for many years to come. But as our study points out, hemoglobin is also equally important to understand the disease process. Hemoglobin should also be considered while managing cases of diabetic retinopathy along with HbA1c. This might better aid in devising proper management and follow-up in patients by identifying the eyes "at risk" of deterioration earlier.

Poster No.: PO-511

Asymptomatic and Symptomatic Features and Genotypes in Familial Exudative Vitreoretinopathy

*First Author: Yonghoon **KIM***
*Co-Author(s): Kwangsic **JOO**, Se Joon **WOO***

Purpose: To investigate the genetic and clinical characteristics of Korean patients with familial exudative vitreoretinopathy (FEVR) (that has been genetically confirmed).

Methods: Conducted across three tertiary hospitals, this retrospective multicenter study included patients with clinically and genetically confirmed FEVR. Pathogenic mutations in the genes FZD4, NDP, LRP5, TSPAN12, ZNF408, KIF11, CTNNA1 were identified through targeted genetic panel or whole exome sequencing. The clinical features and staging of FEVR were analyzed according to retinal vasculature stage, and the presence of exudate and retinal detachment. The genotype-phenotype correlation was also analyzed.

Results: A total of 112 eyes from 57 patients with FEVR were included in the study. The highest number of mutations, 23, was detected in FZD4 (40.4%), followed by LRP5 (24.6%) with 14 mutations. TSAPN12 and ZNF408 had 8 and 4 mutations, respectively, while KIF11, CTNNA1 each had 3, and NDP had 2. Although mutational hot spots were not observed in most genes, p.His69Tyr, p.Met105Val and p.Pro251Arg in FZD4, p.Arg870Trp in LRP5, p.Cys83Arg in TSPAN12 and novel variant, p.Asn257Ser in CTNNA1 were repeatedly detected. There were no differences in staging or clinical severity based on the types of gene or mutation. Even within the same mutation, disease severity was variable, highlighting phenotypic heterogeneity.

Conclusions: The predominant causative genes for FEVR were FZD4, LRP5 and TSPAN12, accounting for 79% of identified mutations in Koreans. Novel variants and clinical manifestations in our study contribute to a deeper understanding of the genetic landscape of FEVR.

Poster No.: PO-517

Changes of Retinal Function Using Multifocal Electroretinogram in Chronic Central Serous Chorioretinopathy Patients After Intravitreal Anti-vascular Endothelial Growth Factor Injection

*First Author: Jong Jin **JUNG***
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Purpose: To evaluate the anatomical and functional changes in chronic central serous chorioretinopathy (CSC) patients after intravitreal anti-vascular endothelial growth factor (VEGF) injection, and to compare the functional outcomes with who did not received anti-VEGF injection.

Methods: In a prospective interventional study, 40 eyes (40 patients) with idiopathic CSC at least 3 months in duration were included. Twenty patients (Injection Group) underwent intravitreal bevacizumab (IVB) injection, and conservative treatment was applied for the remaining 20 patients (Observation Group). Optical coherence tomography (OCT) was performed, and central retinal thickness (CRT) and presence of subretinal fluid (SRF) was evaluated. A multifocal electroretinogram (mfERG) was also performed to compare the changes in retinal function between the two groups.

Results: There were no differences between the two groups regarding age, gender, and initial BCVA. After 6 months, 17 patients in the Observation Group and 19 in the Injection Group showed complete resolution of subretinal fluid (SRF). The mean time from baseline to initial complete resolution of SRF was 3.45±2.28 months in the Observation Group and 1.62±0.51 months in the Injection Group (p<0.001). The mean CRT was significantly thinner in Injection Group after 1 month and 3 months (p<0.001, p=0.002). However, the functional status using mfERG showed no significant difference between the two groups for 6 months.

Conclusions: These results suggested that intravitreal bevacizumab injection revealed a beneficial effect for rapid resolution of serous detachment in chronic CSC patients. However, bevacizumab injection did not result in functional improvement of the retina. Further study

in chronic CSC patients with various anti-VEGF agents for a long observation period is necessary.

Poster No.: PO-510

Choroidal Changes in an Unusual Case of Acute Posterior Multifocal Placoid Pigment Epitheliopathy

*First Author: Sandeep **KUMAR***
*Co-Author(s): Charu **GUPTA***

Purpose: To document a case of an elderly female with clinical characteristics of a syndrome resembling acute posterior multifocal placoid pigment epitheliopathy (APMPPE) in adults with a different clinical course and prognosis.

Methods: The case is an observational case report. Multimodal imaging (MMI) was performed and analysed. With the aid of SS-OCTA, we were able to document bilateral choroidal hypoperfusion and subsequent reperfusion post-treatment. The case report seconds the possibility of choriocapillaris hypoperfusion being the key event, with RPE atrophy being the sequel of changes at inner choroidal levels.

Results: An 81-year-old diabetic and hypertensive lady, presented with a complaint of floaters followed by central scotoma in both eyes (BE) for 7 days. The best-corrected vision was 20/100 in the right eye (RE) and 20/400 in the left eye (LE). Multiple yellow-white placoid lesions in the macular area were noted. SS-OCTA showed significant flow void areas at the choriocapillaris level. Investigations revealed increased Anti-Nuclear Antibody (ANA) titre 1:160 with negative Rheumatoid Factor. Half-dose IV methylprednisolone (500mg x 3 days) was started followed by a fast taper of oral systemic steroids over 10 days. After 8 weeks of treatment, BE improved to 20/40. The flow void areas also showed improved perfusion in the choriocapillaris layer on SS-OCTA.

Conclusions: Our case employs MMI to display the sequence of structural changes from presentation to clinical resolution. It also supports the likelihood of choriocapillaris hypoperfusion being the primary event in APMPPE. MMI gave an enhanced understanding of the aetiology and disease progression of the disease through to clinical resolution.

Poster No.: PO-533

Choroidal and Retinal Thickness Changes Following Treatment of Polypoidal Choroidal Vasculopathy

*First Author: Colin **TAN***

Purpose: To compare changes in retinal and choroidal parameters following treatment of patients with polypoidal choroidal vasculopathy (PCV).

Methods: Review of 32 consecutive patients diagnosed with PCV. 18 patients were treated with photodynamic therapy (PDT) combined with anti-vascular endothelial growth factor (anti-VEGF) agents, while 14 patients were treated with anti-VEGF monotherapy. The optical coherence tomography (OCT) scans were reviewed on presentation and following a course of treatment.

Results: Visual acuity improved following treatment in all patients. Among all patients, the mean central choroidal thickness (CT) on presentation was 248.4 µm, and decreased to 224.8 µm (p=0.141) after treatment with either PDT or anti-VEGF. The decrease in CT in the group treated with PDT combined with anti-VEGF was larger compared to the group treated with anti-VEGF monotherapy (55.4 µm vs. 0.25 µm, p=0.072). Central subfield retina thickness was 439.3 µm at baseline compared to 303.7 µm after treatment. Retinal thickness decreased by 200.1 µm in the combination therapy group compared to 87.3 µm in the anti-VEGF group. Polyp regression was achieved in 90% of patients in the PDT group, compared to 33.3% of patients receiving anti-VEGF.

Conclusions: There is a greater decrease in both choroidal and retinal thickness following treatment of PCV with PDT combined with anti-VEGF, compared to anti-VEGF monotherapy.

Poster No.: PO-537

Cilioretinal Artery-Sparing Central Retinal Artery Occlusion as the Primary Manifestation of Anti-phospholipid Antibody Syndrome in a Young Male

*First Author: Sharmaine Anjanette **NG***
*Co-Author(s): Buenjim **MARIANO***

Purpose: To present a case of central retinal artery occlusion (CRAO) in a young patient found to have anti-phospholipid antibody syndrome (APAS).

Methods: A 27-year-old male, non-smoker with no known comorbidities consulted for sudden painless profound vision loss of the right eye for 9 hours. The patient denied any medication use, past ocular trauma, bone fracture, or surgery.

Results: Best-corrected visual acuity (BCVA) was 20/500 in the right eye and 20/20 in the left eye. Poor color vision, 5 mm sluggishly reactive to light dilated pupil, and positive reverse afferent pupillary defect were observed on the right eye. Dilated fundus examination showed a pale white mottled retina sparing an area nasal to the macula supplied by the cilioretinal artery, box-carring of the arterioles, and macular cherry-red spot. Fluorescein angiography showed early filling of the cilioretinal artery and delayed central retinal arterial filling. Optical coherence tomography angiography showed an absence of flow signal at the superficial and deep capillary plexus. CRAO was diagnosed in an otherwise healthy young

male. Management encompassed ocular massage, hyperventilation into a paper bag, oral acetazolamide, topical beta-blocker, and oral anticoagulant. Systemic work-ups were normal except for the presence of lupus anticoagulant and protein S deficiency. BCVA of the right eye improved to 20/20 after 5 days, with shallow central and paracentral defects seen on visual field analysis.

Conclusions: CRAO in young patients has diverse causes, which necessitates wide-range systemic work-ups. Standardized treatment for CRAO remains undefined. A high index of suspicion with the ophthalmologic findings of CRAO and early treatment may be sight-saving to patients.

Poster No.: PO-549

Clinical Efficacy and Safety of Suprachoroidal Triamcinolone Acetonide in Resistant Diabetic Macular Edema

*First Author: Ambreen **GUL***

Purpose: The current study is being conducted to determine the clinical efficacy and safety of suprachoroidal triamcinolone acetonide in cases of resistant diabetic macular edema.

Methods: It is an ongoing prospective interventional study. 30 Phakic eyes of type 1 and type 2 diabetics aged 25-80 years with resistant diabetic macular edema with CST of >300µm and BCVA of ≤ 6/9 (0.20 Log MAR) after 3 or more injections of intravitreal anti-VEGF agents were enrolled in the study. Suprachoroidal triamcinolone acetonide was given 3.5 mm away from the limbus in a dosage of 4mg in 0.1ml in suprachoroidal space using a 1cc 30G disposable ready-to-go syringe. Post-injection antibiotics and steroid drops were given four times a day for 1 week. Patients were followed at 1st week, 1st month and 3rd month for IOP, cataract grading, BCVA and CST on OCT.

Results: The mean age of patients was 60.67±9.25 SD years. There were 66.7% males and 33.3% females. The mean pre-injection BCVA was 0.837±0.17 SD by Log MAR Chart. The mean post-injection BCVA in the third month was 0.493±0.12 SD. Changes in BCVA were statistically significant (p=0.00). Improvement in BCVA was seen in 28 patients (93.3%). The mean pre-injection CST was 940µm ± 5.76 SD. The mean post-injection CST at third month was 305µm ± 3.27 SD. Changes in CST were statistically significant (p=0.0001). Improvement in CST was seen in 30 patients (100%).

Conclusions: A single injection of Suprachoroidal triamcinolone acetonide is safe and effective leading to anatomical and functional improvement in resistant diabetic macular edema with no recurrence for up to 3 months.

Poster No.: PO-523

Clinical Features of Bilateral Involvement of Myopic Choroidal Neovascularization

*First Author: Soo Hyun **LIM***
*Co-Author(s): Un Chul **PARK***

Purpose: To investigate the clinical characteristics and potential risk factors associated with the bilateral development of myopic choroidal neovascularization (mCNV).

Methods: This retrospective study included highly myopic patients diagnosed with treatment-naïve unilateral mCNV and who were followed up for ≥3 years. Patients with bilateral presence of mCNV or foveal atrophic or scar change in any eyes at first presentation were excluded. Medical records were reviewed to investigate the mCNV development in contralateral eye and compare clinical features.

Results: Ninety-five patients were included, and the mean age at the time of mCNV development was 55.0±13.4 years. During a mean period of 95.4±38.6 months, the occurrence of mCNV in the contralateral eye was observed in 21 patients (22.1%). The mean time interval of mCNV development between eyes was 4.3 years, and the cumulative incidence of mCNV in contralateral eyes at 3, 5, and 10 years were 6.3%, 15.0%, and 28.5%, respectively. The inter-ocular difference in axial length (AXL) was observed only in the unilateral group (p=0.012), and both eyes in the unilateral group had significantly shorter AXL than eyes in the bilateral group. Similarly, eyes in the bilateral group had thinner subfoveal choroids than eyes in the unilateral group. Development of mCNV-related macular atrophy was comparable between unilateral and bilateral groups.

Conclusions: Development of mCNV in the second eye is not an uncommon finding during long-term follow-up. Patients with bilateral mCNV had longer eyes and thinner subfoveal choroids with less inter-ocular difference compared to those with unilateral mCNV.

Poster No.: PO-541

Comparative Study of Topical Steroids vs Nonsteroidal Anti-inflammatory Drugs to Control Post-cataract Surgery

*First Author: Hafiz Muhammad Jahan **ZAIB***
*Co-Author(s): Amina **KHALID***

Purpose: To compare topical steroids versus non-steroidal anti-inflammatory drugs to control post-cataract surgery macular edema.

Methods: This study was conducted from 1st July 2022 to 31st December 2022. Forty patients who had undergone cataract surgery were selected for this study. Baseline features were recorded once informed consent was signed by patients. Patients were divided

into two groups: Group S (n = 20) was given 1% prednisone eye drops for 14 days, while Group N (n = 20) was given 0.1% nepafenac acid eye drops for 14 days. Thirty days after surgery, central macular thickness, using OCT, was assessed and documented in both groups. Data was analyzed by SPSS 21.

Results: Forty patients (20 each in Groups S and N) were part of this RCT with a mean age of 44.02 ± 6.08 years. 60.00% (24) of study participants were male, while 40.00% (16) were females. The mean pre-operative CMT difference between the two groups was statistically insignificant. Post-operative CMT was significantly lower in group N as compared to group S [243.00 ± 21.71µm vs 223.90 ± 17.52µm; p = 0.004]. The frequency of post-operative ME was lower in Group N than in Group S [35.00% (7) vs 15.00% (3); p = 0.144].

Conclusions: Topical eye drops containing NSAIDs and steroids are useful to control post-cataract surgery macular edema, but NSAIDs drops have better efficacy in controlling post-cataract surgery macular edema.

Poster No.: PO-506

Compounded Risks: Cataracts and Diabetic Retinopathy in the Context of Escalating Diabetic Macular Edema Severity

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Purpose: The primary objective of this research is to evaluate the increasing incidence rates of cataracts and diabetic retinopathy, taking into account the escalating severity of diabetic macula edema (DME) among patients.

Methods: Utilizing a retrospective cross-sectional design, this study reviewed the medical records of 85 eyes from 61 patients. Eyes with DME were considered for inclusion, while eyes with histories of intravitreal injections in the preceding three months, other forms of maculopathy, or uveitis were systematically excluded. Optical coherence tomography (OCT) was deployed to obtain precise measurements of macular thickness. The primary outcomes of this study are visual acuity, central macular thickness (CMT), and lens state. The secondary outcome is the degree of diabetic retinopathy. The data were analyzed through observational techniques, using Microsoft Excel as the primary tool for statistical evaluation.

Results: In the group of eyes with DME, 61% were classified under proliferative diabetic retinopathy (PDR) (mean CMT 503.96). Among these, 69% were afflicted with cataracts, and 31% were pseudophakic. Another 39% fell under non-proliferative diabetic retinopathy (NPDR) (mean CMT 473.36), with cataracts present in 67% and pseudophakic in 33%.

Conclusions: The study concludes that there is a notable escalation in the incidence of cataracts in eyes identified with PDR, suggesting a pressing need for comprehensive ophthalmic evaluation and targeted therapeutic strategies in these patients.

Poster No.: PO-546

Effect of Intravitreal Bevacizumab Injection on Macular Thickness and Proangiogenic Biomarkers in Serum and Vitreous of Patients With Diabetic Macular Edema

*First Author: Tayyaba **MALIK***

Purpose: To evaluate diabetic macular-edema (DME) patients for the effect of intravitreal bevacizumab (IVB) injection on macular thickness and proangiogenic biomarkers in serum and vitreous.

Methods: Forty DME patients were analyzed for macular thickness (MT) using OCT. Twelve proangiogenic biomarkers in serum and vitreous were analyzed before and after IVB. The xMAP flow cytometry technique was used to analyze these analytes.

Results: A significant decrease in MT with vitreal vascular endothelial growth factor-A (VEGF-A) was observed as expected after IVB, while serum VEGF-A did not follow a decreasing trend in contrast to VEGF-C, which decreased both in serum and vitreous. Other vitreal factors like bone morphogenetic protein-9 (BMP9) and fibroblast growth factor (FGF) were also significantly decreased, while endothelial growth factor (EGF) increased following IVB. Before IVB, significant negative correlations were vitreous BMP9 with serum FGF, vitreous human growth factor (HGF) and interleukin-8 (IL-8) with serum endothelin, and vitreous and serum FGF and serum placental growth factor (PLGF) with EGF. After IVB, negative correlations in serum vs. vitreous were found for both HGF and PLGF with BMP9, and angiopoietin with FGF. Cube average thickness was negatively correlated with serum FGF and positively correlated with vitreous PLGF and endothelin.

Conclusions: Vascular endothelial growth factors are not the only factors that cause macular edema in diabetic patients. The effect of IVB on different proangiogenic biomarkers indicated a complex interplay of other factors in DME. In patients not responding to IVB may be looked for other factors responsible for DME.

Poster No.: PO-519

Efficacy and Safety of Biosimilar Ranibizumab Versus Innovator Ranibizumab in Neovascular (Wet) Age Related Macular Degeneration: A Double-blind, Randomized, Multicenter, Phase III Study

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Purpose: The present study compared the efficacy, safety, and immunogenicity of biosimilar ranibizumab with innovator ranibizumab in patients with neovascular (wet) age-related macular degeneration (AMD).

Methods: This was a prospective, multicenter, double-blind, randomized controlled trial. Eligible patients were randomized (3:1) to receive intravitreal injection of 0.5 mg (0.05 ml) of biosimilar ranibizumab or innovator ranibizumab every 4 weeks for 12 weeks. The primary endpoint was the proportion of patients who lost <15 letters in best-corrected visual acuity (BCVA) in the study eye. Secondary endpoints were a gain of ≥15 letters in BCVA, mean change in BCVA, and mean change in central subfoveal thickness (CSFT) on optical imaging. Safety was assessed by incidence of adverse events, clinical and ophthalmic examination, and laboratory parameters. The immunogenicity assessment was based on anti-ranibizumab antibodies.

Results: Overall, 141/152 (92.8%) patients completed the study. At week 12, patients with loss of <15 letters were 100% (n=106; 90% CI: 97.29–100) in the biosimilar arm and 100% (n=35; 90% CI: 91.81–100) in the innovator arm. In the biosimilar vs innovator arm, the percentage of patients who gain ≥15 letters was 29.8% vs 23.7%, respectively (p=0.4785). Statistically significant improvement in mean BCVA (biosimilar:11.6; innovator:12.9) and mean CSFT (biosimilar: −76.8; innovator: −73.1) were noted at week 12 compared with baseline in both arms (p<0.0001, each). Biosimilar ranibizumab and innovator ranibizumab demonstrated comparable safety, and no subject expressed anti-ranibizumab antibody in either arm.

Conclusions: Biosimilar ranibizumab was comparable to innovator ranibizumab in terms of efficacy, safety, and immunogenicity in patients with neovascular AMD.

Poster No.: PO-526

Fundus Auto Fluorescence and Spectral Domain Optical Coherence Tomography in Early Detection of Hydroxychloroquine Retinal Toxicity

*First Author: Meera **NASRIN***

Purpose: The aim of this study is to determine the role of spectral domain optical coherence tomography (SD-OCT) and Fundus autofluorescence (FAF) in diagnosing preclinical Hydroxychloroquine retinal toxicity.

Methods: Study design: Descriptive Cross-sectional study. Study period: June 2022 to February 2023. Sample size: 70. Consent has been taken from the subjects who fulfilled the eligibility criteria. A history was taken. Preliminary ophthalmic examination has been done, such as BCVA, anterior segment examination, fundus examination, SD OCT-macular cube -macular cube 512x128 scan, HD OCT HD 9-mm 1 line scan, FAF- Blue fluorescence (SW-FAF).

Results: 70 patients were enrolled in the study. We found that there is no significant thinning found in central macular thickness, parafoveal macular thickness and perifoveal macular thickness in macular cube scan. IS-OS junction interruption was not found in the HD line scan, parafoveal increased autofluorescence was also not seen in FAF, and no correlation was found with the duration of the treatment and cumulative dose of HCQ. In patients who have been treated with HCQ for a mean duration of 6 years and with a mean cumulative dose of 635 grams.

Conclusions: Screening with only SD-OCT and FAF can potentially underdiagnose the subclinical hydroxychloroquine maculopathy, when compared to studies that use a combination of SD-OCT, FAF, mfERG, and Visual field analysis.

Poster No.: PO-505

Intravitreal Brolucizumab for Chronic Central Serous Chorioretinopathy Without Choroidal Neovascular Membrane – A Pilot Study

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*Co-Author(s): R **NARAYANAN***

Purpose: To study the role of intravitreal brolucizumab in the management of persistent macular fluid in chronic central serous chorioretinopathy (CSCR) without choroidal neovascular membrane (CNVM).

Methods: A retrospective, non-comparative, consecutive case series of eyes with chronic CSCR with persistent macular fluid for ≥ 3 months without CNVM. Intravitreal brolucizumab 6mg/0.05ml was administered in all eyes. The primary outcome measure was the resolution of intraretinal (IRF) and/or subretinal fluid (SRF) on OCT. Secondary outcome measures included a reduction in central macular thickness (CMT), subfoveal choroidal thickness (SFCT), and improvement in best-corrected visual acuity (BCVA).

Results: Five eyes of 4 patients with chronic CSCR were included. All eyes showed complete resolution of SRF 1 month following injection of intravitreal brolucizumab. IRF predominantly resolved with minimal residual IRF in 2 eyes. BCVA was stable in 3 eyes, and 2 eyes showed improvement. CMT and SFCT reduced following injection in all cases. No episodes

of intraocular inflammation or serious adverse effects were noted in any of the eyes.

Conclusions: Intravitreal brolucizumab is effective in the reduction of persistent macular fluid in chronic CSCR without CNVM. Long-term follow-up data is required to study recurrence and adverse effect profiles.

Poster No.: PO-525

Intravitreal Panitumumab and Retinal Pigment Epithelium Proliferation in Laser-Induced Retinal Degeneration in Rabbits

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Purpose: To examine the effect of intravitreally applied epidermal growth factor (EGF) receptor blocker panitumumab on the proliferation of retinal pigment epithelium cells (RPE) in an experimental model of localized retinal degeneration.

Methods: The experimental study included rabbits (age:2-3 months; weight: 2.5-3 kg), the right eyes of which received two retinal argon laser coagulation spots (500 mWatt; diameter:100µm; duration:0.5s), applied with an interval of two minutes at the same location. Five times in two-day intervals, the rabbits of the study group received intravitreal injections of 1 mg panitumumab (0.10 mL), and the rabbits of the control group received intravitreal injections of 0.10 mL Ringer's solution. The animals were re-examined by fundus photography and optical coherence tomography of the laser spot.

Results: The study included 10 rabbits (study group: 6 animals; control group: 4 animals). The area of the laser-induced spot of depigmentation and hyperpigmentation combined did not vary significantly between both groups (1.74±1.65 mm^2 versus 2.09±0.60 mm^2; P=0.26). The area of hyperpigmentation as a surrogate of RPE proliferation (0.21±0.13 mm^2 versus 1.45±1.75 mm^2; P=0.038) and the ratio of the hyperpigmented area to the combined depigmented and hyperpigmented area (0.12±0.08 versus 0.67±0.27 mm^2; P=0.01) were smaller in the study group than in the control group. Both groups did not differ significantly in signs of intraocular inflammation.

Conclusions: Repeatedly intravitreally applied panitumumab was intraocularly well tolerated and was associated with reduced subretinal hyperpigmentation as a sign of reduced RPE proliferation in rabbits with acute, laser-induced retinal degeneration.

Poster No.: PO-518

Intravitreal Ranibizumab Injections Reduce Retinal Venular Calibre in Patients With Diabetic Macular Edema

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Purpose: To assess changes in retinal vascular calibre after two monthly intravitreal ranibizumab treatments in patients with diabetic macular oedema (DME).

Methods: Eighty-eight eyes with centre-involved DME were recruited into a prospective study. All patients received three "loading dose" ranibizumab injections, at baseline, month 1 and month 2. At the baseline and month 2 visits, central retinal artery equivalent (CRAE) and central retinal vein equivalent (CRVE) were calculated in both treated (study) eyes as well as non-treated, fellow (non-study) eyes. The artery-vein ratio was also calculated as CRAE/ CRVE.

Results: Fifty-one of 88 study eyes and 42 of 88 non-study eyes had gradable retinal photographs at both the baseline and month 2 visits. At month 2, there were statistically significant changes in CRVE, -8.34µm, p<0.001, (95% Confidence interval -4.93, -11.76 µm) and AVR 0.17 (95% CI 0.06, 0.28), p=0.002 within study eyes. Non-study eyes showed no significant change in CRVE, -0.96 µm, (95% CI -4.23,2.32 µm), p= 0.35 or AVR, 0 (95%CI -0.01, 0.01), p= 1.000. Similarly, there was no change in CRAE within study eyes, -1.89 (95% CI -3.93, 0.15), p= 0.07) or non-study eyes, -0.94, (95% CI -2.92, 1.05 µm), p= 0.34.

Conclusions: Ranibizumab treatment was associated with a significant change in retinal venular diameter and the artery-to-vein ratio in treated eyes of patients with DME. Our findings suggest that the mechanism by which ranibizumab reduces DME may, in part, be related to changes in retinal venular calibre.

Poster No.: PO-507

Intravitreal Tissue Plasminogen Activator and Gas Injection in a Case of Sub-macular Haemorrhage With Choroidal Rupture Post Blunt Trauma

*First Author: Stuti **ASTIR***
*Co-Author(s): Charu **GUPTA**, Daraius **SHROFF***

Purpose: To report the effect of intravitreal tissue plasminogen activator (TPA) and C3f8 gas injection in a case of subretinal haemorrhage and choroidal rupture post blunt trauma.

Methods: An 11-year-old boy presented with a sudden loss of vision one day in his left eye post blunt trauma. His BCVA was 6/6, N6 in the right eye and 6/36p, N18p in the left eye. Fundus examination of the left eye revealed choroidal rupture with subretinal

haemorrhage. OCT confirmed sub-retinal haemorrhage in the left eye. He underwent intravitreal TPA (50 microgram) and C3F8 gas 0.5cc with AC paracentesis. The patient was advised prone positioning post-procedure. Post-operatively on the next day, the subretinal haemorrhage was displaced inferiorly. At one month post-procedure, OCT showed a completely resolved subretinal haemorrhage.

Results: Subretinal haemorrhage was completely displaced at 1 month post-procedure. OCT showed resolved subretinal haemorrhage with the normal restoration of anatomy.

Conclusions: Intravitreal TPA with gas injection is used to displace subretinal haemorrhage at the macula. It results in complete displacement and normal restoration of anatomy. It is a minimally invasive method compared to subretinal route, which can lead to retinotomy, haemorrhage from retinal vessels or an inadvertent injection of TPA in the wrong plane.

Poster No.: PO-513

Intravitreal Triamcinolone Acetonide (IVTA) Versus Anti-vascular Endothelial Growth Factor (Anti-VEGF) in Management of Diabetic Macular Edema (DME)

*First Author: Ni Putu **LESTARI***
*Co-Author(s): Ni Luh Diah **PANTJAWATI***

Purpose: This study aims to evaluate the efficacy of intravitreal triamcinolone acetonide (IVTA) versus anti-vascular endothelial growth factor (ANTI-VEGF) in the management of diabetic macular edema (DME).

Methods: A comparative prospective cohort study involving 128 eyes of the study subject with diabetic retinopathy was conducted in Bali Mandara Eye Hospital from May 2022 to May 2023. The study subjects were divided into two groups and received anti-VEGF injections or intravitreal triamcinolone acetonide. Central macular thickness was assessed pre- and post-treatment using optical coherence tomography. Comparison of CMT pre-treatment, post-treatment, and reduction of CMT between Avastin (Bevacizumab) and intravitreal triamcinolone acetonide (IV-TCA) was done using Mann Whitney Test with p-value<0.05 considered statistically significant using SPSS version 21 for Windows.

Results: Median pre-treatment CMT was found to be higher in the IVTA group compared with the Avastin group, 332.5 (197-798) vs. 350 (191-865), but not statistically significant (p=0.361). While in median post-treatment CMT, we found quite similar CMT results between the two groups and not statistically different (p=0.08). Last, in the reduction of CMT, we found statistically different levels of CMT reduction between the Avastin and IVTA groups. The median reduction level of CMT was higher in the IVTA group than in the Avastin group (64.50 vs. 10.50).

Conclusions: We found no significant difference between CMT in pre- and post-treatment between groups of DME eyes treated with IVTA and Avastin. However, a significantly different reduction of CMT was found to be higher in the IVTA group compared with the Avastin group.

Poster No.: PO-545

Jalili Syndrome – A Rare Association of Cone Rod Dystrophy

*First Author: Noor **UL AIN***

Purpose: Presenting a rare association of cone-rod dystrophy - Jalili syndrome and its systemic association with amelogenesis imperfecta.

Methods: A 30-year-old male, resident of North Pakistan, presented to us with a complaint of a gradual decrease of vision in both eyes since childhood. On examination, the vision was 6/60 in the right eye, and the counting finger was in the left eye. The anterior segment was within normal limits. Ophthalmoscopy showed tilted oval discs in both eyes. Arteriolar attenuation and bone spicule pigmentation scattered over the retina. Pigmentation was present in the macular area. Large choroidal vessels were visible and macular excavation. A general physical examination showed teeth were yellow in color and distorted in shape, suggesting amelogenesis imperfecta. ERG was done which showed scotopic responses were within upper normal limits in Right Eye & markedly reduced in the left eye. Photopic responses were reduced in both eyes.

Results: Based on history, clinical examination and relevant investigation, we made a diagnosis of JALILI SYNDROME.

Conclusions: Although rod-cone and cone-rod dystrophies are quite common in the subcontinent region, we report the first case of Jalili Syndrome from this region. This association must be kept in mind while dealing with such dystrophies.

Poster No.: PO-600

LECT2 Ameliorates Blood–Retinal Barrier Impairment Secondary to Diabetes via Activation of the Tie2/Akt/mTOR Signaling Pathway

*First Author: Yuanjun **QIN***
*Co-Author(s): Xufang **SUN***

Purpose: The effect of leukocyte cell-derived chemotaxin 2 (LECT2) on diabetes-induced blood–retinal barrier impairment and the possible underlying mechanism were investigated both in vivo and in vitro.

Methods: Twenty diabetic and 22 nondiabetic eyes were included in this study. Additionally, we established a streptozotocin-induced diabetic mouse

model and observed vascular leakage in mice treated with or without rLECT2 intravitreal injection. The levels of LECT2 and interendothelial junction proteins were analyzed by western blot and/or immunofluorescence. Endothelial junctions in mouse retinas were observed by TEM. Moreover, confluent HRMECs and HUVECs were treated with glucose (0 or 30 mM) in the presence or absence of rLECT2. After treatment, intact cell monolayers were monitored for permeability to 40-kD FITC-dextran. Interendothelial junction targets and Tie2/Akt/mTOR signaling pathway components were investigated by western blot.

Results: In diabetic human and mouse retinas and high-glucose (30 mM)–treated HRMECs and HUVECs, the levels of LECT2 and interendothelial junction proteins were decreased. rLECT2 treatment (80 ng/mL) significantly attenuated the hyperglycemia-induced reduction in endothelial cell barrier function and inhibited the migration and tube formation of HRMECs and HUVECs. In addition, rLECT2 increased the levels of interendothelial junction proteins via activation of the Tie2/Akt/mTOR signaling pathway. Furthermore, intravitreal rLECT2 injections increased the levels of interendothelial junction proteins and reversed diabetes-induced junction disruption.

Conclusions: rLECT2 can increase the levels of interendothelial tight junction proteins through activation of the Tie2/Akt/mTOR signaling pathway and can ameliorate inner blood–retinal barrier impairment secondary to diabetes. LECT2 might be a potential target to prevent the progression of DR.

Poster No.: PO-516

Microvascular Abnormalities in Myopic Retinoschisis: A Case Series and Literature Review

*First Author: Huan **CHEN***
*Co-Author(s): Youxin **CHEN**, Lihui **MENG***

Purpose: To characterize microvascular abnormalities as a kind of myopic complication related to biomechanical stress and to review the ophthalmic literature regarding microvascular abnormalities in myopic retinoschisis (MAMRS).

Methods: Retrospective case series. All patients with MAMRS detected by fluorescein angiography (FA) or optical coherence tomography angiography (OCTA) between March 2017 and January 2022 were reviewed. Data on clinical characteristics, interventions, and clinical courses were collected and analyzed. A literature review was conducted to critically summarize the characteristics of MAMRS and propose suitable therapeutic strategies. The morphologic characteristics of each stage of MAMRS by multimodal imaging and their prognosis after different interventions.

Results: MAMRS lesions were detected in 22 eyes of 17 patients. 21 eyes of 13 patients were reported in the literature. Stage 1 lesion showed a normal appearance on fundus photograph but abnormal microvasculature in the intraretinal layers by FA or OCTA. Stage 2 lesion appeared as saccular aneurysm-like structures with possibly minimal leakage during the late phase in FFA. Stage 3 lesion broke through the internal limiting membrane and was located in the intravitreal cavity. Stage 4 lesion was more aggressive with vitreous hemorrhage or tractional retinal detachment.

Conclusions: Microvascular abnormalities in myopic retinochisis is a relatively rare complication in myopic patients, which could be characterized by a 4-stage evolution by multimodal imaging evaluation.

Poster No.: PO-515

Mild, Late-Onset, and Slowly Progressive Cone Dystrophy in Patients With Homozygous Hypomorphic p.Arg1933Ter Variant in RP1 Gene

*First Author: Seung Woo **CHOI***
*Co-Author(s): Kwangsic **JOO**, Minji **KIM**, Sejoon **LEE***

Purpose: This study aims to describe the clinical phenotypes of a mild form of cone dystrophy seen in patients with a biallelic hypomorphic variant of p.Arg1933Ter in the RP1 gene, which was previously reported to be non-pathogenic in cases of homozygosity.

Methods: Five patients with biallelic p.Arg1933Ter mutations in the RP1 gene were enrolled in this study retrospectively, and the findings of various ophthalmologic examinations, including fundus photography, optical coherence tomography (OCT), OCT angiography, fundus autofluorescence, full-field electroretinogram (ERG), and multifocal ERG, were thoroughly analyzed.

Results: Homozygous variant c.5797C>T encoding p.Arg1933Ter mutation in the RP1 gene was confirmed by targeted panel sequencing in all five patients. The patients' mean age was 60.5 ± 10.5 years, and symptom onset happened between ages 45 and 50, while maintaining 20/30 or better visual acuity until their early forties. The fundus photography and OCT results indicated mild outer retina deterioration, with a relatively intact fundus appearance but loss of the ellipsoid zone and blurring of the interdigitation zone. The ERG findings revealed a range from a slight reduction in cone response to normal, suggesting a mild form of cone dystrophy.

Conclusions: The hypomorphic p.Arg1933Ter variant's phenotype may be pathogenic, emerging at a later age, exhibiting a phenotype of mild cone dystrophy, and resembling the characteristics of occult macular dystrophy.

Poster No.: PO-540

Non-pharmacological Clinical Interventions to Reduce Pain and Anxiety During Intravitreal Injections Procedures

*First Author: Juan Lyn **ANG***
*Co-Author(s): Shyamanga **BOROOAH**, Peter **CACKETT**, Peng Yong **SIM**, Jean Ngee **YAP***

Purpose: Intravitreal injection (IVT) is the most commonly performed procedure in Ophthalmology. IVT-associated pain and anxiety are frequently reported despite analgesia, and this can potentially reduce compliance with treatment. In this prospective study, we wanted to assess the impact of non-pharmacological clinical interventions on IVT-related pain and anxiety. These included the use of patients' choice of music, explanation of the procedure, chatting during the procedure, hand-holding, or a combination of all four interventions.

Methods: Consecutive patients receiving IVTs over a 5-week period were enrolled. Patients with or without the non-pharmacological clinical intervention were interviewed using a 10-item questionnaire, which included anxiety and pain intensity scores. An anxiety score of 0 represented calm, and 10 represented very anxious. The pain intensity score was recorded using the 0 to 10 numeric pain rating scale.

Results: A total of 313 patients participated. There was a significantly lower mean pain score in the intervention group (1.18 ± 1.58) compared to the non-intervention group (1.86 ± 2.05) (P<0.01). There was also a lower mean anxiety score in the intervention group (2.75 ± 2.97) compared to the non-intervention group (3.20 ± 3.12), although this was not statistically significant (P=0.21). Older age, male gender and increased number of previous IVTs were associated with decreased odds of higher anxiety.

Conclusions: When patients are given the choice, non-pharmacological interventions appear to have a positive impact on IVT-associated pain but not anxiety. We would recommend offering patients all of these interventions to improve both patient satisfaction and also compliance with IVT treatment.

Poster No.: PO-521

Novel OCT Biomarkers in Diabetic Macular Edema

*First Author: Pinank **KHARKANDE***

Purpose: A biomarker is a marker of normal or abnormal tissue processes. This helps to evaluate the response of the tissue to the treatment and understand the disease process behind diabetic retinopathy. An attempt can be made to develop novel treatment techniques, thereby preventing vision loss. Detailed research on the OCT-based biomarkers in diabetic retinopathy was done to improve the understanding of their significance in the prognosis of the disease.

Methods: The study is a meta-analysis based on OCT findings seen in diabetic retinopathy resourced from PubMed indexed articles. A concise list of the prognostic factors, both positive and negative, was derived from an exhaustive list of possible variables that can be used to prognosticate the disease process.

Results: Positive prognostic factors were noted to be photoreceptor outer segment, sub-foveal choroidal thickness, bridging retinal processes, and sub-foveal neurosensory detachment. Negative factors, the presence of which is related to poor prognosis, were identified as taut posterior hyaloid membrane, disorganized retinal inner layers, hard exudates, hyper-reflective foci, retinal thickness, intraretinal cystoid spaces, the integrity of the external limiting membrane.

Conclusions: This poster throws light on the OCT-based biomarkers in diabetic retinopathy and helps to improve the understanding of their significance in the prognosis of the disease. The poster can be used for teaching as well as counseling purposes.

Poster No.: PO-532

OCT Features of Disease Activity After Initial Treatment of Neovascular Age-Related Macular Degeneration

*First Author: Colin **TAN***

Purpose: To determine the anatomic and demographic predictors of early persistent disease activity among patients with neovascular age-related macular degeneration (nAMD).

Methods: In a real-world cohort study, 281 consecutive patients with nAMD were reviewed at baseline and after 3 anti-VEGF injections for pre-defined indicators of disease activity. Subretinal fluid, intraretinal cysts and intraretinal fluid were assessed by reading-center certified graders. Multiple logistic regression was performed on demographic and anatomic factors.

Results: At month 3, the best-corrected visual acuity (BCVA) improvement was 0.16 LogMAR for those with no disease activity compared to 0 for patients with persistent activity (p<0.001). The significant risk factors for persistent activity at 3 months were male gender (odds ratio [OR] 0.54, 95% confidence interval [CI] 0.32 – 0.93, p=0.025), intraretinal cysts at baseline (OR 2.95, 95% CI 1.67 – 5.20, p<0.001) and subretinal fluid at baseline (OR 3.17, 95% CI 1.62 – 6.18, p=0.002).

Conclusions: In a real-world study, 66.1% of nAMD patients have persistent disease activity after the initial loading dose, with poorer BCVA compared to those without. Baseline OCT features (intraretinal cysts and subretinal fluid) are useful predictors of persistent disease activity at month 3.

Poster No.: PO-527

Ocular Change Mimicking Inherited Retinal Degeneration As Early Indicators of Hereditary Immunological Disorders

*First Author: Yingwei **WANG***
*Co-Author(s): Qingjiong **ZHANG***

Purpose: To investigate whether retinal degenerative or inflammatory changes can manifest as an initial indicator of hereditary immunological disorders in an eye clinic.

Methods: Variants in 20 known genes attributed to hereditary immunological disorders were selected from in-house exome sequencing data. Potential pathogenic variants were evaluated by multi-step bioinformatics. Pathogenic variants were defined according to ACMG/AMP criteria, confirmed by Sanger sequencing, co-segregation analysis, and consistence with related phenotypes. Clinical data was summarized in detail, especially fundus changes.

Results: In our study, retinopathy was observed as the initial sign in patients who were identified with pathogenic variants in genes related to hereditary. These variants included nonsense variants in MSN, AIRE, and LAMB2, as well as a published pathogenic missense variant in CBL. The ocular manifestation observed in these patients resembled typical retinal changes of inherited retinal degeneration. For instance, patients with a nonsense variant in MSN exhibited retinal changes mimicking exudative vitreoretinopathy, while the remaining patients had retinitis pigmentosa-like retinal changes. During these patient's visits to our eye clinic, no extraocular symptoms or manifestations were observed. Upon reviewing the literature, it was revealed that among the 20 published families that were identified with variants in these four genes and presented with retinopathy, only one had vision problems as the initial symptom.

Conclusions: Our study demonstrates that retinopathy can be the initial and sole presenting sign of hereditary immunological disorders, in contrast to previous understanding, where retinopathy was an accompanying sign of systemic immunological disorders. Recognizing this fact could significantly enhance the clinical management of such patients.

Poster No.: PO-509

Optic Disc Oedema After Injection Brolucizumab for Polypoidal Choroidal Vasculopathy

*First Author: Shishir **VERGHESE***
*Co-Author(s): Verghese **JOSEPH***

Purpose: To report a case of optic disc oedema in a patient with polypoidal choroidal vasculopathy after treatment with injection of brolucizumab.

Methods: Single-centre case report.

Results: A 47-year-old female patient presented with complaints of decreased vision in the left eye. The best-corrected vision in the right eye was 6/6, and the left eye was CF1m. Anterior segment features were unremarkable. The right eye fundus examination was normal, and the left eye revealed subretinal hemorrhage and subretinal fluid with multiple pigment epithelial detachments. Multimodal imaging, which included fundus photo and OCT, revealed features suggestive of polypoidal choroidal vasculopathy. She was advised of a left eye intravitreal injection of brolucizumab three doses six weeks apart. After treatment with 3 doses, her best corrected visual acuity improved to 6/9 in the left eye. However, 2 weeks after the third injection, she presented with complaints of mild visual disturbance. Left eye examination revealed vitritis with optic disc oedema, which was treated with topical and oral steroids and subsided after one week. She was advised of follow-up after 2 weeks.

Conclusions: This case highlights a previously unreported finding of optic disc oedema post-treatment with injection brolucizumab.

Poster No.: PO-529

Paediatric Racemose Hemangioma Presenting With Central Retinal Vein Occlusion

*First Author: Najia **UZAIR***
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Purpose: To report a case of racemose haemangioma presenting with Central retinal vein occlusion (CRVO) in a 12-year-old.

Methods: A healthy 12-year-old male presented with sudden decreased vision in his right eye (OD). Unaided Visual acuity in (OD) was 6/36. Fundus examination OD showed disc swelling and retinal dot and blot haemorrhages in 2 quadrants. (OD) Optical Coherence Tomography (OCT) showed increased central foveal thickness (CFT). Fundus fluorescein angiogram (FFA) and OCT angiography (OCT-A) were done. Magnetic resonance imaging (MRI) brain was advised, which ruled out Wyburn Mason syndrome. The left eye examination was unremarkable. The patient was observed for 2 weeks. Visual acuity improved to 6/24 with a corresponding decrease in the CFT. At 4 weeks follow up, fundus examination revealed persistent disc swelling and dot blot haemorrhages in all 4 quadrants, worsening of visual acuity to 6/36 and increase in CFT on OCT. The patient was advised intravitreal anti-vascular endothelial growth factor (VEGF) injection after ruling out elevated intraocular pressure.

Results: Vision in the right eye improved to 6/12 after 3 weeks of administration of intravitreal injection with a corresponding reduction in the CFT. The patient is being observed for further improvement in vision.

Conclusions: CRVO can be the presenting feature of Retinal Racemose hemangioma, causing sudden decreased vision. Anti-VEGF injections have been investigated as a treatment modality for associated macular edema.

Poster No.: PO-548

Performance of "Treat and Extend" Anti-VEGF Therapies (Aflibercept, Ranibizumab) Used for Diabetic Macular Oedema in West of Scotland at 1 Year

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Purpose: To compare visual acuity (BCVA) and central macular thickness (CMT) outcomes of anti-VEGF therapies subgroups prescribed as "treat and extend".

Methods: We identified 94 eyes; median age 63.7 years (range 44.3 - 83.3). The sample comprised 3 sub-groups based on original prescribed loading doses; 33 eyes were prescribed Aflibercept monthly for 4 months (A4), 29 eyes Aflibercept for 3 months (A3) and 14 eyes Ranibizumab for 3 months. (R3) All groups subsequently received an average of 3 further injections.

Results: The A4 subgroup reported a + 13.8 letter BCVA and -99.4 micron CMT reduction at 1 year compared to base line. The A3 subgroup reported a + 6.7 letter BCVA and -63.9 micron CMT improvement. The R3 subgroup reported a + 9.3 letter BCVA and -93.6 micron CMT improvement. Subgroups A4 & R3 maintained BCVA between treat-extend decision and 1 year (+8.8 letters, + 6.4 letters respectively). The subgroup R3 reported a vision loss (-7.1 letters BCVA) between treat-extend and 1 year. All groups reported anatomical increases in CMT between the treat-extend decision and 1 year.

Conclusions: There is no national or local consensus in Scotland when prescribing first-time IVT for centre–involving diabetic macular oedema. Variation and clinical uncertainty exist between guidance from governing bodies, manufacturers recommendations, European societies, and clinical studies. Our sample demonstrates superior functional and anatomical outcomes at 1 year from loading with 4 monthly Aflibercept injections, then extending with 3 further injections. The BCVA results compare favourably to the DRAKO study at 1 year.

Poster No.: PO-520

Progression Factor of Geographic Atrophy and Visual Acuity in Non-exudative AMD

*First Author: Kiyoung **KIM***
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Purpose: To investigate progression factors associated with geographic atrophy (GA) and analyze its correlation with visual acuity (VA) decline in patients with GA secondary to non-neovascular AMD for GA in the Korean patient cohort.

Methods: We retrospectively reviewed baseline medical records and imaging data from patients with GA using fundus autofluorescence (FAF). Baseline data were collected at a time when visual acuity was 0.3 logMAR, and we analyzed the groups whose visual acuity decreased to 1.0 logMAR and those who did not. Demographic data were collected and GA area, pattern and distance from the fovea were analyzed, including retinal thickness parameters such as GCIPL and outer retinal thickness. The area of GA was measured with semi-automated software.

Results: Overall, 45 eyes of 34 patients were analyzed. The mean age was 79.44 ± 6.46 and, 24 eyes in the VA decline group and 21 eyes in the VA maintain group. The mean follow-up time was 24.15 ± 28.83, and the GA area was 6.281 mm^2. The VA decline group had a higher incidence in female patients (79.4%) and pseudo-drusen (p = 0.0813). The VA decline group had a statistically significant shorter distance from atrophy than the VA maintain group (p = 0.024). In Cox regression analysis, drusen type, GA area, and distance of fovea centre to atrophy (HR 0.68, 95% CI 0.51 – 0.90) were significantly different between the two groups.

Conclusions: Regarding the correlation between GA progression and VA decline, the distance of the fovea centralis to atrophy is thought to be the most predictive factor for faster progression to VA decline.

Poster No.: PO-539

Progression Patterns of Myopic Traction Maculopathy in the Fellow Eye After Pars Plana Vitrectomy of the Primary Eye

*First Author: Kangjie **KONG***
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Purpose: This retrospective study investigated the patterns and risk factors of the progression of myopic traction maculopathy (MTM) of fellow eyes after pars plana vitrectomy (PPV) of primary eyes.

Methods: The study population comprised 153 patients with MTM in both myopic eyes who sequentially underwent PPV (2006-2021). Observation periods were from PPV of the primary eye (baseline) to PPV of the fellow (end). MTM was graded based on optical

coherence tomography (OCT) images and the ATN (atrophy [A], traction [T], and neovascularization [N]) system. An increase in T grade was considered MTM progression.

Results: MTM progressed in 43.8% of fellow eyes during 34.57 ± 34.08 months. The progression of fellow eyes correlated with T grade of primary eyes ($P < 0.001$). Risk factors for the progression of MTM in fellow eyes were primary eyes in T4-T5, age at baseline <60 years, and fellow eyes with partial posterior vitreous detachment (PVD; $P < 0.001$, $P = 0.042$, and $P = 0.002$, respectively). Fellow eyes in T1/T2 at baseline progressed faster compared with those in T0 ($P < 0.001$); the annual rate of progression to T3-T5 of the T0 (T1-T2) groups was 9.98% (24.59%).

Conclusions: Risk factors for the progression of MTM in fellow eyes included PPV when relatively young, primary eye at high T grade, and partial PVD of the fellow eye. Personalized follow-up for fellow eyes should be based on the severity of MTM of both eyes.

Poster No.: PO-547

Purtscher-Like Retinopathy and Paracentral Acute Middle Maculopathy Following Breast Filler Injection

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Purpose: To report a case of bilateral Purtscher-like retinopathy with paracentral acute middle maculopathy (PAMM) following a hyaluronic acid filler injection to the breast with good visual recovery after corticosteroid therapy.

Methods: A 27-year-old lady presented with painless blurring of vision in both eyes for 2 weeks following hyaluronic acid breast filler injections by a non-medical practitioner. She was managed in the medical ward for 2 weeks for diffuse alveolar haemorrhage. The presenting visual acuity was counting fingers in both eyes. Dilated fundus examination showed tortuous vessels, concentric rim of retinal whitening (pseudo-cherry-red spot), Purtscher's flecken, generalised cotton-wool spots and flame-shaped haemorrhages in all retinal quadrants in both eyes. Spectral domain optical coherence tomography (SD-OCT) macula revealed band-like hyper-reflective lesions at the inner nuclear layer. Fluorescein angiography demonstrated hot discs, delayed arm-to-retina time, arterial filling and arterio-venous transit time, vasculitic changes at the posterior pole. She was treated with a total of eight-week course of oral corticosteroid.

Results: There was a good improvement in both anatomical and functional aspects. The final best-corrected visual acuity improved to 6/12 in both eyes following corticosteroid therapy. Dilated fundus examination showed a resolution appearance. SD-OCT macula at 10 months revealed thinned and disorganised inner nuclear layers.

Conclusions: Filler injections are in increasing demand. Retinal ischaemia from embolic occlusion is a potentially sight-threatening complication – good anatomical knowledge and proper injection technique are vital in preventing this unfortunate sequela. There are limited reports on successful visual recovery after various treatment approaches and we hope this case provides valuable insights.

Poster No.: PO-535

Purtscher-Like Retinopathy in Systemic Lupus Erythematosus: Clinical Features, Risk Factors and Prognosis

*First Author: Lihui **MENG***
*Co-Author(s): Huan **CHEN***

Purpose: Purtscher-like retinopathy (PLR) is a rare ocular manifestation in systemic lupus erythematosus (SLE) with a poor prognosis, but its clear risk factors and treatment consensus are still lacking. This study was to investigate the clinical features, risk factors and prognosis of PLR in SLE patients.

Methods: A retrospective analysis was conducted on SLE patients with PLR admitted at a tertiary, multi-specialty referral hospital from 2013 to 2022. Clinical data, including demographic characteristics, lupus-related features, laboratory findings, and ophthalmologic examinations, were collected and analyzed. The prognosis was evaluated based on best-corrected visual acuity and ophthalmologic outcomes.

Results: Seventeen SLE patients (32 eyes) diagnosed with PLR were included, along with a random selection of 100 SLE patients without retinopathy and 100 with retinal microvasculopathy as controls. Patients with PLR had significantly younger age, higher proportion of hemolytic anemia, shorter duration of SLE, higher SLEDAI-2K score, higher ESR value and lower HGB value than those without retinopathy group ($P<0.05$). They also had a significantly higher SLEDAI-2K score, higher ESR value, and higher WBC value ($P<0.05$) than the microvasculopathy group. The majority of eyes (22/26, 84.62%) achieved stabilization at the last follow-up, with different therapeutic strategies, while a few (4/26, 15.38%) experienced complications or progression.

Conclusions: This is the largest reported case series of PLR in SLE, which was associated with higher disease activity and poor visual prognosis. It was also associated with younger age, shorter SLE duration, concomitant hemolytic anemia, lower HGB and higher ESR value. Early recognition and prompt treatment are crucial for improving visual outcomes.

Poster No.: PO-512

Retinopathy of Prematurity Computerized Screening and Monitoring Systems in a Tertiary Hospital in Ilocos Norte, Philippines

*First Author: Edlyn **NARAVAL***
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Purpose: The objective was to ensure that all premature babies born with any risk factor for ROP receive timely referrals, timely screenings, and no missed screenings for ROP.

Methods: A monitoring and screening system for ROP with an automated computer alarm was developed and implemented. Admitted babies with risk factors for ROP were enrolled in the database and monitoring system.

Results: The database has a total number of 244 patients enrolled from August 2022 to July 2023. Of these, 241 babies were alive at the initial ROP screening dates, while 3 (1%) died before their screening dates. All 241 (100%) patients enrolled in the monitoring system had ROP screenings, and 15 (6%) were diagnosed with ROP. For timeliness, 234 (97%) and 232 (96%) have timely referrals and screenings, respectively. The most common reason for the delays was waiting to wean off patients from the ventilation support before referring them for ROP screening. No patient enrolled in the database missed ROP screening. However, compared with the total number of admitted patients with risk factors for ROP, two (2%) were not enrolled in the database due to the Pediatrician's confusion in the ROP referral parameter (born term, but with low birth weight). Problems during the implementation were identified and addressed.

Conclusions: The alarm system for screening and monitoring ROP was a helpful tool to guide healthcare workers in ensuring a timely interdepartmental referral and screening.

Poster No.: PO-504

Reverse Masquerade: Cytomegalovirus Retinitis Mimicking Ocular Tuberculosis

*First Author: Jeffrey Wei Kiat **ONG***
*Co-Author(s): Kevin **KWAN**, Hong Nien **LEE***

Purpose: To highlight the multitude presentation of cytomegalovirus (CMV) retinitis mimicking ocular tuberculosis in an immunocompromised individual. As contrary to the usual location at the retinal periphery, the granular CMV retinitis was found at zone 1.

Methods: A case report. A 49-year-old man with a history of pulmonary tuberculosis ten years ago was admitted for moderate-to-severe pneumocystis pneumonia (PCP). He is newly diagnosed with human immunodeficiency virus (HIV) and had sudden onset of generalized blurred vision in his right eye for over a week.

Results: His right eye vision was 6/60 with the presence of a reverse afferent pupillary defect. The anterior segment examination was normal. However, fundus showed vitreous condensation with a round yellowish hypopigmented lesion of half a disc size in zone 1, adjacent vasculitic changes with fibrosis, and a pale optic disc. The left eye examination was unremarkable. Antitubercular treatment was commenced. A week later, his vision and the retinitis worsened. The granular opacification of the retina appeared larger with very few retinal hemorrhages. A vitreous tap was done, and he was started with anti-CMV treatment in both ocular and systemic. The vitreous sampling was positive for CMV. Throughout the induction and maintenance phase of treatment, his vision recovered partially, and there was the presence of a macula scar.

Conclusions: CMV retinitis is an acquired immunodeficiency syndrome-related opportunistic infection. A granular form of CMV retinitis can appear in the central region, despite commonly in the peripheral. High suspicion of CMV is crucial in people with AIDS as it can lead to blindness.

Poster No.: PO-531

Role of Ophthalmic Screening and Fundus Fluorescein Angiography in Takayasu's Arteritis

*First Author: Komal **AGARWAL***
*Co-Author(s): Samridhi **AKANKSHA***

Purpose: To describe a case of Takayasu's arteritis where ocular complications could be managed due to timely screening and fundus fluorescein angiography (FFA).

Methods: A 24-year-old male patient was referred by the treating immunologist to screen for ophthalmic complications of Takayasu's arteritis. He had no visual symptoms. His systemic evaluation showed a non-palpable pulse in the upper limbs with a significant discrepancy in the blood pressure of the upper and lower limbs. CT angiography showed thickening of the ascending, descending, and abdominal aorta and arch of the aorta. There was near complete occlusion of the right common carotid artery (CCA) and marked attenuation of the left CCA. The best corrected visual acuity was 6/6 in both eyes on Snellen's chart. The fundus examination was nearly normal except for a few mid-peripheral hemorrhages. FFA was done to evaluate peripheral ischaemia and showed peripheral extensive capillary dropouts in all quadrants with end arteriolar aneurysms.

Results: Pan retinal photocoagulation was done to all ischemic areas. The patient was referred for systemic treatment. He was managed with oral steroids and

immunosuppressive agents. 6 months follow-up did not show any progression of the ophthalmic disease.

Conclusions: Takayasu's arteritis can lead to permanent loss of vision due to widespread retinal ischaemia and its related complications. Most patients take ophthalmic advice only when symptomatic. However, the present case shows that an early referral, even without ophthalmic/visual symptoms, can help diagnose ischaemia early and prevent blinding complications.

Poster No.: PO-500

Split Within a Split: A Rare Case of Bacillary Layer Detachment in Case of Diabetic Macular Edema

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Purpose: To present a less known occurrence of bacillary layer detachment (BLD), which usually occurs in infectious uveitis, or non-infectious ocular inflammation and rarely with Diabetic macular edema (DME).

Methods: A 57-year-old male came with the chief complaints of diminution of vision in both eyes [left eye (LE) > right eye (RE)] for 15 days. He was a known case of diabetes mellitus since 15 years, and was on oral hypoglycemic agents. On examination, the best-corrected visual acuity in RE – 6/9 and LE – 6/18. The anterior segment revealed early lenticular changes in both eyes, and rest was within normal limits. On fundus examination, RE had non-proliferative diabetic retinopathy (NPDR) changes without macular edema, and the left eye had NPDR changes with macular edema (DME). On Swept- source optical coherence tomography, the left eye showed altered foveal contour, intra-retinal cystoid spaces, a dome-shaped cystic space enclosing a crescent, and a dome-shaped splitting of the myoid zone, consistent with bacillary layer detachment (BLD) phenotype. Injection Anti VEGF was administered to the LE of the patient, and the patient was advised to follow up after a week.

Results: A rare presentation of BLD was studied in DME, which successfully provided a clear insight towards further exploration of similar cases.

Conclusions: It is necessary to study in detail and establish the clinical and prognostic value of BLD in the case of DME.

Poster No.: PO-544

The Association Study of CFH Gene Polymorphisms With Age-Related Macular Degeneration

*First Author: Ariunzaya **ALTANKHUYAG***

Purpose: To investigate rs1065489, rs800292 and rs1061170 polymorphisms and AMD.

Methods: A hundred and sixty-one patients and 116 control individuals were randomly enrolled in the case-control study. The genotyping of CFH polymorphisms was performed by polymerase chain reaction and restriction fragment length polymorphism techniques.

Results: Our findings suggest that sunlight exposure (OR=3.16, 95% CI 1.67-5.96, p<0.001), artherial hypertension (OR=2.29, 95% CI 1.37-3.83, p=0.002), anti-coagulant intake (OR=2.28, 95% CI 1.30-3.98, p=0.004) are associated with increased risk of AMD. For the rs800292, in recessive model G/G genotype (OR=5.96, 95% CI, 1.74-20.4, p=0.004) were significantly higher risk for AMD compared with controls. And the frequency of genotype carriers of G/G genotype at SNP rs800292 was strongly associated with AMD conferring more than 11-fold increased risk (OR=11.12, 95% CI, 3.06-40.34, p=0.0002) than carriers of A/A genotype. T-T (OR=0.69, 95% CI, 0.49-0.97, p=0.035), T-A (OR=0.52, 95% CI, 0.37-0.74, p=0.0002), T-A (OR=0.31, 95% CI, 0.20-0.49, p<0.001) haplotypes were 1.5-3.3 fold lower risk, also protective effect on AMD. In addition, we found significant association between T/T genotype of rs1065489 and anti-VEGF therapy.

Conclusions: The result showed that rs1061170, rs1065489 and rs800292 polymorphisms of the CFH gene can be a genetic risk factor for AMD.

Poster No.: PO-502

The Effect on Changes in Intraocular Pressure During Intravitreal Anti-vascular Endothelial Growth Factor Injection With Prophylactic Prostaglandin Analogue or Topical Beta Blocker

*First Author: Stephanie Wing Ki **YUK***
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Purpose: A transient rise in intraocular pressure (IOP) is frequently noted during intravitreal injections. In this study, we compare the effectiveness of topical prostaglandin analogues and beta blockers against placebo in controlling the IOP rise post-anti-VEGF injection.

Methods: This study is a randomized, double-blinded, three-arm crossover study. Consecutive patients who required at least three anti-VEGF injections were randomized to receive either topical hypromellose, timolol, or Travatan on the first visit, subsequently

crossing over to the remaining two drugs for each of the following visits. The IOP was measured before administration of eye drops as baseline (T0), immediately before (T1), immediately after (T2), and 30 minutes after injection (T3).

Results: Sixty-one eyes from 61 patients were included, with a total of 183 visits. No carryover effect was detected in all groups compared ($F = 0.14$, $p = 0.87$). At T1 and T3, timolol administration demonstrated the lowest IOP out of the three ($p < 0.001$). All three treatment groups resulted in a significant decrease in IOP at T3 compared to T2 ($p < 0.001$). Regression analysis revealed the number of previous anti-VEGF injections could affect the degree of reduction in IOP, as demonstrated by measurements at timepoints T1 versus T0 ($p < 0.008$) and T3 versus T0 ($p = 0.020$).

Conclusions: The application of timolol 1 hour before injections showed a significant reduction of IOP, while Travatan demonstrated an IOP-lowering effect when compared to the placebo. In conclusion, a reduction in aqueous production may be useful for eyes at risk of repeated rise in IOP due to intravitreal injections.

Poster No.: PO-528

The Relationship Between Diabetic Retinopathy and Oxidative Stress in Middle Age

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Purpose: Young-onset diabetic retinopathy (DR) has been reported to be more severe, but no identified risk factors differentiate it from DR with a later onset. Here, we compared systemic oxidative stress in middle age–onset DR (MDR) and elderly-onset DR (EDR) and examined the association between oxidative stress and proliferative DR (PDR).

Methods: We examined 60 eyes of 60 untreated MDR patients (age <65 years) (non-PDR to PDR ratio 30:30, age 52.5 ± 8.65 years) and 37 eyes of 37 patients with untreated EDR (age >65 years) (age 71.7 ± 6.09 years). We compared blood oxidative stress markers, including Diacron reactive oxygen metabolite (dROM) level and biological antioxidant potential (BAP), with the Mann-Whitney U test and performed a multivariate logistic regression analysis in the MDR group to examine the association with PDR.

Results: The dROM level was significantly higher in the MDR group than the EDR group ($p<0.001$), while BAP was significantly higher in the EDR group than the MDR group ($p=0.03$). Furthermore, in the MDR group, the dROM level was significantly higher in the PDR than in the non-PDR patients ($p<0.001$), and dROM level was significantly associated with PDR in a multivariate logistic analysis adjusted for age, gender, history of hypertension, and dyslipidemia, renal function, HbA1c, and duration of diabetes (odds ratio 1.93; $p=0.01$).

Conclusions: The dROM level was higher in middle-aged than elderly DR patients and was also associated with the presence of PDR, suggesting that increased systemic oxidative stress may be associated with PDR severity in middle age.

Poster No.: PO-534

Trapa bispinosa Roxb. Inhibits the Insulin-Dependent AKT/WNK1 Pathway to Induce Autophagy in Mice With Type 2 Diabetes

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*Co-Author(s): Takehito **SATO**, Yasuyuki **SUZUKI***

Purpose: To elucidate the antiglycation activity of Trapa bispinosa Roxb. extract (TBE) and the related mechanism using a mouse model with type 2 diabetes.

Methods: We prepared control mice by giving them a normal diet, leptin-deficient ob/ob mice (ob/ob mice) with a normal diet (normal ob/ob mice), and ob/ob mice with a diet containing TBE (TBE ob/ob mice). The effect of TBE on the diabetic retina was evaluated by immunohistochemical staining and quantitative real-time polymerase chain reaction (qPCR) analysis.

Results: In both groups with ob/ob mice, body weight and hyperglycemia levels increased over time. Immunohistochemical staining analysis revealed that glial fibrillary acidic protein (GFAP) and advanced glycation end products (AGEs) expression levels were higher in normal ob/ob mice than in control mice, and lower in the TBE ob/ob mice than in normal ob/ob mice. Light chain-3 (LC-3) expression levels reduced in normal ob/ob mice compared to the control mice, but increased in TBE ob/ob mice compared to normal ob/ob mice. In the qPCR analysis, LC-3 expression levels were significantly lower in normal ob/ob mice compared to control mice, and significantly higher in TBE ob/ob mice compared to normal ob/ob mice. Conversely, AKT1 and with-no-lysine kinases 1 (WNK1) expression levels were significantly higher in normal ob/ob mice compared to control mice, and significantly lower in TBE ob/ob mice than in normal ob/ob mice.

Conclusions: In type 2 diabetes, it was suggested that TBE inhibits the insulin-dependent AKT/WNK1 pathway to induce autophagy, and thereby might promote anti-glycation and reduce retinal damage.

Poster No.: PO-530

Treatment of Recalcitrant nCNV Using Brolucizumab With a Novel Treat and Extend Protocol – A Randomized Controlled Study

*First Author: Nicholas **FUNG***
*Co-Author(s): Timothy **LAI**, Jason **PANG***

Purpose: This study aims to explore the safety and efficacy of using brolucizumab (Beovu) in patients with nAMD who respond poorly to the aflibercept treat and extend protocol.

Methods: Patients with nAMD recalcitrant to treatment on at least 8 weekly intervals were randomized in a 1:1 ratio to either receive Aflibercept (group A) or Brolucizumab (group B) for at least 1 year. Patients in the aflibercept group were allowed to switch to brolucizumab if persistent activity was noted after at least 3 additional Eylea monthly injections.

Results: Thirty-four eyes in 34 patients were randomized, with 14 in group A and 16 in group B completing the study. The injection interval for group A was 5.143 weeks at baseline and 6.31 weeks at the rescue visit (P=0.170). The injection interval for group B was 4.81 weeks at baseline and 11.3 weeks at the final visit (P=0.003). The Central Macula Thickness (CMT) for group A was 355um at baseline and 363um at the rescue visit (P=0.830). The CMT for group B was 384um at baseline and 312um at the final visit (P=0.015). The BCVA for group A was 0.39 at baseline and 0.34 at the rescue visit (P=0.380). The BCVA for group B was 0.31 at baseline and 0.3 at the final visit (P=0.857). At the final visit, 100% of the Eylea patients required rescue and received at least 3 Beovu injections. One patient in group B had mild anterior chamber cells which resolved on observation and required to exit the study.

Conclusions: Brolucizumab is a safe and effective option for recalcitrant nAMD to control disease activity and extend treatment interval.

Poster No.: PO-508

Unilateral Optic Disc Edema As the Presenting Feature of Vogt-Koyanagi-Harada (VKH) Disease in a Patient of Psoriasis

*First Author: Abha **GUPTA***
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Purpose: While the association of VKH disease with dermatological manifestations is well known, its potential link with psoriasis has been rarely reported. We report a case of psoriasis where unilateral optic disc edema was the presenting feature of VKH disease.

Methods: A 39-year-old male with a history of psoriasis presented with decreased vision in the left eye for 15 days. He was receiving oral steroids (1 mg/kg/day) for a diagnosis of left eye optic neuritis, started elsewhere. Color vision and visual fields were normal. Fluorescein angiography (FA) revealed left eye optic disc edema. Oral steroids were continued. Investigations were non-contributory. Five weeks later, he developed a dimness of vision in his right eye, with exudative retinal detachment (RD). FA and Indocyanine green angiography showed choroidal granulomas in both eyes, suggesting VKH disease.

Results: He received intravenous corticosteroid therapy, along with azathioprine as first-line immunosuppressive therapy. Exudative RD resolved with vision 20/20. However, on follow-up, he developed hepatotoxicity and development of reactivation of uveitis on azathioprine. Hence, he was switched to mycophenolate mofetil 1 gm BD. At one year's follow-up, his vision was 20/20 in both eyes with resolved VKH disease.

Conclusions: Though rare, psoriasis is among the limited spectrum of systemic autoimmune disorders with an infrequent association with VKH disease. This case posed two challenges: an atypical manifestation during the initial presentation and a subnormal response despite systemic immunosuppressive therapy. Whether an underlying systemic autoimmune disease predisposed to these challenges remains to be elucidated from more evidence.

Poster No.: PO-503

Unilateral Presentation of Best Vitelliform Macular Dystrophy

*First Author: Abhishek **KUMAR***
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Purpose: A rare case of unilateral Best dystrophy in a 28-year-old female with a diagnostic dilemma.

Methods: A 28-year-old female presented with a diminution of vision in the right eye (OD) for the past 7 months, outside diagnosed with CSC with CNV scar. A Best corrected visual acuity of 6/12 OD and 6/6 OS was noted. Fundus examination revealed a well-circumscribed circular lesion of 2DD at the macula with few pigment clumps and atrophic changes. The left eye fundus was clinically normal. Family members' screening led to the depiction of neovascular scars in the right eye and the vitelloruptive stage of vitelliform dystrophy in the left eye.

Results: Macular SS-OCT revealed subretinal fluid with fibrotic pillars and vitelliform deposits in the right eye with a normal-looking OCT in the left eye. On careful observation, thickening of the Verhoeffe's membrane was noted in the left eye. OCT angiography did not reveal any neovascularisation in the right eye. An electrooculogram was performed, which depicted a reduced Arden ratio of 1.25 OD and 1.39 OS. Clinically evident vitelliform dystrophy was not seen in the left eye till 2 2-year follow-up of the patient.

Conclusions: Unilateral presentation of Best dystrophy is rare and is often confused with central serous

choroidopathy, especially in the young age group. Multimodal imaging, including OCT, FAF, FFA, and electrooculogram, along with family history, can lead to a proper diagnosis and prevent misuse of unnecessary medications. Genetic testing is the gold standard diagnostic modality; however, patient unaffordability is a barrier and proper councelling is required.

Poster No.: PO-514

Unveiling the Depths With Swept-Source OCTA in a Case of Combined Vascular Block

*First Author: Sandeep **KUMAR***

Purpose: To report the role of the wide field swept source optical coherence tomography angiography in a case of central vein occlusion combined with cilioretinal artery occlusion and document the ischemic and reperfusion changes of choriocapillaris.

Methods: The case is an observational case report. Serial fundus photographs and wide field swept source optical coherence tomography angiography images of a case of the combined central retinal vein and cilioretinal artery occlusion were obtained and analysed. With the help of swept source OCTA, the ischemic changes and subsequent reperfusion at the choriocapillaris levels were documented in the area supplied by the cilioretinal artery.

Results: An 80-year-old gentleman presented with a painless decrease in vision in the right eye preceded by multiple episodes of amaurosis fugax. Multimodal imaging was done, and a diagnosis of cilioretinal artery occlusion with central retinal vein occlusion was made. Swept-source OCTA through the choriocapillaris slab showed a wedge-shaped flow void area corresponding to the distribution of the cilioretinal artery. Follow-up scans post-treatment through the choriocapillaris slab revealed reperfusion of the ischemic zones.

Conclusions: Swept-source OCTA is an effective non-invasive modality to study the perfusion status of various layers of the retina and choroid. This is the first documented case report of the central retinal vein and cilioretinal artery occlusion showing involvement of the choriocapillaris layer and its reperfusion over time. The excellent documentation of the capillary dropout areas on the wide montaged view obviates the need for fundus fluorescein.

Poster No.: PO-550

Wide-Field Imaging With Smartphone Based Fundus Camera: Grading of Severity of Diabetic Retinopathy and Locating Peripheral Lesions in Diabetic Retinopathy

*First Author: Ramachandran **RAJALAKSHMI***

Purpose: To assess the performance of smartphone-based wide-field retinal imaging (WFI) versus ultra-wide-field imaging (UWFI) for assessment of sight-threatening diabetic retinopathy (STDR) as well as locating predominantly peripheral lesions (PPL) of DR.

Methods: Individuals with type 2 diabetes with varying grades of DR underwent nonmydriatic UWFI with a Daytona Plus camera followed by mydriatic WFI with smartphone-based Vistaro camera in 2022. Grading of DR as well as identification of PPL (DR lesions beyond the posterior pole) in the retinal images of both cameras was performed by senior retina specialists. STDR was defined by the presence of severe NPDR, PDR or diabetic macular oedema (DME). The sensitivity and specificity of smartphone-based WFI for detection of PPL and STDR was assessed.

Results: Retinal imaging was carried out in 318 eyes of 160 individuals. The sensitivity and specificity for detection of STDR by Vistaro camera was 92.7% and 96.6% respectively, and 95.1% and 95.7% by Daytona Plus respectively. PPL was detected in 89 (27.9%) eyes by WFI by Vistaro camera and in 160 (50.3%) eyes by UWFI. In both devices, peripheral lesions were most common in the supero-temporal quadrant (34%). The prevalence of PPL increased with increasing severity of DR with both cameras ($p<0.001$). The kappa comparison for varying grades of severity of DR was 0.802 ($p<0.001$) for Vistaro and 0.753 ($p<0.001$) for Daytona Plus camera.

Conclusions: Smartphone-based widefield imaging has high sensitivity and specificity for detecting STDR and can be used to screen for peripheral retinal lesions beyond the posterior pole in individuals with diabetes.

Retina (Surgical)

Poster No.: PO-578

27-Gauge MIVS Assisted Sutureless Flapless Scleral Fixation of Intraocular Lens (SFIOL)

*First Author: Shivani **CHHABRA***
*Co-Author(s): Ashish **MARKAN***

Purpose: To determine the surgical outcome of 27 gauge MIVS-assisted sutureless and flapless SFIOL.

Methods: A retrospective data analysis of patients who underwent 27-gauge MIVS-assisted SFIOL was carried out from our retina clinic database. Necessary demographic details, preoperative and postoperative ocular details, intraoperative and postoperative complications and IOL tilt and decentration were noted. The surgical technique involved creating 3mm scleral tunnels, 2mm from corneal limbus at 4 and 10 o'clock positions using a 27-gauge trocar cannula. This was followed by the insertion of 3 3-piece IOL. The IOL haptic was grasped by a 27-gauge retinal forceps and pulled out from both sclerotomies. Heat cautery was used to make flange at haptic ends. Finally, the haptics was inserted into the tunnel, and IOL stabilised.

Results: A total of nine patients (7 males, 2 females) were included in the study. The most common indication was ectopia lentis (44%), followed by dislocated IOLs (22.2%) and phacodonesis (22.2%). The mean best corrected visual acuity improved from 0.81+0.43 logMAR to 0.48+0.53 logMAR at 3 months of follow-up ($p<0.05$). The mean IOL tilt was 2.78 ± 0.81° and the mean IOL decentration was 0.35 ± 0.25 mm. No significant intraoperative or postoperative complication was noted, except for one patient who developed retinal detachment at 2 months of follow up.

Conclusions: 27-gauge MIVS-assisted SFIOL is a safe, minimally invasive, and effective technique to manage patients with aphakia without capsular support.

Poster No.: PO-560

A Case Series of Exogenous Fungal Endophthalmitis: Lessons Learned and Treatment Approaches

*First Author: Gajendra **CHAWLA***
*Co-Author(s): Neha **BIJLANI***

Purpose: To report fungal isolates, treatment strategies, and clinical outcomes for a series of patients with exogenous fungal endophthalmitis.

Methods: Retrospective data were analyzed of all patients of exogenous fungal endophthalmitis presenting between January 1, 2018, and December 31, 2022, at our institute. Only culture-positive patients and those who had at least 3 months of follow-up period were included.

Results: Culture-positive exogenous fungal endophthalmitis occurred in 14 eyes, including 10 post-operative cases (72%) and 4 cases post penetrating ocular trauma (28%). Candida species (yeasts) accounted for the majority -9 cases (65%), and filamentous fungi (Moulds) accounted for 5 cases (35%). As Initial treatment, all patients received oral voriconazole and bi-weekly intravitreal voriconazole injections. Pars plana vitrectomy was subsequently performed in 10 eyes (71%) within a week due to partial response to voriconazole treatment. Final Visual acuity of 20/200 or better was achieved in 9 eyes (65 %). Conversely, 5 eyes (35 %) had BCVA less than 20/200, and the majority of them were from the post-penetrating ocular trauma group (3 of 4; 75%).

Conclusions: The report highlights the difference between the clinical categories of exogenous fungal endophthalmitis. Candida species was the most commonly isolated organism in our case series. Oral & intravitreal voriconazole appears to provide a broad spectrum of antifungal coverage and, as such, may be considered for empirical first-line treatment for fungal endophthalmitis. Also, early vitrectomy plays a crucial role in better results. Final Visual acuity was variable, with post-traumatic patients having the poorest outcome.

Poster No.: PO-555

A Retrospective Single Centre Analysis Surgical Outcome After Vitrectomy for Cytomegalovirus Retinitis Related Retinal Detachment in Acquired Immunodeficiency Syndrome Patients

*First Author: Seng Hong **YEOH***
*Co-Author(s): Widad Bin Md Yusof @ Mohd Yusof -, Zabri **BIN KAMARUDIN**, Pei Fang **NEOH***

Purpose: To analyse the surgical outcomes of cytomegalovirus retinitis (CMVR) related retinal detachment (RD) in acquired immunodeficiency syndrome (AIDS) patients.

Methods: A retrospective cases review was carried out on patients with CMVR-related RD who underwent vitrectomy from January 2012 to December 2022 at a national vitreoretinal referral centre. The main outcome measures included single-surgery anatomical success and postoperative visual acuity (VA). 17 eyes of 16 patients were included. Post-operative follow-up up to 1 year with outcome measures taken at 1,3,6, and12 months respectively.

Results: All patients underwent vitrectomy and silicone oil (SO) was used as an intraocular tamponade agent. CMVR was inactive in 58.8% of the eyes prior to surgery. The median CD4 count at CMVR-related RD presentation was 14 cells/µL. All patients were on highly active antiretroviral therapy (HAART). 3 eyes had proliferative vitreoretinopathy pre-operatively. 16 eyes (94.1%) had macula off prior to vitrectomy. All eyes under follow-up achieved single surgery anatomical success at postoperative 1 year and 40% of patients can maintain ambulatory vision (≥ 1/60). All phakic eyes developed cataracts post-vitrectomy and required cataract surgery later. 1 eye developed secondary glaucoma postoperatively.

Conclusions: Vitrectomy with silicone oil tamponade provides good single surgery success and almost half of the eyes achieved ambulatory VA up to 1 year postoperatively.

Poster No.: PO-577

Anatomical and Functional Outcomes of Large Versus Massive Macular Holes

*First Author: Pallavi **GOEL***
*Co-Author(s): Manisha **AGARWAL***

Purpose: Analyze visual and anatomical outcomes of large (500-1000 µm) vs massive (>1000µm) iFTMH following macular hole surgery.

Methods: A retrospective case series in a tertiary eyecare centre of North India. Patients with iFTMH who underwent surgery between 2009-2020 were included. A review of the medical records and surgical outcomes was carried out.

Results: Eighty eyes with iFTMH undergoing surgery were included. 43 had macular hole base diameter 500-1000µm (group A) and 37 had macular hole base diameter >1000 µm (group B). The difference in postoperative VA between the two groups was significant ($p<0.05$). MH surgery with conventional ILM peel was performed in 27 eyes in group A and 18 eyes in group B. Inverse ILM flap was done in 16 eyes in group A and 18 eyes in group B. In group A, 13 eyes showed type 1 closure, 3 eyes showed type 2 closure and 1 eye had the persistence of macular hole. In group B, 12 eyes showed type 1 closure, 3 had type 2 closure and 5 had persistence of macular hole. Anatomical outcomes were better in group A than in group B.

Conclusions: Our study demonstrates better visual and anatomical outcomes in large MH compared to massive MH. Change in the visual acuity following macular hole surgery was statistically significant between routine and inverted flap techniques in massive MH. Eyes with massive holes undergoing the inverted flap technique have higher postoperative visual acuity gain. Study suggests surgery benefits all patients regardless of the size of the macular hole.

Poster No.: PO-566

Anatomical and Functional Recovery After Subretinal Injection of Tissue Plasminogen Activator (tPA) for Submacular Hemorrhage: A Case Report

*First Author: Astriviani **SWITANIA***
*Co-Author(s): Joshua **LUMBANTOBING**, Soefiandi **SOEDARMAN***

Purpose: To report successful management of submacular hemorrhage (SMH) due to polypoidal choroidal vasculopathy (PCV) with vitrectomy and subretinal tPA.

Methods: A 56-year-old female presented with blurred vision in the right eye for 8 days. Visual acuity (VA) was 1/60 Snellen in the right eye. Intraocular pressure was within normal limits with normal anterior segment findings. Submacular hemorrhage was found at the posterior pole with a size larger than 4 disc diameter (DD) extending beyond the temporal arcade. Optical coherence tomography (OCT) revealed submacular hemorrhage located in the subretinal space with retinal pigment epithelium changes. The patient underwent vitrectomy with the injection of 25 ug/0.1 ml tPA into the subretinal space using a 41-gauge flexible cannula. After a complete fluid-air exchange, the surgery was concluded with the injection of 1.25 mg/0.05 ml bevacizumab into the vitreous cavity, followed by a complete air-20% sulfur hexafloride exchange. Face-down positioning was instructed for 1 week after the surgery.

Results: At 1-month follow-up, there was incomplete displacement of SMH from the macula with VA improvement of 6/30 Snellen. At 1 year follow-up, the patient had undergone cataract surgery, and VA was improved to 6/15 Snellen. There was no residual blood observed at the macula and the findings were confirmed by the OCT.

Conclusions: Early vitrectomy with subretinal tPA in newly formed SMH could promote complete resolution of the blood, resulting in favorable functional recovery.

Poster No.: PO-556

Changes in Retinal Vascular Geometry After Vitrectomy in Idiopathic and Uveitic Epiretinal membrane

*First Author: Kunho **BAE***
*Co-Author(s): Changhwan **LEE***

Purpose: To investigate differences in retinal structure and visual function after vitrectomy in the idiopathic and uveitic epiretinal membrane (ERM).

Methods: This retrospective, observational study included patients with unilateral ERM who underwent vitrectomy. Fundus photography and optical coherence tomography were performed preoperatively, 1 month postoperatively, and 6 months postoperatively. Eyes were divided into two groups based on the association of uveitis. The macroscopic diverging angle (MDA) between superior and inferior major vessels was calculated using digital image analysis of fundus photographs and compared pre- and postoperatively. The angle of the branching vessels from the first bifurcation point and the tortuosity of the retinal vessels between the first and second bifurcations were also measured. The changes in retinal vascular geometry were compared between the groups.

Results: Of 70 patients, 28 patients were uveitic ERM (uERM). The thickness of ERM was significantly thicker in uERM than in idiopathic ERM (iERM) (12.05 and 10.64, respectively, $p=.004$). The change in MDA from baseline was significantly different between the two groups at 1 and 6 months postoperatively ($p<.001$ and $p<.001$, respectively). The change in retinal arterial branching angle from baseline was significantly different between the two groups at 1 and 6 months postoperatively ($p=.003$ and $p=.006$, respectively). There was also a significant difference in the change of retinal venous tortuosity from baseline at 6 months between the two groups ($p<.001$).

Conclusions: Retinal topographic changes caused by ERM improved after ERM removal. The degree of improvement in topographic changes varied according to the association of uveitis.

Poster No.: PO-561

Combination Therapy vs Laser Monotherapy in a Preterm Baby With Aggressive Retinopathy of Prematurity in Zone 2 Posterior With Traction

*First Author: Stuti **ASTIR***
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Purpose: To compare anti-VEGF with laser vs Laser alone in a preterm baby with AROP in Zone 2 posterior with traction.

Methods: A preterm baby with suspected neurodevelopmental impairment, with birth weight 750g and 28 weeks gestational age, presented to us at 38 weeks with AROP zone 2 posterior with plus disease, multiple preretinal hemorrhages, and traction superiorly in both eyes. He was also advised of blood transfusion for anaemia (<8g/dl). Wide field fundus photo was taken on an Optos fundus camera. He underwent an anti-VEGF injection with a peripheral laser in the right eye and a laser alone in the left eye. He was followed up weekly for two months.

Results: At the end of two months, the lasered eye showed regressed ROP, whereas the combination therapy eye showed signs of minimal regression with persistent but reduced pre-retinal hemorrhages.

Conclusions: Anti-VEGF is the gold standard for the treatment of APROP. However, in our case, the laser alone showed signs of regression in the left eye. Anti-VEGF should be used with caution in patients with evidence of traction to avoid the crunch phenomenon and also in patients with neuro-developmental impairment. Anaemia is an important predictor of disease worsening. Patients should also be counseled for VR surgery in case of rapid progression despite treatment.

Poster No.: PO-572

Correlation Between Optical Coherence Tomography Findings and Postoperative Visual Acuity in Foveal-Splitting Rhegmatogenous Retinal Detachment

*First Author: Momoko **TAKAHASHI***
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Purpose: In this retrospective study, we assessed the correlation between preoperative optical coherence tomography (OCT) findings and their visual outcomes in foveal-splitting rhegmatogenous retinal detachment (RRD).

Methods: Forty-four eyes of 43 patients with foveal-splitting RRD (mean age; 56.1 years) which performed vitrectomy between March 2016 and August 2022 were included in this study. These cases were divided into 3 groups according to the distance from the foveal center to the RD border (DRD) using OCT; (A) foveal RD (0-925µm), (B) perifoveal RD (926-2925µm), and (C) macular RD (2926-4500µm). We evaluated the correlation between preoperative DRD at baseline and best-corrected visual acuity (BCVA) at baseline, 1,3, and 6 months post-surgery.

Results: Groups A, B, and C were 17, 16, and 11 eyes respectively. The mean pre-operative DRD among 3 groups were 249 (A), 688.5 (B), and 782 (C)µm, respectively. The mean logMAR BCVA in groups A, B, and C was 0.097, 0.523, and 0.699 at baseline, 0.046, 0.126, and 0 at 1-month post-surgery, -0.079, 0, and 0 at 3 months post-surgery, and -0.079, 0, and 0.155 at 6 months post-surgery. At baseline, the mean logMAR BCVA of group A was lower than that of group B (p=0.0008) and C (p=0.0004). The postoperative mean logMAR BCVA of group A was lower than that of group C at 1 (p=0.0397), 3 (p=0.0492), and 6 (p=0.0015) months post-surgery.

Conclusions: Our study shows accessing preoperative RDD is useful in predicting postoperative visual prognosis.

Poster No.: PO-565

Endophthalmitis Caused by Pseudomonas aeruginosa: A Rare Successful Outcome Following Pars Plana Vitrectomy

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Purpose: This case aims to report exogenous endophthalmitis caused by Pseudomonas aeruginosa achieving a good visual outcome following pars plana vitrectomy (PPV).

Methods: A 71-year-old male presented with sudden-onset pain, redness, and decreased vision in his left eye. Examination revealed visual acuity of light perception with severe inflammation reactions. The diagnosis of endophthalmitis was made and the patient was admitted for immediate PPV. Microbiological analysis from the vitreous tap and culture confirmed the presence of Pseudomonas aeruginosa, further supporting the diagnosis.

Results: Postoperatively, the patient received targeted intravitreal antibiotics tailored to the sensitivity of the isolated Pseudomonas strain. Serial ophthalmic examinations showed that the ocular inflammation progressively subsided, and the vision improved gradually. At the final follow-up visit, the patient achieved a visual acuity of 6/15, with no signs of recurrence or complications. Endophthalmitis caused by Pseudomonas aeruginosa can lead to devastating visual consequences if not promptly diagnosed and managed. However, early intervention with a combination of intravitreal antibiotics and pars

plana vitrectomy does not rule out a favorable visual outcome. Prompt identification of the causative organism and tailored antibiotic therapy based on sensitivity testing are essential for successful management.

Conclusions: Early pars plana vitrectomy with targeted antibiotics plays an important role in determining the outcome of Pseudomonas aeruginosa endophthalmitis.

Poster No.: PO-581

Expansile Gas Kinetics for Pneumatic Retinopexy

*First Author: Steven **TOH***
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Purpose: To study the behaviour of expansile intravitreal gases and air used in treating rhegmatogenous retinal detachment.

Methods: A validated mathematical model of gas expansion and absorption in human eyes was used to stimulate the effect of varying volumes of pure air, sulphur hexafluoride (SF6), hexafluoroethane (C2F6), and perfluoropropane (C3F8) injected into the vitreous cavity. Variation in axial length was accounted for by using three different vitreous cavity volumes (4ml, 7.2ml, and 10ml) to represent hypermetropic, emmetropic, and myopic eyes.

Results: The time course of varying volumes of pure air and fluorinated gases injected into the vitreous cavity were tabulated, with calculated parameters including volume of gas, percentage gas fills and corresponding retinal contact angles at different time points.

Conclusions: We produced a comprehensive compilation of expansive gas kinetics aiming to facilitate surgeon selection of the most suitable choice of gas and volume to use, tailored to an individual patient's clinical need.

Poster No.: PO-568

Family Screening of a Child With Sticklers Syndrome and Its Clinical Picture

*First Author: Abhishek **JAIN***
*Co-Author(s): Ruma **GUPTA**, Manju **VERMA***

Purpose: Stickler syndrome is a disorder of collagen connective tissue with an optically empty vitreous cavity, with complete AD inheritance. We describe an 11-year-old boy with a bilateral liquefied vitreous cavity presenting with unilateral total cataract and open funnel retinal detachment associated with trivial trauma. The child has a strong familial manifestation of the same disease in his father and his younger brother. We emphasize the importance of screening the family members and healthy other eye of such patients for predisposing lesions of development of retinal detachment.

Methods: (1) All the family members, including the patient's brothers and father, were screened for the same disease. (2) The child underwent a combined vitreo-retinal and cataract with IOL implant surgery.

Results: The surgical outcomes of combined vitreoretinal and cataract surgery of this young patient with sticklers syndrome were reattachment of the detached retina, and visual acuity gain to 6/36. In addition, the screening family members showed the presence of high myopia and unilateral retinal detachment in the father and his younger brother.

Conclusions: The surgical outcome of combined vitreo-retinal and cataract surgery of this young patient with sticklers syndrome has a fairly good prognosis. In addition, screening family members for similar clinical signs is important.

Poster No.: PO-567

Influence of Vitreoretinal Surgery on Ocular Surface Dynamics Using Keratograph 5M

*First Author: Gyu Eun **HWANG***
*Co-Author(s): Hoon Dong **KIM**, Eung Suk **LEE***

Purpose: To evaluate changes of ocular surface dynamics using Keratograph 5M for three months after vitreoretinal surgery.

Methods: Eighty-three patients (46 men and 37 women) were divided into three groups: (1) Phaco group, (2) Vitrectomy group, and (3) Combined group. Keratograph 5M® was performed at one week, one months, and three months after the surgery. Ocular surface dynamics parameters measured by K5M, including non-invasive keratograph break-up time-first (NifBUT), non-invasive keratograph break-up time-average (NiaBUT), and tear meniscus height (TMH) were compared among the three groups over time.

Results: NifBUT and NiaBUT were significantly decreased at one week after surgery compared to those at baseline in all three groups. NifBUT and NiaBUT in the Phaco group almost recovered to the preoperative level, while those in the Vitrectomy and Combined groups were still significantly less than the baseline. NifBUT and NiaBUT in the Phaco group were significantly longer than those in Vitrectomy and Combined groups at 3 months. After one week, TMHs were significantly higher in Vitrectomy and Combined groups than in the Phaco group ($p=0.001$, $p=0.022$), while TMHs were significantly less in Vitrectomy and Combined groups than in the Phaco group ($p=0.010$ and $p<0.001$) at three months after surgery.

Conclusions: These results suggest that vitreoretinal surgery could induce alteration of ocular surface dynamics for three months. Vitrectomy and Combined surgery groups showed tear film instability compared

to the cataract surgery alone group. Patients who underwent vitreoretinal surgery experienced more severe dry eye syndrome symptoms than those who underwent cataract surgery.

Poster No.: PO-554

Late-Onset Retinal Detachment in Untreated Retinopathy of Prematurity: A Case Report

*First Author: Ari **DJATIKUSUMO***
*Co-Author(s): Seruni **ARDHIA***

Purpose: To report a case of late-onset retinal detachment in patients with untreated retinopathy of prematurity.

Methods: Data were collected from medical records.

Results: A 23-year-old female patient presented with blurred vision, floaters, and flashes in her right eye for one week before coming to the clinic. She had amblyopia and revealed a history of preterm birth of unknown gestational age with supplementary oxygen use in the NICU. There was no history of treatment or surgery in both eyes. The best corrected visual acuity (BCVA) upon examination was 0.3 (OD) and 0.05 (OS). Fundus examination displayed macular-off, inferior retinal detachment, and an atrophic retinal hole at nine o'clock with peripheral lattice degeneration in the right eye, with optical coherence tomography (OCT) b-scan on the right eye showing macular detachment. The left eye presented an attached retina and dragging macula with pigmentary changes and an atrophic retina at the temporal region at the zone 2 ROP landmark. The patient underwent pars plana vitrectomy combined with scleral buckling and silicone oil tamponade. On the fourth week follow-up, wide-field fundus photography and OCT showed a complete reattached retina, with BCVA of 0.3 (OD). Four months later, the silicone oil was removed, and the retina remained attached with stable visual acuity.

Conclusions: Retinal detachment as a late retinal finding in untreated ROP can occur at any time in all age groups. Regular ophthalmology examinations and follow-ups may be necessary for these patients. Successful reattachment of the retina can be achieved through surgical intervention.

Poster No.: PO-575

Macular Structural Abnormalities in Patients With Metamorphopsia After Rhegmatogenous Retinal Detachment Surgery

*First Author: Hirika **GOSALIA***
*Co-Author(s): Karan A.k. **KUMARSWAMY**, Veerappan **SARAVANAN***

Purpose: To identify the macular structural abnormalities in patients with postoperative metamorphosis (POM) who underwent pars plana vitrectomy for macula off Rhegmatogenous retinal detachment (RRD) repair.

Methods: Prospective study of 30 eyes of 30 patients complaining of POM at 3 months follow-up for macula off RRD repair. Participants underwent routine ophthalmological examination, imaging with SD-OCT and FAF. Their macular structural changes were namely IS/OS disruption, ELM disruption, uneven retinal surface, RPE defects, CME, ERM, SRF, and MH were analysed using OCT, while RPE defects, retinal vessel displacement and retinal folds were analysed using FAF.

Results: Out of 30 eyes,6 underwent vitrectomy under gas tamponade (C3F8), while 24 patients used silicon oil as a tamponade agent. Among the SD-OCT:IS/OS disruption 33.3%, ERM 30%, uneven foveal contour 16.7%, CME 16.7%, RPE changes 13.3%, Retinal folds 10%, ELM disruption 6.7%, and lamellar macular hole 6.7%. FAF findings-retinal vessel displacement 23.3%,13.3% retinal folds and 6.7% RPE changes around macula. Inferior displacement of retinal vessels was mainly seen in our patients. We found that there was a statistically significant association of retinal vessel imprinting as a cause of POM with gas tamponade agent compared to silicon oil agent.

Conclusions: It demonstrates that retinal vessels may move downwards postoperatively and hence could be the main cause for POM in patients undergoing vitrectomy with gas tamponade; FAF is a valuable tool for the detection of this abnormality after successful RRD repair. We found that POM is not affected by duration of RRD and post-operative BCVA. Our study is among the earliest in the literature to highlight the association of macular structural abnormalities with POM.

Poster No.: PO-557

OCT Biomarkers in Rhegmatogenous Retinal Detachment (RRD) and Their Correlation With Visual Outcome

*First Author: Thirumalesh **M B***
*Co-Author(s): Aayesha **KHANUM***

Purpose: To identify and correlate OCT biomarkers and visual outcomes in RRD patients.

Methods: OCT biomarkers studied were ellipsoid zone (EZ) continuity, external limiting membrane (ELM) continuity, the thickness of the outer nuclear layer (ONL), the thickness of the outer plexiform layer (OPL), the thickness of the inner nuclear layer (INL), the thickness of the inner plexiform layer (IPL), retinal nerve fibre layer thickness (RNFL), and total retinal thickness. Radial scan OCT images, then analysis of these layers using Custom software by MATLAB. Two-tailed probability (p) values of less than 0.05 were considered to be significant.

Results: Median preoperative visual acuity in patients with EZ disruption prior to surgery (n=30) was lesser-

LogMAR 0.95, whereas in those with intact EZ (n=10) it was LogMAR 0.18 (<6/9), P-value 0.0041. The median post-operative VA in patients with EZ and ELM disruption prior to surgery was lesser. Median post-operative VA in patients with EZ disruption prior to surgery (n=30) was lesser- LogMAR 0.7 (6/30), whereas in those with intact EZ (n=10) prior to surgery was LogMAR 0.12 (6/9 and better). P-value 0.0004, pre-operative ONL, OPL, INL and GC-IPL thickness showed a highly significant correlation to post-operative VA.

Conclusions: Disruption of EZ and ELM significantly contributes to low visual acuity in patients with RRD and reattachment of these layers resulting in better post-operative visual acuity. The thickness of ONL, OPL, INL and IPL can be used as predictors of post-operative visual outcome. The total retinal thickness, both pre-operatively and post-operatively, can be a predictive factor of post-operative visual acuity.

Poster No.: PO-562

Optimizing Amniotic Graft Manipulation in Macular Hole Retinal Detachment Surgery: The Role of Incomplete Fluid-Air Exchange

*First Author: Shu-chun **KUO***
*Co-Author(s): Chia-yi **LEE**, Chenghao **SUNG***

Purpose: To introduce valuable surgical pearls using human amniotic membranes and incorporating the incomplete fluid-air exchange technique.

Methods: Retrospective observational case report.

Results: The surgical procedure was initiated with a standard 3-port pars plana vitrectomy, followed by full vitreous removal and an ILM peel employing the pinch-and-peel technique. To optimize the process, an incomplete fluid-air exchange technique was applied, involving the preservation of a modest amount of fluid on the posterior retina. Utilizing intraocular forceps, the amniotic membrane patch was delicately maneuvered. Upon reaching the fluid-air interface, the patch was released, allowing a gradual, leaf-like descent towards the macular hole. Maintaining an unfolded state upon reaching the retina, the patch was then meticulously inserted into the macular hole with the assistance of forceps and laser probes. The patch's secure fixation within the macular hole was a direct outcome of the incomplete fluid-air exchange technique, instrumental in maintaining consistent intraocular pressure and thereby preventing its displacement.

Conclusions: Three months later, the sealed macular hole, absence of subretinal fluid, and improved visual acuity reflected favorable anatomical and functional outcomes. The incomplete fluid-air exchange technique's contributions are multifaceted, as it prevents crumpling of the amniotic membrane patch upon encountering air, ensures gradual unfurling as it enters the aqueous environment, and minimizes pressure fluctuations and potential displacement risk. These attributes streamline patch manipulation, distinguishing it from the full fluid-air exchange or no-exchange methods.

Poster No.: PO-558

Outcome of Laser Treatment for Retinopathy of Prematurity in Makassar, Indonesia

*First Author: Idayani **PANGGALO***
*Co-Author(s): Budu, Ichsan **ANDI**, Dyah Ayu **ASMARA PUTRI**, Andi **TAJUDDIN***

Purpose: This study aims to describe the result of laser indirect ophthalmoscopy in Makassar, South Sulawesi, Indonesia.

Methods: This study was a descriptive observational study that included 41 ROP patients from 1130 screening procedures from 2020 until 2022 in Makassar. The diagnostic procedure was based on International Classification of ROP (ICROP) standards. Laser indirect ophthalmoscopy (LIO) and anti-vascular endothelial growth factor (VEGF) were used to deliver through an argon green laser (Iridex oculight TX Green-532 nm) with A 28-dioptre lens (Volk 28D Bio Lens). The regression of ROP lesion was evaluated 7 days after treatment, followed by visits every two weeks or every month until the ROP had completely subsided. All data was shown in tables and figures.

Results: Of 41 patients who received therapy, most were type 1 ROP (78%), Aggressive Posterior (AP) ROP (19%), and the rest were Stage IV A. There were 40 patients who received laser photocoagulation, and one infant received both laser photocoagulation and intravitreal anti-VEGF injection. Regression was found in all cases of type 1 ROP by fundoscopy examination and retinal camera. Patients with aggressive posterior ROP were also treated successfully, except for one patient who progressed to stage IV ROP.

Conclusions: Laser indirect photocoagulation was proved to be an effective treatment method to examine ROP-related blindness. With screening and prompt treatment, good outcomes have been obtained.

Poster No.: PO-571

Outcome of the Management of Aggressive Retinopathy of Prematurity

*First Author: Tanzina **ISLAM***

Purpose: To compare the efficacy and safety between laser therapy and anti-vascular endothelial growth factor (VEGF) agents for aggressive retinopathy of prematurity (A-ROP).

Methods: A comparative study for laser, anti-VEGF with laser, and anti-VEGF monotherapy for A-ROP treatment. The study period was from 2016 to 2020 at BIRDEM General Hospital. We included fifteen A-ROP babies with thirty eyes. Ten eyes were treated with

laser, ten eyes were treated with anti-VEGF with laser, and ten eyes were treated with anti-VEGF. We used Bevacizumab as an anti-VEGF. We compared efficacy, safety, complication, and retreatment between these three groups.

Results: Complication incidences were significantly higher in the laser therapy group. 20% of infants needed retreatments with laser therapy of more than two sessions. In the anti-VEGF and laser therapy group, 6.7% of infants needed retreatment, and in the anti-VEGF Group-1, 3.3% of infants needed retreatment. The P-value was 0.005, which was significant. Development of myopia was significantly higher in the laser therapy group (Group-3). About 100% of infants developed myopia. In Group-2, 30% of infants developed myopia. In Group-1 no infants developed myopia. The P-value was highly significant at 0.01.

Conclusions: This analysis outcome indicates that anti-VEGF agents are as effective as laser treatment and safer than laser. The degree of myopia in A-ROP in the laser group is higher than the anti-VEGF monotherapy group. The decreased incidence of early unfavorable refractive and functional outcomes in the IVB group compared with the laser group showed a potential benefit for patients treated with Intravitreal Bevacizumab (IVB).

Poster No.: PO-582

Papillary Vitreous Detachment as a Possible Accomplice in Non-arteritic Anterior Ischaemic Optic Neuropathy

*First Author: Xiaorong **LI***
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Purpose: To evaluate the role of papillary vitreous detachment (PVD) in the pathogenesis of non-arteritic anterior ischaemic optic neuropathy (NAION).

Methods: All study participants underwent Swept-Source Optical Coherence Tomography (SS-OCT) to assess the vitreopapillary interface, peripapillary wrinkle (PPW), and peripapillary superficial vessel protrusion (PSVP). The statistical correlations between PSVP measurements and NAION were analysed. Two NAION patients underwent standard pars plana vitrectomy (PPV).

Results: Incomplete PVD was noted in all acute NAION patients. The prevalence of PPW was 68%, 30%, and 0%, and the prevalence of PSVP was 44%, 91%, and 0% in the acute, non-acute NAION, and control groups, respectively. The prevalence of PSVP was 88.9% in the eyes without RNFL thinning. Furthermore, the number of PSVP in the superior quadrant was significantly higher than that in the other quadrants in eyes with NAION, consistent with the more damaged visual field defect regions. PPW and visual field defects in two patients with NAION were significantly attenuated after PPV within 1 week and 1 month, respectively.

Conclusions: PPW and PSVP may be signs of PVD-related traction in NAION. PVD may play an important role in NAION pathogenesis.

Poster No.: PO-574

Performance of the 25 Gauge 20,000cpm HYPERVIT Dual Blade vs. 10,000cpm ULTRAVIT Vitrectomy Cutter – A Prospective, Randomized Controlled Trial

*First Author: Nicholas **FUNG***
*Co-Author(s): Wai Ching **LAM**, Wai Yan **LAM**, Jeffrey **LO**, Jason **PANG**, Mehnaz **QUDDUS***

Purpose: To compare the performance of the 20,000 cut/min Dual Blade vitrectomy probe with the 10,000 cut/min 25-gauge vitrectomy probe in terms of efficiency and safety.

Methods: Seventy-two eyes in 72 patients were randomized 1:1 into two groups. Group A for 25-gauge 20,000 cpm Hypervit Dual Blade and Group B for 25-gauge 10,000 cpm Ultravit vitrectomy cutter. Before the surgical procedure, all the patients had a basic ophthalmological examination. Core vitrectomy duration and intraoperative retinal tear or other complications were recorded for each eye. Patients were followed up on day 1, 1 week, 1 month, and 3 months.

Results: There were no statistically significant differences between 20,000 cpm probe and 10,000 cpm probe (p value=.347) for the core vitrectomy duration. The mean core vitrectomy time was 269.28 seconds for Group A and 289.44 seconds for Group B. The observed difference in mean for core vitrectomy duration between the two groups was 20.16 seconds. In total, 2.8% had intraoperative retinal tears (P value= 0.314), and postoperatively, a total of 4.2% of the patients had postoperative complications (P value= 0.077); all of them belonged to Group A.

Conclusions: 25-gauge 20,000 cpm Hypervit dual blade showed a shorter vitrectomy time, although not statistically significant. Future studies and real-world performance will likely take advantage of the more efficient cut rate.

Poster No.: PO-559

Posterior Approach With Phacofragmatome for Cataract With Fuchs' Endothelial Corneal Dystrophy

*First Author: Lily **ARFIANI***
*Co-Author(s): Budu, Ichsan **ANDI**, Hasnah **EKA***

Purpose: To report the outcome of pars plana vitrectomy with posterior lensectomy and phacofragmatome for the management of cataract with Fuchs's endothelial corneal dystrophy.

Methods: A case report is presented.

Results: A 75-year-old man presented with blurry vision in both eyes. Visual acuity was 20/200, and hand movement in the right and left eye, respectively. His lens status was senile nuclear cataract in the right and pseudophakic in the left eye. This patient had had phacoemulsification cataract surgery in the left eye, with visual acuity getting worse due to persistent corneal edema. Pars plana vitrectomy with posterior lensectomy and phacofragmatome was performed, then intraocular lens implantation in the sulcus. Thirty days post-surgery, a significant improvement in visual acuity to 20/25 with endothelial cell count remaining stable at 1804 cells/mm^2, central corneal thickness 519 µm and did not find any sign of corneal endothelial cell drop out.

Conclusions: Pars plana vitrectomy with phacofragmatome should be considered one of the best options for the management of cataract with fuchs' endothelial corneal dystrophy.

Poster No.: PO-573

Repeat Pneumatic Retinopexy for Recurrent Retinal Detachment in a Case of Giant Retinal Detachment

*First Author: Harshit **VAIDYA***

Purpose: To highlight the utility of a simple office-based procedure in treatment of a complex retinal pathology.

Methods: A 60-year-old male with loss of nasal visual field in the right eye and BCVA of 6/18 had a macula on, pseudophakic temporal giant retinal detachment from 7.30 o'clock to 11 o'clock. He was managed with pneumatic retinopexy using sulphur hexafluoride gas (SF6 100%) gas under topical anaesthesia under aseptic conditions.

Results: The patient underwent Pneumatic Retinopexy with 0.7 cc 100% SF6 and AC tap of 0.3 ml was carried out. The prone position was advised for the first four hours, following which the left lateral position was advised to the patient. Laser photocoagulation was commenced from day 2 to the posterior edges of the superiorly settling detachment. A second bubble was injected on day 3 (0.5 cc SF6 with 0.2 cc AC tap) with similar positioning postoperatively, and a laser was added to the rest of the temporal retina. On day 40, nasal retinal detachment was noted with HST at 1.30 o'clock. Repeat Pneumatic Retinopexy was carried out (0.6 SF6 100% with 0.3 cc AC tap), and subsequently, the nasal half of the retina was lasered. This time, the patient was advised of right lateral positioning in the post-operative period. On day 90, the retina was completely attached with minimal floaters, with a BCVA of 6/9.

Conclusions: Pneumatic retinopexy can give beneficial outcomes even in the more complex retinal detachments. Appropriate case selection, positioning, and close follow-up remain the key indicators for the success of pneumatic retinopexy.

Poster No.: PO-580

Retinal Sensitivity Changes in Large Macular Holes Following Inverted Internal Limiting Membrane Flap Technique Surgery

*First Author: Wei-yu **HUANG***

Purpose: This study was designed to evaluate the visual outcome of patients with large macular holes after receiving the inverted internal limiting membrane (ILM) flap technique.

Methods: We enrolled patients with idiopathic large macular holes (MH) and receiving surgery from 2019 to 2023. The criteria defining large MH is those patients having a minimum diameter of idiopathic MH exceeding 500 µm. All patients underwent comprehensive preoperative ophthalmologic examinations, OCT and best-corrected visual acuity (BCVA) measurements. Postoperative OCT and BCVA were evaluated at least three months post-operatively. Additionally, the presence of microperimetry (MP-1) pre- and post-operatively for retinal sensitivity was documented.

Results: A total of 14 patients (14 eyes) were enrolled for analysis. The mean retinal sensitivity within central 12˚ and 4˚ were statistically improved after surgery ($P<0.05$). The number of absolute or relative scotomas (stimuli values $\leqq$ 4 dB) within central 4˚ showed a significant reduction postoperatively. There was also a significant increase in visual acuity postoperatively.

Conclusions: Surgical procedures of the inverted ILM flap technique induced a great success rate in patients with large MH. The postoperative follow-up in all MHs of fourteen eyes presented anatomically closed. The inverted ILM flap technique also demonstrated favorable results in the improvement of both the functional and anatomic outcomes.

Poster No.: PO-563

Retinectomy and Postponement of Endolaser in Total Rhegmatogenous Retinal Detachment With Advanced Proliferative Vitreoretinopathy: A Case Report

*First Author: Aderiesta **PADMASTRIMAYA***
*Co-Author(s): Arief **WILDAN***

Purpose: To present a rhegmatogenous retinal detachment (RRD) with advanced proliferative vitreoretinopathy (PVR) (CP1-12) case treated with phacoemulsification without intraocular lens (IOL) Implantation, vitrectomy, retinectomy, and silicone oil tamponade surgery with postponement of endolaser.

Methods: A case report of a 49-year-old female with total retinal detachment (RD) and advanced PVR (CP1-12) in the right eye.

Results: A 49-year-old Asian female patient presented with sudden blurred vision. Preoperative visual acuity was hand movement. The anterior segment was within normal limits, with lens opacity grade four nuclear sclerosis. The funduscopy could not be evaluated. The B-Scan Ultrasound showed retinal stiffness, which is indicative of PVR. Phacoemulsification without IOL implantation, vitrectomy, retinectomy, and silicone oil implantation were performed. Intraoperative observations showed total RD with advanced PVR (CP1-12) and a retinal break in the inferonasal region. Circular and radial retinectomy followed by fluid-air exchange was done; a subsequent endolaser could not be performed during the operation because the retina was still not attached properly, then a silicone oil tamponade was introduced. One week after head face-down positioning, the retina showed good reattachment, so laser retinopexy at the edge of retinectomy was done using slit lamp ophthalmoscopy. The best-corrected visual acuity (BCVA) one month after the laser was 20/200, and the retina was still reattached under silicone oil.

Conclusions: Retinectomy remains an option for the treatment of RD with advanced PVR (CP1-12). Postponed laser retinopexy might still have a good effect on keeping retinal reattachment under silicone oil and improving visual acuity after one week of head positioning.

Poster No.: PO-570

Risk Factors for Epiretinal Membrane Following Pars Plana Vitrectomy for Uncomplicated Rhegmatogenous Retinal Detachment

*First Author: Dayeong **KIM***
*Co-Author(s): Minhee **KIM**, Young Jung **ROH***

Purpose: To evaluate the risk factors associated with the incidence and severity of epiretinal membrane (ERM) after pars plana vitrectomy (PPV) for uncomplicated primary rhegmatogenous retinal detachment (RRD).

Methods: This retrospective, single-center cohort study included 176 patients (176 eyes) who underwent RRD repair using PPV between April 2007 and August 2022, without a prior history of macular disease, including ERM. The primary outcomes were ERM formation, classified using an optical coherence tomograph, and the severity of ERM. Preoperative characteristics, visual acuity, postoperative complications, and risk factors for ERM formation were also investigated.

Results: The average age of the patients was 54.5 ± 11.4 years, and 66 (37.5%) were women. Postoperative ERM occurred in 81 eyes (46%) during the one-year follow-up period. Only 3 (1.7%) eyes were required secondary PPV for ERM peeling. There was a statistically significant difference in age ($p<0.001$), vitreous hemorrhage before surgery ($p<0.001$), number of retinal breaks ($p=0.016$), extent of retinal detachment ($p=0.002$), type of tamponade ($p=0.008$), retinectomy ($p=0.027$), cystoid macular edema ($p=0.002$), postoperative subretinal fluid ($p=0.013$), best-corrected visual acuity (BCVA) after surgery at 3 months ($p=0.001$), 6 months ($p<0.001$), and 1 year ($p=0.005$). And as a result of multinomial logistic regression analysis, postoperative ERM formation was associated with older age ($p=0.018$), preoperative vitreous hemorrhage ($p<0.001$), postoperative cystoid macular edema ($p=0.040$), and postoperative subretinal fluid ($p=0.023$).

Conclusions: Patients who underwent PPV for RRD repair have a higher probability of secondary ERM when they are at an older age, have cystoid macular edema, or when subretinal fluid is present after surgery.

Poster No.: PO-552

Scleral Buckling and Its Modifications in Unique Situations

*First Author: Henal **JAVERI***
*Co-Author(s): Divyansh **MISHRA**, Mahesh Shanmugam **PALANIVELU**, Rajesh **RAMANJULU***

Purpose: Scleral Buckling surgery is a dwindling skill, owing partly to the difficulty in examination and mastering the intricate steps. The purpose of this paper is to present a series of cases demonstrating novel alterations to achieve successful scleral buckle outcomes in certain challenging situations.

Methods: Case 1: Localisation on the table can be challenging, especially for beginners, and we showcase an easy modification for better accuracy in localization and cryo delivery using a homemade illuminated localizer with a bent light pipe and an illuminated cryoprobe. Case 2 displays the effortless maneuvering for suturing of a radial buckle segment when the break lies in close proximity or underneath a rectus muscle. Cases 3 and 4: Demonstrate two different buckle augmentation methods using an additional scleral buckle segment and visco-augmentation with successful postoperative outcomes.

Results: In addition to adding to the ease of surgery, good closure of the retinal breaks, and reduction in vitreo retinal traction, with adequate scleral indentation and chorioretinal adhesion and long-term stability were documented, despite the challenging situations.

Conclusions: Scleral buckling surgery is indeed a handy craft in a vitreoretinal surgeon's armory, especially when it comes to a young patient. However, owing to the steep learning curve and inclination towards pars plana vitrectomy, it is a lost art in this day and age.

Circumventing unique situations for successful buckling is a crucial conversation at this time.

Poster No.: PO-579

Scleral Buckling with Adjuvant Pneumatic Retinopexy versus Scleral Buckling Alone for the Treatment of Rhegmatogenous Retinal Detachment

*First Author: Yong Je **CHOI***
*Co-Author(s): Kwangsic **JOO**, Young Hoon **JUNG**, Min Seok **KIM**, Se Joon **WOO***

Purpose: To compare the efficacy and safety of scleral buckling with adjuvant pneumatic retinopexy (SB with PR) and scleral buckling (SB) alone for the treatment of primary rhegmatogenous retinal detachment (RRD).

Methods: We included patients who underwent SB with PR (n=88) or SB alone (n=161) for primary RRD repair between January 2017 and February 2021. We reviewed the medical records of 249 patients who completed a minimum of 6 months of postoperative follow-up. Primary anatomical success was defined as retinal reattachment at 6 months after a single surgery. Surgical outcomes were compared between the SB with PR, and SB alone groups.

Results: The primary anatomical success rate for SB with PR was 81.8%, whereas that for SB alone was 80.7% (P = 0.836). Among patients who achieved primary anatomical success, those in the SB with PR group showed postoperative epiretinal membrane formation (ERM) more frequently than those in the SB alone group (P = 0.009). For patients with macula-off RRD, the mean time to SRF absorption was not significantly different between the two groups (P = 0.881). Multivariate Cox regression analysis showed that surgical failure was associated with macula-off RD (hazard ratio [HR], 1.87; P = 0.036). In the SB with PR group, RD involving ≥ three quadrants was a significant risk factor for surgical failure (HR, 3.04; P = 0.041).

Conclusions: Adjuvant pneumatic retinopexy does not provide any additional benefit in improving the surgical outcomes of SB for primary RRD repair. In addition, it is associated with an increased risk of postoperative ERM formation.

Poster No.: PO-576

Structural and Functional Analysis of Multiple Subretinal Fluid Blebs after Successful Surgery for Rhegmatogenous Retinal Detachment

*First Author: Yingchao **WANG***
*Co-Author(s): Kangjie **KONG**, Yingqin **NI**, Sisi **XU***

Purpose: This retrospective study investigated the clinical characteristics of multiple subretinal fluid blebs (MSFBs) after successful surgery for rhegmatogenous retinal detachment (RRD) and explored the association between MSFB with best-corrected visual acuity (BCVA) and metamorphopsia.

Methods: The study comprised 206 patients after successful surgery for RRD, with 58 and 148 eyes undergoing, respectively, scleral buckling (SB), and pars plana vitrectomy (PPV). The clinical characteristics of MSFBs were analyzed by optical coherence tomography (OCT). The choroidal vessels in some cases were evaluated with OCT angiography. M- M-charts were used to determine the metamorphopsis.

Results: MSFBs occurred in 17 (29.3%) and 8 (5.4%) eyes given SB and PPV, respectively. MSFBs appeared 5.6 ± 5.5 weeks after surgery and required 34.9 ± 13.8 weeks to disappear. Disrupted external limiting membrane and ellipsoid zone could still be seen in 83.3% and 66.7% of the patients 12 months after surgery; these rates were significantly higher than those of patients without MSFBs (p = 0.047, 0.022, respectively). Twelve months post-surgery, BCVA and metamorphopsia scores of the patients with MSFBs were statistically comparable to those of the controls.

Conclusions: MSFBs occur more commonly after SB than PPV. MSFBs may delay the recovery of the outer retina structure but do not affect postoperative BCVA and metamorphopsia.

Poster No.: PO-569

Visual Improvement Outcome of Pars Plana Vitrectomy Combined Endofragmentation and Secondary IOL Implantation for Dropped Nucleus After Cataract Surgery: A Case Report

*First Author: Saut **SIMAMORA***

Purpose: Nucleus drop is one of the most feared and severe complications of modern cataract surgery. The lens material may drop through iatrogenic breaks of the posterior capsule. The incidence of the nucleus as the complication of phacoemulsification increases concomitant to the increased frequency of phacoemulsification. Pars plana vitrectomy (PPV) followed by endofragmentation and secondary intraocular lens (IOL) implantation is the choice of management procedure. This case report aims to present the outcome of PPV for the treatment of dropped nuclei after cataract surgery.

Methods: A 65-year-old female patient came to the Vitreoretina department with chief complaints of blurry vision in her left eye after phacoemulsification one month before. Ophthalmological examination revealed visual acuity of the right eye (VA RE) was 6/15 and the left eye (VA LE) was hand movement. The intraocular pressure (IOP) on the right eye was 18 mmHg and on the left eye was 59 mmHg. On her left eye, there were aphakic, dropped lens nucleus and secondary glaucoma.

Results: The patient got an antiglaucoma agent until her IOP was decreased. She underwent pars plana vitrectomy to remove the dropped nucleus and iris-fixated IOL. One week post-operative evaluation revealed VA LE was 6/7.5 and iris fixated IOL was in the proper position.

Conclusions: Nucleus drop generally occurs in phacoemulsification cataract surgery techniques. Retained lens nuclei or fragments in the vitreous may cause severe intraocular inflammation, leading to secondary glaucoma. The proper and good management of retained lens fragments in the nucleus drop gives excellent outcomes to the patients.

Translational Research in Ophthalmology

Poster No.: PO-585

Amblyopia: What Does the Future Hold?

*First Author: Piyush **JAIN***

Purpose: As ophthalmologists, it is important that we embrace emerging concepts. Recent advancements in technology and scientific understanding have opened up new possibilities for the future of amblyopia management. This abstract aims to explore emerging approaches and technologies that hold promise for the future of amblyopia treatment.

Methods: A comprehensive review of the literature was conducted to identify recent research and developments related to amblyopia treatment. Various approaches, including novel therapies and technological interventions, were examined in terms of their potential benefits and challenges.

Results: Several promising strategies and technologies have emerged in recent years. These include binocular therapies utilizing virtual reality (VR) and augmented reality (AR), perceptual learning paradigms, pharmacological interventions, and non-invasive brain stimulation techniques. Virtual reality-based treatments, such as dichoptic games and 3-D stimulation, show the potential to enhance binocular vision and visual acuity. Perceptual learning programs have demonstrated the ability to improve contrast sensitivity and visual acuity in amblyopic individuals. Pharmacological agents targeting visual cortex plasticity and non-invasive brain stimulation techniques like transcranial magnetic stimulation (TMS) are also being explored as adjunctive treatments.

Conclusions: The future of amblyopia treatment holds great promise, fueled by advancements in technology and a deeper understanding of the neurobiology of the condition. The integration of virtual reality, augmented reality, and perceptual learning paradigms presents exciting opportunities for enhancing visual outcomes in amblyopic individuals. Collaborative efforts among researchers, clinicians, and industry stakeholders are crucial for translating these advancements into routine clinical practice and improving the outcomes and quality of life for individuals with amblyopia.

Poster No.: PO-583

Biomarker Profile in Aqueous Humor in Patients With Retinal Vein Occlusion With Macular Edema

*First Author: Thirumalesh **M B***
*Co-Author(s): Aayesha **KHANUM***

Purpose: To study changes in the disease resolution and aqueous humor soluble profile following two different treatment strategies plain ranibizumab and ranibizumab with steroids. To compare the fluid-free interval in both groups and edema resolution in each group.

Methods: Twelve treatment-naive eyes included 6 patients randomized in each group. There was no significant difference in baseline CMT between each group. Aqueous sampling was done at the time of injection and at the time of repeat injection at recurrence. Various biomarkers were measured in disease subclasses BRVO and CRVO. Fluid-free interval was noted between 2 injections in each treatment group, and edema reduction was noted in each treatment group. The total number of injections required was noted in each group.

Results: VEGF-A, sICAM-1, MMP-9, and IL-6 levels were higher in retinal vein occlusion (RVO) aqueous humor samples. Ranibizumab (Anti-VEGF) treated eyes, and Anti-VEGF+ steroid-treated eyes showed resolution of macular edema in patients with RVO. There was no significant difference in aqueous biomarker profile change of patients treated, between the two groups. There was no significant difference in the fluid-free interval between.

Conclusions: The addition of steroids along with the anti-VEG significantly changes the edema reduction on OCT. However, the aqueous collected at the time of recurrence showed no significant difference between the two groups. Both groups showed similar fluid-free intervals. The total number of injections required was less in the combined group than in the plain anti-VEGF group.

Poster No.: PO-584

Polymorphism of Exon 42 and 48 in Col4A4 Gene Among the Malaysian Population With Keratoconus

*First Author: Hong Nien **LEE***
*Co-Author(s): Visvaraja **SUBRAYAN***

Purpose: To assess variation in exons 42 and 48 of the Col4A4 gene in the Malaysian population with keratoconus by using restriction digestion and sequencing. Most cases of keratoconus are sporadic. However, genetic inheritance and ethnicity play a role. In the Col4A4 gene, the exon 42 and exon 48 polymorphisms have been associated with a predisposition to keratoconus. Such data can be contributed to the data in the Southeast Asia region.

Methods: A case-control study in a single center. The sample size was calculated. Consents were taken, and interviews were done via questionnaire. Clinical features of keratoconus were evaluated. Inclusion and exclusion criteria applied. Blood samples were collected in EDTA. DNA extraction and genotyping studies were done. Amplification of DNA using restriction digestion and sequencing was performed. The samples were sent for sequencing, and the collected data were further analyzed with the Basic Local Alignment Search Tool. All data is stored and analyzed with IBM SPSS statistics version 23.0.

Results: A total of 137 subjects were recruited: 53 patients and 84 healthy unrelated subjects. Pearson Chi-Square was performed. A significant difference was found between patients and control in polymorphism of Col4A4 exon 42 (P=0.006. OR 5.982). No significant difference in exon 48 (P=0.071).

Conclusions: The presence of exon 42 polymorphism is supported by two studies, but opposed by another two. This can be due to the variance of genetic distribution among different races, and geographic regions. Further research is required.

Visual Sciences

Poster No.: PO-591

Characteristics and Neurogenic Properties of Primary and Immortalized Mouse Müller Glial Cells

*First Author: Hang **TRAN***
*Co-Author(s): Shinichi **FUKUDA**, Donny **LUKMANTO***

Purpose: To investigate the characteristics and neurogenic properties induced by chemical reprogramming of primary Müller Glial Cells (pMC) and immortalized Müller Glial Cells (iMC).

Methods: PMC were isolated from the eyes of postnatal 2 mice and subsequently passaged two times. The growth curves of pMC and two mouse iMC, QMMuC-1 and ImM10, were determined by cell counting. Immunostaining was used to examine the cell markers' distribution. The chemical reprogramming was conducted following a previous study with some modifications. Cells were fixed at day 7 and then subjected to immunostaining using GS, Sox9, and Tuj1 antibodies.

Results: PMC, QMMuC-1 and ImM10 exhibited typical characteristics of Müller Glial Cells including cell morphology and cell marker's distribution. ImM10 exhibited a significantly higher growth rate compared to pMC and QMMuC-1 ($p<0.05$). During the chemical induction process, pMC, QMMuC-1, and ImM10 underwent a transformation in cell morphology, adopting a neuron-like appearance. Neuron-like cells were positive for Tuj1 and weak positive for GS and Sox9, indicating an immature neuronal stage. The percentage of Tuj1+ cells among total cells originating from ImM10 was 2.5 and 3.8 times greater than that from pMC and QMMuC-1, respectively. However, the total axon length per Tuj1+ cells derived from ImM10 was shorter (180 ± 19 µm) compared to pMC (360 ± 62 µm) and QMMuC-1 (266 ± 24 µm).

Conclusions: These results suggest that both pMC and iMC can be chemically converted to immature induced neurons with variations in conversion efficiency and axon length.

Poster No.: PO-593

Efficacy of Dichoptic Contrast Discrimination Training in Patients With Amblyopia With or Without Alternating Fixation

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Purpose: To determine whether amblyopia etiology can affect the outcome of a binocular contrast discrimination training method.

Methods: Four adults with amblyopia and 9 controls were tested. Participants completed testing for visual acuity (Landolt C), stereopsis (Randot Fly Stereoacuity Test), and motor function (Bruininks-Oseretsky Test of Motor Proficiency 2nd edition) before and after training. The training showed Gabor patches in two intervals and asked participants to judge which had a higher contrast. One interval contained the target in the amblyopic eye and a mask in the fellow eye, whereas the other interval contained only the mask (fellow eye). There were 4 levels of mask contrast (-36, -28. -20, and -12 dB re 1). Contrast thresholds were measured at each mask contrast level using the staircase method.

Results: Two patients without alternating fixation had significantly higher contrast thresholds compared to controls at all mask contrast levels, which was consistent with previous results. Two patients with alternating fixation unexpectedly showed lower pre-training thresholds for mask conditions set to -12 and -20 dB. The thresholds gradually approached those of controls throughout the training. On the other hand, they showed higher thresholds for the -36dB mask condition. One patient showed an improvement of 0.36 logMAR in the amblyopic eye (baseline VA = 0.4 logMAR) and recovered their stereopsis from nil to 60 sec of arc.

Conclusions: Etiology may impact the efficacy of binocular treatments. Patients with alternating fixation may have difficulties maintaining binocular fusion, and may switch dominance in some situations.

Poster No.: PO-588

Low Vision Management in Aphakic Retinitis Pigmentosa Patients: The Role of Contact Lenses

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*Co-Author(s): Joan **HUTABARAT**, Ine **MUSA**, Karmelita **SATARI**, Susanti **SIRAIT***

Purpose: To report a case of low vision management in a patient with retinitis pigmentosa.

Methods: To present a case report.

Results: A thirty-nine-year-old male came with a chief complaint of blurred vision in both eyes since ten years ago. Blurred vision became worse at night. He had a history of the left eye (LE) traumatic cataract surgery and underwent separate cataract surgery on the right eye (RE). Blurred vision at night was also found in his family member. Best corrected distant visual acuity with S+1.00 C-2.00 x180 was 4/10 for RE and with S+13.00 was 4/32 for LE. Near visual acuity was 0.8M at 30 cm with additional lens S+3.00 on LE. The anterior segment showed pseudophakia RE and aphakia LE, while others were within normal limits. Fundus examination showed the bone spicule appearance. Color vision was deficient and contrast sensitivity was reduced. The Humphrey visual field 10:2 showed peripheral visual field defect. The patient was diagnosed with retinitis pigmentosa, pseudophakia RE, aphakia LE, and severe visual impairment. The patient was assessed to use a rigid gas permeable (RGP) contact lens S+14.50 for LE, and BCVA could reach 0.3. Contact lenses could be an option to minimize the risk of aniseikonia due to anisometropia while preserving the visual field. The patient was also taught about good illumination and contrast and given orientation and mobility training.

Conclusions: Low vision management in patients with retinitis pigmentosa should be managed comprehensively according to their needs. The management aims to maintain their residual visual function with the best corrected visual acuity and low vision rehabilitation.

Poster No.: PO-587

Lycium barbarum Polysaccharide Promotes Corneal Re-epithelialization After Alkaline Injury

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Purpose: Chemical injury of the cornea results in epithelial defect and subsequent stromal scarring and infection. Our study aims to evaluate the effectiveness of pre-treatment of Lycium barbarum polysaccharide (LBP) in promoting corneal re-epithelialization after alkaline burn.

Methods: The corneas of C57BL/6J mice were pre-treated with topical phosphate-buffered saline or LBP (0.2/2/20 mg/mL) for 7 days, followed by 0.1M sodium hydroxide injury for 30 s and washing with distilled water for another 30 s. The area of epithelial defect and thickness of the cornea were evaluated. Inflammatory cytokines and water channel expression levels were assessed using immunohistochemistry and Western blot.

Results: Compared to the injury group, mice with 2 mg/mL LBP pre-treatment revealed a significant decrease in fluorescein-stained area after injury ($p = 0.025$), with increased epithelial layer thickness ($p = 0.004$). The corneal opacity was significantly reduced in the group with 2 mg/mL LBP pre-treatment followed by injury ($p = 0.02$). The expression of matrix metalloproteinase 12 ($p = 0.033$), platelet-derived growth factor-BB ($p = 0.031$), and aquaporin 5 ($p = 0.022$) resulted in a decrease in expression level in the group with 2 mg/mL LBP pre-treatment. Our results showed that 2 mg/mL LBP, with no apoptotic effect on corneal cells, promoted corneal epithelial growth and minimized disruption of the collagen architecture after injury in vivo.

Conclusions: We suggest that LBP, as a natural traditional Chinese medicine, may potentially be a novel topical pre-treatment option for patients highly susceptible to ocular injury.

Poster No.: PO-590

Optimising Umbilical Cord Stem Cells for the Treatment of Corneal Endothelial Disorders

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Purpose: Corneal endothelial disorders, such as Fuchs endothelial corneal dystrophy (FECD), are a leading cause of corneal transplantation. Due to a global

shortage of donor corneal tissue, it is essential for alternative therapeutic strategies to be developed. The umbilical cord is a rich source of stem cells, including human umbilical vein endothelial cells (HUVECs). The optimisation of HUVECs for corneal endothelial cell (CEC) replacement will provide a therapeutic pathway for the treatment of corneal endothelial disorders.

Methods: HUVECs were isolated from ten umbilical cords and characterised by polymerase chain reaction (PCR) and immunocytochemistry (ICC). HUVECs were differentiated into CEC-like cells by using a CEC-conditioned medium. Differentiation was measured by changes in cell morphology, ICC, PCR, and flow cytometry analysis. The conditioned medium was fractionated, and mass spectrometry was used to identify proteins which may be driving CEC differentiation.

Results: Isolated HUVECs showed expression of HUVEC markers, CD31 and CD146. Following differentiation by conditioned medium, a clear change in cell morphology and the upregulation of CEC markers ATP1A1 and ZO1 was observed. Mass spectrometry analysis identified proteins in the conditioned medium which may be responsible for CEC differentiation.

Conclusions: These results show that HUVECs can be differentiated into CEC-like cells. Differentiated cells show a hexagonal morphology and an upregulation of CEC markers. Proteins responsible for CEC differentiation can be identified, allowing for the development of targeted CEC replacement therapies in which differentiated HUVECs are used to re-populate the corneal endothelium.

Poster No.: PO-589

Real-world Psychophysics and Neuroimaging Outcomes of Gene Therapy With Voretigene Neparvovec

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Purpose: RPE65-associated retinal degeneration (RPE65-RD) is a severe form of rod-cone dystrophy with a profound impact on visual function. Gene therapy with voretigene neparvovec (AAV2-hRPE65v2) has been shown to improve ambulatory navigation, visual field and light sensitivity in treated patients. By combining psychophysics (Full-field Stimulus Threshold, FST) and neuroimaging (functional Magnetic Resonance Imaging, fMRI), this study aims to evaluate the real-world outcomes of voretigene neparvovec.

Methods: Prospective case series including consecutive patients with biallelic RPE65-RD submitted to bilateral pars plana vitrectomy and subretinal injection of 0.3mL of AAV2-hRPE65v2. White stimulus FST and fMRI were performed before and 12 months after treatment. Visual activations were assessed using a block-design paradigm of a checkerboard pattern with contrast reversal at 3 contrast levels. Additionally, we evaluated the population receptive field sizes of visual neurons in the calcarine sulcus.

Results: Ten patients (mean age 27±9.2 years; 70% female) were included. Mean combined baseline and 12-month FST values were -2.35±0.91 and -3.54±1.09 log-units, respectively. Despite the improvement of light sensitivity under low luminance conditions, fMRI data suggested a patchy pattern of changes, more prominent in the perifoveal region. We also found evidence for the interaction between low-level and high-level visual mechanisms in visual improvement, with a positive right hemispheric bias.

Conclusions: While improvement in retinal sensitivity to light was observed on FST, fMRI data suggested a patchy pattern of changes and a positive right hemispheric bias on visual improvement. This suggests that cognitive factors related to visual attention may help amplify low-level mechanisms.

Poster No.: PO-592

Small Chemicals-Mediated Mülller Glia to Retinal Neuron Conversion

*First Author: Donny **LUKMANTO***
*Co-Author(s): Shinichi **FUKUDA**, Hang **TRAN***

Purpose: Direct reprogramming is a method to convert one cell lineage into another. In the retina, direct reprogramming has been facilitated with a virus vector to convert Mülller Glia (MG) into retinal neurons. However, gene transfer by virus vector is hindered by lack of temporal and safety control. Therefore, another means for gene transfer is expected. Small chemicals are bioactive compounds that could enhance gene expression through alteration of the signalling pathway. Recently, small chemicals have been used to convert brain glia cells into neurons. Here, we examined whether small chemicals-based conversion is possible in the retina.

Methods: Small chemicals of TGF inhibitor, BMP inhibitor, GSK-3b inhibitor, and Notch inhibitor were intravitreally injected into the retina in vivo or added to culture medium in vitro. Cell proliferation and reprogramming were evaluated with immunostaining of proliferating cells marker (BrdU) and neuronal marker (Tuj1).

Results: BrdU-positive cells increased after administration of small chemicals of SLCD in vivo. BrdU-positive cells are confirmed to be GFAP-positive, indicating that proliferated cells are of MG origin. In vitro, we observed that established MG cell lines changed into neuronal morphology and became Tuj1 positive after small chemicals cocktail administration, suggesting conversion from MG into neuron in vitro.

Conclusions: Small chemicals cocktail could be used to direct reprogram MG into retinal neurons.

Poster No.: PO-586

Understanding Monocular Pupillary Distance for Prescribing Glasses

First Author: Priethikka M ***S***
Co-Author(s): Chandrasekaran ***B***

Purpose: This study aims to measure the monocular pupillary and interpupillary distance in patients with refractive errors to analyze their significance while prescribing spectacles.

Methods: A cross-sectional, randomized, analytical study was performed amongst the general population who presented to the OPD with complaints of diminished vision. 250 men and 250 women were chosen. Ocular and neurological conditions other than refractive errors were excluded. The MPD and IPD were measured using a pupillometer and were evaluated in each patient.

Results: We found that 35 out of the 250 men and 40 out of 250 women had varying MPD in both eyes. This approximately accounts for about 15% of the total population taken into consideration. An average difference of 1mm was seen in any eye, thereby causing a significant change ($p < 0.05\%$).

Conclusions: Therefore, both parameters are crucial while prescribing glasses to avoid aberrations and asthenopia symptoms.

E-POSTERS

AI, Digital Innovation and Virtual Health

A Deep Learning Model for the Screening of Age-Related Macular Degeneration in Taiwan

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Purpose: To investigate a deep learning image assessment software VeriSee AMD™ and to check its accuracy in diagnosing the category of age-related macular degeneration (AMD).

Methods: Patients aged 50 or more who underwent single-field, nonmydriatic, 45-degree color retinal fundus photography at National Taiwan University Hospital between August 2010 and June 2019 were retrospectively recruited. A total of 6,801 judgable color fundus images were collected and diagnosed for the severity of AMD according to the Age-Related Eye Disease Studies (AREDS) AMD category by ophthalmologists, and referable AMD was defined as category 3 (intermediate) or 4 (advanced). Among these pictures, 6,123 were used for model training and validation. The other 678 images were used for testing the accuracy by VeriSee AMD™ and ophthalmologists. Area under the receiver operating characteristic curve (AUC) for VeriSee AMD™, and the sensitivities and specificities for VeriSee AMD™ and ophthalmologists were calculated.

Results: The AUC for VeriSee AMD™ in diagnosing referable AMD was 0.961. The accuracy for VeriSee AMD™ in testing was 92.0%, with a sensitivity of 90.0% and specificity of 92.4%. The mean accuracy for ophthalmologists for diagnosing referable AMD was 85.8%, ranging from 75.9% to 97.3%.

Conclusions: The software VeriSee AMD™ from Taiwan had excellent sensitivity and specificity in diagnosing referable AMD from color fundus images. It may provide clinical assistance for the screening of intermediate and advanced AMD with non-mydriatic retinal fundus photography.

AI-Powered Diabetic Retinopathy Screening

*First Author: Tumenjargal **ERDENEBAATAR***
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Purpose: Diabetic Retinopathy is a leading cause of blindness worldwide, and its early detection is crucial for effective management. In low-resource settings, where access to specialized ophthalmic care is limited, the integration of Artificial Intelligence holds immense promise for improving DR screening.

Methods: We conducted a comprehensive study involving a cohort of 160 eyes of 80 patients, comprising 40 confirmed DR cases and 40 no diabetic retinopathy cases. High-resolution fundus images were captured using a RetCAD fundus camera. The ophthalmologist's assessment of DR grade was compared with the conclusion by AI. We conducted an analysis utilizing diagnostic testing parameters, including metrics such as the area under the ROC curve, sensitivity, and specificity, to compare the conclusions drawn by ophthalmologists with those generated by the AI.

Results: Our research highlighted the promising possibilities of AI screening in DR. The sensitivity of the study was 92.51%, and the specificity was 96.25%. Furthermore, the ROC curve analysis revealed the AI model's strong discriminatory ability across sensitivity and specificity thresholds, yielding an AUC of 0.943.

Conclusions: In conclusion, our pioneering study showcases the potential of AI in transforming DR screening. Strong sensitivity, specificity, and AUC values indicate differences in efficacy, suggesting that the use of artificial intelligence in the near future may lead to improvements in the early detection of DR. Our research opens an era where AI-guided diagnostics stand ready for a new beginning in medical science, offering not just accurate screenings but also a beacon of hope for equitable and accessible eye care worldwide.

Accuracy Level of Cataract Detection Based on Artificial Intelligence on Slit Lamp and Smartphone Camera Eye Photos

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Purpose: This study aims to analyze the accuracy of artificial intelligence (AI) based gray level co-occurrence matrix (GLCM) feature extraction and support vector machine (SVM) classification method for cataract diagnosis on eye photos taken with slit lamps and smartphone cameras.

Methods: Ophthalmology specialists evaluated eye photos taken with slit lamps and smartphone cameras as normal eyes or eyes with cataracts. Pre-processing

of the photos was performed followed by feature extraction using the GLCM method and classification using the SVM to determine a normal or cataract eye. We conducted diagnostic tests to determine the accuracy, sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of GLCM feature extraction and SVM classification in cataract detection.

Results: AI-based cataract diagnosis using GLCM feature extraction and SVM classification on eye photos taken with the slit lamp, smartphone camera, and a combination of the slit lamp and smartphone camera yielded accuracies, sensitivities, and specificities ranging from 80.76-86.39%, 81.6-83.37%, and 79.48-87.06%, respectively.

Conclusions: The GLCM feature extraction and SVM classification method have good accuracy in detecting cataracts in slit lamps and smartphone camera eye photos.

Addressing the Burden and Unmet Needs Associated With Medical Device Maintenance: A Targeted Literature Review

First Author: Carine C.W. ***HSIAO***
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Purpose: A targeted literature review was conducted to identify the unmet needs associated with medical device maintenance in hospital and operating room settings within the ophthalmic field, and the potential solutions for these challenges.

Methods: MEDLINE was searched from January 1, 2010 to April 30, 2023, for English-language studies pertaining to medical device maintenance, with an emphasis on ophthalmology and similar surgical fields as required. There were no limits on the study design. Frequency and consequences of equipment failure, and interventions to reduce downtime were extracted.

Results: A total of 14 studies were retrieved, including a mix of observational and descriptive studies, and a review. The reported rate of equipment failure ranged from 15% to 63%, with insufficient maintenance being a primary contributing factor. Consequences of equipment failure included case cancellations, prolonged anesthesia time, increased staff workload, and workflow disruption. In ophthalmology and similar surgical domains, the implementation of machine learning for predictive maintenance may enhance medical equipment performance, potentially reducing repair time, extending equipment life, and minimizing costs (n=7). Additionally, the availability of remote maintenance services and technical support may provide operational efficiency and improve patient care and throughput (n=5).

Conclusions: Proactive approaches are crucial to mitigate equipment failure in medical settings. Findings emphasize the potential benefits of predictive maintenance and remote support in enhancing equipment performance, patient safety, and operational efficiency. Further studies are required to understand the impact of suboptimal medical device maintenance and effective solutions for ophthalmology.

Artificial Intelligence (AI) in Screening of Diabetic Retinopathy at Sindh Institute of Ophthalmology and Visual Sciences (SIOVS) Hyderabad Sindh Pakistan

First Author: Khalid ***TALPUR***

Purpose: To validate the use of AI in the screening of DR in hospital-based practice.

Methods: A deep learning model was trained and validated on a private dataset and tested in real-time at SIOVS. The intelligent model evaluated the quality of the test images. The implemented model classified the test images into DR-Positive and DR- Negative ones. They were also reviewed by clinical experts to assess the model's performance. A total number of 398 patients, including 232 male and 166 female patients, were screened for five weeks.

Results: The model achieved 93.72% accuracy, 97.30% sensitivity, and 92.90% specificity on the test data as labelled by clinical experts on Diabetic Retinopathy.

Conclusions: AI Model showed successful performance in screening DR cases in hospital-based practice.

Comparing the Accuracy of a Tertiary Center's Endocrinologists' Grading on Referable Diabetic Retinopathy With a US FDA Approved Artificial Intelligence System

First Author: Chi Lik ***AU***

Purpose: To compare an Artificial Intelligence (AI) system and local endocrinologists for detecting referrable diabetic retinopathy (DR) in an Asian population in Hong Kong.

Methods: A retrospective, cross-sectional study was conducted in a tertiary hospital in Hong Kong. Fundus photos and gradings by endocrinologists from all consecutive visits of DR screening in 2/2021 were retrieved. Gradings by the AI system and ophthalmologists were obtained. The primary outcome focused on the sensitivity and specificity of the AI system in diagnosing more than mild DR (mtmDR), i.e. referrable DR in our locality. The secondary outcome measured the agreement between the AI system and endocrinologists' gradings. The comparison was evaluated by Cohen's kappa, Gwet's first-order agreement coefficient and McNemar's Chi Square test. Statistical analyses were performed using SPSS 26.0.

Results: Of 187 individuals recruited, 23 were excluded due to the loss of data. 328 eyes completed the study protocol. The sensitivity and specificity of the AI

system for mtmDR were high, 88.0% (95% confidence interval 69.2%-96.7%) and 90.9% (95% CI 86.8%-93.8%), respectively. Imageability was 98.7% (95% CI 96.5%-99.6%). Good agreement between the AI system and endocrinologists was demonstrated by the kappa coefficient of 0.505 (95% CI 0.368-0.642), P<0.001; Gwet's first-order agreement coefficient 0.832 (95% CI 0.776-0.888), P<0.001. The P-value for McNemar's Chi Square test for sensitivity and specificity was 1 and 0.216, respectively.

Conclusions: This study showed the AI system studied demonstrated high sensitivity and specificity in Asian diabetic patients. The AI system demonstrated a good level of agreement with the screening results provided by the endocrinologists.

Corneal Opacity Blindness and Visual Impairment Prevalence and Barriers for Keratoplasty Services in a North Indian State

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*Co-Author(s): Noopur **GUPTA**, Sumit **GROVER**, Vivek **GUPTA**, Sarath **S**, Senjam **SINGH***

Purpose: This study was conducted to assess the prevalence and causes of corneal opacity, corneal opacity-related blindness, the second leading cause of blindness in India, and to ascertain the need for keratoplasty services available in the state of Haryana, India.

Methods: A population-based Rapid Assessment survey was conducted in all 4 representative districts (North, West, Central, and South) of Haryana state. A sample of 18,000 population of all age groups in the sampling frame was enumerated and examined for corneal opacity-related blindness and visual impairment.

Results: The prevalence of corneal opacity in the study population was 1.9 % (1.68-2.10 at 95% CI). There was a positive correlation of the prevalence of corneal opacity with advancing age and female gender and a negative correlation with literacy. 8.8% of persons with corneal opacity had blindness, and 14.7% of persons had visual impairment. A major cause of corneal opacity in our study group was pterygium which accounts for 37%. 7 out of 306 persons (2.3%) with corneal blindness and visual impairment required keratoplasty services to treat blindness and visual impairment. The most common barrier to corneal opacity treatment was lack of awareness (67.9%). Financial constraints and distance from the facility were the major barriers for keratoplasty services.

Conclusions: Corneal opacity and corneal cause of blindness prevalence are concerning in the state of Haryana with improving trends in cataract surgical expertise and coverage. Keratoplasty services need to be strengthened in Haryana to tackle the rising prevalence of corneal blindness.

Cybernetic Revolution in Ocular Surgery: Status Quo and Quo Vadis

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Purpose: Globally, billions lack access to safe and affordable surgical eye treatment, with disparities among socioeconomic groups. The intricate nature of these procedures requiring micron-level precision may contribute to this inequality. The advancement of technology in robotics and teleophthalmology offers clinical benefits and has the potential to expedite access to surgical care. Despite the considerable excitement, this rapidly expanding domain remains in its infancy. This systematic review aims to provide a comprehensive overview of recent advancements as well as barriers in ophthalmic robotics and cyber-surgery.

Methods: Cochrane, MEDLINE, SCOPUS, Google Scholar, and EMBASE databases were searched. No constraints based on language or publication date were applied. The reference lists of included studies were searched for any additional studies not identified by the electronic searches. The search syntax included synonyms for cybersurgery, telesurgery, and ophthalmology robotics.

Results: A total of 682 abstracts were reviewed for inclusion, and 42 articles focusing on ophthalmology were included for full-text review. Cybersurgery is an alternative to overcome distance and the shortage of surgeons. These technologies have the potential to find various applications such as retinal surgery, implant surgery, drug delivery, gene therapy, telementoring, and bio-printing inside the eye. Nevertheless, the utilization of these technologies in a 'real-world' setting may face significant obstacles including expenses, availability, medicolegal considerations, as well as limitations to bandwidth and latency.

Conclusions: Robotic and cybersurgery in ophthalmology have demonstrated feasibility, but they are still in their niche. The advancement of telesurgery is contingent upon surgeon acceptance, need, and development of more prototypes to further improve the quality of ocular surgery.

Development of a Prediction Model for Seasonal Ocular Conjunctivitis Based on Conjunctival Image Analysis Collected Through a Smartphone Application

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Purpose: AllerSearch – a smartphone application for hay fever research utilizing patient and public

involvement – allows users to capture lower eyelid conjunctival images and report symptoms of ocular itching. In this study, we developed and validated a machine-learning model to detect allergic conjunctivitis among patients with hay fever using smartphone-captured conjunctival images.

Methods: Conjunctival images of 6,173 individuals collected by AllerSearch between January 2019 and December 2022 were retrospectively analyzed. Age, gender, RGB R-value in conjunctival images, contact lens use, eye drop use, allergic diseases, smoking history, and dry eye status were used as explanatory variables, and ocular itching reported as non-nasal symptom score (0-3 points) was used as the objective variable. 4,938 (80%) images were used for training; 1,235 (20%) images were set aside for testing. Four machine learning models were developed: lightGBM (LGBM), XGBoost, CatBoost, and an ensemble model averaging the predictions of each model. Regression analysis was performed to evaluate their performance.

Results: The mean age of the subjects was 44.2±15.9 years. 2,602 (42%) subjects were male. Regression analysis yielded coefficients of determination (R2) of 0.221, 0.194, 0.214, and 0.222 for LGBM, XGBoost, CatBoost, and the ensemble model, respectively (P<0.001 for all models).

Conclusions: Machine learning models using conjunctival images from AllerSearch showed satisfactory predictive performance for ocular itching. For patients with hay fever susceptible to allergic conjunctivitis, effective app-based monitoring of ocular pruritus may have implications in offering prompt assessments and treatment recommendations.

Impact of Social Networking Service With Recommendation Function on Cosmetic Surgery for Teenagers

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Purpose: We investigated how various contents related to cosmetic surgery on a social networking service (SNS) with a recommendation function affect teenagers.

Methods: A survey of 564 Japanese high school students (139 males, 420 females, 5 non-answers, average age 16.31±0.95 years) revealed how much time they spend on SNS, their interest in cosmetic surgery, and their personal appearance. We asked 10 questions including evaluation. The number and ratio of responses to each question were calculated, and Spearman's correlation coefficient was calculated between different questions.

Results: 31.8% of respondents answered "very/somewhat interested" in question 3 (receiving eyelid cosmetic surgery within 5 years). 20.7% answered "often/occasionally" to question 9 (Do you ever think about cosmetic surgery due to advertisements and posts on SNS), and she had a correlation coefficient of 0.67 with question 3. 84.7% of respondents answered "a big/slight decrease" to Question 6 (Does SNS affect their level of satisfaction with their appearance?), and the correlation coefficient with Question 3 was 0.31. To Question 8 (Do you think someone close to you has undergone plastic surgery?), 41.8% answered "I think most/some people have had plastic surgery," and the correlation coefficient with Question 03 was 0.37.

Conclusions: Various content related to cosmetic surgery on SNS with recommendation functions may be causing a decline in teenagers' satisfaction with their own appearance and may be stimulating teenagers' interest in cosmetic surgery.

Macular and Submacular Choroidal Microvasculature in Patients With Primary Open-Angle Glaucoma and High Myopia

*First Author: Fengbin **LIN***
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Purpose: To characterize the influence of primary open-angle glaucoma (POAG) and high myopia (HM) on the macular and choroidal capillary density (CD).

Methods: Two hundred and seven eyes were enrolled, including 80 POAG without HM, 50 POAG with HM, 31 HM without POAG, and 46 normal controls. A fovea-centered 6×6 mm optical coherence tomography angiography scan was performed to obtain the CD of the superficial capillary plexus (SCP), deep capillary plexus (DCP), and choriocapillaris. Macular and choroidal CDs were compared among the groups, and the association of CDs with visual field mean deviation (MD) was determined using linear regression models.

Results: Compared with normal eyes, SCP CD was decreased in the POAG without HM group (P<0.05), while DCP CD was significantly decreased in the HM without POAG group (P<0.05). Both SCP and DCP CDs were significantly decreased in the POAG with the HM group (P<0.05). CD reduction occurred mainly in the outer rather than inner ring of the 6×6 mm scan size. In multivariate regression analysis, the worse MD was associated with lower CD in the outer ring of the SCP in all the HM eyes (P<0.05).

Conclusions: POAG and HM reduced macular CD in different layers of the retinal capillary plexus and both, particularly in the outer ring of the 6×6 mm scans. Furthermore, assessment of the CD in the outer ring of the SCP may facilitate the diagnosis of glaucoma in the eyes with HM.

Monofocal Solution to Multifocal Problem

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Purpose: Evaluating 1:00 diopter myopia as target refraction in both eyes for routine cataract patients.

Methods: A cross-sectional observational study from 2021-2023 included 50 cases (100 eyes). Cases were selected as per inclusion criteria. Following pre-operative assessment, Phaco-emulsification with PCIOL implantation was done under topical anesthesia by 2.2 mm temporal incision. Optical biometer was used. Topical antibiotic and steroids were prescribed post-operatively. The surgery in each eye was deferred by at least 02 weeks. All the surgeries were performed by a single surgeon. All the surgeries were uneventful. Follow-up was done at POD 1, 15 and 30. The visual acuity at near and distance was noted.

Results: Preoperatively the mean BCVA LogMAR was 0.84 ±0.139. At POD 30, the unaided mean was 0.186±0.040 ($P < 0.05$). 82% had a binocular unaided distant visual acuity of LogMAR 0.20, 16% had 0.1, and 2% had 0.30. In case of near vision, 96% had N6 binocularly, and the rest had N8 unaided. 47 (94%) patients out of 50 did not want optical correction for distant or near. 01 (02%) patient wanted optical correction for both distant and near vision and 02 (04%) wanted optical correction only for near vision.

Conclusions: Targeting 1 diopter myopia for both eyes is an easy, acceptable, and affordable approach to address post-operative optical status in carefully selected patients to address near vision.

Multimodal Database of Retina Images for Africa: The First Open Access Digital Repository for Retina Images in Sub-Saharan Africa

*First Author: Simon **ARUNGA***

Purpose: The main aim for creating the Multimodal Database of Retinal Images for Africa (MoDRIA) was to provide a publicly available repository of retinal images for responsible researchers to conduct algorithm development in a bid to curb the challenges of ophthalmic Artificial Intelligence (AI) in Africa.

Methods: Data and retina images were ethically sourced from sites in Uganda and Kenya. Data on medical history, visual acuity, ocular examination, blood pressure and blood sugar were collected. Retina images were captured using fundus cameras (Foru3-nethra and Canon CR-Mark-1). Images were stored on a secure online database.

Results: The database consists of 7,859 retinal images in portable network graphics format from 1,988 participants. Images from patients with Human Immunodeficiency Virus were 18.9%, 18.2% of images were from hypertensive patients, 12.8% were from diabetic patients, and the rest were from 'normal' participants.

Conclusions: Publicly available data repositories are a valuable asset in the development of AI technology. Therefore, there is a need for the expansion of MoDRIA to provide larger datasets that are more representative of Sub-Saharan data.

Operationalizing Data Standards in Ophthalmology: Mapping Structured EHR Data on Ocular Vitals to Standard Ontologies

*First Author: Brian **TOY***
*Co-Author(s): Christopher **LONG**, Justin **QUON***

Purpose: Common data models (CDM) employ standardized data structures and vocabularies, enabling interoperability between different source databases and facilitating multi-institutional federated studies. A key step to realize these benefits is the process of ETL (extract, transform, load) from clinical electronic health records (EHR) to the CDM. The present study aims to assess the representation and concordance of "ocular vitals" from the clinical eye exam (visual acuity, intraocular pressure, pupil, confrontation visual field, extraocular motility) between the Observational Medical Outcomes Partnership (OMOP) CDM (OHDSI; New York, NY) and two implementations of the Oracle Cerner Millennium EHR (Oracle Corp; Austin, TX).

Methods: Source data elements comprising five ocular vitals domains were mapped from the default Cerner Model Experience and a localized implementation to the closest standard concept in the OMOP CDM. Cross-mapped fields were graded for their match as "exact," "wider," or "narrower."

Results: Exact representations of source data in OMOP CDM were found for 74.2% (46/62) of Cerner Model mappings and 82.6% (114/138) of localized Cerner mappings. However, 40.3% (25/62) and 67.4% (93/138) of respective mappings required interpretation of multiple source concepts. The remaining mappings were imprecise or unmatchable due to a lack of a semantic equivalent.

Conclusions: Harmonizing the mapping of ophthalmic exam data to standardized ontologies may facilitate more efficient access to clinically relevant data for interoperability, quality measures reporting, and network studies.

Personalized Portfolio as a Resume Adjunct in Rehabilitation of Visually Impaired Individuals

*First Author: Jophy **CHERRY***
*Co-Author(s): Alisha **KURIAN***

Purpose: Empowerment and awareness of visually impaired individuals across different spheres of life.

Methods: In-depth interviews and case studies followed by portfolio creation.

Results: The creation of these portfolios will be helpful for both the individuals with visual impairment along their employers. A document covering several aspects of their professional and personal life will act as a

repository that can be referred to in different cases. It can also be customized and curated based on the candidates' personal and professional requirements. It will also aid in conducting in-depth interviews and acquiring information on unique aspects of the candidates such as their skills and hobbies. This model can be extremely helpful for NGOs searching for employability options for their members as well as to document their candidates to future investors in the community.

Conclusions: Individuals with visual impairment have faced discrimination in every aspect of their lives. The creation of portfolios can help them communicate as well as promote themselves as productive members of an equitable society and contribute to building their Nation.

Quantifying Fundus Image-Based Chronic Kidney Disease Prediction AIs Through Pre-trained Feature Extractors

*First Author: Songyang **AN***
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Purpose: Convolutional neural networks (CNN) have been trained using end-to-end approaches for screening chronic kidney disease (CKD) from fundus photographs. All previous studies used estimated glomerular filtration rate as the training label for identifying individuals with CKD, but the performance of resulting models has been inconsistent. All previous studies also suffer from a lack of explainability of the CNN created, making it challenging to investigate underlying causes. In this study, we present an alternative development methodology that aims to address some of these limitations.

Methods: Using UK Biobank, we developed a model using a two-stage approach and compared it against two CNNs developed using end-to-end approaches for CKD screening. Our proposed two-stage approach incorporated pre-trained retinal age, retinopathy, maculopathy, drusen, pigmentary abnormality, and age-related macular degeneration feature extractors that were then fine-tuned on an XGBoost predictor.

Results: The two-stage model showed statistically significant improvements in ROC AUC (0.819 vs. 0.792, 0.781), log loss (0.281 vs. 0.295, 0.300), and brier score loss (0.085 vs. 0.088, 0.089). Shapley value attribution analysis revealed that the retinal age feature extractor acted as a baseline determinant of model output for a wide range of patients, with the other input components adjusting for individuals who exhibit specific retinal pathologies, such as retinopathy.

Conclusions: In conclusion, our proposed approach appeared to be a more robust way of developing models screening for CKD when compared to the direct training of CNNs against measures of kidney function. Further validation on external databases is warranted.

Real World Application of a Smartphone-Based Visual Acuity Test (WHOeyes) with Automatic Distance Calibration

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Purpose: To develop and validate a smartphone-based visual acuity (VA) test with an automatic distance calibration (ADC) function called WHOeyes.

Methods: Three groups of Chinese participants with different ages (≤20, 20-40, >40 years) were recruited for distance (monocular) and near (binocular) VA testing using both an Early Treatment Diabetic Retinopathy Study (ETDRS, distance VA: 4m; near VA: 40cm) chart and the WHOeyes (IOS version, distance VA: 2m; near VA: 40cm). The WHOeyes ADC function would automatically determine if the user reached the testing distance, an infrared rangefinder was used to determine the testing distance for the ETDRS chart, and the actual testing distance for the WHOeyes.

Results: The actual testing distance determined by the WHOeyes ADC showed an overall good agreement with the standard testing distance in all three groups. Regarding the distance and near VA testing, the accuracy of WHOeyes was similar to ETDRS; the mean difference between the WHOeyes and ETDRS ranged from -0.084 to 0.012 logMAR, and the quadratic weighted kappa (QWK) values were greater than 0.75 across all groups. The test-retest reliability of WHOeyes was high for both near and distance VA, with a mean difference ranging from -0.040 to 0.004 logMAR and QWK all greater than 0.85. The questionnaire revealed an excellent user experience and acceptance of WHOeyes.

Conclusions: The IOS version of WHOeyes with the ADC function could provide accurate measurement of the testing distance as well as the distance and near VA when compared to the gold standard ETDRS chart.

Smartphone App for Measuring Ptosis, Proptosis, IPD, Head Position, Lesion Size & Area From Photos

*First Author: Anju **KURIAKOSE***

Purpose: To use smartphone apps to measure external ocular diseases such as corneal and conjunctival lesions. Also, to use smartphone apps for eye measurements such as ptosis, proptosis, interpupillary distance, head posture and more.

Methods: The ImageMeter Pro app (Dirk Farin, Germany) was installed from Play Store and used on an Android smartphone. The smartphone camera was used to take eye photographs directly or through a slit-lamp using a universal adapter. Previously captured photos can also be used. Specific measuring tools for each type of measurement, such as an IPD scale, transparent ruler, Hertel's exophthalmometer, and

calipers, are required for proper measurement. Often, these tools are not available, either because of cost, or because such expensive equipment is locked away. Smartphones are easily available everywhere and can be used at a moment's notice.

Results: In the ImageMeter app, the images were opened, and a reference scale was placed on an object of known size in the image. This enables further measurements. Then, linear or area measurements are done using the line and area tools. Angle measurements can be done without a reference scale.

Conclusions: The authors use some apps which can take measurements from smartphone photographs. This can be done using a reference scale based on any object of known size in the photo. Photographic records of ocular lesions help in objective measurements. It is very useful for monitoring suspicious lesions and responses to treatment. Simple free apps on smartphones can help in this once-complex technique. It helps in easier and earlier assessment of treatment success and targeted management.

Transition to Subtenon's Anesthesia in Cataract Surgery: Have Block-Related Complications Reduced?

*First Author: Basitali **LAKHANI***
*Co-Author(s): Balamurugan **S***

Purpose: To analyze complication rate following the transition to subtenon's anesthesia (SA) in cataract surgery for consecutive 4 years in a tertiary eye care center.

Methods: Transition to SA in cataract surgery occurred in May 2016. Block-related complications of the consecutive period from August 2012 to January 2020 were analyzed with the rates prior to the transition period serving as historical controls.

Results: In the pre-subtenon's period, the rates of repeat blocks, positive pressure, subconjunctival hemorrhage (SCH), chemosis and perforation were 4%,2.5%,14%,18%, and 0.015%, respectively. After the transition, the corresponding rates were 7%, 4.8%, 30%, 34%, and 0%, respectively ($P<0.05$).

Conclusions: Subtenon's anesthesia for cataract surgery has eliminated globe perforation. Despite a significant rise in SCH and chemosis, the increase in the need for repeat blocks and positive pressure was not significant. Hence SA shows promising results in this era.

Visual Acuity Examination and Colour Blind Test Using Digital Application in an Islamic Boarding School in Malang

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Purpose: Students in boarding schools have limited time for eye examinations in medical facilities. This problem could be helped with the use of digital applications for preliminary self-screening. This study aims to determine the sensitivity and specificity of digital visual acuity examination and colour blind test.

Methods: We conducted visual acuity examination using the Snellen chart, followed by the PEEK Acuity application to 300 subjects (600 eyes) and colour blind test using Ishihara's 38 plates book, followed by color blind test application to 600 subjects. PEEK Acuity application examined visual acuity using the tumbling E method, delivered using smartphones; while colour blind test application was based on Ishihara's 38 plates book, delivered using a personal computer. All subjects were in the first year of junior high school in an Islamic boarding school in Malang, and underwent all examinations during school time in a period of two weeks, in March 2023.

Results: There were 41 eyes from 31 subjects with visual acuity below 6/12. PEEK Acuity application yielded a sensitivity value of 73.07% and a specificity of 94.68%. There were 305 males and 295 females examined for colour blindness, and there were found 15 males and 3 females with partial colour blind. Color-blind test application yielded a sensitivity value of 85.71% and specificity of 95.5%.

Conclusions: Digital visual acuity examination and colour blind test have high specificity and moderate sensitivity. Further studies with larger and more various subject characteristics are needed for consideration of using these tests as for self-screening.

Academia, Research, Teaching and Education in Ophthalmology

A 2-Year Retrospective Study on Outcomes of Sutureless Sclera Fixated Intraocular Lens (SSFIOL) Implantation in Northern Malaysia

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*Co-Author(s): Hamizah **BINTI MUHAMMAD**, Muzaliha **MOHAMED NOR**, Haslina **MOHD ALI**, Rona Asnida **NASARUDDIN***

Purpose: To describe the outcomes, complications, and incidence of pupillary block in sutureless sclera fixated intraocular lens implantation via modified Yamane's technique done in Hospital Sultanah Bahiyah, Alor Setar, Kedah.

Methods: A retrospective analysis of electronic medical records (eHis system) of 135 eyes of 129 patients who underwent sutureless sclera fixated intraocular lens implantation from April 2021 to April 2023.

Results: A total of 135 eyes underwent sutureless sclera fixated intraocular lens implantation. 93 eyes

were implanted with Kowa Avansee 3-piece intraocular lens (IOL) and 42 eyes were implanted with Eyecryl TP600. Postoperatively, there were 6 cases (4.44%) of subluxated IOL, 6 cases (4.44%) of decentred IOL, and 1 case (0.74%) of posteriorly dislocated IOL due to broken haptic, requiring explantation and repeat SSFIOL implantation. Out of the 6 cases of subluxated IOL, 4 (2.96%) underwent repositioning of SSFIOL. The remaining 2 cases defaulted follow-up and refused surgical intervention respectively. The 6 cases with decentred IOL were monitored conservatively as the IOL optic was within the visual axis (mean LogMar of 0.30). No surgical iridectomy was done in all cases, but 15 eyes (11.11%) had pre-existing peripheral iridectomy. There was no reported pupillary block postoperatively in all cases.

Conclusions: SSFIOL implantation is a good surgical option with good outcomes and minimal complications. There was no incidence of pupillary block post SSFIOL without peripheral iridectomy.

Addressing the Challenges and Unmet Needs in Clinical and Training Practices of Medical Device Usage: A Targeted Literature Review

First Author: Carine C.W. ***HSIAO***
Co-Author(s): Margaret ***AINSLIE-GARCIA****, Senol* ***DEMIRCAN****, Zhi (wendy)* ***WANG***

Purpose: A targeted literature review was conducted to identify the unmet needs in staff training for medical equipment in ophthalmology.

Methods: MEDLINE was searched from January 1, 2010 to April 30, 2023 for English-language studies pertaining to medical device maintenance, with an emphasis on ophthalmology and similar surgical fields as required. There were no limits on the study design. Frequency of improper use of medical equipment, root-cause errors, associated consequences, and potential solutions were extracted.

Results: A total of 11 studies were retrieved. Improper operation of medical equipment was identified in seven studies, including incorrect use, troubleshooting malfunctions, and incorrectly attaching device cords. The most commonly reported root cause of these errors was inadequate training. Training and recertification were noted as essential for digital health technologies in ophthalmology, such as those supporting screening. The literature highlighted suboptimal equipment utilization, often derived from a lack of familiarity with advanced device features and functions. Importantly, one study reported that 27% of nurses lacked confidence in troubleshooting equipment issues in the intensive care unit. Inadequate training contributed to medical equipment misuse and was associated with potential patient adverse events (e.g. prolonged anesthesia time) and increased cognitive burden for staff. Two studies noted enhancing staff competency and/or providing access to remote training may help to reduce device-related incidents and associated downtime.

Conclusions: Periodic assessments and better access to personalized training are important to address skill gaps and ensure safe, efficient medical device operation. Further studies on device training in ophthalmic surgeries are warranted given the high volume of these surgeries globally.

Correlation of Anisometropia With Axial Length and Corneal Curvature- an Institutional Based Cross-sectional Study

First Author: Sanyukta ***KADAM***
Co-Author(s): Harsha ***BHATTACHARJEE****, Damaris* ***MAGDALENE***

Purpose: A difference of >1.00 diopter is the widely accepted criterion for anisometropia (D). An analysis of binocular characteristics in the anisometropic eye revealed that the most critical component in anisometropia was the axial length (AL). It's debatable whether or not additional anterior segmental factors contribute to anisometropia. As a result, the purpose of this study was to determine the correlation between axial length and corneal curvature in anisometropes.

Methods: This was a prospective institutional-based observational study. 100 subjects with anisometropia more (>) 1 dioptre were included. All the subjects underwent a comprehensive ocular examination followed by corneal curvature measurement with a manual keratometer and axial length measurement using Carl Zeiss IOL Master 500.

Results: The mean age was 11 ± 3 years [range: 6-16]. The mean ± SD of SER was 3.52±2.08 D. A positive correlation was found between SER and axial length difference between both eyes (r=0.61; p=<0.001) and between SER and AL/CR ratio between both eyes (r=0.57; p=<0.001).

Conclusions: As a result, we infer that axial length is the most relevant factor in anisometropic eye dioptric power disparities, with no significant relationship between CR and dioptric power.

Dietary Factors and Body Mass Index in School Aged Children: The Correlation Refractive Error, Axial Length and Lens Thickness

First Author: Devyntya ***PUTRI***

Purpose: This study aimed to evaluate the correlation of dietary factors and BMI with refractive error, axial length (AXL), and lens thickness (LT) in school-aged children.

Methods: A community service-based cross-sectional study was held in November 2021 in Malang. Diet was assessed using a semiquantitative food-frequency questionnaire. BMI was obtained from height and

weight measurements and then classified into normoweight, underweight, overweight, and obese. Refractive error was collected based on the spherical equivalent (SE) of auto-refractometry, axial length, and lens thickness by contact ultrasound A-scan biometry.

Results: There were 574 eyes from 101 boys (37.1%) and 171 girls (62.9%). The majority were aged 11- 15 years, with a total of 174 children (64%) in this age group. The highest prevalence of BMI was normoweight (42 %). There was no significant correlation between BMI, SE, AXL and LT, but we found that children with obesity had significant differences in SE and LT with other BMI groups (sig. <0.001). Fat and cholesterol were positively correlated with SE ($p<0.05$, $r=0,210$). Protein, fat, carbohydrate and cholesterol were positively correlated with AXL ($p<0.05$). In the relationship between SE and AXL, a significant result was found with positively correlated ($p<0.001$, $r=0.560$).

Conclusions: This study showed a significant correlation between dietary factors with refractive error and axial length. Higher intake of fat and cholesterol is associated with higher refractive error. And children with higher intake of carbohidrat, protein, fat, and cholesterol had longer axial lengths.

Educating Patient On Amblyopia Isoametropia With High Myopia Astigmatism Compositus, Pit and Falls: Case Report

*First Author: Jerio **WICAKSANA***
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Purpose: To report a case of a patient with High Myopia Astigmatism Compositus treated with refractive correction as the visual acuity showed improvement gradually in visual acuity.

Methods: A 6-year-old girl underwent high myopia astigmatism compositus with amblyopia isoametropia due to her symptoms, signs, and examination. There is no history of using spectacles before. The patient presented with VOD: 3/60 ph 5/60 and VOS: 2/60 ph 3/60. On BCVA OD: S-4.00 C-2.00 x 175 -> 6/15 while OS: S-6.00 C-2.00 x 20-> 6/15. The patient was comfort with binocular view 6/12. On the examination using Autoreffractometry was shown the pre-Cycloplegic OD: S-4.87 C-2.25 X168 OS: S-7.62 C-2. 75 X173. The post cycloplegic refraction showed OD: S-5.25 C-3.87 X2o and OS: S-5.00 C-3.50 X172o. The intraocular pressure on the right eye was: 16.8 mmHg while on the left eye was: 17,6 mmHg. The patient was given a pair of spectacles and made an appointment every 3 months to follow up on the visual acuity and the progress of amblyopia.

Results: The treatment of amblyopia involves primary therapy, such as eliminating any obstruction of the visual axis, correcting any significant refractive error, and promoting the use of the amblyopic eye. The patient was given a correction for refractive error and follow-up every 3 months. The follow-up showed that the visual acuity increased in the amblyopic eyes.

Conclusions: The treatment for high myopia astigmatism compositus with amblyopia isoametropia with refractive correction as initial therapy could make progressive improvement in visual acuity.

Effect of Low-Density Lipoprotein (LDL) Cholesterol Value on the Severity of Non-proliferative Diabetic Retinopathy (NPDR) in Patients With Type 2 Diabetes Mellitus: A Rare Research

*First Author: Stefany **TANTO***
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Purpose: To determine whether there is a relationship between the value of Low-Density Lipoprotein (LDL) cholesterol and the occurrence of Non-Proliferative Diabetic Retinopathy (NPDR) in patients with Diabetes Mellitus Type II (T2DM).

Methods: This study utilizes secondary data in the form of medical records from 2018 to 2022. The data will then be analyzed bivariately using the Chi-Square test using the SPSS version 26.0 program.

Results: In patients with optimal LDL values, it can be seen that only mild NPDR was found in 9 patients (90%) and moderate NPDR in 10 patients (10%) while there were no severe NPDR events. In patients with LDL values close to optimal, 6 patients (17.1%) had mild NPDR, 19 patients (54.3%) had moderate NPDR, and 10 patients with severe NPDR (28.6%). Finally, in patients with non-optimal LDL values, 1 patient (1.9%) had mild NPDR, 11 patients (20.4%) had moderate NPDR and 42 patients (77.8%) had severe NPDR.

Conclusions: There is a significant relationship between the value of Low-Density Lipoprotein (LDL) cholesterol and the severity of Non-Proliferative Diabetic Retinopathy (NPDR) in patients with Diabetes Mellitus Type II (P-value < 0.001).

Experimental Study on the Application of Negative Pressure Filtration Device in Eye Surgery for Patients With Infectious Respiratory Diseases

*First Author: Yang **XUN***

Purpose: To observe the efficacy of a self-made negative pressure expiratory filtration device on avoiding environmental pollution in the operating room and improving patient comfort in eye surgery for patients with infectious respiratory diseases.

Methods: Simulating the condition of ophthalmic surgery, the oxygen concentration and partial pressure of carbon dioxide at five volunteers' snout, shoulder, and outlet of the device were measured every 5 minutes for 3 times in total when the negative pressure

expiratory filtration device was on and off. The comfort degree was graded by a number rating scale.

Results: When the device was turned on, the inhaled Pco2 at the snout was 1.97±1.74mmHg, the Pco2 at the shoulder and the device outlet were 0.6±0.507mmHg and 3.83±1.03mmHg, respectively, (P<0.05, higher when device off). The comfort degree under power on and off state were 1.2±1.1 and 6.0±0.71, respectively.

Conclusions: The new negative pressure expiratory filtration device can significantly reduce environmental pollution in the operating room and the risk of infection for medical staff, and also improve the subjects' comfort level.

Functional Analysis of METTL23 c.84+60delAT Risk Variant in Normal-Tension Glaucoma

*First Author: Yang **PAN***
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Purpose: METTL23 plays a crucial role in catalyzing the dimethylation of H3R17 in the retina and was required for pS2 transcription and NF-κB–mediated TNF-α and IL-1β feedback. We have previously linked METTL23 c.A83G to family normal-tension glaucoma and validated that this mutation caused mRNA aberrant splicing, which abolished normal protein production and altered subcellular localization. This study aimed to investigate the other risk variants in METTL23 for normal-tension glaucoma.

Methods: A total of 2431 DNA samples were collected from the ophthalmology departments. Following DNA extraction from blood samples, the METTL23 variant was screened by direct Sanger sequencing.

Results: We found the METTL23 c.84+60delAT in 14 unrelated individuals from 1029 NTG cases and in 8 of 1402 age-matched controls. The distribution of the risk allele between the NTG cases and controls suggests a potential contribution to NTG (P = 0.03, Fisher's exact test or $\chi 2$ with Yates correction; P = 0.038, logistic regression adjusting for age and sex). The Human Splicing Finder analysis predicted this variant causes abnormal splicing, resulting in functionally null proteins. To determine the effect of METTL23 c.84+60delAT on mRNA splicing, we performed the in vitro splicing assay. The results showed that this variant resulted in skipping exon 2, removing 106 bp, including the start codon from the mRNA transcript, by which amino acids 1–67 would not be translated.

Conclusions: Our results suggest that METTL23 c.84+60delAT is associated with NTG. Further work, including analyses of other data sets, will be required to confirm this finding.

Gender-Related Trends Amongst Ophthalmologists in Asia

*First Author: Claire Lixian **PETERSON***
*Co-Author(s): Marcus **ANG**, Rachel **CHONG**, Andrew **TSAI**, Tina **WONG**, Brian Sy **YEO***

Purpose: To gain insight into gender-related differences amongst ophthalmologists in Asia.

Methods: An anonymous online self-reported survey on career, leadership, research, personal life, and gender-related views was shared amongst 21 regions in South Asia, Southeast Asia, and Northeast Asia through the Young Ophthalmologist (YO) network from May 1 to June 30, 2023. Statistical analysis was performed with RStudio.

Results: A total of 242 ophthalmologists from 20 regions responded. 163 identified as female and 79 as male. The majority (87%) of respondents practiced in institutions with >=50% female ophthalmologists, with 49% indicating females comprised >=75% of their workforce. 148 (61.7%) had male heads of departments (HODs) while 92 (38.3%) had female HODs. Compared to male ophthalmologists, a smaller percentage of females felt they had equal opportunity at pursuing leadership (F:55% vs M:82%, p<0.001) and research (F:63% vs M:78%, p=0.03), with more females feeling a need to champion women in leadership (F:57% vs M:35%, p=0.006) and research (F:50% vs M:30%, p=0.01). However, the distribution of genders was similar for leadership position (s) held, publications, and grant numbers (p>0.05). While the majority work full-time (92%), more females work part-time (p=0.02), mostly citing family commitments. More female ophthalmologists felt that having children affected their choice of subspecialty (F:30% vs M:15%, p=0.02) and career progression (F:39% vs M:22%, p=0.02). Overall, women with children were perceived as less ambitious (22.1%, p=0.05) compared to men with children (3.3%, p=0.05). Female ophthalmologists also experienced more gender discrimination and sexual harassment from their patients, colleagues, and bosses of the opposite sex compared to male ophthalmologists (p<0.05).

Conclusions: Females contribute significantly to ophthalmology in Asia but feel they lack the opportunity to pursue leadership and research, face more gender discrimination in the workplace, and are more impacted by child-rearing than their male counterparts. Overcoming these barriers will help female ophthalmologists fulfill their potential.

Human Resources Development in Children Eye Health Services in South Sulawesi

*First Author: Ahmad Ashraf Amalius **MPH**, **SP**.M(K), M.**KES***

Purpose: To report the human resources development in children's eye health services in South Sulawesi.

Methods: Surveys were carried out in several districts to assess the availability of human resources in children's eye health services. Creating collaborations with several institutes such as the Faculty of Medicine, Hasanuddin University, professional organizations, Opticist Refractionist Association etc. Conducting several trainings in provinces, districts, subdistricts, villages, and urban villages.

Results: Preparation and dissemination of materials and media on the prevention of blindness in children, improvement of human resources in the form of District Trainer training in 24 districts that recruited 98 people who were ready to become trainers. For 2 years conducting tiered training at 24 districts, they produced human resources of 1,395 officers at the Puskesmas, 11,145 posyandu cadres, and 3,826 teachers. The results of this built system revealed that 3,248 paediatric patients were screened with vision problems, 3,528 toddlers in the Integrated Health Centre were screened and referred to Health Centre as many as 426 toddlers, and at the School Health Unit, it was recorded that 173,778 children were screened and there were 28,845 (17%) children who had visual disturbances.

Conclusions: The development of human resources in the prevention of visual impairment and eye health in children in Indonesia was not only the responsibility of the government and the health sector, but it also needed cross-sectoral roles such as professional and community organizations, including the private sector and non-governmental organizations (NGOs).

Incidence of Re-surgery After Manual Small-Incision Cataract Surgery at a Tertiary Eye-Care Center in South India

*First Author: Prerana **SHETTY***
*Co-Author(s): Sushank **BHALERAO**, Rajvardhan **MALLIPUDI**, Uma **THIGALE**, Sowjanya **VUYYURU***

Purpose: To study the incidence of resurgery after manual smallincision cataract surgery (MSICS) at a tertiary eyecare center in South India and to compare the resurgery rate between trainees and experts.

Methods: A retrospective study was conducted at a tertiary eyecare center in Andhra Pradesh state of South India, which included 19,515 patients who underwent MSICS between 2012 and 2022, with 369 eyes of 369 patients who underwent resurgery within 1 week of primary surgery. Factors included demographic data and type of resurgery, that is, wound resuturing, IOL repositioning, cortical wash, and anterior chamber (AC) wash.

Results: A total of 19,515 eyes from the year 2012–2022 were analyzed. Most of the patients undergoing resurgery belonged to the age group of 61–70 years (40.3%). Wound resuturing was the most frequently performed resurgery (47.6%). Wound resuturing rates were comparable between the trainees and experts, whereas IOL repositioning, cortical wash, and AC wash were higher in the cases performed by trainees though statistically not significant.

Conclusions: Careful preoperative assessment, training under supervision, and other measures can be taken to reduce the resurgery rates. Timely diagnosis and early treatment can give better outcomes and prevent devastating complications like endophthalmitis.

Innovative 3D Printing Technology for Surgical Wet Lab Practice and Innovative Instrument Design

*First Author: Anju **KURIAKOSE***

Purpose: To design and 3D print surgical instruments for wet lab practice and also to design new surgical instruments using Computer Aided Design and StereoLithoGraphy.

Methods: The authors have made 3D models of various surgical instruments including CTR, CTS, b-hex, choppers, sickle chopper, vectis, dialer, phaco probe, iris repositor, AC maintainer, AADI (Aurolab Aqueous Drainage Implant), i-nova, canabrava ring, speculum and more. These can be 3D printed and utilized in wet labs for practice very easily and at a low cost. 3D designing & printing also allow quick design of various innovative instruments for inventors without spending too much money on industrial prototyping.

Results: Several inventors in India and abroad have embraced this technology to develop their innovative instruments and devices, bringing on an innovation revolution. The authors demonstrate various surgical tools and instruments designed and manufactured by them using this technology. Many of the resulting designs have been uploaded to Thingiverse and also to the NIH 3D. (National Institutes of Health, USA) NIH 3D is an open, community-driven portal to download, share, and create bioscientific and medical 3D models for 3D printing and interactive 3D visualization, including virtual and augmented reality.

Conclusions: Every training surgeon wishes to be well versed with all surgical instruments, but often, they have no access to most new instruments. Wet lab practice with model instruments would give good skill training. The technology of 3D printing allows one to easily download and print plastic models of even exotic instruments at low costs.

Is the 'Red' Reflex Really Red? – Decolonising Medical Terminology

*First Author: Martin **ANDERSON***
*Co-Author(s): Andrew **BLAIKIE**, Cieren **KELLY**, Obaid **KOUSHA**, Harry **SMITH***

Purpose: The 'red' reflex test is a simple means to identify life and sight-threatening eye disease. The name of the test and by inference the 'normal' appearance, refers to the typical colour seen in those

who are white. In other populations, it is recognised that the reflex looks different. This poses clinical and educational challenges. We aim to gather objective and subjective evidence to support decolonising the term 'red' reflex.

Methods: Reflex videos of six adults of different ethnicities (Black, Asian Indian, Asian Afghan, Southeast Asian, and White) were captured using an Arclight ophthalmoscope attached to a smartphone camera. 27 naïve observers recorded their subjective opinion of the colour in the pupil space in each video. For objective analysis, the mean objective Red/Green/Blue (RGB) value of all the 'pupil space' pixels was recorded and converted to a Hexadecimal code and the associated colour using an algorithm.

Results: In the subjective analysis, 16 unique colour descriptions were recorded, with the most common descriptions being yellow, orange, and white. Objective RGB results showed that the overall average colour of the pupil space is not red, and was more closely associated with colours such as brown and orange.

Conclusions: This is the first study to offer subjective and objective evidence to support renaming the 'red' reflex test, for clinical reasons, as well as for the purposes of decolonising. To avoid associating the test with a colour we propose a change in terminology to the Fundal Reflex Test, an anatomical description, which is equitable and inclusive.

Myopia Information on TikTok: Analysis in Quality and Audience Engagement

*First Author: Shuai **MING***
*Co-Author(s): Qingge **GUO***

Purpose: To evaluate the quality of TikTok videos focusing on myopia education and identify key factors that influence video quality and audience engagement.

Methods: Utilizing keyword-based search algorithms, we isolated the top 200 videos as ranked by TikTok's default "General Search" and by "Most Liked" sorting strategy, respectively. Multiple video features such as publisher category, follower count, and video likes were documented. The DISCERN instrument was deployed to assess video information quality, while the log value of video likes served as a measure of audience engagement. Statistical analysis was performed using a Generalized Linear Model.

Results: Out of 223 qualifying videos, the average count of 2.3 million likes was noted 251 days after initial publication. A considerable 58.3% of videos discussed treatment options. The reliability score was 20.9 ± 4.2, and the total quality score was 38.2 ± 7.6. Being a medical professional ($\beta = 2.254$ and 6.380, $P \leq 0.002$), affiliated with a media or non-profit organization ($\beta = 4.478$ and, $P < 0.001$), video duration ($\beta = 0.026$ and 0.055, $P < 0.001$), and background music ($\beta = -1.327$ and -3.5, $P \leq 0.28$) emerged as significant factors for both reliability and quality scores. Similarly, the publisher's type ($\beta = -0.416$, $P=0.007$) and log (follower count) ($\beta = 0.506$, $P<0.001$) significantly influenced audience engagement.

Conclusions: Myopia-focused TikTok videos display moderate-to-low quality but achieve high audience engagement. The type of video publisher significantly impacts both video quality and audience engagement.

Ophthalmological Manifestations of Dengue From a Large Tertiary Care Center

*First Author: Mohan **HANUMANTHAPPA***
*Co-Author(s): Manisha **BISWAS**, Ashok Kumar **PANNU**, Mani **RAJENDRAN**, Basavaraj **TIGARI***

Purpose: Dengue is one of the most commonly reported tropical fevers in North India. For the first time, we report ocular manifestations in patients with dengue fever from the medical emergency department.

Methods: This study was conducted on 132 hospitalized patients diagnosed with dengue fever from July 2021 to October 2022. All clinical, ophthalmological, and laboratory parameters of the patient were recorded. They also underwent detailed ophthalmic examination, including fundus examination using Welch Allyn PanOptic ophthalmoscope with iExaminer adapter. We correlated the patient's morbidity and mortality with ophthalmological manifestations. We followed up with patients with positive findings to establish whether the changes were permanent, temporary, or worsening.

Results: The mean age was 32.3 years; male patients (64.4%) were affected more. Fourteen patients had eye manifestations (4 – retinal hemorrhages, 3 – soft exudates, 2 – soft exudates, 2 – vascular changes, 1 – subconjunctival hemorrhage, 1 – nystagmus, and 3 – keratitis). Patients with eye manifestations had 5.5 times more mortality risk than those without eye manifestations (p-value 0.024, OR 5.5). Most of the ocular manifestations were spontaneously resolved at three months.

Conclusions: Dengue patients can have eye manifestations with both anterior and posterior segment involvement during the acute phase of the illness. Patients with ocular involvement had significantly increased mortality risk compared to others. In Dengue fever, ophthalmic evaluation should be a part of the examination during the acute phase of the illness.

Outcome of Cataract Surgery Performed by Ophthalmology Residents Hasanuddin University

First Author: Khairun Nisa

Purpose: The study aimed to determine the outcome of cataract surgery performed by Ophthalmology Residents.

Methods: This was an observational, descriptive study that evaluated surgery performed by a resident between May and August 2023. Demographic characteristics of residents who perform cataract surgery, pre-and postoperative visual acuities, step complications, and type of surgical complications were recorded and analyzed. The visual status and outcome parameters were classified based on the World Health Organization (WHO).

Results: A total of 45 cases performed by ophthalmology residents of the Faculty of Medicine Hasanuddin University were evaluated. Most of the residents were third-years (57,7%). The operations were carried out independently by 14 (31.1%) and under supervision by 31 (68,9%) residents. The types of cataract operations performed were SICS by 35 (77.8%) and phacoemulsification by 10 (22.2%). There were intraoperative complications by 27 (60%). The most common type of intraoperative complication was a vitreous prolapse of 8 (29.6%). The most common type of postoperative complications was corneal edema 14 (70%). Follow-up shows improvement in visual acuity of 44 (97,7%) patients.

Conclusions: Most of the residents who had complications were third-years. The step where the most complications occurred was the Nucleus Removal step. The most common type of complication was vitreous prolapse. However, there is an improvement in visual acuity in patients who underwent cataract surgery by residents.

Prevalence of Pseudoexfoliation Syndrome (PXS) in Northern Pakistan - a Hospital-Based Survey

*First Author: Zubaida **SIRANG***
*Co-Author(s): Karim **DAMJI**, Raisa **KHAN***

Purpose: The purpose of this hospital-based study was to determine the prevalence of pseudoexfoliation syndrome among the population in Northern Pakistan.

Methods: This was a prospective descriptive study conducted from September 2022 to July 2023, in the ophthalmology department of a large private-sector hospital serving a population of 2.5 million in Northern Pakistan. Patients aged 45 and above attending the general ophthalmology clinic were recruited for the study. They underwent comprehensive ophthalmic examination, including slit lamp biomicroscopy, intraocular pressure measurement, gonioscopy & dilated fundus examination.

Results: Out of 600 patients, 211 (35.2%) were found to have pseudoexfoliation syndrome. Among those with PXS, 72% were males and 28% were females. PXS was present bilaterally in 96% of cases.

Conclusions: To the best of our knowledge, this was the first study done to identify the prevalence of pseudoexfoliation syndrome (PXS) among the people living in Northern Pakistan. The prevalence rate was found to be quite high compared to other parts of Pakistan & South Asia.

Proactive Online Learning Module Improves Clinical Examination Scores and Student Learning of Ophthalmic Procedures

*First Author: Mantapond **ITTARAT***

Purpose: We aimed to quantify the effects of a proactive online learning module (POLM) on the summative performance of ophthalmic procedures.

Methods: We invited students (N = 65; 35 female and 30 male students) to participate. Compared to a standard lecture, a POLM adds a supporting system for the students. The POLM consisted of a 5-page electronic book, five 15-minute-long prerecorded demonstrations of the procedures, and 5 trial tests at the end of the module. Lastly, they underwent an online trial test and received feedback on their learning. We compared the mean OSCE scores for ophthalmic procedures achieved by students who completed the POLM with the scores of those who did not.

Results: While 43% of students completed the POLM, 57% did not. The mean OSCE scores for ophthalmic procedures among students who completed the POLM and those who did not were 81.83 (SD 8.2) and 77.45 (SD 7.1), respectively. The mean OSCE scores achieved in three ophthalmic-procedure stations were significantly higher by the students who completed the POLM than those who did not ($p = 0.024$).

Conclusions: A POLM can help teachers and students target study areas that need work and enable them to improve educational strategies by creating a supportive system and feedback loop. The POLM adds to students' flexibility in terms of schedules, self-paced learning, and comfort with their environment. This study showed that POLM resulted in more effective learning by enhancing clinical knowledge and practice skills.

Revealing the Unseen: Ocular Clues to Early Metastatic Cancer Detection

*First Author: Lia **AMANDA***
*Co-Author(s): Muhammad **KHOIRUL HUDA**, Mutmainah **MAHYUDDIN**, Anggun **YUDANTHA***

Purpose: Cancer-associated retinopathy (CAR) is a rare paraneoplastic retinal disorder linked to diverse cancers, leading to vision loss. We highlight a case where CAR served as an early indicator of metastatic cancer, emphasizing the importance of recognizing ocular symptoms in systematic malignancy detection.

Methods: A 51-year-old male complained of left eye blurred vision and floaters for a month. Initially diagnosed as bilateral central serous retinopathy, and oral methylprednisolone treatment showed no improvement. The patient had a smoking history but

no cancer history. Visual acuity was 6/6 in the right eye and 6/30 in the left eye. Fundus examination revealed a bulging macula on both eyes with clear vitreous and hyperpigmentation in the macular area of the left eye. Bilateral subretinal fluid with increased central macular thickness was confirmed by macular OCT. Elevated tumor markers CRF 21-1 and CEA triggered suspicion of malignancy. CRF 21-1 rises in some lung cancers, especially non-small cell carcinoma, while CEA indicates colorectal and gastrointestinal cancer. Chest CT scan revealed a solid mass in the left lung, lytic vertebral lesions, liver nodules, and an enlarged left adrenal gland. A lymph node biopsy showed a malignant epithelial tumor mass which is consistent with adenocarcinoma metastasis. Subsequent investigations led to a stage IV lung carcinoma diagnosis.

Results: CAR diagnosis relies on recognizing symptoms and identifying systematic cancer. Vision loss, particularly when acute, rapidly progressing, and bilateral, should raise suspicion of malignancy.

Conclusions: Despite its rarity, CAR's potential in early cancer detection underscores the need for meticulous evaluation for timely interventions.

Smartphone Use in the Field of Clinical and Teaching Ophthalmology

*First Author: Anum **HANEEF***

Purpose: The goal of this study is to propose an innovative, cost-effective and convenient way to make video clips and pictures of fundus and other parts of eye to enable an affordable and handy approach for examination, telemedicine and teaching purposes.

Methods: Smartphones equipped with 16 megapixel cameras were used for different imaging techniques with aiding devices including 20D volk lens. Clip-on macro lenses bought from a local market, and 66D volk lenses were also used. Smartphone cameras along with these can be used with slit lamps and operating microscopes. Lenses were held along with the camera in the respective focal distance with continuous flash 'on' for fundus imaging as an indirect ophthalmoscope, and without flash for other aids. Videos were also recorded along with images for detailed data presentation purpose.

Results: A whole new dynamic and innovative method to make the patients aware of their ophthalmic conditions, it is a highly recommended tool to educate the pre- and post-graduate residents and to record images for diagnostic and consultation purposes. Recording videos and images of diseases is helpful for follow-up of the disease pattern and management in the future.

Conclusions: Smartphone and ophthalmic imaging-aiding devices brought a new era of quick, handy, and cost-effective imaging acquisition techniques in the field of ophthalmology.

Study on Acceptance of Low Vision Aids and Visual Rehabilitation Measures in Tertiary Care Center

*First Author: Nithya **SRIDHARAN***

Purpose: Aims to study the profile of patients referred to a vision rehabilitation center (VRC) and their acceptance to the rehabilitative options provided.

Methods: Patients were classified based on WHO- ICD 10 classification of vision impairment (VI).6556 unique patients referred to VRC for 1 year were included. All patients had working ocular diagnoses after standard ocular treatment, including medical/surgical glasses. Informed consent was obtained, and medical records were reviewed. Rehabilitative services provided were optical and non-optical low-vision devices, orientation and mobility training, early intervention strategies, and digital resources.

Results: Early intervention strategies were accepted maximum in paediatric age (93%) and in profound VI group (93%). Overall blurred vision (45%) patients benefited from optical low vision devices (LVD)-51% and mobility training -43%. Children with Cerebral vision impairment had 100% acceptance of non-optical LVD and early intervention strategies. Peripheral field loss patients had a higher acceptance rate for orientation and mobility training (79%) and optical LVD (51%). Functional vision impairment patients had 33% acceptance of optical LVD.

Conclusions: 3678 (56%) patients had acceptance to at least one rehabilitative service. Need need-based multidisciplinary approach enhances acceptance of rehabilitative services. Allowance to proactive choices of vision rehabilitation services by patients ensures a better acceptance rate.

The Impact of an Online International Glaucoma Training Program in China During the COVID-19 Pandemic

*First Author: Qing **LU***

Purpose: During the COVID-19 pandemic, carrying out face-to-face ophthalmic training was difficult, and online training became one of the main approaches to training eye care personnel. This article analyzes the impact of an international glaucoma training program on county-level ophthalmologists and ophthalmic residents in China.

Methods: Internationally renowned basic glaucoma courses were selected and translated into Chinese. Free online training was provided through an international tele-ophthalmic platform, which included live lectures, videos of glaucoma surgery, self-learning courses, online testing, and virtual wet lab simulation training.

Results: Over 2500 trainees who participated in the online glaucoma training program were from 30 out of 31 provinces in mainland China from

November 2020 to May 2023. Among them, 80% were ophthalmologists,10% were ophthalmic residents/ postgraduate medical students, and 10% were optometrists and ophthalmic nurses. The online course was divided into 5 modules. All trainees attended at least one model based on their own needs. Over 50% of ophthalmic residents,25% of ophthalmologists, postgraduate students and optometrists, and 10% of nurses completed the full glaucoma training course.

Conclusions: Online glaucoma training was a safe, convenient, and effective training method during the COVID-19 epidemic. Excellent content of the online courses and experienced mentors were important to attract local eye care staff to participate in the program. Using the local language and the provision of the courses free of charge allowed more local eye care staff to attend the online training program.

The Microstructural Changes of Retina Between Different Types of Diabetic Macular Edema

*First Author: Zhengwei **GE***

Purpose: To observe the microstructural changes of retina between different types of diabetic macular edema (DME) by OCT and OCTA.

Methods: Patients with DME were divided into three groups: CME (cystoid macular edema), DRT (diffuse retinal thickening), and SRD (serous retinal detachment). Observational indicators include CMT (macular fovea retinal thickness), MCT (macular choroidal thickness), the defect degree of the ellipsoidal zone and external membrane, DRIL (disorganization of the retinal inner layers), FAZ (foveal avascular zone), SCP/ DCP (retinal superficial/ deep capillary blood flow density), choroidal capillary area.

Results: The degree of defect ellipsoidal zone and external membrane in the three groups was SRD > CME > DRT. The CMT size, the DRIL length and the FAZ area in DRT group were smaller than that in the other two groups, while there was no significant difference between the CME group and the SRD group. Correlation analysis showed that the degree of the ellipsoid band and external membrane defect, the DRIL length and the FAZ area were strongly correlated with BCVA (logMAR). At the same time, FAZ area was weakly positively correlated with the degree of ellipsoidal zone defect.

Conclusions: Compared with the other two groups, the shape of the ellipsoidal zone and outer membrane in the DRT group is more complete, the disorder of the inner structure of the retina and the damage of FAZ is slighter, while the pathological changes in the SRD group are the most serious. The size of CMT, the integrity of the ellipsoid zone and outer membrane, the length of DRIL, and the area of FAZ in patients with DME were all related to visual acuity.

Various Presentations of Chronic Myeloid Leukemia

*First Author: Manogna **MANDAVA***
*Co-Author(s): Dr.Shankar **C**, Dr.Premnath **G**, Dr.Rajakumari **M**, Dr.Adnan **MATHEEN***

Purpose: It is to enumerate the various ocular findings seen in Chronic myeloid leukemia. And we will discuss a case seen in our outpatient department.

Methods: Case report will be attached.

Results: A 17-year-old male came to the Department of Ophthalmology with a complaint of defective vision in his left eye for both near and distant vision for a period of 10 days. On examination RE anterior and posterior segments were normal. LE anterior segment was normal. LE posterior segment media clear disc edema with dilated tortuous veins and Roth spots scattered along the superotemporal quadrant. A fundus picture and OCT were taken. A differential diagnosis of retinal vasculitis was made. Later, blood investigations were done, and the patient was found to be suffering from chronic myeloid leukemia. He was then referred to a hemato-oncologist.

Conclusions: A thorough examination of the eye can sometimes lead us to identify dreadful diseases.

Cataract

0.3% Nepafenac OD Most Convenient and Effective Drug Post Phacoemulsification

*First Author: Roopa **HIREMATH***

Purpose: Compare 0.1%nepafenac and tapering dose of topical steroids with 0.3% of nepafenac and one week of topical steroids post phacoemulsification surgery inflammation, CME, pain.

Methods: In this prospective randomized control single-blind study. 1500 patients who underwent uneventful phacoemulsification were divided into two groups. Group A received 0.1% nepafenac eye drops three times/day for 4 weeks and topical moxifloxacin +dexamethasone tapering dose for 4 weeks and group B received 0.3% nepafenac eye drops once daily for 6 weeks and one week of moxifloxacin +dexamethasone 4times a day following phacoemulsification.

Results: The mean age of the patients in group A was 60.5+/-5.4 years, while in group B, it was 61.7+/-6.3 years. The results were statistically insignificant in terms of inflammatory markers between both groups on day 1, day 7 and day 30. Group B showed better results in terms of lid edema, conjunctival congestion, and anterior chamber cells after 1 month of surgery as steroid withdrawal reaction. The patients in group B also perceived significantly less pain on day 1 ($P = 0.02$) and day 7 ($P < 0.001$). The incidence of post-surgery

central macular thickness was also significantly lower in group B at day 30 (: P < .001) and day 90 (P < .001), respectively. Intraocular pressure rise due to steroid was less in Group B (p<.001)at day 30

Conclusions: A higher concentration of Nepafenac 0.3% is an equally effective and convenient drug post phacoemulsification in terms of reduced incidence of steroid withdrawal reaction, CME and IOP control.

A Case Series of Complicated Cataract Management in Northern Territory Australia

First Author: Christopher ***GO***
Co-Author(s): Susith ***KULASEKARA****, Ario* ***WILSON-POGMORE***

Purpose: To report the management of complicated cataracts in the Northern Territory, Australia. Undetected complicated cataracts are common due to the high incidence of trauma and delayed presentations especially in the Aboriginal and Torres Strait Island populations. Often, these go undetected during pre-operative assessment due to factors including; low self-reported trauma, language barriers, poor dilation of dark irises, and low tolerance for delay or wait time.

Methods: A case series of 8 complicated cataracts managed by a single surgeon at Royal Darwin Hospital over 18 months.

Results: Eight patients were aged 30-70 (median 60), with 5 males and 3 females. Seven identified as Aboriginals or Torres Strait Islanders, and 5 are from remote communities. Pre-operatively, 3 had reported trauma, 1 had a posterior capsular defect and 3 had phacodenesis; 4 more were identified intraoperatively. A variety of surgical techniques were used; 4 had scleral tunnel with intracapsular extraction (ICCE), 3 had converted ICCE via limbal wound extension and 1 had routine phacoemulsification. Post-operatively, all patients' visual acuity (VA) improved and 4 had significant improvement. 1 was lost to follow-up from day 1 and 5 had missed appointments.

Conclusions: This case series described a learned experience of cataract management unique to the Northern Territory region including high suspicion of traumatic cataract with zonular dehiscence. The authors also advocate for the use of scleral tunnel incision to mitigate the risks of infection and induced astigmatism in the setting of unreliable follow-up. Subconjunctival dexamethasone is also preferred intra-operatively given difficulties with compliance and accessibility in remote communities.

A Novel Technique of Using Double Capsular Tension Rings in a Subluxated Cataract of More Than One Quadrant

First Author: Aakanksha ***RAGHUVANSHI***

Purpose: To present a subluxated cataract with 4 clock hours of subluxation managed using two capsular tension rings.

Methods: The patient in his 50s had total cataract having subluxation of 3- 7 o'clock in the left eye. There was a history of trauma to the left eye by a stick. The patient underwent phacoemulsification, and I inserted two capsular tension rings (CTR) to support the bag as one was not able to sustain the contour of the bag. Then, a foldable hydrophobic lens was inserted into the bag. The intraocular lens was stable and central in position.

Results: On the first-day post-op, the patient had mild conjunctival congestion with clear cornea. The anterior chamber was formed and the intraocular lens was centrally placed in the bag with visual acuity of 20/40 in the left eye.

Conclusions: We can use two Capsular Tension Rings in a subluxation of more than one quadrant. It is a rare technique that is followed less till date. Cionni ring is used for such subluxations but the benefit of CTR is that it does not require sutures.

A Rare Case of Cataract Within 15 Hours of Vitreo-Retinal Surgery for Retinal Detachment

First Author: Deepak ***AGARWAL***
Co-Author(s): Sneha ***BATRA***

Purpose: To report a case of cataract development within 15 hours of pars plana vitrectomy.

Methods: A 21-year-old young male was operated on his left eye for traumatic retinal detachment. The lens was clear before surgery. Pars plana vitrectomy with silicone oil tamponade was performed. There was no evidence of posterior capsule trauma at the conclusion of surgery. On a post-operative check-up the next day, the retina was attached under oil. The lens showed evidence of a rosette-shaped cataract within 15 hours of pars plana vitrectomy.

Results: A single case report.

Conclusions: Cataract development has been reported as early as 1 day following vitrectomy. However, this is extremely rare and usually occurs as a result of surgical trauma to the lens capsule. In the present case, we report acute onset (within 15 hours) of rosette cataract without surgical injury to the capsule.

A Sling to Prevent Intraocular Lens Swing- a Prospective Interventional Study- Interim Analysis

*First Author: Jyoti **GOYAL***
*Co-Author(s): Avik Kumar **ROY***

Purpose: To ensure safe placement of Intraocular lens (IOL) in ciliary sulcus using a 10-0 nylon suture sling during complicated cataract surgery.

Methods: A total of 58 cataract surgery eyes that would be complicated by posterior capsule rent (PCR) or Zonular Dialysis (ZD) intraoperatively were considered for the placement of single-piece non-foldable rigid IOL in sulcus using the suture sling technique. An interim analysis was performed in 10 eyes and pre-op and post-op 1 week, 6 weeks, and 3 months LogMAR BCVA (best corrected visual acuity) was compared and IOL stability was assessed. Data were entered into Microsoft Excel (Redmond, WA) and analyzed using SPSS version 22 (SPSS Inc., Chicago, IL). $P < 0.05$ was considered statistically significant. IOL stability in the form of IOL centration and tilt was assessed at 6 weeks follow-up using dilated slit lamp photography and ultrasound biomicroscopy.

Results: The mean age was 70.7 (±10.7) years. Male and female ratio was equal- 5:5. The LogMAR BCVA improved from preoperative 1.4 ± 0.69 to 0.46 ± 0.22 ($p=0.001$) in 1st week and 0.33 ± 0.36 ($p=0.001$) in 6 weeks. The IOL was found to be stable in all patients with no intraoperative or postoperative IOL drop. The decentration of IOLs was within normal limits. The tilt in IOLs' was within the normal range (<15 degrees).

Conclusions: The sling technique method is safe and effective for stable placement of IOL in the sulcus during complicated cataract surgery. It is simple and requires no extra (vitreoretinal) surgical expertise.

Axial Misalignments After Implantations of One-piece Hydrophobic Toric Intraocular Lenses. Comparison Between Manufacturers and Generations

*First Author: Tomohisa **NISHIMURA***

Purpose: This retrospective study compared postoperative axial misalignment after implantations of one-piece hydrophobic toric intraocular lenses (IOLs) between three manufacturers and two generations.

Methods: Clinical records reviewed 420 eyes that underwent cataract surgery following implantation of six types of toric IOLs: SN6AT3-T9 and CNW0T3-T9 (Alcon, SA and CNW groups, respectively), 355T3-T5 and XY1AT3-T6 (Hoya, 355 and XY1A groups), and ZCT150/225/300/375 and ZCW225150/225/300/375 (J&J. ZCT and ZCW groups), 70 eyes each. All surgeries were performed in the same manner by an identical surgeon using the same surgical equipment and surgical technique. Axial of each IOL was aligned using a surgical guidance system (VERION®, Alcon). The position of the axial marker on IOLs was measured immediately after surgery and on the day after surgery. The absolute difference between the two points was calculated. The number of cases with misalignment of 10° or more was also counted.

Results: The means of misalignments were SA: 2.4, CNW: 2.6, 355: 4.7, XY1A: 4.5, ZCT: 6.0, and ZCW: 3.0 degrees. The 355 and ZCT groups resulted in significantly larger than the SA and CNW groups. Misalignment of 10° or more was found in the 355 (9 eyes), XY1A (6 eyes), ZCT (10 eyes), and ZCW (1 eye) groups.

Conclusions: Toric IOL of Alcon showed least misalignments and no difference between the different materials (AcrySof and Clareon). A newer generation IOL with frost-treated haptics (ZCW group) reduced misalignments, while there was no change in the materials. From this comparison, it was demonstrated that IOL material and haptics property would factor of misalignment.

Clinical Characteristics of Cataract Surgery Indicators Pre-COVID and During COVID-19 Pandemic

*First Author: Puspadevi **ARMUGHAM***
*Co-Author(s): Mohammad Aziz **SALOWI**, Nadiah **SA'AT***

Purpose: This study aims to compare the clinical characteristics of patients who underwent cataract surgery pre-covid (2018-2019) and during the COVID-19 pandemic (2020-2021) in Malaysia's Ministry of Health of Malaysia facilities.

Methods: A retrospective study on the cataract surgery cases was performed from 1 January 2018 to 31 December 2021. The data from the Cataract Surgery Registry (CSR), records each cataract surgery's pre-, intra-, and post-operative profiles.

Results: A total of 139,148 patients aged 50 years and above with senile cataracts were analyzed. Hypertension and diabetes were the most common systemic comorbidities in both periods, with p-value < 0.001. Both right and left eye surgeries decreased during the COVID-19 pandemic (p-value < 0.001). More second eye surgeries were performed during the COVID-19 pandemic (75.2% vs. 24.8%, p-value < 0.001). Topical anesthesia was the dominant method in both periods but significantly decreased during the COVID-19 pandemic (65.3% vs. 34.7%, p-value < 0.001). Phacoemulsification was the most common cataract operation in both periods, with a p-value < 0.001. Both phacomorphic and phacolytic glaucoma cases decreased significantly during the COVID-19 pandemic (p-value < 0.001). During the COVID-19 pandemic, there was a significant increase in pre-operative patients with visual acuity of "Blindness" (VA < 3/60) compared to the pre-COVID years (39.5% vs. 47.2%).

Conclusions: The COVID-19 pandemic substantially impacted the prevalence of comorbidities, surgical procedures, anesthesia methods, and the timing of surgeries on the first or second eye. These changes reflect the adaptions made within the healthcare system to manage the pandemic's challenges and prioritize patient safety.

Clinical Course and Prognostic Factors in Cytomegalovirus Anterior Uveitis Eyes Undergoing Phacoemulsification

*First Author: Kelvin **WAN***
*Co-Author(s): Vanissa **CHOW**, Ke **LIU**, Nai Man **LAM***

Purpose: To evaluate the outcomes of cataract surgery in patients with cytomegalovirus (CMV) anterior uveitis and factors associated with final visual outcome.

Methods: A retrospective case series from a single tertiary academic hospital. History, clinical characteristics, corrected distance visual acuity (CDVA), medications, and complications of PCR-positive CMV anterior uveitic eyes undergoing cataract surgery over a 10-year period were reviewed.

Results: This study included 26 eyes of 26 patients undergoing phacoemulsification. The median duration of the disease was 4.8 years, and the median quiescent period before surgery was 2.3 years. None required pupil manipulation or had significant intraoperative complications. The median CDVA improved from 20/100 (IQR 20/200-20/50) before surgery to 20/30 (IQR 20/40-20/25) at 1 year and 20/35 (IQR 20/50-20/30) at the last follow-up at a median of 4.9 years after surgery, respectively (P<0.001). CDVA improved in 19 eyes (73.1%) and was ≥20/40 in 18 eyes (69.2 %). In the multivariate regression model, preoperative use of topical 0.15% ganciclovir (β 0.33, 95% CI 0.17-0.48, p<0.001) and adjunctive intraoperative intracameral dexamethasone 0.4mg (β 0.19, 95% CI 0.01-0.36, p=0.043) were associated with a better final CDVA. Loss of CDVA and poor postoperative CDVA visual acuity were mostly attributed to uveitic glaucoma, but preoperative glaucoma or the number of anti-glaucoma medications did not affect final CDVA.

Conclusions: Cataract surgery in eyes with CMV anterior uveitis was safe and CDVA significantly improved and remained sustained after surgery. Topical ganciclovir 0.15% preoperatively and intracameral corticosteroid intraoperatively appear to maximize the final visual outcome.

Clinical Outcomes of Cataract Surgeries Using a New Type of Enhanced Depth of Focus Toric Intraocular Lens

*First Author: Tae-im **KIM***
*Co-Author(s): Ikhyun **JUN**, Hyunjean **JUNG**, Kyoung Yul **SEO***

Purpose: Over the years, toric IOL (intraocular lens) has become an increasingly common option for the management of corneal astigmatism during cataract surgery. The current study describes the visual outcomes, residual astigmatism, and ocular aberrations following implantation of a new enhanced depth of focus (EDOF) toric IOL, the Tecnis® Eyhance™ Toric II IOL.

Methods: We retrospectively enrolled 55 eyes of 37 patients with regular astigmatism, who underwent cataract surgery with implantating of the Eyhance™ Toric II IOL. All patients completed clinical parameters, including uncorrected and best-corrected distance visual acuity (UCVA and BCVA), distance-corrected intermediate (at 66cm) and near (at 33cm) visual acuity (DCIVA and DCNVA), ocular aberrations, lens alignment, and defocus curves. In the vector analysis, the correction index (CI) was calculated as the surgically induced astigmatism divided by the target-induced astigmatism.

Results: At the 3-month postoperative visit, significant improvements were observed in UCVA (from 0.61 ± 0.42 to 0.16 ± 0.16; p < 0.01), BCVA (from 0.21 ± 0.24 to 0.03 ± 0.05; p < 0.01), and refractive cylinder (from -1.62 ± 0.85D to -0.33 ± 0.37D; p < 0.01) compared with preoperative measurements. The mean absolute IOL rotation at 3-month postoperative visit was 4.40 ± 2.99°. Defocus curves showed <0.2 logMAR range between -1.0D to +0.5D. Ocular total high-order aberrations, coma, and spherical aberration at 3 months were also significantly reduced compared to preoperative values.

Conclusions: In this study, the new EDOF toric IOLs demonstrated the ability to achieve significant improvements in BCVA, mean cylinder, and high-order aberrations.

Clinical Results After Binocular Implantation of a Unique Nondiffractive Enhanced Monofocal Intraocular Lens Designed for Enhanced Monovision to Increase the Depth of Focus

*First Author: Madanagopalan **V GOVINDARAJAN***

Purpose: To provide the reports of a pilot study to assess the visual acuity (VA) and contrast sensitivity with RayOne enhanced monovision (EMV), a unique nondiffractive enhanced monofocal intraocular lens (IOL) to increase the range of focus.

Methods: A retrospective case series study was conducted by analyzing 25 patients (50 eyes) who had bilateral implantation of EMV IOL after cataract surgery. Data collected included biometry, spherical equivalent (SE), and VA. Contrast sensitivity (CS) was checked at 1 month.

Results: The study included 14 males (56%). The age of participants was 61.4 ± 7.4 years. Uniocular uncorrected near and distance VA improved from 0.33 ± 0.13 to 0.05 ± 0.07 and from 0.63 ± 0.31 to 0.05 ± 0.10 log of minimum angle of resolution (logMAR) at 1 month ($P < 0.001$ for both). Binocular uncorrected near and distance VA improved from 0.09 ± 0.18 and 0.14 ± 0.27 to 0.05 ± 0.06 and 0.00 ± 0.09 logMAR, respectively ($P < 0.001$). SE changed from − 0.23 ± 2.55 to − 0.33 ± 0.46. CS at 3 months was 1.74 ± 0.21. At 1 month, 48 eyes (96%) achieved uncorrected intermediate VA 6/15 (0.4 logMAR) or better. When comparing eyes that had an uncorrected intermediate vision of ≥ 0.2 (6/9 or better) to eyes that had < 0.2 logMAR at 1 month, there was no difference between groups with respect to baseline parameters.

Conclusions: The study shows that the nondiffractive EMV IOL is safe, effective, and stable, providing excellent distance and intermediate vision and good near vision.

Comparative Analysis of Iris Claw Lens Implantation With and Without Anterior Vitrectomy in Aphakic Patients

First Author: Rakhi ***DCRUZ***

Purpose: To evaluate surgical outcomes and complication profile with retro-pupillary iris claw lens implantation in intraoperative surgical aphakia and to compare the results in cases with and without anterior vitrectomy. To our knowledge, to date, there are no studies comparing the need for anterior vitrectomy and outcome profile during iris claw lens implantation.

Methods: We conducted a prospective analysis of consecutive aphakic eyes that underwent retropupillary iris claw lens implantation in complicated cataract surgery cases with inadequate capsular /zonular support during the period of January 2018-2023. We analyzed the best corrected visual acuity (BCVA), Intraocular pressure (IOP), spherical equivalent, need for secondary laser peripheral iridectomy and the complication profile with a minimum follow-up of 3 months.

Results: The study evaluated a total of 36 eyes of 36 patients with a mean age of 68.4± 7.9yrs. Group A (with anterior vitrectomy) included 17 eyes, and group B included 18 eyes. Mean BCVA was 1.56±0.74 logMAR units, which improved to 0.33± 0.28 at three months. BCVA improved significantly in both groups after surgery ($P<0.001$, ANOVA). There was no statistically significant difference in IOP at any point between the groups. Group A eyes experienced higher rate of postoperative transient IOP rise, iritis, pigment dispersion, IOL tilt& pupil ovalisation than group B during immediate postoperative period, however the difference was not statistically different at longterm.

Conclusions: Performing an anterior vitrectomy during iris claw lens implantation helps in reducing transient iritis, raised IOP, chances of IOL tilt in the immediate postoperative period, and reducing the need for multiple medications and secondary procedures.

Comparative Analysis of Postoperative Visual and Subjective Outcomes After Bilateral Implantation of Extended Depth of Focus IOL, Trifocal IOL and a Mix and Match Approach

First Author: Rachel ***NGE***
Co-Author(s): Marliana ***MAHMUD****, Miswan Muiz* ***MAHYUDIN***

Purpose: To analyze postoperative visual outcomes of 3 groups of patients who underwent bilateral phacoemulsification with implantation of combined extended depth of focus intraocular lens (IOL) (Zeiss AT LARA/LARA Toric), combined trifocal IOL (Zeiss AT LISA/LISA Toric) or a mix-and-match approach (Zeiss AT LARA/AT LISA).

Methods: Twenty-four patients who underwent consecutive phacoemulsification with implantation of bilateral EDOF IOL (n=9), bilateral trifocal IOL (n=4) and mix-and-match IOL (n=11) were identified retrospectively. A 3-step assessment was performed: a 10-question survey to measure the quality of vision, followed by a refractive assessment and a contrast sensitivity test. Demographic and pre-operative data were gathered from patients' case files.

Results: At 6 months postoperatively, binocular uncorrected distance, intermediate and near visual acuity were comparable in all 3 groups. The Binocular defocus curve showed that at a vergence of 0.00D (Distance vision), all 3 groups achieved similar binocular visual acuity results. At 0.5D to -1.00D, the mixed group achieved better values compared to the other 2 groups. Between -2.00 to -4.00D, the LISA-only group performed better, followed by the mixed group and the LARA-only group. The mixed group achieved better contrast sensitivity outcomes than the combined LISA-only group, and was comparable to the combined LARA group. A higher percentage (91%) of mixed group participants reported having expectations fulfilled compared to the other 2 groups. The percentage of those who achieved spectacle independence was highest in the LISA-only group.

Conclusions: A combination of EDOF-trifocal approach provides good contrast sensitivity, subjective and visual outcome for distant, and intermediate distances and was well received by patients.

Comparison Between Opposite Clear Corneal Incision Versus Toric Intraocular Lens in Correcting Astigmatism Post Phacoemulsification

*First Author: Priyamvada **P V***
*Co-Author(s): Jagadeesh Kumar **REDDY**, Vandhana **SUNDARAM**, Dr Prabhu **VIJAYARAGHAVAN***

Purpose: To compare visual outcome and efficacy of paired opposite clear corneal incision versus toric IOL in correcting astigmatism of 1–3D in patients undergoing phacoemulsification.

Methods: This interventional, prospective, comparative study was conducted in patients with cataracts, with ages ranging from 50 to 90 years, undergoing phacoemulsification. Group 1 underwent phacoemulsification with foldable IOL implantation combined with paired OCCI. Group 2 underwent phacoemulsification with toric IOL implantation. There were follow-up visits at 1 and 6 weeks. At each visit, UCVA, BCVA, manifest refraction and corneal astigmatism (corneal tomography) were measured. At 6 weeks, UCVA, BCVA, reduction in keratometric astigmatism, and residual refractive cylinder were assessed.

Results: 60 Eyes of 60 patients were included. At 6 weeks, 96.7% (29 eyes) of eyes in the toric IOL group and 83.3% (25 eyes) in the OCCI group achieved UCVA of 6/9 or better (p=0.37). All eyes in the toric IOL group and 93.3% of eyes (28 eyes) in the OCCI group achieved a BCVA of 6/6. At 6 weeks, the reduction in mean corneal astigmatism was 0.63±0.37d in the OCCI group and 0.15±0.12d in the toric IOL group with a statistically significant difference between groups (p<0.001). The residual mean refractive cylinder was 0.60±0.38d in the OCCI group and 0.05±0.15d in the toric IOL group at 6 weeks (p=0.007). Corneal astigmatism reduction was significantly higher in smaller WTW corneal diameters.

Conclusions: Both OCCI and toric IOL implantation are effective in correcting pre-existing astigmatism (PEA), but toric IOL has an enhanced effect over OCCI. However, in resource resource-limited settings, OCCI is effective in correcting pea of 1–1.5d during phacoemulsification without requiring additional cost or equipment.

Comparison Between a Swept-Source OCT-Based Optical Biometer Versus a Standard PCI Optical Biometer in Cataract Patients

*First Author: Niha **KHATIB***
*Co-Author(s): Zain **KHATIB***

Purpose: To compare the refractive accuracy of a new optical biometer (Tomey OA-2000 which is based on swept-source optical coherence tomography combined with Placido-disk corneal topography) versus a gold standard partial coherence interferometry optical biometer (IOLMaster 500).

Methods: Forty eyes of patients (AL 22-26mm) who underwent uncomplicated Phacoemulsification with AcrysofIQ IOL were included. The 2 study arms which included 20 eyes each, underwent Biometry by the above 2 biometers respectively. Post-op refraction was performed at day 21, and the biometer error for each eye was calculated as the difference between the prediction error and the actual post-op SE. IOL power was calculated for both groups using the online Barrett U2 calculator, and the absolute mean and median error were compared between the 2 groups. Also, the percentage of eyes within +/-0.25D was found out and compared between the groups.

Results: The mean and median absolute errors for the Tomey biometer were 0.23 and 0.19, respectively, while the mean and median absolute errors for the IOLMaster were higher at 0.30 and 0.29, respectively. This difference was not statistically significant. The Tomey biometer also showed a lower box and whisker distribution plot as compared to IOMaster indicating a more predictable result. The percentage of eyes whose error was within +/-0.25D was 70% for the Tomey group and 40% for the IOMaster group.

Conclusions: The predicted refraction by the Tomey OA-2000 biometer proved to be more accurate and predictable as compared to the Zeiss IOL Master 500 in cataract patients with normal axial lengths.

Comparison of Post-Operative Outcomes Predicted by Ultrasonic and Optic Biometry After Phacoemulsification

*First Author: Faiza **HASSAN***

Purpose: To compare postoperative refractive outcomes predicted by ultrasonic and optical biometry after phacoemulsification.

Methods: The study included 59 eyes with cataracts and required phacoemulsification and implantation of a foldable intraocular lens. They were divided into two groups (29 in the ultrasonic biometry group and 30 in the optical biometry group). The first group was subjected to ultrasound biometry, whereas the second was subjected to optical biometry. We compared ocular refractions following cataract surgery in two groups. The Mann-Whitney U test was used to compare the mean absolute refractive error (MAE). The operating surgeon was the same in both groups.

Results: All the participants were between 40 and 70 years of age. The preoperative mean target refraction in the ultrasonic group was 0.05 ± 0.13D (range: -0.01 to + 0.17D) and 0.12 ± 0.33D in the optical group (range: -0.01 to +0.49D). Thus, there was a non-significant difference between both groups regarding target refraction (P = 0.58, U = 398.5). The MAE measured for the first group was 0.14 ± 0.46D and for the second group was 0.60 ± 0.53D. The comparison between both biometry procedures showed that the difference was

non-significant between the biometry methods (P = 0.430).

Conclusions: The difference between Post-Operative MAE of patients undergoing two different biometry procedures (Optical and Ultrasonic) after cataract surgery was non-significant at P > 0.05.

Comparison of the Two Barrett Toric Calculations With and Without Measured Posterior Corneal Astigmatism

*First Author: Wenjie **LIU***

Purpose: To compare the prediction errors in residual astigmatism of Barrett-predicted posterior corneal astigmatism (PCA) toric calculator and Barrett measured PCA toric calculator.

Methods: In 109 eyes of 78 patients undergoing cataract surgery with toric IOL implantation (Acrysof IQ Toric), predicted residual astigmatism by each calculation was compared with the manifest refractive astigmatism. The prediction error in residual astigmatism was calculated by vector analysis.

Results: The two calculation methods resulted in undercorrection of with-the-rule astigmatism and overcorrection of against-the-rule astigmatism. For the with-the-rule astigmatism group, the centroid prediction error of Barrett predicted PCA toric calculator was 0.24±0.52D@94°(x=0.24±0.40, y=0.03±0.35) and Barrett measured PCA toric calculator was 0.30±0.57D@92° (x=0.30±0.44,y=0.03±0.37). The former yielded significantly reduced error compared with the latter (P<0.001 and P=0.309 for x and y, respectively). But for the against-the-rule astigmatism group, the centroid prediction error of Barrett measured PCA toric calculator yielded significantly (0.22±0.62D@109°; x=0.18±0.36,y=0.14±0.51) reduced error compared with Barrett predicted PCA toric calculator (0.34±0.63D@102°; x=0.32±0.36,y=0.14±0.53), the differences between the two toric calculators were statistically significant (P<0.001 and P=0.033 for x and y, respectively).

Conclusions: The Barrett predicted PCA toric calculator yielded the lowest centroid astigmatism prediction errors in the subgroup of eyes with WTR astigmatism. But in the ATR astigmatism group, Barrett measured PCA toric calculator yielded the lowest centroid astigmatism prediction errors.

Determination of the Time of Refractive Stability After Uneventful Phacoemulsification in Indian Eyes

*First Author: Bijnya **PANDA***
*Co-Author(s): Ashok **NANDA***

Purpose: The objective of this study was to investigate the time required for refractive stability in Indian eyes after uneventful phacoemulsification surgery.

Methods: In a group of 257 eyes that underwent uneventful phacoemulsification with foldable intraocular lens implantation, the difference in biometric parameters, as well as refraction parameters (spherical, cylindrical components, and spherical equivalent (SE)) between the 1-week and 6-week follow-up period (Wilcoxon signed rank test) and statistical significance (P<0.05), were studied. The refractive stability was defined as the point at which the change in SE was within ±0.50 diopters (D) for two consecutive visits.

Results: The average age of the patients was 64.9 ± 8.9 years. The differences observed in spherical power (0.1 ± 0.2), cylinder power (0.3 ± 0.4), and spherical equivalent (0.2 ± 0.2) were minimal and not statistically significant. The majority of eyes (93.4%) achieved refractive stability within six weeks after the surgery. The cylindrical power differed between age sub-groups at the 6th week post-operative, and the difference was statistically significant (p-value 0.013). There were no significant differences in refractive stability when considering gender and preoperative refractive status.

Conclusions: Phacoemulsification with foldable IOL implantation in Indian eyes results in no significant changes in biometric parameters or refraction for the majority of cases during the 6-week follow-up period. Therefore, a spectacle prescription can be given at the completion of even one week. This is the first study of its kind that has also studied the factors affecting the timeframe for refractive stability in specific patient groups.

Early Intraocular Lens Implantation During Phacoemulsification in Elderly Male Patient With Cataract and High Myopia Performed by Resident: A Case Report

*First Author: Muhammad **BAQIR***
*Co-Author(s): Karyusi **AHMAD**, Alie Solahuddin **SOLAHUDDIN***

Purpose: To report a case of a 58-year-old male with senile cataract and high myopia in both eyes where phacoemulsification was performed with early intraocular lens implantation.

Methods: A 58-year-old male patient complained of blurred vision in both eyes since 1 year ago, slow progressive, felt like foggy vision. The patient had a history of wearing spectacles a long time ago. On examination, we found that the patient had high myopia. The patient was diagnosed with bilateral senile cataracts and high myopia. The treatment planning was surgery for both eyes performing phacomulsification. During the operation performed by a resident, an early intraocular lens was implanted to protect the posterior capsule.

Results: One day after performing phacoemulsification with early intraocular lens implantation on the right eye, the visual acuity in the right eye (RE) improved

from 6/60 to 6/18. Upon two weeks of follow-up for RE, the visual acuity improved from 6/18 to 6/9.

Conclusions: Phacoemulsification has its own difficulties when it is performed in cataracts with high myopia. The phacoemulsification with early intraocular lens implantation performed in this patient with senile cataracts and high myopia can reduce intraocular complications performed by a resident and can give significant visual acuity improvement.

Effects of Intense Pulsed Light Treatment Prior to Cataract Surgery: A Prospective, Randomized, Controlled Study

*First Author: Kyu Young **SHIM***

Purpose: To investigate the clinical effects of Intense Pulsed Light (IPL) treatment prior to cataract surgery on meibomian gland disorders and dry eye that can be caused by surgery.

Methods: For 32 patients (64 eyes) scheduled for bilateral cataract surgery, intense pulsed light treatment was performed twice only in the randomly designated monocular of both eyes before cataract surgery at an interval of 3 weeks. They visited the hospital 1 week, 1 month, and 3 months after surgery, and at each visit, high-order aberrations were measured using a Dual-scheimpflug analyzer (Gallilei®), tear film breakup time (tBUT), ocular surface staining score (OSS), contrast sensitivity, meibomian gland quality score (MGS) and meibomian gland excretion scores (MGE) and lid margin scores (LMS) were evaluated. The Schirmer's test and the Standardized Patient Evaluation of Eye Dryness test were performed at registration and 3 months after surgery.

Results: At 1 month after surgery, the IPL group showed significantly lower MGE, MGS, and LMS than the control group (P<0.001). Comparing MGE, MGS, and LMS before and after surgery, the IPL group showed significantly decreased scores at 1 month after surgery (P<0.005), and no significant difference was found at 3 months after surgery. The tBUT increased significantly after surgery in the control group (P<0.05), however, it showed no significant difference in the IPL group. The OSS consistently decreased significantly after surgery in the IPL group (P<0.05).

Conclusions: IPL treatment prior to cataract surgery can safely and effectively alleviate dry eye and meibomian gland disorders that may occur due to surgery.

High Myopia in Normal Axial Length: A Rapid Myopic Progression and Diplopia Secondary to Nuclear Cataract

*First Author: Riskha **PANGESTIKA***
*Co-Author(s): A Rizal **FANANY***

Purpose: To evaluate the clinical characteristics and outcomes of cataract surgery in lenticular progressive myopia.

Methods: A 49-year-old female presented for rapid, unexplained myopic progression and monoocular diplopia. Because of their insidious nature, this condition was misdiagnosed with neurological or binocular abnormalities. She had undergone extensive additional testing before referral, including a CT scan. Visual acuity (VA) with her newest glasses was reduced; the patient's spherical equivalent refraction had begun at −2.75 OD and -3.25 OS at the baseline examination but had increased to −10.75 OD and −9.00 OS in 6 months. The axial length was normal (23,05 OD and 23,08 OS), and the mean K-values were 43,25 OD and 43,75 OS. Besides a small amount of nuclear cataracts, no etiology was determined for this shift. There were no other ocular or systemic diseases closely associated with lenticular progressive myopia. There was no extreme IOL power measurement, and there were no signs of excessive myopia intraoperatively.

Results: Phacoemulsification was performed on her right eye initially, followed by her left eye a few weeks later. A month after surgery, VA had improved to 0.1 (logMar) OD and 0.18 (logMar) OS. The diplopia was resolved, and the refractive state stabilized. Through simple examination of a dilated pupil, the patient can be directed for appropriate surgical care and avoid unnecessary examination.

Conclusions: A combination of early diagnosis of lenticular progressive myopia, efficient examination, and appropriate management can improve the outcome.

Immediate Sequential Bilateral Cataract Surgery in a Malaysian District Hospital

*First Author: Yeohan **GAR GEAN***

Purpose: To report the visual outcome, advantages, and disadvantages of immediate sequential bilateral cataract surgery (ISBCS) in a Malaysian district hospital.

Methods: A one-year retrospective study of ISBCS was conducted in a Malaysian district hospital (May 2022 -May 2023). Medical records of 93 patients (186 eyes) were reviewed, which included phacoemulsification and extracapsular cataract extraction (ECCE) either under local or general anesthesia. Only monofocal lenses were included in this study. Pre- and post-operative visual acuity (VA), pre-existing ocular comorbid, intraoperative and postoperative complications, and post-operative refraction were reviewed.

Results: A total of 93 patients (186 eyes, n=186) underwent ISBCS. 97% underwent phacoemulsification (n=181), and 3% underwent ECCE (n=5). Ten patients were lost to follow-up (n=20). 1.61% of eyes (n=6) had visual acuity (VA) at 6/12 or better before their operation. Thirty-seven eyes had pre-existing ocular comorbids. 99.24% (n=131) with no pre-existing ocular comorbid achieved post-operative best corrected visual acuity (BCVA) of 6/12 and better. One eye had

intraoperative complications of posterior capsular rent, zonular dehiscence, and vitreous loss (n=1). There was no post-operative endophthalmitis. Late postoperative complications occurred in six eyes; four eyes had retained lens material, one eye had intraocular lens subluxation and one eye developed Irvine-Gass syndrome. The post-operative spherical equivalent of 129 eyes (97.73%) was within ±1Dioptre.

Conclusions: Excellent visual outcome was achieved with ISBCS in our hospital, with low complication rates.

Is Posterior Corneal Measurement Important in Refractive Outcomes of Cataract Surgery

*First Author: Anusha **POREDDY***
*Co-Author(s): Rupak Kumar Reddy **KONDREDDY***

Purpose: To evaluate the refractive outcomes using K (conventional keratometry) and TK (total keratometry) in cataract surgery. Compare and evaluate – Agreement between K and TK; IOL power calculations using K and TK in SRK T, Hoffer Q, Holladay II, Barrett Universal II and Barrett Universal TK formulae.

Methods: One hundred cases- Femto laser-assisted cataract surgery. Instrument- IOL Master 700. Residual postoperative refractive error is measured 6 weeks postoperatively. The deviation between the predicted and residual refractive error using K and TK in different formulae was evaluated and analyzed.

Results: The mean ± SD of K and TK – 43.89 ± 1.48 D and 43.96 ± 1.47 D intraclass correlation (ICC) coefficient 0.996. The distribution of mean IOL power calculations with K did not differ significantly compared to mean TK for Hoffer Q, Holladay 1, Barrett II formula (P-value>0.05). The Bland-Altman regression analysis (%r2 value) shows that there is a significant agreement between IOL power calculations using K and TK measurements by all formulae. The distribution of mean pres (predicted refractive error) by K did not differ significantly compared to mean Pres by TK for Hoffer Q, Holladay 1, Barrett II formulae (P-value>0.05). In the study, the TK group shows a higher proportion of eyes within ± 0.25 D of post-operative spherical equivalent range compared to the K group across all the formulae studied.

Conclusions: Statistically significant agreement between–K&TK -IOL power calculations using K&TK- they can be used in existing IOL power calculation formulae with the same IOL constants. Refractive outcomes in the TK group are slightly better than in the K group.

Management and Implantation of Individual "Turtle-IOL" LU-814VRT, (Original ACRIFLEX 62 VR TI) the First Customized Toric IOL. Case Report

*First Author: Volker **RASCH***
*Co-Author(s): Maximilian **RASCH***

Purpose: Toric IOLs must be rotationally stable, implantable in capsular bag and sulcus, and as close as possible to individually calculated values.

Methods: An IOL with four flexible haptics was presented, which due to the manufacturing technology, corresponded to the calculated values with "spot landings" and thus also postoperatively came close to the target refraction with low tolerances.

Results: The results of 184 toric standard IOLs were compared with customized IOLs.

Conclusions: Personalized toric IOLs are recommended for IOL implantation, especially for higher cylinder diopters. For better rotational stability, the 4-haptic turtle design is recommended.

Managing Traumatic Cataract With Iridodialysis: A Comprehensive Approach

*First Author: Ganjar **SULAKSMONO***
*Co-Author(s): Reny **SETYOWATI***

Purpose: Traumatic injuries to the eye can result in a range of ocular complications. This review presents the case of a 42-year-old patient referred to the ER for full-thickness corneal laceration, traumatic cataract, and iridodialysis. The aim of this report is to present traumatic cataracts with iridodialysis management and its complications in the patient.

Methods: During the examination, we observed a significant dilation of the pupil and a ruptured anterior capsule in the patient's right eye. Additionally, a white cataract and iridodialysis were present in the 5-7 o'clock position. The patient's best corrected visual acuity (BCVA) in the right eye was limited to hand movement. To address these issues, the patient was scheduled for secondary cataract extraction and iridodialysis repair surgery approximately three months after the initial procedure. In the meantime, the patient received topical anti-inflammatory and antibiotic treatment. 10.0 nylon sutures in the cornea were removed 2 weeks prior to biometry examination to eliminate difficulty in keratometry finding.

Results: Before the standard phacoemulsification procedure, we conducted iridodialysis repair surgery. We implanted a three-piece posterior chamber intraocular lens into the bag. After surgery, the patient achieved a postoperative best-corrected visual acuity (BCVA) of 20/20 in the right eye. Over the course of three months of observation, there were no instances of the lens becoming dislocated.

Conclusions: Patients with traumatic cataracts and iridodialysis can undergo successful treatment through the repair of iridodialysis followed by a standard phacoemulsification procedure. However, caution must be noted during cataract surgery in patients due to the high prevalence of zonular abnormalities caused by trauma. These factors contribute to an increased risk of complications during intraoperative and postoperative.

Mix-and-Match Implantation of a Monofocal EDOF With a Diffractive Trifocal IOL– To Eliminate the Dissatisfaction for First Eye With Diffractive Trifocal IOL

*First Author: Tsui-kang **HSU***
*Co-Author(s): An-fei **LI**, Chia-chen **TSAI***

Purpose: To evaluate postoperative visual acuity (VA) and subjective quality assessment after mix-and-match implantation of an enhanced monofocal EDOF IOL and a diffractive trifocal IOL versus bilateral implantation of trifocal IOL.

Methods: The trifocal IOL was implanted in the first eye and the monofocal EDOF EMV IOL in the second eye if the patients complained about dysphotopsia symptoms. Otherwise, the second eye will also implant trifocal IOL. The postoperative analysis included VA at far, intermediate, and near distances, defocus curves, VF-7 questionnaire, wavefront analysis, and a halo and glare simulator.

Results: Forty eyes of 20 subjects were collected. The bilateral trifocal IOL groups performed better at DCNVA ($p<0.05$) and at defocus levels of -1.75D to -4.0D ($p<0.05$), the mix-match with enhanced monofocal EDOF IOL group was better at -0.5D and -1.5D ($p=0.013$). Wavefront analysis disclosed lower HOAs in the trifocal group at 6 mm ($p<0.05$) and no difference ($p = 0.33$) at 3 mm pupil size. The monofocal EDOF IOL displayed increased positive SA at 6 mm pupil size. The UDVA and CDVA were better in the EDOF group. Low rates of dysphotopsia phenomenon and satisfied results of the VF-7 questionnaire were obtained in the mix-match group after the second eye implantation ($P=0.01$).

Conclusions: Better visual quality and high satisfaction rates of VF-7 questionnaire were obtained after mix-and-match implantation of monofocal EDOF IOL and trifocal IOL. Enhanced monofocal EDOF IOL could be an alternative for 2nd eye to increase the satisfaction rate if the trifocal IOL in the first eye induced unwanted optical phenomena.

Preclinical Biocompatibility and Biosafety Evaluation of a New Foldable Brown-Diaphragm Intraocular Lens: An In Vitro and In Vivo Study

*First Author: Keke **ZHANG***
*Co-Author(s): Wenwen **HE**, Yi **LU**, Jiao **QI**, Shaohua **ZHANG**, Xiangjia **ZHU***

Purpose: A new foldable brown-diaphragm intraocular lens (IOL) was preclinically evaluated in vitro and in vivo by comparing its biocompatibility and biosafety with those of a commercially available IOL.

Methods: The new brown-diaphragm IOL is made of hydrophobic acrylic material, incorporating a transparent optical zone and surrounding brown diaphragm. Cellular experiments evaluating lens epithelial cell morphology, adhesion, and migration were conducted to exclude cytotoxic effects. Twelve New Zealand rabbits had the new brown-diaphragm IOL implanted in one eye, and another 12 had a commercially available foldable IOL implanted, followed by slit-lamp evaluations, corneal endothelial cells density measurement and aqueous humor analysis to identify any dye leakage from the brown-diaphragm IOL. Haematoxylin and eosin staining of ocular tissue and scanning electron microscopy (SEM) of the IOL surface were performed after 12-week observation.

Results: In vivo experiments showed there were no statistically significant differences between the two groups in terms of postoperative inflammation and capsular biocompatibility. There were no significant changes in corneal endothelial cell density before and after surgery in either group. LC-MS/MS analysis showed that the target dye was not detected in aqueous humor samples. Histopathology of ocular sections and SEM imaging of IOL surfaces showed similar changes in both groups.

Conclusions: The newly-invented brown-diaphragm IOL showed good biocompatibility and biosafety. Combined with its foldability and peripheral shading, it could be a new choice for patients with iris defects.

Significance of Accurate Diagnosis and Optimal Management Approach for Bilateral Anterior Lenticonus

*First Author: Laiba **ASIF***
*Co-Author(s): Muhammad Abdullah **MAZHRY**, Zia **MAZHRY***

Purpose: The purpose of our case report is to emphasize the importance of accurate diagnosis of anterior lenticonus and the crucial role of an ophthalmologist in aiding the timely diagnosis of Alport syndrome. Bilateral anterior lenticonus is a pathognomonic feature of Alport Syndrome and exploration must begin once anterior lenticonus is discovered.

Methods: We reported this case in our clinic setting. Our patient came in for 2nd opinion about corneal cross-linking. We examined the patient and observed a central symmetrical oil-droplet sign; a slit lamp exam showed a conical protrusion of the anterior lens capsule. OCT anterior segment proved to be an excellent modality to confirm the diagnosis. Audiometry and urinalysis showed bilateral sensorineural hearing loss and proteinuria with hematuria, respectively, and the diagnosis of Alport syndrome was established. We performed irrigation and aspiration with IOL implantation in both eyes under local anesthesia, with an interval of one week between the two eyes. The capsule was thin and fragile, and extreme care was taken while performing capsulorrhexis.

Results: The patient had a good visual outcome of 6/9 in both eyes with correction at 1 month postoperatively. He was referred to a nephrologist and was started on ACE Inhibitors to delay the onset of End-Stage Renal Disease (ESRD). The patient was also referred for auditory rehabilitation.

Conclusions: The central oil droplet sign of lenticonus should be differentiated from the relatively asymmetrical oil droplet sign of keratoconus. The anterior segment module of OCT is an excellent investigation to confirm the diagnosis. Meticulous care should be taken during capsulorrhexis in these cases.

Six-Month Outcomes of Bilateral Mix-and-match Implantation of Extended Depth of Focus and Trifocal Intraocular Lenses

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Purpose: Six-Month Outcomes of Bilateral Mix-and-match Implantation of Extended Depth of Focus and Trifocal Intraocular Lenses.

Methods: All patients who had met inclusion and exclusion criteria underwent bilateral cataract surgery. The EDOF or toric EDOF IOL (Symfony, J&J Inc., New Brunswick, NJ, USA) was implanted in the dominant eye, and the trifocal or toric trifocal IOL (Synergy, J&J Inc.) in the non-dominant eye. Uncorrected distance visual acuity (UDVA), uncorrected intermediate visual acuity (UIVA), uncorrected near visual acuity (UNVA), corrected distance visual acuity (CDVA), contrast sensitivity, satisfaction questionnaire, osmolarity, and matrix metalloproteinase-9 (MMP-9) were obtained before and one and six months postoperatively.

Results: Seventy-four eyes of thirty-seven patients were enrolled. One and six months after surgery, mean UDVA (logMAR) in the EDOF IOL-implanted eyes (0.06±0.07 and 0.04±0.08) was significantly better than in the trifocal IOL-implanted eyes (0.13±0.14 and 0.13±0.14). The mean UNVA in the trifocal IOL-implanted eyes (0.13±0.11 and 0.11±0.11) was better than in the EDOF IOL-implanted eyes (0.37±0.18 and 0.39±0.28). Although 62.5% and 70.3% of patients were satisfied at one and six months, 71.8% and 74.1% said they would recommend the mix-and-match implantation.

Conclusions: The bilateral Mix-and-match implantation using the EDOF and trifocal IOLs showed good visual outcomes at distance, intermediate, and near distances with a broader range of vision without increased photic phenomena over six months.

Surgeries and Outcome in Subluxated and Dislocated Lens in Eastern Nepal

*First Author: Pranav **SHRESTHA***

Purpose: The aim of this study is to evaluate the outcome of surgery in cases with subluxated and dislocated lenses.

Methods: A review of all cases with subluxated and dislocated lenses undergoing surgery from January 1, 2019 to December 31, 2019, was conducted. Demographic profile, systemic comorbidities, initial and final best-corrected visual acuity, and surgical procedure were recorded along with all the intraoperative and postoperative complications.

Results: A total of 62 eyes of 60 patients with a mean age of 50.18 ± 15.18 years (18 to 87 years) were included with the modal duration of presentation of one week. Among these, trauma was found to be the most common etiology. Subluxation was present in 55 eyes and seven eyes had dislocation with 41 of these undergoing Intracapsular Cataract Extraction (ICCE) and 21 undergoing Extracapsular Cataract Extraction (ECCE); and surgical intervention elicited a statistically significant improvement in the visual acuity. The Best Corrected Visual Acuity (BCVA) was statistically better among the pseudophakic patients. The most common complication encountered intraoperatively was vitreous loss whereas, significant corneal edema was the most common complication in the postoperative period.

Conclusions: Cataract extraction in cases with subluxated and dislocated lenses due to different etiology results in the improvement in the visual acuity of the patient. In cases, where Extracapsular Cataract Extraction (ECCE) cannot be performed, Intracapsular Cataract Extraction (ICCE) also results in comparable visual improvement.

The Difference of Postoperative Aqueous Antioxidant Concentrations Between Femtosecond Laser-Assisted Cataract Surgery and Conventional Cataract Surgery

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Purpose: To evaluate the change in total antioxidant capacity (TAC) and ascorbic acid (AA) levels between

femtosecond laser-assisted cataract surgery (FLACS) and conventional cataract surgery.

Methods: A prospective non-randomized study was conducted where 18 and 36 patients receiving FLACS and conventional cataract surgery, respectively, were enrolled. The patients were subjected to cataract surgery with the same phacoemulsification and femtosecond laser devices. The aqueous humor was obtained via paracentesis before and one day after the cataract surgery, and TAC and AA concentrations were determined. The generalized linear mixed model was adopted to determine the adjusted odds ratio (aOR) and 95% confidence interval (CI) of TAC and AA changes between groups.

Results: Preoperative TAC and AA levels showed a significant decrement postoperatively in both the FLACS and control groups ($P < 0.05$). In the multivariable analysis, the trend in TAC (aOR: 0.352, 95% CI: 0.218-0.527, $P = 0.0177$) and AA (aOR: 0.308, 95% CI: 0.156-0.488, $P = 0.0204$) decrement was significantly greater in the FLACS group. In the subgroup analyses, the correlation between FLACS and greater TAC reduction was more significant in patients with high myopia, dense cataracts, short anterior chamber depth (ACD), and long axial length (AXL) ($P < 0.05$). In addition, the correlation between FLACS and lower AA decrement was more significant in patients with high myopia, dense cataract, long AXL, and greater central corneal thickness (CCT) ($P < 0.05$).

Conclusions: FLACS was associated with greater TAC and AA reductions compared to conventional cataract surgery, especially in patients with high myopia and advanced cataracts.

Visual Outcomes Following the Implantation of High Water Content Hydrophobic Acrylic Trifocal Intraocular Lens

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Purpose: Visual outcomes after the implantation of a new trifocal intraocular lens (IOL) with high water content hydrophobic acrylic material were evaluated.

Methods: One hundred eighteen eyes of 59 cases (mean age 65.1±7.9 years) were included in this prospective multicenter study. High water content hydrophobic acrylic trifocal IOL: Clareon®PanOptix® (CNWTT0: Alcon) was implanted in both eyes. At 3 months postoperatively, bilateral distance corrected visual acuities (BDCVAs) at 5m, 60, and 40 cm, unilateral and bilateral VAs at 5m, 80, 60, and 40 cm, defocus curves, photopic distance contrast sensitivity, and glare and halo were examined.

Results: Bilateral BDCVAs at 5m, 60cm, and 40cm were logMAR -0.163±0.087, -0.075±0.091, and -0.067±0.090, respectively. Smooth defocus curve, contrast sensitivity within normal range, and low rate of glare and halo were achieved.

Conclusions: A new trifocal IOL with high water content hydrophobic acryl was effective for presbyopia correction in cataract surgery.

Visual and Refractive Outcomes in Cataract Eyes Implanted With Either a Hydrophobic or Hydrophilic Trifocal Intraocular Lens With the Same Optical Design

*First Author: Robert **ANG***

Purpose: The main objective of this study was to assess the clinical outcomes of cataract patients when implanted with either a hydrophobic FineVision POD F GF or a hydrophilic FineVision POD F intraocular lens (IOL).

Methods: This study considers 46 patients bilaterally implanted randomly with the FineVision POD F GF or FineVision POD F IOLs. The main parameters analyzed were refraction, uncorrected-distance visual acuity, corrected-distance visual acuity (CDVA), distance-corrected intermediate visual acuity (DCIVA), distance-corrected near visual acuity (DCNVA), defocus curve, and contrast sensitivity under photopic and mesopic lighting conditions up to 2 years of follow-up.

Results: The refractive outcomes for both groups were good, with 97.73% and 100% of eyes in the FineVision POD F GF IOL group and 95.65% and 100%, of eyes in the FineVision POD F IOL group within ±1.00D of the target refraction at 12 and 24 months, respectively. All patients showed a CDVA of ≥20/25 at 12- and 24-months post-surgery. At 24 months of follow-up, in both FineVision POD F GF and FineVision POD F IOL groups, 91% of patients showed a DCIVA of ≥20/25 and 83.3% of patients had a DCNVA of ≥20/25, respectively. The defocus curve obtained in both groups showed a continuous visual acuity, being ≥20/32 over a 4.00D range. The contrast sensitivity values for photopic and mesopic conditions were good in both groups.

Conclusions: This clinical study shows the good visual and refractive outcomes obtained in patients bilaterally implanted with the FineVision POD F GF or the FineVision POD F IOLs.

Cornea, Dry Eyes, External Eye Diseases and Eye Banking

15-Year Experience With Keratoplasty in the Management of Pediatric Corneal Diseases: Indications and Clinical Outcomes in Malaysia

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Purpose: To evaluate the indications and clinical outcomes of pediatric keratoplasty performed in Hospital Kuala Lumpur (HKL) over the past 15 years.

Methods: We conducted a retrospective evaluation of pediatric patients (less than 12 years old) who underwent corneal keratoplasty HKL, from January 2008 to December 2022. We analyzed demographic data, preoperative diagnoses, types of keratoplasty performed, and the 1-year graft survival rate.

Results: A total of 100 eyes from 95 patients were included in the study, with a mean age of 4.39 +/- 3.32 years. The indications for keratoplasty included limbal dermoid (45%), anterior segment dysgenesis (ASD) (22%), infective keratitis (IK) (14%), congenital glaucoma (4%), and other pathologies (15%). Of the patients, 56% underwent lamellar keratoplasty, while 44% underwent penetrating keratoplasty. Thirty-one out of 100 (31%) had corneal perforation. Complications included wound dehiscence (4%) and graft melting (3%). 77% completed 1-year follow-up, and the overall 1-year graft survival rate was 54.5%. The 1-year graft survival rate for ASD and IK were 35.7% and 30%, respectively. Limbal dermoid showed a better graft survival rate (72.2%) compared to other pathologies (39%), with a p-value of 0.004. Among the cases of perforated corneas, an overall 1-year graft survival rate of 25.8% (8/31) was observed, which was significantly lower compared to eyes without corneal perforation 73.9% (34/46) with a p-value of 0.008.

Conclusions: Limbal dermoid was the most common indication for pediatric keratoplasty, and it exhibited a better graft survival rate compared to other pathologies. Perforated cornea has a lower graft survival rate compared to non-perforated corneal pathology.

A Case Diagnosed With Brown-McLean Syndrome After Acute Retinal Necrosis (ARN)

*First Author: Kentaro **HAYASHI***
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Purpose: The Brown-Mclean syndrome, which leads to peripheral corneal edema, is uncommon and typically emerges after intracapsular cataract extraction. We diagnosed a patient with this syndrome following ARN induced by herpes simplex virus (HSV) and subsequent treatments. To date, no cases have been reported after PEA+IOL+PPV post-ARN.

Methods: A 65-year-old man presented with iritis, keratic precipitates (KPs), and anterior chamber inflammation, with his aqueous humor testing HSV positive. He also showed peripheral corneal edema. Thirteen years prior, he had ARN in his left eye. Due to potential acyclovir resistance, he underwent vitreous surgery and PEA+IOL+PPV. An intravitreal ganciclovir injection post-surgery improved inflammation. He experienced two uveitis recurrences, with the latest occurring 7 years ago, absent any corneal edema. Valaciclovir (3000mg/day for 7 days), followed by acyclovir ointment (5 times daily) and 0.1% betamethasone (6 times daily) were prescribed. The anterior inflammation and KPs were improved after 1 month and the steroid dose was lessened. His corrected visual acuity was 1.2 (LogMAR -0.1) and endothelium density was 2000 but peripheral corneal edema remained. Comprehensive exams, including UBM, CASIA, and intra-ocular pressure (IOP) tests, were conducted, and topical steroid treatment was intensified.

Results: Despite topical treatment, the pronounced peripheral corneal edema showed little change, while UBM and IOP were normal. The edema's etiology seems akin to Brown-Mclean syndrome's pathology, with potential influences from uveitis or prior surgeries.

Conclusions: This is the first documented Brown-Mclean syndrome after ARN and the subsequent surgery. The cause remains unknown, emphasizing the need for further research.

A Case of Epikeartophakia for Keratoconus With 30-Years Follow-up

*First Author: Takashi **MIYAI***
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Purpose: Epikeratophagia is a refractive surgery used to correct aphakia, hyperopia, and keratoconus. The purpose of this report is to present a case that has been observed for more than 30 years after epikeratophakia surgery for keratoconus.

Methods: The patient was a 17-year-old man with keratoconus who had difficulty wearing hard contact lenses and underwent epikeratophakia surgery on his right eye using a plano power lenticule. Anterior segment optical coherence tomography was performed 20 years after surgery, and the progress was observed using AvgK and Kmax as indicators of progression.

Results: AvgK and Kmax revealed that the progression of keratoconus was stopped in the operated right eye, but continued to progress in the non-opearted left

eye. Thirty years after surgery, contact corrected visual acuity (1.0) on the right and (0.4) on the left. Avg K and Kmax were 47.3D and 54.3 D on the right and 79.5D and112.5 D on the left, respectively. The thinnest corneal thickness was 534 µm on the right and 279 µm on the left.

Conclusions: We reported the longest follow-up to date of a case of epikeratophakia for keratoconus. The progression of keratoconus was halted in the treated eye but continued in the non-operated contralateral eye.

A Distinct Case of Unilateral Keratoconus

*First Author: Adrean **MELIALA***
*Co-Author(s): Fatimah **NUSASTUTI***

Purpose: To present a case of improved visual acuity in unilateral keratoconus patient following Rigid Gas Permeable (RGP) treatment.

Methods: A case report of an 18-year-old male patient with unilateral keratoconus.

Results: An-18-year-old male with blurred vision on his left eye wtih visual acuity 3/60. Anterior examination showed Munson sign, Rizzuti sign, and Fleischer Ring. Scissoring Reflex and Oil Droplet Reflex were found on funduscopy. Anterior Segment Ocular Coherence Tomography was done with Central Corneal Thickness 437 µm. Keratometry showed average K 57.18 D, Cylinder 6.88 D. Corneal Topography parameter showed Keratoconus Classification Index 95%, Keratoconus Severity Index 95%, Keratoconus Prediction Index 0.53, Irregular Astigmatism Index 0.73, Surface Regularity Index 2.12. Refractive lens correction was 6/38 with no better correction. Aspherical RGP was initially utilized, with Base Curve 7.30 mm, diameter 9.00 D, Flat Fit, with Power -4.00 D, showing visual acuity of 6/10. Keratoconus-designed RGP was then compared with the initial aspherical RGP, with base curve 6.2 mm, diameter 8.80 D, Power -12.50 D, and Three-Point Touch showing 6/10 visual acuity. The aspherical RGP was chosen as the final treatment as its use shown visual improvement with overall better fit stability.

Conclusions: Abnormal corneal shape with progressive thinning is a hallmark of keratoconus. Rigid Gas Permeable contact lens as a non-invasive therapy produces good results. It is effective in mending the irregular anterior corneal surface, improving visual acuity, and has a relatively low chance of adverse effects.

A Population-Based Study of Social Demographic Factors, Associated Diseases and Herpes Simplex Keratitis in Taiwan

*First Author: Yuh-shin **CHANG***
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Purpose: To investigate the association of herpes simplex keratitis (HSK) with sociodemographic factors and associated ocular conditions or systemic diseases.

Methods: This nationwide, population-based, retrospective, matched case-controlled study included 27,615 HSK patients, identified by the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code 054.42 Dendritic keratitis+ 054.43 Herpes simplex disciform keratitis, selected from the Taiwan National Health Insurance Research Database. The age-, sex-, and index date-matched control group included 27,615 non-HSK control group also selected from the Taiwan Longitudinal Health Insurance Database 2000. Sociodemographic factors and associated ocular conditions or systemic diseases were examined using univariate logistic regression analyses, and continuous variables were analyzed using paired t-test. The odds ratio (OR) of developing HSK was compared using adjusted logistic regression analysis.

Results: Patients with corneal abrasion were more likely to have HSK than the control group. Patients with systemic diseases such as diabetes mellitus, hyperlipidaemia, coronary artery disease, chronic renal disease and human immunodeficiency virus infection have significantly higher ORs for HSK development. Patients residing in Northern Taiwan and patients whose monthly income was higher than NT$ 30,000 had increased odds of developing HSK; however, patients residing in satellite cities and being public servants (military, civil, teaching staff, etc.) had decreased odds of developing HSK.

Conclusions: HSK is strongly associated with corneal abrasion, diabetes mellitus, hyperlipidaemia, coronary artery disease, chronic renal disease and human immunodeficiency virus infection.

A Rare Case of Gelatinous Drop-like Corneal Dystrophy with Mulberry Type: A Dilemma in Surgical Decision

*First Author: Burhana **MAWARASTI***
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Purpose: This study highlights the rare case of gelatinous drop-like corneal dystrophy (GDLD) and surgical decisions due to its devastating outcome of recurrence.

Methods: Diagnosis of GDLD was established based on the clinical appearance by slit-lamp biomicroscopy and Anterior Segment Optical Coherence Tomography

(AS-OCT). Reported treatment and outcomes were reviewed in managing GDLD in this case study.

Results: A 25-year-old woman complained of blurry vision and photophobia in both eyes (BE) since 15 years ago. The visual acuity (VA) was hand movement with good projections on BE. The slit-lamp observation revealed irregularity on the corneal surface with multiple grayish-white deposits in the sub-epithelial of BE. AS-OCT supports findings of localization of multiple deposits from the basal membrane surging to the epithelial surface, suggesting the typical mulberry type. Mutation of the TACSTD2 gene disrupts tight junctions, leading to amyloid depositions. Unfortunately, gene sequencing was limited in our center. GDLD is a rare genetic corneal disease with a 1:33,000 prevalence in Japan and 50-70% recurrence after a simple keratoplasty. Combining allograft limbal stem cell transplant (LSCT) with deep anterior lamellar keratoplasty (DALK) provides better outcomes for two years with stable VA. Phototherapeutic keratectomy (PTK) also improves the VA for a more extended period within six years of follow-up. Therapeutic soft contact lenses decrease the progression and the cornea's irregularity, prolonging the time needed for keratoplasty.

Conclusions: Combined treatment modalities on GDLD postpone keratoplasty and prevent recurrence. In this case, modifying PTK with extended contact lens wear is preferred to improve the VA and delay the urgency for keratoplasty.

A Scleral Rigid Contact Lens Fitting after Corneal Refractive Surgery: a Case Report

*First Author: Fatimah **NUSASTUTI***

Purpose: To describe a visual acuity improvement after scleral rigid contact lens fitting following corneal refractive surgery patient.

Methods: A case report of a 43-year-old male patient who was fitted with scleral contact lenses after corneal refractive surgery.

Results: A 43-year-old male patient was referred to our clinic because of his vision problems after 10 months of corneal refractive surgery. The best corrected visual acuity was 20/200 S + 2.25 cyl -1.00 x 175 20/60 for the right eye and 20/150 S + 2.25 20/40 for the left eye. A standard corneal rigid gas permeable contact lens fitting was done prior to the scleral contact lens fitting, but the fitting result could not get an optimum profile. Scleral contact lenses were fitted then, with a base curve 8.50mm/ diameter 16.6 mm/ central thickness 0.39mm/ sagittal depth 4.56mm/ 0 D power for the right eye; and base curve 8.25/ diameter 16.6 mm/ central thickness 0.35mm/ sagittal depth 4.64mm/ S-3.25 D power for the left eye. The final visual acuity can reach 20/20 for each eye. There were no major complaints about these lenses, only mild discomfort during the adaptation period.

Conclusions: A larger diameter and more complex design of contact lens can be a good option to improve fitting stability and visual acuity in contact lens fitting for patients who underwent corneal refractive surgery.

A Study to Investigate the Association Between Serum Vitamin D and Pterygium in a Representative Sample Population Among Patients Reporting to a Tertiary Hospital in Eastern India

*First Author: Amit **RAJ***
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Purpose: The purpose of this study was to compare vitamin D (VD) deficiency frequency among patients with pterygium to that of healthy subjects and to investigate the VD deficiency among patients with pterygium.

Methods: Forty pterygium patients and 40 healthy age and gender-matched subjects were included in the study. Patients were evaluated for average hours of daily sun exposure and also tests for dry eye disease, such as Schirmer's test and van Bijsterveld scoring. Blood samples were collected from groups during the same time interval and the samples were saved. Serum 25-hydroxyvitamin D (25 (OH)D) levels were measured and analyzed.

Results: The pterygium group and control group both consisted of 40 patients each. From the above data collected in our analysis, we found no significant association between hours of sunlight exposure on a daily average and the occurrence of pterygium. The mean value in the group with pterygium was 24.0 ± 7.11 ng/ml whereas that in the group without pterygium was 32.9 ± 6.41 ng/ml. The mean difference of 8.91 was statistically significant ($p < 0.001$

Conclusions: Vitamin D deficiency can play a role in pterygium etiopathogenesis. Wide population-based studies in different regions are needed to evaluate this result.

A Successful Case of Toric Lens in a Patient With Corneal Scarring and Induced Astigmatism

*First Author: Vishnu **RAO***
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Purpose: In recent years, advancements in lens manufacturing and design have led to the development of toric lenses to correct not only common refractive errors but also the intricate distortions caused by corneal scars. This case report highlights that toric lenses can greatly improve visual outcomes in eyes with corneal scars.

Methods: Case report.

Results: A 76-year-old Chinese male presented with bilateral eye poor vision secondary to immature cataract and corneal scarring with induced high astigmatism. He initially underwent cataract surgery for his left eye (-3.00/-2.75 x 130 (6/18)) with a monofocal lens and was unhappy with his post-operative outcome (-1.00/-2.00 x 75 (6/18)). He was then offered a toric lens for his other eye with manifest pre-operative refraction of (-1.75/-3.00 x 110 (6/24)). Post surgery he was extremely happy with his vision. The manifest refraction was improved to (-0.50/-0.50 x 25 (6/12)).

Conclusions: In conclusion, corneal scars pose visual challenges that can impact an individual's daily life and activities. Toric lenses represent an advanced and tailored approach to managing the visual impairments caused by corneal scars, aiming to restore clear and comfortable vision by precisely counteracting the distortions induced by the scars. Ongoing research and technological innovations continue to refine the efficacy and design of tonic lenses, offering new avenues for individuals with corneal scars to attain optimal visual function.

Alert in Long-term Topical Anti-Glaucoma: Emergence of Pseudo-Ocular Cicatricial Pemphigoid

*First Author: Yulia **AZIZA***
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Purpose: Long-term topical anti-glaucoma medications may cause ocular surface changes, including squamous metaplasia, subconjunctival fibrosis, and decreased goblet cells. It is usually related to the preservatives contained in the eyedrops. The symptoms are similar to dry eye, which may lead to misdiagnosis and delayed treatment. This report describes a diagnostic approach and identification of long-term topical anti-glaucoma adverse effects as pseudo-ocular cicatricial pemphigoid.

Methods: A case report.

Results: A Male, 75 years old, complained of dryness, redness, and itches on the eyelid, blurred vision with sticky discharge for the last ten months. He had a history of glaucoma for ten years with routine use of brinzolamide-brimonidine and timolol-latanoprost in fixed combination eyedrops. He was treated for dry eye and chronic blepharitis with topical 50% autologous serum and artificial tears without any improvement. Cicatricial ectropion, telangiectasia, crust, lagophthalmos, and dispersed superficial punctate keratopathy were found. The break-up time was 10 seconds. Pseudo-ocular cicatricial pemphigoid was suspected to be related to a hypersensitivity reaction to long-term topical anti-glaucoma. His glaucoma medication was switched to non-preservative anti-glaucoma. He also got skin moisturizer, oral antihistamine and mast cell stabilizer, frequent non-preservative artificial tears, and steroid eye ointment; clinical improvement was obtained.

Conclusions: Ocular surface changes in long-term topical anti-glaucoma use may appear as pseudo-ocular cicatricial pemphigoid. Rigorous history-taking and a multidisciplinary approach may be beneficial to get early diagnosis and management.

An Endeavor for Excellent and Aberration Free Vision in Advanced Keratoconus – Penetrating or Deep Anterior Keratoplasty?

*First Author: Shilpa **DIKE***

Purpose: To assess visual outcomes, contrast sensitivity and higher order optical aberrations, patient satisfaction index and impact on quality of life after corneal transplantation for keratoconus.

Methods: This is a prospective and retrospective longitudinal study of 50 eyes of 48 patients undergoing penetrating keratoplasty, deep anterior lamellar keratoplasty (DALK) or modified DALK (central DALK with peripheral lamellar keratoplasty) at our institute between 2015 and 2022, completing at least one year of follow-up. Visual acuity, detailed slit lamp evaluation, corneal topography, contrast sensitivity and aberrometry were assessed pre as well as post-operatively, at 1,3,6 & 12 months. The modified visual function questionnaire (VFQ) 25 was used to determine the patient satisfaction index and quality of life improvement.

Results: All patients had moderate to advanced and very advanced keratoconus with steepest K readings (K Max) as variable as between 53.5D to 117.8 D. At 1 year, Best Corrected Visual acuity (BCVA) ranged from 20/20 to 20/60 with mean spherical equivalent 3.38 +/- 2.11 D. All patients showed significant improvement in contrast sensitivity & higher order aberrations. Nearly all patients were satisfied with the outcome of surgery & reported better quality of life in terms of daily activities.

Conclusions: PK, DALK and modified DALK are very rewarding surgeries in terms of visual outcomes, especially for very advanced keratoconus patients. Furthermore, these patients, who are in the prime of their youth & productive years, make great strides in their personal and professional lives due to rapid visual rehabilitation.

An Unusual Case of Consecutive Microbial Keratitis in the Same Eye Post Collagen Cross-Linking in a Case of Keratoconus

*First Author: Anjali **DAMISETTI***
*Co-Author(s): Akhil **BEVARA***

Purpose: To report a unique case of consecutive bacterial and viral keratitis in a patient with keratoconus following collagen cross-linking (CXL).

Methods: A 21-year-old female presented with moderate keratoconus in both eyes. She underwent CXL with hypo-osmolar riboflavin in the right eye. Four days after surgery, she presented with symptoms of pain, redness, and watering in the right eye.

Results: Slit lamp examination revealed multifocal corneal infiltrates and a 1 mm hypopyon in the anterior chamber. Scrapings were taken and subjected to microbiological evaluation. Gram-positive cocci were identified on Gram stain and Staphylococcus aureus was isolated on culture. She was treated with Fortified Cefazoline 5% eye drops hourly, Fortified Vancomycin 5% eye drops hourly and Prednisolone acetate 1% eye drops 4 times a day. This resulted in the complete resolution of the bacterial keratitis in 40 days. One month after resolution, the patient presented with a characteristic dendritic epithelial defect in the right eye with reduced corneal sensations indicating Herpes simplex (HSV) epithelial keratitis. She was treated with topical Acyclovir 5% ointment five times a day, which led to complete resolution in 2 weeks.

Conclusions: This is a unique case of consecutive microbial keratitis following CXL. Exposure to UV-A light during CXL has been postulated to be a potential trigger for the reactivation of latent HSV infections. Additionally, changes in ocular flora due to topical steroid use and a compromised ocular surface could have led to a superadded bacterial infection initially, which might have masked the underlying primary HSV etiology.

Assessment of Modifiable Risk Factors for Contact Lens Complications in a Cohort of Patients With Contact Lens Related Microbial Keratitis

*First Author: Martin **ANDERSON***
*Co-Author(s): Ashish **AGRAWAL**, Roxanne **ANNOH**, Angela **JAMES***

Purpose: Microbial keratitis related to contact lens (CL) use is a common and sight-threatening complication with modifiable risk factors. We set out to evaluate behavioural risk factors and contact lens education given to patients who had experienced a CL-related infection.

Methods: We prospectively recruited 100 consecutive patients referred with CL-related keratitis to an acute clinic in a tertiary eye hospital in Edinburgh, UK. A questionnaire covering basic demographics, CL type, length of use, previous CL education, hygiene habits, dry eye symptoms and previous eye infections was used.

Results: 98/100 patients were soft CL wearers, with 34/100 purchasing CLs online. 61/100 reported receiving advice regarding CL usage on initial purchase only and none thereafter. 42/100 had experienced at least one previous microbial keratitis requiring treatment. 27/100 reported wearing CLs longer than prescribed. 7/100 had not received any CL-related advice. CLs (excluding extended wear CLs) were worn for a median duration of 12 hours per day (Range 4.5-18). 27/100 reported swimming in their CLs. 17/84 reported sleeping and 40/84 showering whilst wearing CLs. 18 respondents reported using tap water to clean CLs.

Conclusions: A large proportion of our patients undertake activities associated with increased risk of CL-related complications. Patient education is essential to reduce CL-related infections. Educating prescribers of CLs and opportunistic education in clinics is needed to improve patient awareness of risk factors. Purchase of CLs online poses challenges to patient education and requires public health measures which should involve online sellers, community prescribers of CLs and hospital-based approaches.

Association of Self-reported Psychiatric and Systemic Risk Factors in Dry Eye Disease in Adult Korean Population

*First Author: Sang Beom **HAN***

Purpose: To evaluate the association between dry eye disease (DED) and various psychiatric and systemic diseases in an adult Korean population aged 40 years or older.

Methods: Population-based cross-sectional data of 6,732 participants aged ≥ 40 years was extracted from the Korea National Health and Nutrition Examination Survey 2017-2018 (KNHANES VII). Data including DED, demographic variables, behavioral factors, psychiatric conditions, and systemic diseases was analyzed to determine the prevalence and psychiatric and systemic risk factors for DED.

Results: The weighted prevalence of DED was 7.9 ± 0.4% (mean ± SE). Multivariate analysis showed that female sex and urban residence were associated with an increased risk of DED. The prevalence of DED was lower in patients aged ≥70 years than in those aged 40–69 years. Self-reported psychological conditions, including perceived stress and depression, were associated with the risk of DED. Self-reported systemic conditions, such as rheumatoid arthritis, degenerative arthritis, osteoporosis, ischemic heart disease, and chronic renal failure had an association with an increased risk of DED.

Conclusions: DED may be associated with several self-reported psychiatric and systemic conditions, which highlights the need for an integrated approach to manage these diseases for optimal treatment of DED.

Audit on Technique of Corneal Scraping on Patients With Corneal Ulcer Presenting to the Casualty Clinic

*First Author: Tuck Chun **NG***

Purpose: The primary objective of this audit was to evaluate the corneal scraping technique in patients presenting with corneal ulcers at the casualty clinic. This audit also served to ensure patient safety during the procedure and to educate on the proper technique of corneal scraping to ensure the high yield of the procedure.

Methods: The method of corneal scraping was direct observation for all cases of corneal ulcers requiring corneal scraping that were presented at the casualty clinic from August 2022 to November 2022. Observation would be done by the registrars that were taught the proper method of corneal scraping based on a guideline. The technique of corneal scraping would be noted down on a specific data collection form containing 12 key components.

Results: Overall, only 2 out of the 30 (6.67%) corneal scrapings done to patients fulfilled all the required components as per protocol. Proper streaking of agar plates, proper smearing of the slide for KOH, writing a note to the microbiologist team regarding the prior treatment of antibiotics, and proper placement of the agar plate after smearing were 4 of the components falling the furthest away from the target with a compliance rate of 20%, 33.33%, 60%, and 76.67% respectively.

Conclusions: The corneal scraping technique did not meet the target for most of the components, and over 90% of the corneal scraping done did not fulfill one or more components. Implementing a guideline, exposure to the proper technique of corneal scraping and re-auditing will be required.

Benzalkonium Chloride Induced Toxic Effects on the Cellular Metabolic Functions of Human Conjunctival Fibroblast

*First Author: Shusuke **TAKAOKA***
*Co-Author(s): Fumihito **HIKAGE**, Hiroshi **OHGURO**, Yuri **TSUGENO**, Araya **UMETSU**, Megumi **WATANABE***

Purpose: The objective of this study was to evaluate the effects of benzalkonium chloride (BAC) on two-dimensional (2D) and three-dimensional (3D) cultures of human conjunctival fibroblast (HconF) cells.

Methods: The cultured HconF cells were subjected to the following analyses in the absence or presence of 10-5 % or 10-4 % of BAC; (1) the barrier function of the 2D HconF monolayers, as determined by trans-endothelial electrical resistance (TEER) and FITC dextran permeability, (2) real-time metabolic analysis using an extracellular Seahorse flux analyzer, (3) the size and stiffness of 3D HconF spheroids, and (4) the mRNA expression of genes that encode for extracellular matrix (ECM) molecules, and ER stress related genes.

Results: In the presence of BAC, even at low concentrations at 10-5 % or 10-4 %, the maximal respiratory capacity, mitochondrial respiratory reserve, and glycolytic reserve of HconF cells were significantly decreased, although the barrier functions of 2D HconF monolayers, the physical properties of the 3D HconF spheroids, and the mRNA expression of the corresponding genes were not affected.

Conclusions: The findings reported herein the fact that BAC, at even such low concentrations, may induce unfavorable adverse effects on the cellular metabolic capacity of the human conjunctiva.

Bilateral Corneal Ulcer in Young Diabetic Male

*First Author: Ridhima **BANSAL***
*Co-Author(s): Ravinder **GUPTA**, Shagun **KORLA***

Purpose: Diabetes mellitus is associated with progressive damage to corneal nerves and epithelial cells, which increase the risk of anterior segment disorders, including dry eye disease, corneal erosions, persistent epithelial defects, and even sight-threatening corneal ulcers.

Methods: A thirty-five-year-old diabetic male presented with a diminution of vision in both eyes for 2 months. On examination, the best corrected visual acuity was finger count close to face and hand movement close to face in the right and left eye, respectively. Intraocular pressure was digitally high in both eyes. On anterior segment examination: The right eye showed diffuse conjunctival congestion with dry-looking infiltrates with an oval epithelial defect in the Inferonasal quadrant of approximately 4*6mm with stromal edema and Descemet folds. The left eye showed diffuse conjunctival congestion with dry-looking infiltrates with feathery margins in the center of the cornea with non-mobile hypopyon of 2mm with a large epithelial defect of 7*10mm. On posterior segment examination done by B-scan: It was within normal limits in both eyes.

Results: The scrappings were taken from the ulcer and sent for culture sensitivity which were suggestive of fungal findings bilaterally and the patient was managed conservatively.

Conclusions: Fungal corneal disease is on the rise. Although fungal keratitis is less common than bacterial or viral keratitis, it is a disease of increasing concern for alcoholics, service members, and healthcare providers should be aware of its potential to cause significant morbidity. Referral to an ophthalmologist is critical for early diagnosis and treatment to preserve vision.

Changing Scenario of Herpes Simplex Keratitis in a Developing Country Like Nepal

*First Author: Poonam **SHRESTHA***

Purpose: To find out the demographic profile, clinical manifestations of Herpes simples keratitis and to assess associated visual impairment.

Methods: This was a retrospective, descriptive case study of 2 years of the eyes of patients with clinically diagnosed herpes simplex keratitis. Medical records were reviewed where visual acuity at presentation and at one-month follow-up, clinical details on examination were recorded and, diagnosis of the stage of disease given in the case record was noted. Statistical analysis was done using the chi-square test and Fisher exact test.

Results: Of 112 Herpes simplex keratitis patients, the mean age was 47.19± 19.14 years, where 68 were female and 44 were male. Patients of HSK presented with different types of clinical manifestations i.e. 25 were dendritic and 13 geographic ulcers, 38 cases presented with purely stromal lesions, 19 cases epithelial and stromal lesion, 11 stromal plus endothelial lesion, 6 cases presented with endotheliitis. Of 112 cases that followed up to 1month since the first visit, improvement in vision was seen where 63.3% had visual acuity of 6/6–6/18, 26.7% had 6/24–6/60, 4.4% had <6/60–3/60, and 5.35% <3/60.

Conclusions: Herpes simplex keratitis has a diverse presentation and can cause significant vision impairment, as it is one of the leading causes of corneal blindness in developing countries. Early clinical diagnosis and management of HSV can restrict disease progression which leads to visual impairment.

Clinical Efficacy of 2% Rebamipide for the Patients With Video Display Terminal-Associated Dry Eye Disease: Results of a Prospective, Randomized Double-Blinded Study

*First Author: Yongwoo **LEE***
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Purpose: To compare the therapeutic effects of 2% rebamipide clear solution and 0.1% sodium hyaluronate ophthalmic solution in patients with visual display terminal (VDT)-related dry eye disease (DED).

Methods: A prospective double-blind randomized controlled study was conducted. Patients with VDT-related were randomly allocated to the 2% rebamipide (REB) group and 0.1% sodium hyaluronate (HYA) group (four times a day for 4 weeks). OSDI (ocular surface disease index) and DEQ-5 (dry eye questionnaire) were performed, and dry eye parameters were examined using a Placido tear film analyzer. FBUT (fluorescein-stained tear break-up time), corneal, and conjunctival staining score (Oxford score) were measured through slit lamp examination. The Schirmer 1 test, which can affect the staining score, was performed last.

Results: 28 eyes of 14 patients were included in the REB group and HYA group respectively. OSDI, DEQ-5, FBUT, and conjunctival staining scores improved statistically significantly in both the REB and HYA groups after treatment compared to before treatment. In the REB group, the corneal staining score and bulbar nasal redness score also improved significantly after treatment compared to before treatment, but there was no statistically significant difference in the HYA group. Only the corneal staining score improvement was significantly more in the REB group than in the HYA group.

Conclusions: The 2% rebamipide clear solution was effective in improving symptoms and signs of VDT-related DED patients. In particular, it was superior to 0.1% sodium hyaluronate ophthalmic solution in improving corneal epithelial damage. It is expected to be a safe and effective treatment option for VDT-related DED.

Clinical Efficacy of Intense Pulsed Light Therapy in Patients With Ocular Graft-Versus-Host Disease and Concomitant Meibomian Gland Dysfunction

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*Co-Author(s): Yong Woo **KIM**, Ja Young **MOON**, Hyeon-jeong **YOON***

Purpose: This research aimed to investigate the effects of intense pulsed light (IPL) therapy on patients with meibomian gland dysfunction (MGD) accompanying ocular graft-versus-host disease (GVHD).

Methods: A total of 11 patients with ocular GVHD and MGD were enrolled. A total of 22 eyes were subjected to IPL therapy, administered three times at two-week intervals. Ocular surface disease index, tear break-up time, Schirmer test, and corneal fluorescein staining scores were measured before treatment and one month after treatment completion. Additionally, meibum quality, meibomian gland expression, eyelid margin abnormality, and meibomian gland dropout were evaluated.

Results: After IPL therapy, corneal fluorescein staining scores and the Schirmer test showed no significant changes, but tear break-up time improved (P=0.04). Especially, meibomian gland expression of the lower eyelid was significantly improved (P=0.002), and both upper and lower eyelids showed improvement in meibum quality and eyelid margin abnormality scores (P<0.05).

Conclusions: IPL therapy in patients with ocular GVHD accompanying MGD improved tear film and enhanced meibomian gland function.

Clinical Feature of Microsporidial Stromal Keratitis -a 3-Year Study (2018–2020)

*First Author: Quynh **NGUYEN***
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Purpose: To review the clinical findings of patients with Microsporidial stromal keratitis who underwent penetrating keratoplasty and determine which factors were present at visits, which can predict the need for therapeutic penetrating keratoplasty (TPK).

Methods: A retrospective descriptive study of all cases of microbiologically confirmed Microsporidial stromal keratitis, who was diagnosed and underwent therapeutic corneal transplantation between January 2018 and December 2020 for treating Microsporidial keratitis. Information regarding demographics, clinical findings, and management was analyzed. Potential predictors for TPK were obtained, and determined which factors at presenting.

Results: A total of 63 eyes from 62 patients were analyzed. Bilateral involvement was seen in 1 patient (1.6%). 74.6% of patients were female. The mean age was 60.8±10.1 years (range 34-86). The mean duration of symptoms was 10.1± 9.7 months (range 1.3-50.2 months). Risk factors include using long-term topical steroid, a history of ocular trauma. Visual acuity was ≤ counting finger 3m in 92.0%. Keratic precipitates were present in 47.6%, hypopyon was present in 66.7%. The reason for performing TPK includes medically unresponsive ulcers in 43 eyes (68.3%), perforated ulcers, and imperforated ulcers in 6 eyes (9.6%).

Conclusions: The diagnosis of microsporidial keratitis can be challenging and usually presents with non-specific corneal infiltration refractory to antimicrobial therapy. Therefore, ophthalmologists should consider Microsporidia in the differential diagnosis of infectious keratitis.

Clinical Presentation and Risk Factors of Vernal Keratoconjunctivitis in Children and Adolescents: A Population Based Study

*First Author: Yogita **GUPTA***
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Purpose: To study clinical presentation patterns and ascertain risk factors of vernal keratoconjunctivitis (VKC) in children and adolescents in an urban population.

Methods: Prospective observational cohort study. Population aged 10-25 years from urban districts of Delhi were screened for risk factors for the development of VKC using a prevalidated risk assessment questionnaire, collecting information about exacerbations due to various risk factors like exposure to smoke (from various sources, e.g. biomass fuel, tobacco, mosquito coils), sunlight, pollens, paints, pets, family history, past history of asthma or known allergies, etc. This was followed by a comprehensive eye examination to screen for signs of VKC.

Results: A total of 1158 children were screened with a mean age 17.8±3.2 (range: 12-25) years, 28% males. Prevalence of VKC was 4.9% (95%CI: 0.19-0.61) overall and 7.8%, 2.7% and 3% age-wise in the three age groups: 12-15, 16-20 and 21-25 years. VKC was found to be significantly higher in participants having regular exposure to indoor air pollution ($p<0.001$; 71.6% vs 28.4% of all participants). Exposure to outdoor pollutants/dust was identified as the most common exacerbating factor for VKC. Most cases reported active episodes in winter, followed by spring seasons. Palpebral VKC was the most common type, while papillae plus muddy sclera was the most common finding pattern among VKC cases.

Conclusions: VKC presenting in urban areas had a significant association with indoor and outdoor air pollution and winter months (which also correlate with the highest air pollution levels in this area), with maximum prevalence in lower teenage groups and palpebral VKC being the most common presentation.

Clinico-Demographic Profile of PMCD in a Tertiary Care Centre in Eastern Odisha

*First Author: Kshyanaprava **PRIYADARSHINI***

Purpose: To retrospectively review the clinical profile of PMCD in a tertiary care centre in Eastern Odisha.

Methods: Data collection was done retrospectively from the electronic medical records using search words such as ectasia, PMCD from January 2015-June 2023. Fifty-two out of 2005 patients diagnosed with corneal ectasia were confirmed as having PMCD on clinical & topographical evaluation. Detailed history taking, including duration of vision loss & progression, was noted. The improvements between spectacle correction and contact lens correction were documented in terms of lines of improvement in visual acuity.

Results: A total of 52 patients were diagnosed with PMCD in January 2015 – June 2023. The bilateral presentation was seen in 84.6%. Male: female ratio was (3.7:1). More than half of these patients were in the age group of 21-40 yrs (57.69%), 0-20 yrs (7.69%), 41-60yrs (30.77%) and above 60 yrs (3.84%). n= 22 (21.15%) had uncorrected visual acuity between 20/20-20/60 while 53.84 %(n= 56) had less vision worse than 20/200 The Best spectacle-corrected visual acuity (BSCVA) improved to 20/20 - 20/60 after subjective refraction. Vision improved to 20/20-20/60 (92.68%) with RGP & miniscleral/scleral lenses. Most of the patients were comfortable in RGP CL fitting (73.17%); some were in miniscleral (17.07%), while 7.31% were comfortable in scleral lenses. Rose-K contact lens was advised in 2.44%. Against-the-rule (ATR) astigmatism was observed in 92.68%.

Conclusions: PMCD is a rare disease in which conservative management with spectacle or contact lens correction provides a stable vision with a good outcome.

Comparison of Peripheral Endothelial Cell Density Following Endothelial Keratoplasty

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Purpose: To report on differences observed between central, paracentral and peripheral endothelial cell density (ECD) on a non-contact widefield specular microscopy in the eyes of patients who have undergone a Descemet's Membrane Endothelial Keratoplasty (DMEK).

Methods: A cross-sectional retrospective review of 64 patients who had undergone DMEK was performed. All eyes had imaging with widefield specular microscopy (CEM-530, Nidek Co. Ltd, Gamagor, Japan). Data on patients' demographics, indication for surgery, glaucoma status and post-operative endothelial cell counts using widefield specular microscopy were collected.

Results: Of the 64 eyes studied, 6 (9.4%) were phakic and 58 (90.6%) were pseudophakic and glaucoma was present in 18 eyes (28.1%). 48 eyes (75%) had a pre-operative diagnosis of Fuch's Endothelial Corneal Dystrophy (FECD) while the other 16 (25%) had undergone DMEK for non-FECD related cornea decompensation. The average age of donors was 62.3 years (49-75 years) and the average central pre-operative donor cell count was 2826.1 cells/mm^2. Univariate analysis of dependent variable central ECD compared to paracentral and peripheral ECD demonstrated that patients with glaucoma had statistically significant ($p < 0.001$) lower ECDs in the peripheries compared to centrally when compared to patients without glaucoma. Multivariate analysis of central versus paracentral and peripheral parameters demonstrated no difference between paracentral and peripheral ECD ($p<0.001$).

Conclusions: Our study suggests that DMEK patients with a background of glaucoma have a lower peripheral ECD than patients without glaucoma. It also demonstrates no difference between measurements of paracentral versus peripheral ECD when correlated to central ECD.

Comparison of Two Lubricant Eye Drops for Ocular Comfort and Tear Film Stability in Orthokeratology Contact Lens Wearers

*First Author: Yi-ching **HSIEH***
*Co-Author(s): Wen-ling **LIAO**, Chih-ying **LIN**, Hui Ju **LIN**, Yi-yu **TSAI***

Purpose: To compare the ocular comfort and tear film stability between low viscous and high viscous lubricant eye drops in the orthokeratology lens (OK lens) wearers.

Methods: This is a prospective, two-arm, randomised, crossover study. After the run-in and wash-out period for 7±2 days, subjects were randomly instructed to instill either one of the eyedrops in the OK lens bow every night before inserting the lenses. Low viscous preservative-free eye drops with 0.9% NaCl (AIM Artificial Tears, Aimedicine, Taiwan) and high viscous preservative-free lubricant eye drops with 0.4% polyethyleneglycol (Systane ULTRA UD, Alcon, France) were used. Visual acuity (VA), Ocular Surface Disease Index (OSDI) questionnaire, corneal staining (NEI) score, non-contact tear film break-up time (NiTBUT), and topography for centration of OK lens were measured at baseline and each 1-month visit.

Results: Of 30 subjects (28 males and 8 females) with a mean age of 10.53±2.86 years (range 9-21 years) reported the average spherical equivalent (SE) was -3.19±1.56D (range -1.00 to -5.50D). The NiTBUT showed a statistically significant difference in the high viscous group (+1.04 sec vs -1.81 sec; $p=0.001$). The daytime VA was significantly improved while using high viscous eye drops (0.0024 LogMAR vs.0.0167 LogMAR; $p=0.018$). There were no significant changes in OSDI, NEI score and OK lens decentration between groups.

Conclusions: Instilling the high viscous lubricant eye drops before insertion of the OK lens showed better tear film stability and daytime VA. No differences were found for subjective comfort, cornea stain and lens centration.

Comparison of the Effects of 0.05% and 0.1% Cyclosporine for Dry Eye Syndrome Patients After Cataract Surgery

*First Author: Sangkyung **CHOI***

Purpose: We compared the effects of 0.05% and 0.1% cyclosporine on dry eye symptoms following cataract surgery.

Methods: We retrospectively reviewed the medical records of patients with dry eye syndrome who underwent cataract surgery. The patients were separated into 0.05% and 0.1% cyclosporine groups. Each group had been treated with their routine eye drops for 3 months after cataract surgery. We evaluated dry eye symptoms and signs using the Schirmer test, tear film breakup time (TBUT), corneal and conjunctival staining score, ocular surface disease index (OSDI), and matrix metalloproteinase 9 (MMP-9) testing of the tear film preoperatively and at 2 weeks, 1 month, and 3 months postoperatively.

Results: The 0.05% cyclosporine group had an increase in the Schirmer test and improved corneal and conjunctival staining scores at 3 months postoperatively. The 0.1% cyclosporine group had improved corneal and conjunctival staining scores at 1

and 3 months postoperatively. The OSDI and MMP-9 results indicated a significant decrease in both groups at 2 weeks, 1 month, and 3 months postoperatively. The 0.05% cyclosporine group showed a significant increase in the Schirmer test compared to the 0.1% cyclosporine group at 3 months postoperatively. The 0.1% cyclosporine group showed a significant improvement in TBUT compared to the 0.05% cyclosporine group at 3 months postoperatively.

Conclusions: Both 0.05% and 0.1% cyclosporine are effective treatments for improving dry eye symptoms and ocular surface inflammation after cataract surgery. Both eye drops are considered to have similar effectiveness.

Complex Therapy of Dry Eye Disease in Patients With Intermediate Uveitis

*First Author: Elena **TATARNIKOVA***

Purpose: This study aims to investigate the clinical features and course of Dry Eye Disease (DED) in patients with intermediate uveitis. Additionally, a comprehensive treatment method will be developed, incorporating tear-replacement therapy, anti-inflammatory medications, and laser coagulation of the extreme periphery of the retina.

Methods: The clinical study was conducted in 98 patients who made up 2 follow-up groups: the main group (78 people) and the comparison group (20 people). All patients underwent OSDI questionnaires, biomicroscopy of the anterior segment of both eyes, binocular ophthalmoscopy with sclerocompression, the Schirmer I test, the Norn test, and the LIPCOF test. Patients of the main group were treated with a new method of treatment, the comparison group received only local tear- replacement and anti-inflammatory therapy. The follow-up period was 18 months.

Results: After 18 months of observation, the average level of OSDI in patients of the main group was 3.5 times lower than the level of OSDI in the comparison group ($p<0.05$); the average level of LIPCOF test was determined in the main group and was on average 1.4 times lower than in the comparison group ($p<0.05$). 4 times lower than in the control group ($p<0.05$), the average increase in Schirmer's test I in the main group was on average 1.8 times higher than the level of total tear production in the control group ($p<0.05$), Norn's test values in the main group were on average 1.2 times higher than in the control group ($p<0.05$).

Conclusions: Using the developed method improves ocular surface in patients with intermediate uveitis.

Cone on Top of Another Cone: A Rare Occurrence of Dual Pathology on an Unfortunate Young Adult

*First Author: Kar Yong **CHONG***
*Co-Author(s): Elicia Tze Zhing **CHIENG**, Yi Lin **CHUA**, Yong Zheng **WAI**, Chiang **WAI SENG***

Purpose: To report a case of bilateral eye keratoconus in a patient with cone dystrophy disease.

Methods: Case report.

Results: A 26-year-old male presented with gradual bilateral eyes (BE) blurring of vision and the vision was not improved with glasses. Ophthalmic examination showed an unaided vision of 2/60 and 3/60 in his right eye (RE) and left eye (LE), respectively. BE retinoscopy revealed a scissoring reflex, and manifest refraction was -1.00/-3.00 x40 6/45, RE while -1.00/-4.00 x130 6/45, LE. The anterior segment was normal, with no Vogt's striae or corneal scarring. The gross fundus examination was unremarkable. Keratometry and topography exhibited features consistent with keratoconus. He was subsequently prescribed rigid gas permeable (RGP) contact lenses and advised to follow up. Despite treatment with contact lenses, his BE best-corrected visual acuity was 6/24. Further investigations were proceeded to look for the causes of poor vision. The color vision test and fundus autofluorescence were unremarkable. However, optical coherence tomography of the macula revealed macular atrophy and loss of the foveal photoreceptor outer segments (ellipsoid zone) over the subfoveal region. Clinical evaluation showed BE keratoconus coexisting with cone dystrophy disease. Long-term follow-up is planned to monitor disease progression and evaluate the need for potential interventions.

Conclusions: Bilateral keratoconus in conjunction with cone dystrophy disease is a remarkable clinical rarity, particularly in the young adult population. Early diagnosis, genetic counseling, and tailored treatment can enhance visual outcomes and quality of life in affected individuals. Further study is warranted to better understand the genetic underpinnings and optimal management strategies.

Converting Black Into White – Surgical Treatment of Scleral Naevus of Ota

*First Author: Quresh **MASKATI***

Purpose: Patients with Naevus of Ota, are often depressed about their eye cosmesis. Most ophthalmologists turn them away saying nothing can be done for this as it is a congenital discoloration of the sclera. The author was confronted by a young lady who was in depression due to the discoloured sclera - it was affecting her relationship with her newly wed husband and she had contemplated suicide.

Methods: The author measured the thickness of the pigmented scleral patches with an AS-OCT. He

then used an artificial anterior chamber and a micro-keratome to make lamellar 350 micron scleral patch grafts from a donor's sclera in the eye bank. A guarded knife set at 350 microns was used to mark and then do a lamellar dissection of the discolored sclera and fibrin glue was applied to stick the donor sclera in place. It is now 2 years since the surgery.

Results: The cosmetic result is very satisfactory. The young patient is very happy and has even got a small child born after the cosmetic surgery.

Conclusions: Patients with Naevus of Ota can be successfully cosmetically rehabilitated by surgery with lamellar scleral explants.

Corneal Calcification in End-stage Renal Disease Patient: A Quality-of-Life Based Approach

*First Author: Leoni **ATIKAWATI***

Purpose: End-stage renal disease (ESRD) can manifest as an ocular abnormality aside from being life-threatening. Corneal-conjunctival calcium deposit is one of the signs that may be present and decrease visual acuity in ESRD patients. This case report presents the case of extensive, bilateral corneal calcium deposits in ESRD patients and its intervention strategy.

Methods: A 34-year-old man with a 12-year history of ESRD presented with complaints of decreased visual acuity, photophobia, and foreign body sensation in both eyes. Anterior segment examination showed extensive corneal calcification in both eyes. Calcification up to anterior stroma in the right eye and up to 50% stromal thickness in the left eye was shown in anterior segment ocular coherence tomography results. Despite the size and thickness of the calcification, the patient's best corrected visual acuity was 1.0 in the right eye and 0.8 in the left eye.

Results: The patient was treated with preservative-free lubricants to maintain comfort and reduce friction. The patient also planned for keratectomy, chelation by ethylenediaminetetraacetic acid (EDTA), with amnion membrane transplant for the left eye if the condition progresses and further visual acuity decline was present. A multi-disciplined approach was taken with the internist to control his condition.

Conclusions: Extensive bilateral corneal calcification can be present as one of the ocular manifestations in patients with ESRD. This condition can affect patients' visual acuity and further decrease their quality of life. Collaboration between the internist and ophthalmologist was needed to provide comprehensive treatment for the patient.

Descemet's Membrane Detachment During Cataract Surgery: Tips for Management and Outcomes Post Descematopexy

*First Author: Shilpa **DIKE***
*Co-Author(s): Vidya **CHELERKAR***

Purpose: To study the steps in cataract surgery during which Descemet's Membrane Detachment (DMD) occurred, and evaluation of anatomical & functional success post-Descematopexy (Descemet's repositioning).

Methods: This is a retrospective case series of 31 eyes of 31 patients who underwent descematopexy either intraoperatively or were diagnosed to have DMD postoperatively & then underwent descematopexy. Events leading to DMD, location & extent of DMD were noted for all cases. Patients with disproportionate corneal edema postoperatively were carefully assessed on slit lamp & corneal diagrams were drawn indicating the probable site of DMD, which was confirmed by ASOCT. The technique of repositioning, gas used for temponade, postoperative complications, if any, and visual acuity at 6 weeks follow-up were noted.

Results: Eighteen patients diagnosed with DMD had undergone Phacoemulsification surgery (58.1%), and 13 (41.9%) patients had undergone MSICS (Manual Small Incision Cataract Surgery). The cause of DMD in Phaco was trauma by phaco probe or I/A tip, whereas, in MSICS, it was due to poor tunnel & sideport incision or during nucleus delivery.DMD was detected & reposited intraoperatively in 9 (29%) and postoperatively in 22 (71%). Five (55.6%) of intraop & 18 (81.8%) of postop descematopexies achieved good vision.

Conclusions: A high index of suspicion with support of ASOCT can demarcate the location & extent of DMD. Even in the abscence of introp ASOCT, a good technique of descematopexy can prevent corneal decompensation & salvage vision.

Diagnostic and Comprehensive Management of Limbal Stem Cell Deficiency With Dry Eye Disease

*First Author: Aditya **RACHMAN***

Purpose: To report the diagnostic and comprehensive management of limbal stem cell deficiency (LSCD) with dry eye disease (DED).

Methods: The diagnosis was made based on history-taking and clinical examination.

Results: A 17-year-old boy presented with pain, blurred vision, and redness in both eyes four days ago. He has a history of allergies and has used eye drops for a long time. Examination showed visual acuity in the right eye (RE) was 0.10 and the left eye (LE) was hand motion with conjunctival injection, pericorneal injection, conjunctivalization, and neovascularization in the cornea. The LE showed epithelialized iris prolapse,

and we performed a periosteal graft. The Ocular Surface Disease Index score was 25. The RE showed leucoma and epithelial defects, the Meibomian Gland Dysfunction stage was 0, the tear meniscus height was less than 1 mm, the tear-breakup time was 6 seconds, the ocular surface staining results were 5 conjunctival spots, 5 corneal spots, a random break pattern, and lid margin staining was 5 mm. The condition of both eyes is caused by LSCD and DED. The patient has been given a non-preserved tear substitute, topical antibiotics and corticosteroids, serum autolog, and lifestyle modifications to avoid allergy triggers. A month of follow-up showed significant improvement.

Conclusions: An early and accurate diagnosis of LSCD with DED leading to appropriate interventions, including lifestyle modification and medical management, is needed to improve patients' quality of life.

Drug Resistance of Detected Bacteria in the Conjunctiva of the Elderly

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Purpose: Antimicrobial resistance, especially in elderly patients, is a growing concern in the realm of ophthalmology. This study aimed to discern the culture positivity rate and drug resistance of detected bacteria in elderly patients with conjunctivitis.

Methods: We conducted a retrospective medical review of cases diagnosed with conjunctivitis between April 2014 and March 2016. Bacterial isolates taken from the conjunctival sac were tested for antibiotic susceptibility, with a focus on levofloxacin (LVFX) resistance in Corynebacterium spp., and compared across different age groups. Patients aged 65 years and older were divided into three subgroups: young elderly [65-74], middle elderly [75-89], and oldest elderly [90 -]. The control group was divided into young [20-40] and middle-aged [41-64]. We also examined differences in causative bacteria and resistance frequency.

Results: Of 272 eyes (193 cases) diagnosed with conjunctivitis, 243 eyes (164 patients; 89%) showed culture positivity. Culture-positive patients were categorized into age groups: the young (49 eyes), the middle (70 eyes), and the elderly (124 eyes: 54 young-elderly, 59 middle-elderly, and 11 oldest-elderly). Methicillin-resistant Staphylococcus (MRSA/MR-CNS) was detected variably across age groups, without a clear age correlation. Corynebacterium spp., found in 65 eyes, showed increasing levofloxacin resistance with age, particularly notable in patients 65 and above ($p < 0.01$ Fisher's exact test).

Conclusions: Elevated LVFX resistance in Corynebacterium spp. with aging underscores the need for judicious antibiotic use, especially in elderly patients. This resistance trend should be noted especially in the context of preoperative prophylaxis and postoperative care in ophthalmic surgery.

Drug-Depository Contact Lens Hasten Healing And Minimize Antimicrobial Loading Doses In Bacterial Keratitis: A Randomized Controlled Trial

*First Author: Lional Raj **DANIEL RAJ PONNIAH***

Purpose: To evaluate the efficacy of a novel therapeutic drug-depository contact lens (DDCL) for bacterial keratitis (BK) treatment. The lens was designed to increase the corneal lesion-antimicrobial drug interaction time.

Methods: Forty BK patients were randomized (1:1) as a topical antimicrobial treatment only (Group-1) and DDCL (with dual base curves resulting in a central reservoir along with fenestrations to enable capture of applied drugs) plus antimicrobial treatment (Group-2). Both groups received standard 0.5 % moxifloxacin in a frequency of 2-hourly for 2 days (during waking hours) and 4-hourly for the next 12 days. We evaluated BK recovery clinically and with cornea OCT, anterior chamber (AC) reactions, corneal haze, and pain (on a 10-point scale) 12 hours and 1, 3, 5, and 14 days after treatment. A separate drug retention study (DRS) over time in DDCL was performed.

Results: Baseline BK severity was comparable ($P = 0.92$). After 12 hours, the improvements were more pronounced in Group 2 than in Group 1 (all $P < 0.05$). Complete recovery occurred on Days 14 and 5 in Groups 1 and 2, respectively. The AC reaction was resolved by Day 3 in Group 2. The baseline pain scores were also comparable ($P = 0.52$) and decreased throughout the follow-up period (all $P < 0.05$); the decrease was more pronounced in Group 2. DRS established an extended drug-corneal availability for up to 4 hours.

Conclusions: DDCLs augment drug-lesion interaction by prolonging corneal antimicrobial availability, which hastens healing in Bacterial Keratitis. DDCL may decrease the antimicrobial regimen, and improve tolerance, eliminating the necessity for a loading dose.

Dry Eye Disease and Conjunctival Goblet Cells: Insight From Two Animal Models

*First Author: Hsiu Hui **HSIEH***
*Co-Author(s): Yi-chen **SUN***

Purpose: To characterize the effectiveness of distinct clinical assessments of dry eye disease (DED) using two different animal models.

Methods: New Zealand white rabbits receiving surgical removal of the lacrimal and Harderian glands by dacryoadenectomy were divided into two groups, one with ablation of conjunctival goblet cells (GCs) by topical application of trichloroacetic acid (TCA) to the bulbar conjunctiva and one without, and the conditions

of DED were assessed weekly using Schirmer test, tear break-up time (TBUT), tear osmolarity, and fluorescein staining. After 8 weeks, the rabbits were sacrificed, and the eyes were enucleated for histopathological examination.

Results: Histopathological analysis showed corneal epithelium thinning in both groups. DED rabbits treated with TCA soaking had fewer conjunctival GCs. Both groups showed significant decreases in the Schirmer test and TBUT, as well as an increase in tear osmolarity. In DED rabbits with TCA soaking to ablate GCs, TBUT further decreased, whereas tear osmolarity increased markedly, suggesting that lipid and mucin, made of the Harderian gland and GCs, are the main components that affect TBUT and tear osmolarity, respectively. Positive corneal fluorescein staining was evident at all time points for both cohorts, and the NEI grading of fluorescein staining escalated over the follow-up duration, suggesting that fluorescein staining may not reveal an early disruption of the tear film until the prolonged progression of DED.

Conclusions: Characterizing the robustness of the Schirmer test, TBUT, tear osmolarity, and NEI fluorescein grading in identifying the underlying conditions of DED will guide a more appropriate management for patients with DED.

Effect Combination of Oral Antiviral and Topical Corticosteroid in Herpes Simplex Virus Disciform Keratitis

First Author: Ericka ***PRATAMA PUTRI***
Co-Author(s): Angga ***FAJRIANSYAH***

Purpose: To report oral antiviral and topical corticosteroid combinations in herpes simplex virus disciform keratitis to reduce inflammatory damage and prevent reactivation.

Methods: A 36-year-old male came up with a chief complaint of blurred vision with white patches on his left eye three months ago. The patient had a history of recurrent red eyes. Visual acuity was closed face finger counting. The anterior segment examination showed paracentral stromal edema (9x7 mm), microbullae, negative fluorescent test, and loss of corneal sensibility. The patient had no systemic condition such as diabetes mellitus, tuberculosis, or immunocompromised. Laboratory examination results were IgG anti-HSV1 reactive: 44.8, while IgM anti-HSV1 non-reactive: 2.081. The patient was diagnosed with herpes simplex virus disciform keratitis. The patient was treated with oral acyclovir 400 mg five times daily for ten days, followed by oral acyclovir twice daily and prednisolone acetate eye drops four times daily. The prednisolone drops tapered every 1-2 weeks.

Results: In the sixth-week follow-up, the anterior segment examination showed a reduction in the diameter of the paracentral stromal edema (9x6 mm), although the visual acuity remained the same. A combination of oral antiviral and topical corticosteroids had no side effects in this patient.

Conclusions: Topical corticosteroid co-administered with prophylactic oral antivirals reduces the development of stromal inflammation with minimal side effects, although this requires long-term follow-up to evaluate recurrence.

Effect of Isomer-Specific ROCK Inhibition on Oral Mucosal Epithelium Expansion for LSCD Treatment

First Author: Wei-lun ***HUANG***
Co-Author(s): Wei Li ***CHEN****, Chia-ying* ***TSAI****, Jo-hsuan* ***WU***

Purpose: To evaluate the effect of different Rho-associated protein kinase (ROCK) inhibitors on niche regeneration and graft colonization of oral mucosal epithelial cell sheet in the development of a novel oral epithelial cell-based therapy for limbal stem cell deficiency (LSCD).

Methods: Oral mucosal tissues harvested from New Zealand albino rabbits were rinsed and cut into small pieces with 1-2 mm^2 each, followed by incubation with collagenase type I (10 µg/ml) to separate the epithelial sheet from the underlying stroma. The epithelial sheet was then seeded onto a six-well tissue culture plate with or without AM in α-MEM media with 5% FBS, 1X L-Glutamine, and 1X NEAA. Pan-ROCK inhibitor (Y27632) or ROCK-II specific inhibitor (belumosudil) were added into the medium in different concentrations (0, 1, 5, 10 µM). After up to 14 days of cultivation, light microscopy and immunofluorescence staining of cell markers K3, K4, K12, K13, ZO-1, p63 were performed.

Results: The application of AM and the addition of Y27632 both facilitated the growth of oral epithelial cells, showing a larger expansion area, more compact cell morphology, and an enhanced expression of epithelial cell markers. However, belumosudil did not show the effect of epithelial growth promotion. A dose-dependent effect of Y27632 (up to 10 µM) on cell growth was found.

Conclusions: Inhibition of ROCK-I, but not ROCK-II, may provide a niche environment for oral mucosal epithelial cells. The treated oral epithelial cell sheet product may enable further development of simplified oral mucosal epithelium transplantation (SOMET) therapy for LSCD.

Effect of Omega 3 Fatty Acid in Dry Eye Syndrome

First Author: Leesha ***JOSHI***

Purpose: To assess the effect of omega 3 fatty acid on dry eye syndrome.

Methods: This was a prospective, longitudinal, hospital-based study. Approval was obtained from the

relevant ethics committee. After a detailed history taking, patients were asked a 12-point Ocular Surface Disease Index (OSDI) Dry Eye Questionnaire. The objective tests like tear film break-up time (TBUT), Schirmer's test, and Blink rate were recorded. Patients were divided into two groups, Group I and Group II. In Group I, patients were treated with artificial tears, and in Group II, patients were treated with omega-3 supplementation, one tablet per day. Each enrolled subject was followed up for 2 consecutive months. IBM SPSS Statistics 22 was used in all statistical analyses.

Results: A total of 60 patients were included (30 each in Group I and II). The mean ages in Group I and II were 32.46 ± 9.98 and 31.20 ± 9.94 years respectively. In both groups, there was no significant change in Schirmer's and TBUT scores. A significant difference was observed in both groups in OSDI Score. In Group I, the OSDI score significantly decreased from 37.58 ± 8.19 at baseline to 30.13 ± 10.80 at the completion of the treatment (p = < 0.01). Similarly, In Group II, the OSDI score lowered, from 36.79 ± 8.34 at baseline to 25.18 ± 7.61 at the completion of the study (p = < 0.01).

Conclusions: Omega-3 fatty acid supplementation does not improve the clinical signs (TBUT and Schirmer's test) of dry eye but significantly improves subjective symptoms.

Effects of EP2 Agonist, Omidenepag, on Human Corneal Stroma Fibroblasts

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Purpose: The objective of this study is to examine the drug-induced effects of the EP2 agonist, omidenapag (OMD), on the human corneal stroma, two- and three-dimensional (2D and 3D) cultures of human corneal stroma fibroblasts (HCSFs).

Methods: The drug-induced effects on 2D monolayers and 3D spheroids were evaluated by the following analyses; (1) structural analyses by electron microscope (SEM), (2) the barrier function of the 2D HconF monolayers, as determined by trans-endothelial electrical resistance (TEER) and FITC dextran permeability, (3) the size and stiffness of 3D HconF spheroids, and (4) the mRNA expression of genes that encode for extracellular matrix (ECM) molecules, and ER stress related genes.

Results: In the 2D HCSFs, OMD induced (1) a significant increase in ECM deposits, as evidenced by SEM, the mRNA expression of COL4 and FN, and (2) a decrease in TEER values and a concentration-dependent increase in FITC-dextran permeability. In the 3D spheroids, OMD had no effect on their size but substantially increased their stiffness. In addition, such OMD-induced stiffening effects were substantially modulated by the osmotic pressure levels.

Conclusions: Our findings suggest that the EP2 agonist, OMD, altered the physical stiffness of 3D spheroids obtained from human corneal stroma fibroblasts and this alteration was exclusively dependent on the osmotic pressure levels.

Effects of IPL Treatment on Corneal Phlyctenulosis in Pediatrics

*First Author: Minji **HA***
*Co-Author(s): Heung Won **CHA**, Dong Hyun **KANG***

Purpose: Corneal phlyctenulosis in pediatrics is often misdiagnosed as allergic conjunctivitis or viral conjunctivitis. If it is misdiagnosed, corneal inflammation is repeated. Finally, corneal scarring remains permanently. Once an accurate diagnosis is made, treatment must be started promptly, and it is important to suppress the recurrence. In the case series, we will investigate the recurrence frequency and treatment effect of IPL treatment for corneal glycogenosis in pediatrics compared to drug treatment alone.

Methods: A retrospective case series review of children diagnosed with corneal phlyctenulosis between 2019 and 2023 was identified. Patients' clinical history, presenting symptoms, and clinical signs at the time of diagnosis were reviewed. We compared the recurrence frequency and treatment effect in patients who received only conventional drug therapy and those who received IPL treatment.

Results: Eight patients (5 male, 3 female) with corneal phlyctenulosis were identified. The average age of disease onset was 9.6. In clinical symptoms, patients most commonly presented with eye redness, photophobia, and blurred vision. Patients were treated with a 2-month course of oral minocin, topical steroid, topical antibiotics point, and lid hygiene. Four patients had IPL treatment which was conducted in 3-4 cycles on the lower lid with 2-3 weeks' intervals. The average long follow-up period was 2-3 years. Corneal inflammation resolution was not different between the two groups. But during the follow-up period (2-3 years), the IPL treatment group was not recurred, but drug treatment patients were recurred 2 times.

Conclusions: IPL treatment improves blepharoconjunctivitis and helps prevent the recurrence of corneal phlyctenulosis. But disease resolution time was not different in the two groups.

Epidemiology and the Estimated Burden of Microbial Keratitis on the Health Care System in Taiwan: A 14-Year Population-Based Study

*First Author: Yeo Yang **KOH***

Purpose: To investigate the epidemiologic characteristics of microbial keratitis and its overall burden on the health care system in Taiwan.

Methods: We conducted a study using claims data from the Taiwan National Health Insurance Research Database in 2000-2013, employing diagnoses, drugs, and procedure codes to define diseases and procedures. Participants were classified into groups according to the requirement of hospitalization and surgical intervention. The main outcome measures were incidence, risk factors, predictive factors for hospitalization and surgical intervention, and health care expenditure.

Results: A total of 2,071 patients were included. The overall incidence significantly increased from 8.4 in 2000 to 20.2 per 100,000 person-years in 2013. The peak age range of incidence was between 18 and 40 years, but the peak age group for healthcare expenditures was those older than 65 years. A total of 704 patients (33.99%) had analyzable risk factors, of which the top 3 were diabetes mellitus (DM, 11.52%), eye trauma (10.55%), and dry eye (8.72%). Older patients, those using steroid and antiglaucoma agents, and those with ocular and systemic diseases were susceptible to further hospitalization and surgical intervention for the treatment of microbial keratitis.

Conclusions: In Taiwan, DM, eye trauma, and dry eye were key predisposing factors for microbial keratitis. Older patients (>40 years) accounted for approximately 80% of healthcare expenditure for the management of infectious keratitis. Special care may be required for older patients with medication-related risk factors and ocular and systemic comorbidities because they are likely to have severe diseases leading to hospitalization and surgical interventions.

Epithelial Sheet Thickness Measurement Following Cultivated Oral Mucosal Epithelial Sheet Transplantation

*First Author: Kosuke **OYA***
*Co-Author(s): Yuichi **HORI**, Koji **KAKISU**, Yukinobu **OKAJIMA**, Takashi **SUZUKI***

Purpose: To assess the health of the transplanted epithelial sheet, we used anterior segment Optical Coherence Tomography (AS-OCT) to determine epithelial sheet thickness following cultivated oral mucosal epithelial sheet transplantation (COMET).

Methods: The epithelial sheet thickness was measured using AS-OCT (HEIDELBERG ANTERION®), which automatically analyzed corneal epithelial thickness in the central 8mm corneal area.

Results: A 73-year-old female with Ocular Cicatricial Pemphigoid in the left eye, in which the cornea was totally covered with conjunctival tissue. COMET was performed on the left eye. The thickness of the epithelial layer at 1, 4, and 6 months after COMET was 40 ±10µm (14-69µm), 38±21µm (0-161µm), and 37±8µm (11-76µm) respectively. A 79-year-old female with Steven-Johnson syndrome in both eyes, which developed 39 years ago, in which both corneas were covered with conjunctival tissue. COMET was performed on the left eye. The thickness of the epithelial layer at 1, 5, and 6 months after COMET was 41±12µm (0–78µm), 43±11µm (12-97µm), and 38±12µm (0-74µm) respectively.

Conclusions: After COMET, AS-OCT allowed us to measure the epithelial sheet thickness with time. This technique might one day be helpful for figuring out how the epithelial sheet is doing.

Estimation of Corneal Epithelial Thickness Distribution Between Eyes With Refractive Errors and Healthy Eyes in Saudi Population

*First Author: Rawan **ALSHABEEB***

Purpose: To assess the corneal epithelial thickness in Saudi population and to determine its relationship with corneal thickness, corneal curvature and refractive error.

Methods: Cross-sectional study. One hundred patients with refractive error and 50 emmetrope subjects were enrolled. Patients with corneal scars, previous refractive surgery, keratoconus, glaucoma, active VKC or active ocular surface disease were excluded.

Results: Compared to the control group, cases presented for refractive surgery at our hospital were younger in age (P-value <0.001), had a high proportion of females (n=68, 68%) (P-value =0.009), and had higher steep keratometry values (P-value <0.001). Among cases presented for refractive surgery, a lower trend in values was observed in all zones compared to the control group. There was no difference in the mean central corneal epithelial thickness between eyes planned for refractive surgery correction (51.98±3.8) and emmetropic eyes (52.54±3.0) (P-value=0.4). Similarly, no difference was found in eyes presented for refractive surgery (49.4+-3.3) vs. The control group (49.7±2.2) when comparing the peripheral corneal epithelial thickness within 8mm (P-value=0.6). The peripheral 6 mm corneal epithelial thickness showed a statistically significant difference between subjects (51.8±3.5) and control (53.1±2.9) (P-value=0.03). Regarding differences based on sex, we observed significantly a thicker corneal epithelium in males compared to females in all zones (P-value <0.0001). No difference in various corneal epithelial zones between those aged less than 30 and those 30 years old and above was observed (P-value≥0.2).

Conclusions: OCT based tomography demonstrated that the epithelial thickness is different between sexes, slightly thinner in cases with refractive errors compared to emmetropic eyes. Age in this study played little or no role in influencing the corneal epithelial thickness.

Evaluating the Impact of Systane ULTRA MDPF on Dry Eye Relief in Asian Eyes with Computer Vision Syndrome (CVS)

First Author: Manki ***CHAN***

Purpose: This study assesses the efficacy of Systane ULTRA MDPF (the drops) on mild dry eye symptoms related to CVS due to prolonged computer use.

Methods: A single-masked study involving 64 subjects (18-39 years) with mild CVS-related dry eye symptoms included three visits: screening, baseline, and relief condition. The drops were not used at baseline but were applied four times daily for a week thereafter.

Results: At baseline, the average SANDE score was 34.5 (95% CI: 31.4-37.5) before screen exposure, increasing to 45.7 (95% CI: 42.5-48.9, p<0.0001) after three hours of screen time. However, during the relief condition after using the drops for one week, the SANDE score decreased to 29.4 (95% CI: 26.7-32.1, p=0.001) pre-exposure, and remained stable post-exposure (p=0.48). In terms of tear film quality, during the baseline visit, both the Non-invasive Tear Film Breakup Time (NITBUT) and Tear Meniscus Height (TMH) decreased after exposure to the screen without using Systane ULTRA MDPF. The NITBUT decreased from 7.0 seconds to 6.5 seconds (p<0.0001), and the TMH decreased from 0.20mm to 0.19mm (p=0.002). However, after using Systane ULTRA MDPF for a week, the NITBUT improved during the relief condition visit from 7.0 seconds to 8.0 seconds (p<0.0001), while the TMH did not show significant improvement (p=0.53). Moreover, both the NITBUT (p=0.57) and the TMH (p=0.13) remained at pre-stress levels after exposure to digital screens.

Conclusions: Regular use of Systane ULTRA MDPF for a week improves ocular comfort, reduces discomfort, and maintains tear quality after extended digital device use.

Evaluation of Factors & Levels of Serum & Tear Bio Markers Influencing Development of Keratoconus in Vernal Keratoconjunctivitis Patients

First Author: Chethan ***MURTHY***
Co-Author(s): Mahesh ***JB****, Ranjitha* ***KC***

Purpose: To evaluate factors & inflammatory biomarkers in serum & tear samples influencing keratoconus development in both subclinical & frank keratoconus in vernal keratoconjunctivitis patients in comparison to normal subjects.

Methods: A cross-sectional study involving 42 patients,82 eyes with VKC & 42 subjects of controls of 84 eyes were evaluated for serum IgE, Vitamin D, Vitamin B12 & Tear fluid analysis of IL6, MMP9 and TNF-α. Schiempflug corneal tomographic tests were done. Factors like age of presentation, duration, levels of each Bio marker, and severity of the disease were co-related with topographic changes at the time of presentation.

Results: The mean age of patients was 10.95 years. The average duration of disease presentation was 1.5 years. The longer the duration, the higher the incidence of keratoconus. 99% of subjects had eye rubbing which was directly attributed to keratoconus. Mean Serum IgE in the case was: 546.02IU/ml, and controls were: 146.56IU/ML (P < 0.001). Mean Serum Vitamin B12 in the case was: 277.16pg/ml, and controls were: 368.56pg/ml. Mean Serum Vitamin D in case:20.63ng/ml, controls:40.87ng/ml (P < 0.001).Mean Tear fluid IL-6 levels in case:303.22 pg/ml, controls:28.55pg/ml (P < 0.001).Mean Tear fluid MMP 9 in the case: 354 .76 ng/mL, controls:13.56 ng/mL (P 0.001). Mean Tear fluid TNF-α was in the case: 32.34pg/ml, controls: 4.23pg/ml (P < 0.001). The incidence of total keratoconus was 28.5%, among which subclinical cases were 16.5%

Conclusions: Factors like younger age, longer duration of disease, increase in levels of serum IgE, tear levels of IL-6, MMP9, TNF-α and insufficient Vitamin D levels are directly attributed to the development of keratoconus in VKC patients.

Evaluation of Retinol Palmitate Ophthalmic Suspension in Severe Dry Eye and Ocular Surface Keratinisation associated with Chronic Stevens-Johnson Syndrome

First Author: Rajesh ***SINHA***

Purpose: To evaluate the outcome of retinol palmitate ophthalmic suspension in addition to conventional management of chronic Stevens-Johnson syndrome (SJS) with severe dry eye with ocular surface keratinization.

Methods: Twenty-two eyes of 11 patients with chronic SJS were started on topical retinol palmitate eyedrops 1000IU/ml QID in addition to conventional therapy and compared with controls, being treated with conventional therapy alone.

Results: There was a statistically significant improvement in tBUT, Schirmer-1 score, NEI corneal staining score, conjunctival and corneal keratinization, and TGFβ and MMP-9 levels at 3 months in the retinol group, while none was seen in the control group. Impression cytology revealed goblet cells at 1st week, the highest number at 1 month, in lower numbers at 3rd month in the retinol group, while the control group showed no goblet cells at any time.

Conclusions: Incorporation of retinol into the treatment regime in chronic SJS shows significant benefits in improving the ocular surface. The benefit in terms of improvement in ocular surface cytology is not long-lasting. Perhaps an additional intervention that may support the growing cells may be beneficial.

Evaluation of Visual Outcomes in Patients With Complex Corneas Implanted With the IC-8 Aphtera IOL

*First Author: Nicole **SIE***
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Purpose: To assess visual outcomes in patients treated with implantation of a small aperture intraocular lens (IOL) in eyes with corneal irregularity.

Methods: Prospective, non-interventional, single-visit, clinical study of 21 subjects with complex corneas implanted with a unilateral IC-8 IOL. Complex cornea is defined as from pre-existing natural causes: keratoconus or high coma, or induced causes: laser vision correction or others. Uncorrected (UC) and distance corrected (DC) visual acuities (VA) were measured at distance (D), intermediate (I), and near (N). Defocus curve testing was performed monocularly and binocularly. Monocular and binocular contrast sensitivity (CS) was measured under photopic and mesopic conditions with and without glare and visual symptoms were assessed.

Results: The results showed mean logMAR ± SD UCDVA, UCIVA, and UCNVA in the IC-8 eye of 0.24 ± 0.18 (20/35), 0.19 ± 0.18 (20/31), and 0.14 ± 0.14 (20/28) respectively and mean logMAR ± SD DCDVA, DCIVA, and DCNVA in the IC-8 eye of 0.12 ± 0.17 (20/26), 0.16 ± 0.15 (20/29), and 0.19 ± 0.13 (20/31), respectively. Defocus curve testing yielded a depth of focus of 1.5D monocularly and 2.0D binocularly at a 0.2 logMAR threshold. Photopic binocular CS with and without glare was improved over monocular CS of IC-8 and fellow eyes under all spatial frequencies. Mesopic binocular CS with and without glare remained largely unchanged over monocular IC-8 and fellow eyes under all spatial frequencies.

Conclusions: These results demonstrate that the small aperture IC-8 IOL provides good distance, intermediate and near visual acuity for cataract patients with complex corneas.

Extra-Articular Manifested Rheumatoid Arthritis in Patient with Peripheral Ulcerative Keratitis

*First Author: Ivany Rizky **HASIBUAN***
*Co-Author(s): Patriotika **MUSLIMA***

Purpose: Peripheral ulcerative keratitis is an inflammatory condition that affects the juxtalimbal cornea. Rheumatoid arthritis was the most common autoimmune disease related to peripheral ulcerative keratitis. This study aims to report a case of peripheral ulcerative keratitis with extra-articular manifested rheumatoid arthritis.

Methods: A 71-year-old female complained of pain in the left eye with foreign body sensation, watery, and photophobia. Visual acuity in the left eye was 0.2. Anterior segment examination for the left eye showed crescent-shaped lesion with corneal thinning and stromal melting at 9 o'clock to 3 o'clock. The rheumatoid factor showed reactive results with antigen histone borderline and the chest x-ray showed nodular infiltrate. The patient was diagnosed with peripheral ulcerative keratitis in the left eye, complicated cataract in the left eye, and rheumatoid arthtritis. Treatment for this patient included topical and systemic corticosteroid, cycloplegic, artificial tears, antibiotic, collagenase inhibitor and also undergo annular corneoscleral patch graft.

Results: The clinical symptoms were resolved at the 7 days after surgery. Anterior segment examination showed slight edema in the cornea, an annular scleral patch graft with intact suture and bandage contact lens. Treatment from the preoperative was continued.

Conclusions: Symptoms of rheumatoid arthritis were usually found in the articular area with or without extra-articular symptoms. Diagnosis and management strategy are important to make a comprehensive and multidiscipline management of peripheral ulcerative keratitis that is related to autoimmune disease to prevent morbidity and mortality.

Filling the Refractive Gap

*First Author: Dr Tiruvengada **KRISHNAN***
*Co-Author(s): Sidhartha **ANANTHOJU**, Seema **RAMAKRISHNAN***

Purpose: To report a case of secondary supplementary piggyback sulcus IOL implantation to correct the hyperopic refractive surprise following DSAEK (Descemet's stripping automated endothelial keratoplasty) triple procedure in a case of both eyes Fuch's corneal endothelial dystrophy (FED).

Methods: The patient was diagnosed with right eye FED stage 3, left eye FED stage 1-2, and underwent DSAEK + cataract surgery with primary IOL implantation in the right eye. Despite successful surgery and a normal posterior segment, the patient experienced poor uncorrected visual acuity (UCVA) 5/60 (Snellen) in the operated eye attributable to a hyperopic refractive surprise due to erroneous preoperative biometry and IOL power calculation. After 6 months of primary surgery, we corrected the residual refractive error with a piggyback IOL designed for sulcus fixation. Following the second surgery, the patient maintained 6/9 UCVA with a clear DSAEK graft at 18 months follow-up. After 18 months the patient had undergone DMEK - triple procedure in left eye.

Results: The patient achieved visual acuity in both eyes, improving to 6/6 with glass correction and complete resolution of ocular symptoms following Piggyback secondary IOL implantation in the right eye & DMEK - triple procedure in the left eye.

Conclusions: Preoperative biometric difficulties can be an important cause of post-operative refractive surprise

in patients undergoing endothelial keratoplasty- triple procedure. Customized Sulcus fixated IOL can be a safe and predictable option for treating refractive surprises following the DSAEK triple procedure.

First Clinical Results After DMEK Using Tissue Stored in Optisol-GS With Amphotericin B Supplementation

*First Author: Theofilos **TOURTAS***
*Co-Author(s): Friedrich **KRUSE**, Julia **WELLER***

Purpose: To analyze the safety and efficacy of amphotericin B supplementation of Optisol-GS for corneal tissue used for DMEK surgery.

Methods: Retrospective, single-center case series of 400 consecutive eyes which underwent DMEK for Fuchs endothelial corneal dystrophy. All donor corneal tissues were stored either in Optisol-GS supplemented with amphotericin B (0.255 µg/mL) (n=200 eyes, study group), or in Optisol-GS without amphotericin B (n=200 eyes, control group). The main outcome measures were: the rate of positive rim cultures, endothelial cell density (ECD), best-corrected visual acuity (BCVA, logMAR), and central corneal thickness (CCT) 3 months after DMEK.

Results: There were no significant differences concerning preoperative clinical parameters (BCVA, CCT, donor ECD) between the study group and the control group. The rate of positive rim cultures in the study group was reduced by 55%, but there was no statistically significant difference between the groups (control group: 9/200, 4.5%; study group: 4/200, 2.0%; p = 0.259, fisher´s exact test). No significant differences were found regarding ECD (control group: 1434 ± 328/mm^2, study group: 1471 ± 362/mm^2, p= 0.303), BCVA (control group: 0.24 ± 0.26, study group: 0.26 ± 0.26; p= 0.380), and CCT (control group: 514 ± 46 µm, study group: 522 ± 54 µm, p= 0.114) 3 months after surgery.

Conclusions: We found a non-significant reduced rate of fungal contaminations in the group with amphotericin B supplementation. Our data provide evidence that amphotericin B has no detectable negative impact on the clinical outcome after DMEK. In particular, there was no toxic effect on the endothelial cells.

Frequency of Eye Symptoms in COVID-19 Patients in a Tertiary Care Hospital

*First Author: Amina **KHALID***
*Co-Author(s): Hafiz Muhammad Jahan **ZAIB***

Purpose: The purpose of this study was to observe the frequency of eye symptoms in COVID-19 patients in a tertiary care hospital in Pakistan.

Methods: A total of 333 subjects from the COVID admission unit with laboratory-confirmed SARS-CoV-2 infection were included, with 81 of them providing insightful data. A number of eye symptoms were observed. Admitted patients with PCR positive and HRCT (High-resolution CT scan) chest critical results stratified by sex, age, comorbidities, HRCT, and condition of conjunctiva were analyzed.

Results: Of the 333, 81 subjects were considered for analysis. Forty-six patients (56%) were female, and among them, the mode age was 35 years. Out of 81 significant subjects, 52 patients (64.2%) reported congested conjunctiva. A positive relationship between COVID-19 and the frequency of eye symptoms was observed, with all Covid positive patients showing one or more eye symptoms (p-value = 0.001). A weak positive correlation between HRCT and conjunctiva was found through bivariate analysis (0.132).

Conclusions: Almost every hospitalized COVID-19 patient under tertiary care reported one or more eye symptoms related to SARS-CoV-2 infection. The study proved the identification of early-stage eye symptoms in COVID-19 patients can play a vital role in its diagnosis.

Gaze Into the Screen: Unraveling Refractive Errors and Dry Eye Implications Among Esports Enthusiasts

*First Author: Abdul **MAIMUNAH***
*Co-Author(s): Azlina **MOKHTAR**, Siti Husna **HUSSIEN***

Purpose: The rise of esports has brought forth an unprecedented era of competitive gaming, with players dedicating extensive hours to digital screens. This study aims to investigate the potential associations between esports players, refractive errors, and dry eyes resulting from prolonged screen time exposure.

Methods: A cross-sectional study involving 208 esports players explored these relationships.

Results: The study encompassed a diverse participant pool, with Malay individuals constituting 89%, followed by Chinese at 8%, while Indian and other ethnic groups represented the remaining proportions. The mean age of participants was 23.5 ± 4.2 years, with a predominantly male cohort (85%). The participants boasted diverse gaming experience, averaging 5.7 ± 2.1 years. The refractive analysis highlighted a significant myopia prevalence (37%). It is linked to extensive screen time. Additionally, 14% exhibited astigmatism. Dry eye symptoms were prevalent, affecting 12% of participants. Notably, 28% reported ocular discomfort, 13% experienced redness, and 6% had temporary blurred vision.

Conclusions: The implications of refractive errors on gameplay mechanics and strategies are discussed, alongside concerns over dry eyes, which correlated with heightened screen engagement. Tailored interventions are essential to enhance both visual comfort and gameplay performance. In conclusion, this study illuminates the demographic diversity, refractive challenges, and ocular health concerns within the esport players. Acknowledging these factors is pivotal

in shaping targeted training approaches and ocular hygiene practices, ensuring sustainable performance and well-being of eSports participants. By addressing these issues, the esports community can foster healthier gaming practices and enhance the overall well-being of its players.

Gonococcal Conjunctivitis in an Unusual Age Group: A Case Report

First Author: Yinvill -
*Co-Author(s): Ni Made Indah **KENCANAWATI***

Purpose: To present a gonococcal conjunctivitis case in an unusual age group.

Methods: We proceeded with a thorough clinical evaluation with the patient-centered care approach, while assuring patient privacy. Complete patient history, including sexual history, was obtained before stepping up into another necessary test for diagnosis confirmation. A 62-year-old man presented with copious mucopurulent discharges of the right eye, with eyelid edema and chemosis. His condition was worsening despite treatment with antibiotic eyedrops prescribed by a doctor from the primary healthcare facility. There was a history of multiple sexual partners, with the last unprotected sexual activity approximately one month ago. The patient denied any related sexually transmitted disease (STD) symptoms and no particular changes in urination behavior.

Results: Physical examination revealed conjunctival hyperemia and chemosis of the right eye, and there was no corneal involvement. Direct microscopic examination of ocular secretions revealed gram-negative diplococci intracellular bacteria, thus gonococcal conjunctivitis diagnosis was confirmed. Treatment with quinolones regimen was preceded immediately with close monitoring.

Conclusions: Prolonged conjunctivitis with massive purulent discharges, especially worsening despite adequate treatment, should raise suspicion and need further investigation. Complete clinical examination is the key point of this unusual case, to exclude any possible differential diagnosis. Since gonococcal ocular infection is rare, but a potentially shattering infection, the necessity of making the right diagnosis and the swift therapeutic decision is promptly needed in order to achieve good visual outcomes and prevent unwanted complications, both ocular and systemic infection.

Heterogenous Pathogen Profile Associated with Acute Conjunctivitis in Nepal

*First Author: Meenu **CHAUDHARY***
*Co-Author(s): Thuy **DOAN**, Tom **LIETMAN**, Kevin **RUDER**, Gerami D **SEITZMAN**, Sanjeeta **SITAULA***

Purpose: Conjunctivitis is a common health problem in Nepal. In 2003, Nepal experienced a nationwide outbreak of acute hemorrhagic conjunctivitis affecting nearly half the entire population. Both Human adenovirus and coxsackievirus viruses were identified, suggesting that epidemics can be caused by more than one pathogen and that DNA and RNA viruses can co-mingle.

Methods: This prospective study recruited sixty patients with presumed acute infectious conjunctivitis in Nepal. Swabs from the conjunctiva and anterior nares were processed for metagenomic RNA deep sequencing (RNA-seq). Inclusion criteria required signs and symptoms suggestive of acute infectious conjunctivitis for a duration of less than 14 days in any age group. Swabs were placed in a DNA/RNA-Shield (Zymo Research) and stored in a -20 o C freezer prior to processing. The pre-specified criteria for pathogen identification were: 1) virus known to be a human pathogen and representing the most abundant matched reads after water background subtraction; or 2) two or more unique reads covering separate regions in DNA virus genomes; or 3) 1 or more unique reads matching RNA virus genomes.

Results: Pathogens were identified in 55% of cases. RNA viruses were the most common pathogen class identified. SARS-CoV-2 was the most common RNA virus identified.

Conclusions: Acute infectious conjunctivitis varies by location. Contrary to expectations, RNA viruses predominated. Repeat surveillance may be useful and RNA-seq allows for detection of unexpected pathogens including RNA viruses.

High-Order Aberration Management of Corneal Ectasia After Keratorefractive Surgery

*First Author: Ariesanti **HANDAYANI***
*Co-Author(s): Ayu Diah **PERMATASARI**, Fabiola **SUPIT***

Purpose: Post-operative corneal ectasia is a rare complication related to keratorefractive surgery. The purpose of this study is to report two similar cases of corneal ectasia after corneal refractive surgery that successfully treated each with rigid gas permeable (RGP) and scleral lens (SL).

Methods: A 33-year-old man (Case 1) with a history of laser-assisted in situ keratomileusis combined with corneal cross-linking (LASIK XTRA) and a 30-year-old woman (Case 2) after bilateral ReLEx Small-incision lenticule extraction (SMILE) surgery underwent SL and RGP fitting procedure, respectively. In case 1, his right eye (RE) already used SL for three years meanwhile the left eye (LE) recently started to feel double vision and glare. LE was 6/18 with S-0.50 C-1.00 A 82 6/12. Topography results showed high order aberration (HOA) of LE was 1.52. In Case 2, blurry vision and significant glare in both eyes started six months after SMILE, RE was 6/30 with S-1.00 C-5.00 A 60 6/12 and LE was

4/60 with S-3.00 C-1.75 A 120 6/9. Topography results showed that HOA in RE was 4.47 and LE was 2.54.

Results: After SL fitting in case 1, his LE became comfortable, with visual acuity 6/6 without glare. In case 2, after the RGP fitting, both eyes also became 6/6 and the HOA results improved to 0.92 on RE and 0.50 on LE. RGP and SL provide more stable and regular anterior surface contour, counteracting the corneal irregularity post-surgery.

Conclusions: Rigid contact lenses can improve HOA in corneal ectasia following keratorefractive surgery.

Higher Order Aberrations in Dry eyes

*First Author: Tanu **SINGH***

Purpose: To analyze various types of higher-order aberration (HoA) and correlate them with the severity of dry eye disease (DED).

Methods: Prospective observational study conducted from January 2021 to June 2022. 51 patients with DED underwent HoA assessment using Anterior Segment Analyzer – Pentacam. HoA were further sub-categorized as coma, spherical aberrations and trefoil and were compared with various grades of DED.

Results: The mean HOA-RMS Value across all grades of DED was 0.60 (0.35). Individually, mild DED showed RMS value of 0.38 (0.06), moderate 0.57 (0.07), and severe 1.37 (0.35). Among various types of HOA, the majority of aberrations were Coma (Mean (SD) - 0.33 (0.26). Spherical Aberrations (mean (SD)-0.22 (0.07) were maximum in Mild DED; Trefoil (mean (SD)-0.32 (0.14) were maximum in Moderate DED whereas, Coma (mean (SD 0.85 (0.27) were maximum in Severe DED. The mean Coma aberrations in Mild DED was- 0.18 (0.08), in Moderate DED- 0.31 (0.12) while in Severe DED was- 0.85 (0.27). The mean Trefoil Aberrations in Mild DED was- 0.16 (0.08), in Moderate DED- 0.32 (0.14) while in Severe DED was- 0.71 (0.28). The mean Spherical Aberrations in Mild DED was- 0.22 (0.07), in Moderate DED- 0.30 (0.09) while in Severe DED it was- 0.72 (0.17).

Conclusions: With the increasing severity of DED, there was a significant increase in HOA, which affects the quality of vision. All patients with DED should be evaluated not only for Visual Acuity but also for QOV, especially, in terms of HOA for better management of disease.

Impact of COVID-19 Related National Lockdown on Care of Corneal Transplantation Patients at a Tertiary Eye Care Centre in India

*First Author: Sowjanya **VUYYURU***
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Purpose: To study the impact of COVID-19-related national lockdown on the care of corneal transplantation patients at a tertiary eye center in Andhra Pradesh state of South India.

Methods: A cross-sectional questionnaire-based study conducted at a tertiary eye care center in Andhra Pradesh state of South India included 109 patients who underwent keratoplasty (full thickness or partial thickness) at our center and who came for follow-up visits after the lockdown. Factors such as type, indication, number of keratoplasties in the operated eye, and unusual clinical outcomes identified during visits after the lockdown were studied. Uncorrected visual acuity, best corrected visual acuity, clarity of graft, graft-host junction apposition, intactness of sutures, intraocular pressure, and disc status were compared on visits made before and after lockdown.

Results: During the lockdown, 77.1% of patients were properly using medications that were significantly (P = 0.0003) lower than before the lockdown (90.8%). After the lockdown, 82.3% of patients were using medications properly, which was comparable (P = 0.11) to that of during the lockdown (77.1%). The proportion of eyes with clear grafts and intact sutures decreased significantly after lockdown. The unusual outcomes observed after the lockdown were graft failure (36.7%), graft edema (11%), graft infiltrate (5.5%), phthisis bulbi (1.85%), and edematous graft cleared in eyes 3.7% eyes.

Conclusions: We noted a significant drop in usage of medications from 91% before lockdown to 77% during lockdown and maintained at 83% after lockdown. Edematous grafts increased from 41% before the lockdown to 54% after the lockdown. Intactness of sutures decreased from 82% before lockdown to 69% after lockdown.

Impaired Meibomian Gland Structure Due to Ocular Demodicosis in Patients with Dry Eye

*First Author: Wan-lin **WU***
*Co-Author(s): Shu-wen **CHANG***

Purpose: This research aims to investigate how ocular demodicosis impacts the structure and function of Meibomian glands in individuals with dry eye.

Methods: There were 5,532 participants who visited the dry eye center. Patients in Group 1 (N=102) were diagnosed with demodex blepharitis clinically and proved by optical microscope. Group 2 (N=5430) consists of control patients without clinical signs of Demodex blepharitis. Subjective symptoms were evaluated using Standardized Patient Evaluation of Eye Dryness (SPEED) and Ocular Surface Disease Index (OSDI) questionnaires. Lipid layer thickness (LLT), blink/incomplete blink rates and meibography were measured with the LipiView® II. The number of expressible meibomian glands (MGE) was evaluated with a slit-lamp-aided standardized evaluator. The extent of meibomian gland dropout was graded using a meiboscale. The fluorescein tear film break-up time

(FTBUT) and superficial punctate keratitis (SPK) were also recorded. Aqueous tear secretion was evaluated with Schirmer test II with anesthetics. The patients were divided into four groups according to the degree of dermatochalasis (DM). All data were collected during the first time the patient visited the dry eye center.

Results: The patients averaged 54.82±15.01 years old. Patients with Demodex blepharitis have lower MGE (7.62±3.41 vs. 8.22±4.16, p=0.02) and higher Meiboscale, especially in the lower lid (1.56±0.94 vs 1.24±0.70, p<0.001) Otherwise there were no difference in OSDI, SPEED, LLT, TBUT, Schirmer test, SPK.

Conclusions: For patients with Demodex blepharitis, the Meibomian gland structure was damaged, although Meibomian gland function remained intact in terms of LLT.

Interferon Alpha 2b: An Effective First-line Alternative in Vernal Keratoconjunctivitis

*First Author: Saurabh **HARAL***

Purpose: To elucidate the efficacy and safety profile of interferon alpha 2b in vernal keratoconjunctivitis.

Methods: In this prospective interventional study, patients with vernal keratoconjunctivitis (vkc) fulfilling the inclusion and exclusion criteria were included. All patients were scored on the clinical scoring system. Patients were treated with E/D INF α2b (1 mIU/mL) qid for 6 weeks. Changes in total subjective symptom score (TSSS) & total objective sign score (TOSS) were evaluated at 2 weeks, 1 month, 2 months & 6 months after treatment. Possible ocular and systemic complications were evaluated.

Results: A total of 80 eyes of 40 patients (32 M & 8 F) were included in the study. Both the mean baseline TSSS & TOSS improved to highly significant levels at 8 weeks (P-value <0.001). After stopping the drug, both TSSS & TOSS increased at the end of 6 months but were still statistically significant compared to baseline. No ocular or systemic side effects were seen.

Conclusions: E/D INF α2b (1 mIU/mL) is safe and effective in the first-line management of VKC with virtually no side effects and exhibits long-term efficacy.

Intraoperative OCT Guided Deep Anterior Lamellar Keratoplasty a Novel Technique

*First Author: Sanyukta **JOSHI***
*Co-Author(s): Sudhank **BHARTI***

Purpose: To evaluate the usefulness of OCT-guided tunnel in achieving big bubble in DALK.

Methods: The laser device (Ziemer LDV Z8, Ziemer Ophthalmic Systems AG, Port, Switzerland) was used for trephination of the donor and recipient cornea. Preoperative planning on femto platform is done like ring size, outer and inner cut diameter, side cut, resection depth, tunnel width, and tunnel length. After achieving suction on the patient's eye real-time OCT mode was switched on to see the cut pattern, resection depth, depth of tunnel, length of tunnel, angulation of tunnel entry etc.

Results: All the cases included in the study had a successful big bubble.

Conclusions: This advanced software module of Zeimer Z8 works very well for performing successful DALK. The feature of tunnel creation in the stroma for air injection makes this software module superior to other laser platforms.

Long-term Clinical Outcomes of Type I Keratoprosthesis: A 12-Year Experience in 12 Cases of Bilateral Corneal Blindness

*First Author: Raksheeth **RAJAGOPAL***
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Purpose: To describe the clinical profile of cases of Type I keratoprosthesis (KPro) that attained long-term anatomical and functional success.

Methods: The medical records of all patients who underwent a Type I KPro between 2009 and 2013 at a tertiary eye care institute were retrospectively analysed. Out of 75 eyes of 75 patients, this study included 12 eyes of 12 patients, all of whom retained the primary KPro device and retained best-corrected visual acuity (BCVA) of ≥ 20/200 at the last follow-up visit.

Results: The most common indication for surgery was limbal stem cell deficiency (66.6%), followed by multiple failed grafts (33.3%). Out of 12 eyes, 8 (66.6%) received Boston KPro and 4 (33.3%) received Auro KPro. The mean age at KPro surgery was 29.8 ± 10.7 years. Out of 12 patients, 9 (75%) were male, and 3 (25%) were female. The mean duration of follow-up was 11.7 ± 1.1 years (range: 9.75 – 13.6). Of 12 eyes, 9 (75%) had glaucomatous optic disc damage and 5 (41.6%) required glaucoma drainage device implantation. All eyes were on topical antibiotics, a maintenance dose of topical steroids, and topical antiglaucoma medications. The mean BCVA at the last visit was 20/53. Routine large-diameter bandage contact lens wear was observed in 10 (83.3%) patients and vascularisation of the carrier graft was observed in all eyes.

Conclusions: The KPro Type 1 device shows favourable long-term anatomical and functional outcomes in select patients. Sixteen percent of KPros performed over five years survived over a ten-fourteen-year follow-up period.

Making an Open Source, 3D Printed, Lacrimal Punctal Plug with Drug Delivery System

*First Author: John **AKKARA***
*Co-Author(s): Vedant **BAWA**, Twisha **KHANNA**, Anju **KURIAKOSE***

Purpose: To design and 3D print a lacrimal punctal plug that can also work as a drug depot preparation, thus providing constant medication to the eye, preventing drug wastage, and reducing dry eye symptoms.

Methods: The punctal plug to be printed was designed according to the average sizing of punctum similar to commercially available medium-sized VeraPlug (Lacrivera, Lexington, USA) with similar shape and sizing. This design was made using open source application FreeCAD. In this design, the length of the punctal plug was taken to be 2 mm with a diameter of 1mm of the outer broad head portion and an internal diameter of 0.6mm of the cylindrical hollow part where the drug can be stored for the additional benefit of ocular drug delivery. This design has been uploaded on the website Thingiverse and is free to use. https://www.thingiverse.com/thing:5209632

Results: Punctal plugs with satisfactory results were printed using the LCD Stereolithography printer using UV-polymerized resin. The punctal plugs showed suitable structure and were also easily reproduced in the 3D printer without any complications or setbacks. They were viewed under a microscope and photographed. Medication could potentially be injected into the reservoir but needs more research on materials.

Conclusions: The goal of this study is to produce efficient 3D printed punctal plugs that can be used for personalized punctual occlusion along with prolonged ocular drug delivery for glaucoma, dry eye syndrome, cataract surgery postop, uveitis, and eventually for more diseases. Custom 3D-printed punctal plugs can be used for this.

Management of Fuchs Endothelial Corneal Dystrophy With Keratoplasty and Subconjunctival Anti-VEGF Injection

*First Author: Rezandi **AZIZTAMA***

Purpose: To report a case of a patient with Fuchs Endothelial Corneal Dystrophy who was treated with Keratoplasty accompanied by injection of anti-VEGF.

Methods: A 50-year-old woman complained of a white spot that appeared on the right eye about 6 months ago, then 4 months ago the same complaint appeared in the left eye. Complaints are accompanied by discomforts such as a lump, sometimes watery and glare in both eyes, and blurry vision ± 2 years ago. The visual acuity of the right eye was 1/300 and the left eye was 6/18. On ophthalmological examination, the cornea appeared cloudy, and there was edema with endothelial dystrophy and neovascularization on the right eye, it also found there's endothelial dystrophy and neovascularization on the left eye. The patient was treated with keratoplasty in the right eye and subconjunctival injection of anti-VEGF in the left eye.

Results: Nine days post keratoplasty and subconjunctival anti-VEGF injection follow-up showed the visual acuity of the right eye was 4/60 and the left eye 6/12. Anti-VEGF has been shown to reduce corneal neovascularization and the prognosis for graft survival is good.

Conclusions: A case of Fuchs Endothelial Corneal Dystrophy treated with keratoplasty and subconjunctival anti-VEGF injection. The main goal of therapy in this case is to reduce inflammatory infection and improve vision. The prognosis for graft survival is good, especially if the procedure is performed before vascularization occurs.

Management of Relapsing Mooren's Ulcer: A Case Report

*First Author: Safira **NADIFA***

Purpose: To report a case of relapsing Mooren's ulcer and its management strategy.

Methods: To present a case report.

Results: A 46-year-old woman presented with pain in the right eye and redness in both of her eyes since one month ago. Anterior segment examination findings on the right eye were ciliary injection, corneal thinning at the nasal region with an overhanging edge, and neovascularization. Anterior segment examination findings on the left eye were corneal thinning at the temporal region. The patient was referred to the rheumatologist for systemic evaluation, but the results of physical and laboratory examinations were within normal limits. The patient was diagnosed with Mooren's ulcer on the right eye and underwent a lenticule patch graft with multilayer amnion membrane transplantation three months ago. The patient was managed with conjunctival resection with corneoscleral patch graft, oral corticosteroids, immunosuppressive agent, topical corticosteroids, and cycloplegic on the right eye, while the left eye was managed with topical corticosteroids and artificial tears. One week after surgery, the corneoscleral patch graft was intact, and the pain decreased.

Conclusions: The etiology of Mooren's ulcer remains unclear. The absence of any diagnosable systemic disorder that is responsible for progressive corneal destruction is needed to diagnose Mooren's ulcer. Management for Mooren's ulcer is stepwise based on the response to therapy. Surgical intervention is needed if conservative treatment doesn't give a good response to decrease the progression of the ulcer.

Management of Xerophthalmia in Pregnancy in Indian Scenario

*First Author: Himanshu **PRAKASH***
*Co-Author(s): Nipun **GUPTA***

Purpose: To report a case of xerophthalmia in pregnancy with special emphasis on oral vitamin A (10000 IU/ml) preparation.

Methods: A 24-year-old primi gravida at 31 weeks gestation, presented with both eye gradual painless diminution of vision and poor night vision since one month. On examination, her best corrected visual acuity (BCVA) was 6/60 OU. Anterior segment examination revealed wrinkling and dryness of conjunctiva with lack of corneal lustre, dryness and superficial punctate keratitis corresponding to WHO grade X2 Xerophthalmia and rest within normal limits. She had a history of hyperemesis gravidarum in the first trimester with poor dietary intake, and low haemoglobin and was admitted for conservative management of fetal growth retardation and oligohydramnios. She was started on topical lubricants and oral liquid oil-based vitamin A 10000 IU/ml preparation which was prepared by mixing 5 ml of vitamin A oil-based solution (1lakh/ml) with 45ml of coconut oil.

Results: At the 2-week follow-up, conjunctival xerosis, Bitot's spots, superficial punctate keratitis and corneal xerosis had completely resolved, with final BCVA markedly improving to 6/6.

Conclusions: Oral vitamin A 10000 IU is not easily available in India, and there is no available literature regarding such preparation methodology for these groups of patients. Hence an extemporaneous novel preparation of oral vitamin A 10000 IU/ml in recommended dosage was prepared to treat our patient with gratifying outcome.

Mechanosensation of Pterygium cells and Disease Progression

*First Author: Jinkwon **CHUNG***

Purpose: The dynamic ecosystem of the pterygium is orchestrated by multiple cell types, including stem cells with high levels of proliferation, inflammation, angiogenesis, and extensive amount of extracellular matrix (ECM) accumulation. The specific molecular mechanism of pterygium pathogenesis is still unclear. Hence the present study tries to understand the molecular mechanisms underlying pterygium pathogenesis using patient-derived epithelial cells by transcriptome analysis.

Methods: We used human pterygial and normal conjunctival epithelial cells, isolated from patients who underwent pterygium excision and conjunctival autograft. In addition, the study also analyzed the cell adhesion and migration-associated signaling pathways which were significantly upregulated in pterygium epithelial cells. Further, we elucidated the role of disease-specific mechanosensitivity in the disease microenvironment by traction force microscopy (TFM).

Results: The TFM analyses revealed that pterygium cells showed significantly higher levels of mechanosensitivity. Further, matrix stiffness accelerates migration behaviors and fibrosis in pterygial cells through activation of integrins and focal adhesion via connective tissue growth factor, cysteine-rich angiogenic inducer 61, transient receptor potential vanilloid-2, 4.

Conclusions: Understanding of the mechanobiology of pterygium epithelial cells has the potential to lead to improved tissue engineering and cell-based therapies for pterygium. Our findings seem to offer insights into the important roles of cell-matrix interactions in the aspect of matrix stiffness in pterygium pathophysiology.

Modulation of T Helper 1 Response Associated With PKP (Penetrating Keratoplasty) by Using Mesenchymal Stem Cells

*First Author: Yoonseop **SIM***
*Co-Author(s): Hyun Soo **LEE**, Soonwon **YANG***

Purpose: The aim of this study was to investigate which MSCs (Mesenchymal stem cells) affect would have on corneal allograft survival with a focus primarily on immune rejection.

Methods: PKP was performed using C57BL/6 donor grafts and BALB/c recipients. Bone marrow-derived MSCs or vehicle was injected at the tail vein at postop day 0 and day 7.

Results: We evaluated the immunological responses in both groups, such as delayed-type hypersensitivity assays, real-time PCR, and immunohistochemistry.

Conclusions: Bone marrow-derived MSCs result in decreased graft rejection compared to the control group. MSCs lead to less delayed-type hypersensitivity response and less interferon-gamma production from T cells of drainage lymph nodes than vehicle control, according to better graft survival than vehicle control. MSCs lead to less angiogenesis and lymphangiogenesis, which could make mature antigen-presenting cells less move into drainage lymph nodes and grafted corneas, respectively.

Molecular and Phenotypic Characterization of Ocular Methicillin-Resistant Staphylococcus Epidermidis Isolates in Taiwan

*First Author: Yin Hsi **CHANG***
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Purpose: Staphylococcus epidermidis, a commensal, has emerged as an important opportunistic pathogen, particularly methicillin-resistant Staphylococcus epidermidis (MRSE). The mechanism behind this

transformation remains unclear. This study aimed to investigate the molecular and genotypic characteristics of MRSE isolated from healthy conjunctiva and ocular infections.

Methods: We collected MRSE isolates from two groups: healthy conjunctiva from patients undergoing cataract surgeries and ocular infections at our hospital. The genotypic analysis included pulsed-field gel electrophoresis (PFGE), multilocus sequence typing (MLST), staphylococcal cassette chromosome mec (SCCmec), and biofilm-related genes (icaA, aap, and bhp). Additionally, phenotypic data on biofilm production and antibiotic susceptibility were recorded.

Results: A total of 86 isolates, including 42 from healthy conjunctiva and 44 from ocular infections, were analyzed. MLST identified 21 sequence types (ST) with ST59 being the most frequent (n=33, 39.5%), followed by ST130 (n=10, 11.6%), ST57 (n=6, 7.0%) and ST2 (n=6, 7.0%). All isolates were categorized into 23 PFGE types, and SCCmec IV was the most prevalent SCCmec type (n=52, 60.5%). The two sources of isolates exhibited overlapping molecular types and phenotypic traits, except for ocular infection isolates, which exhibited significantly higher multidrug resistance compared to healthy conjunctiva isolates (P=0.032). When contrasting ST59 with non-ST59, ST59 displayed a significantly higher presence of aap (100%) and bhp (69.7%) while lacking icaA (0%). ST59 also showed lower susceptibility to fluoroquinolones compared to non-ST59 (42.4-54.5% v.s. 75.5-83.0%, P <0.01).

Conclusions: MRSE isolates from healthy conjunctiva and ocular infections demonstrated a degree of resemblance. Specific strains, notably ST59, exhibited distinctive characterizations.

Navigating the Challenge of Recurrent Pterygium Using Conjunctival Autograft and Fibrin Glue: A Case Report

*First Author: Dearaini **SOEPOMO***
*Co-Author(s): Regina **IVANOVNA**, Syska **WIDYAWATI***

Purpose: Despite advancements in surgical techniques and treatments, recurrent pterygium cases remain a concern in ophthalmology practice. This report aims to describe a challenging case of recurrent pterygium successfully managed by conjunctival autograft (CAU) secured with fibrin glue.

Methods: A 53-year-old man presented with recurrent pterygium in his right eye. He had experienced this condition over two decades ago and underwent surgical removal on four separate occasions. However, the growth returned after his most recent surgery, which took place a couple of months prior. He also reported experiencing blurred vision and restricted lateral ocular motility. Upon ophthalmological examination, a grade III-IV pterygium with pronounced neovascularization with symblepharon of the caruncle in the nasal region was observed. Considering the history of recurrence, a surgical procedure was performed involving a CAU secured with fibrin glue onto the bare sclera.

Results: The exact pathogenesis of recurrent pterygium is under debate. Factors contributing to recurrency include postoperative inflammation, incomplete tissue removal, and excessive suturing. Studies have demonstrated reduced long-term recurrence rates when using fibrin glue as opposed to sutures. This can be attributed to immediate graft adherence facilitated by the glue, which is pivotal in impeding fibroblast ingrowth, accelerating graft vascularization, and thus mitigating the likelihood of recurrence.

Conclusions: Managing recurrent pterygium cases demands a meticulous assessment of factors contributing to recurrence, appropriate selection of surgical methods, and the adoption of preventive strategies to enhance outcomes following surgery.

Neurologic and Systemic Complications of Herpes Zoster Ophthalmicus

*First Author: Gillian Louise **SAQUIAN***
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Purpose: Orbital apex syndrome is a rare neuro-ophthalmic manifestation of herpes zoster virus infection. Two of its consequences if left untreated are viral meningitis and cerebrovascular disease. Early diagnosis and treatment of herpes zoster ophthalmicus is crucial to avoid consequences.

Methods: This is a case of a seventy-four-year-old female who consulted for vesicular rashes on the right peri-ocular area. History revealed that two weeks prior to the consult, the patient noted the appearance of vesicular, painful rashes on her forehead, the right periorbital area, extending to the lateral tip of her nose. A mixture of herbs was topically applied but offered no relief. There was a gradual right visual loss, with conjunctival hyperemia, ptosis, and limitation of eye movement. Ophthalmological and neurological evaluation showed the following: complete ptosis right with limited eye movement, negative light perception, non-reactive pupils, and recurrent hyphema. There was also a decrease in sensorium and right-sided body sensorimotor weakness.

Results: Lumbar tap yielded elevated protein and lymphocytes. Cavernous sinus thrombosis was seen with neuro-imaging. A diagnosis of Orbital Apex Syndrome with Meningitis secondary to Herpes zoster ophthalmicus was then established. The patient was treated with topical and intravenous Acyclovir and Pregabalin. There was improvement after 3 weeks except for vision which remained negative, persistence of the limited eye movement and ptosis.

Conclusions: It is necessary to consider the possibility of Orbital Apex Syndrome development in patients with Herpes Zoster Ophthalmicus. Furthermore, cerebrospinal studies and MRI will help select a

treatment method. Prompt treatment should be initiated to avoid systemic complications.

New Insights Into Lacrimal Gland Anatomy Using 7T MRI: Relevance for Lacrimal Gland Targeted Therapies and Bioengineering

*First Author: Swati **SINGH***
*Co-Author(s): Tobias **BAUERLE**, Fabian **NECKER**, Friedrich **PAULSEN**, Zoltan **WINTER***

Purpose: To study the tissue architecture, isthmus (connection between two lobes) of the lacrimal gland using preclinical 7T MRI in combination with histology and electron microscopy.

Methods: Ten lacrimal glands from five Caucasian body donors (mean age 78.7 years) were studied using 7T-MRI (N=5; scanned at 75-µm intervals), histology, and electron microscopy (N=5) and 3D cinematic rendering (CR) techniques.

Results: 3D CR images showed uniform-sized lobules (widest lobule diameter, 1.68±0.19 mm in orbital lobe, 1.68±0.17 mm in palpebral lobe) in both lobes, separated by septae (size, 0.29±0.09 mm). The internal framework of the gland resembled a honeycomb pattern. In CR and histology, the isthmus contained glandular acini, large blood vessels, nerves, and no more than two ducts having a tortuous course towards the conjunctival surface. On assigning a color display to the rendered lacrimal gland, all glands showed a blood vessel originating from the main lacrimal artery just 5mm beyond the hilum and making its course to the palpebral lobe via the isthmus. Palpebral lobe conjunctiva had a compact subepithelial layer, followed by loosely scattered collagen bundles that contained the gland lobules. The distance between the conjunctiva and the central substance of the orbital and palpebral lobe was 9.4± 0.2 mm and 2.8± 0.7 mm, respectively.

Conclusions: 3D-CR can be used to study the lacrimal gland microstructure, help fabricate a 3D scaffold for lacrimal gland bioprinting, and serve as a guide for transconjunctival lacrimal gland targeted therapies, i.e., 2.9 & 9mm long needle to reach the orbital and palpebral lobe center, respectively.

Non-healing Corneal Ulcer- Related Diabetes Mellitus Type 1: Successfully Treated With Medical Therapy: A Case Report

*First Author: Quynh **NGUYEN***
*Co-Author(s): Nga **DUONG M**, Sam **TRAN**, Le **XUAN CUNG***

Purpose: To report a case of non-healing corneal ulcer that responded to aggressive medical treatment with topical autologous serum 20%

Methods: A 29-year-old female presented with a 5-month history of redness, pain, and blurry vision in both eyes. Systemic history of diabetes type 1 with insulin-dependent diabetes mellitus with controlled blood glucose. She also had a history of diabetic retinopathy and secondary glaucoma in both eyes. She underwent cataract surgery with IOL implantation on the right eye. Repeated microbiological evaluation showed positive gram cocci. At the time of the presentation, she was using 3th fluoroquinolones 1.5% and Combigan twice daily. After ruling out infection factors, conventional therapeutic options included intensive artificial tear supplements, contact lenses, and appropriate management of adnexal disease. Topical autologous serum eye drops 20% were applied 10 times daily in combination with non-preservative artificial tear until the cornea was healed completely after 3 months of follow-up.

Results: The corneal ulcer was completely healing after 3 months of intensive treatment with no recurrence still now, and a corneal scar remained. The final BCVA returned to useful vision.

Conclusions: Diabetes keratopathy is one of the complications of diabetes mellitus and needs more awareness. Autologous serum drops are an effective method for treating non-healing corneal ulcer-related diabetes mellitus.

One-Year Graft Survival of Pediatric Keratoplasty Among Perforated Corneas: A Comprehensive 15-Year Retrospective Study in Malaysia

*First Author: Yongyuin **CHONG***
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Purpose: To analyze the graft survival of corneal transplants among pediatric perforated corneas within a 15-year period at Hospital Kuala Lumpur.

Methods: This is a retrospective study of corneal perforation in the pediatric age group who underwent keratoplasty from 2008 to 2022 at the Paediatric Ophthalmology Centre in Malaysia. The results were analyzed based on the 1-year graft survival rate.

Results: A total of 31 eyes among 29 patients who underwent keratoplasty due to corneal perforation were included. The median age was 8 months (12 days to 11 years). Among these cases, 18 eyes were less than 1 year old and the commonest etiology was anterior segment dysgenesis (ASD) 10/18 (55.56%). The etiology was divided into infective keratitis (IK) 13/31 (41.95%) and non-infective keratitis 18/31 (58.06%). Non-infective causes include ASD 11/31 (35.48%), exposure keratopathy (EK) 3/31 (9.68%), congenital glaucoma 2/31 (6.45%), neurotrophic keratopathy 1/31 (3.23%) and ocular surface disease (OSD) 1/31 (3.23%). Among 10 eyes with ASD, one patient underwent re-grafted twice. The 1-year graft survival rate was 30.76% in IK (4/13), 33% in EK (1/3), 18.18% in ASD (2/11), and 0% in other causes. The graft remained clear after 1 year for the only OSD patient. IK had a higher survival

rate of 30.76% (4/13) compared to non-IK 22.22% (4/18), however was statistically insignificant (p-value 0.448).

Conclusions: This study highlights infective keratitis as the leading cause of pediatric corneal perforation in Malaysia. Additionally, we found that corneal perforation was associated with a low graft survival rate, however, there was no significant difference across groups that had corneal perforation.

One-Year Postoperative Results of Corneal Crosslinking for Keratoconus in Japanese Population

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Purpose: To compare the outcomes of different types of corneal crosslinking (CXL) with (epi-on CXL) or without epithelium (epi-off CXL) for advanced keratoconus in the Japanese population.

Methods: A total number of 38 eyes in 38 patients consisted of the two groups; the epi-off group included 21eyes in 21 patients (17 males, 4 females, mean age 23.9 ± 5.5 years), and the epi-on group included 17 eyes in 17 patients (15 males, 2 females, 23.5 ± 8.3 years). Patients were examined at baseline,1,3,6,12 months postoperative. LogMAR visual acuity, corneal refractive power and its change (ΔKs, ΔKmax), and corneal thinnest thickness were recorded as the evaluation factor after one year follow up.

Results: The comparison between preoperative and postoperative values at one year after surgery showed no significant difference in the two groups (The p-values were shown in the order of the epi-off and epi-on groups); logMAR visual acuity (p=0.15, =0.56), Ks (p=0.45, 0.22), Kmax (p=0.35, 0.39) and corneal thinnest thickness (p=0.02, 0.59). The ΔKs of the epi-off and epi-on groups were -0.71±2.30 and -0.24±1.46, and the ΔKmax were -1.14±5.29 and 0.62±2.94. When the increase in corneal refractive error of 1D or more at one year was defined as recurrence, the recurrence rate was 23.8% for the epi-off group and 35.3% for the epi-on group in Ks (p=0.34). Kmax was 14.3% in the epi-off and 47.0% in the epi-on group (p=0.07).

Conclusions: Although no significant progression was observed at one year after CXL in both methods, the recurrence rate tended to be higher in the epi-on group.

Perfluorohexyloctane: New Kid on The Block

*First Author: Jovita **JUTAMULIA***
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Purpose: To assess the feasibility of perfluorohexyloctane for dry eye treatment.

Methods: This review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. We performed a comprehensive literature search across five online databases: PubMed, Cochrane, ProQuest, ScienceDirect, and Google Scholar. We used 'dry eye disease', 'perfluorohexyloctane, 'dry eye', 'dry eyes', and their Mesh terms as keywords. Rayyan, an online-based tool, was used to conduct the screening process. Human studies using perfluorohexyloctane as dry eye or dry eye disease (DED) therapy, were published in the English language, and full-text journals available were included in this review. We identified corneal fluorescein staining (CFS) as the main outcome measurement, with adverse events as an additional measurement.

Results: Five randomized controlled trials (RCTs) and two cohort studies, involving a total of 2015 participants, were analyzed. Most studies were conducted in Western countries, except one RCT in China. All participants in this review were adults ≥ 18 years old, with a mean age of 53.31 years old. One hundred percent perfluorohexyloctane was used in all studies. Isotonic saline 0.9% (3 studies) and hypotonic saline 0.6% (2 studies) were used as comparators in RCTs. All studies showed improvement in CFS to the control group, with a significance level of $P \leq 0.001$, except for one study where $P = 0.2786$. All studies indicated minimal or no serious adverse events.

Conclusions: Perfluorohexyloctane shows promising potential as a new therapeutic approach for patients with DED, but additional research is needed, especially in Eastern countries.

Perforated Corneal Ulcer Due to Gonococcal Infection in Adult Woman Treated With Tectonic Lamellar Patch

*First Author: Anna **UTAMI***

Purpose: To report a case of a bilateral keratoconjunctivitis of Gonococcal infection. The corneal perforation was successfully treated with a tectonic lamellar patch using an anterior donor stroma (DSAEK cap).

Methods: A 36-year-old woman was admitted with redness, pain, and swelling in both eyes since one week ago. She could barely open her eyes. Other symptoms included blurry of vision, excessive yellowish discharge, tearing, and photophobia. There was no history of multiple sexual partners. The patient was assessed with bilateral bacterial keratoconjunctivitis.

Results: We did the Gram examination and found gram-negative diplococci. The patient was treated with cefixime orally, antibiotic and steroid eyedrops. One week later, the patient was presented with corneal thinning in the right eye and corneal perforation of the left eye. Surgery was performed in the left eye by using a tectonic lamellar patch of anterior donor stroma post

DSAEK cap, and medical treatment was continued for both eyes. After one month, both eyes were healed, with a visual acuity of 1.0 in both eyes.

Conclusions: The present case is to report a rare case of gonococcal keratoconjunctivitis in an adult. In developing countries, where the fresh cornea donor is limited, we can use the anterior cap as a lamellar patch graft with a favorable prognosis.

Piggyback Contact Lens in Unilateral Keratoconus in a 17-Year-Old Boy: A Case Report

*First Author: Nugraha **ADIYASA***
*Co-Author(s): Fatimah **NUSASTUTI***

Purpose: To report the effectivity of piggyback contact lens therapy in a 17-year-old boy with unilateral keratoconus due to persistent eye rubbing.

Methods: A 17-year-old boy presented with a complaint of a blurry right eye. The patient also had previously used spectacles for the last 3 years and already exchanged the glasses 2 times. The patient also had a complaint of itchy eyes, especially when exposed to dust and cold. The patient also had a history of persistent eye rubbing due to allergy. The base visual acuity of the right eye was 2/60, with the best corrected visual acuity using spectacles was 6/19 using S-4.00 C-1.00 x10'. And for the left eye, the base visual acuity was 6/38, with the best corrected visual acuity using spectacles being 6/6 using S-2.25. The patient was diagnosed with right-eye keratoconus and left-eye myopia.

Results: The patient was advised to use piggyback contact lenses which were a combination of soft contact lenses with a base curve (BC) 8.6 mm and a diameter 14.2 mm with power S-0.5 Dioptre and Rigid Gas Permeable (RGP) lens with BC 7.30 and Diameter 9.2mm with power S-6.00 and manage to achieve 6/6 best corrected visual acuity (BCVA).

Conclusions: We had reported a treatment of piggyback contact lens in a patient with unilateral keratoconus and managed to achieve 6/6 BCVA. The results were better than glasses.

Prevalence and Factors Associated With Symptomatic Dry Eye Among Medical Students in Malaysia

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Purpose: Dry eye disease (DED) is a multifactorial condition of the ocular surface that is defined by a loss of the tear film's equilibrium and visual symptoms. Medical students are at risk as they are in the most academically demanding programs, requiring long hours on computers, indoors, and in air-conditioned environments. This study aimed to determine the prevalence and factors associated with symptomatic dry eye disease (DED) among medical students in Malaysia, using the Ocular Surface Disease Index Questionnaire (OSDI).

Methods: This cross-sectional study was carried out from November 2022 to June 2023 using a self-administered questionnaire disseminated through WhatsApp messaging, via the universal sampling technique. The questionnaire consists of 6 sections: Socio-demographic factors, Clinical characteristics, Lifestyle factors, Ocular Surface Disease Index (OSDI), and mental health status using DASS-21 and Smartphone Addiction Scale Short Version. The data was analyzed using Statistical Package for Social Science (SPSS) version 27.0.

Results: A total of 272 medical students with a mean age of 21.85 participated in this study. The prevalence of symptomatic DED was 40.4%. From the bivariate analysis, atopic allergy (P=0.011), higher depression scores (P<0.001), higher anxiety scores (P<0.001), and higher stress scores (P<0.001). From the multivariate logistic regression, atopic allergy (OR= 1.862, 95%[CI]= 1.057-3.279, P=0.031) and higher anxiety levels (OR= 1.072, 95%[CI]= 1.042-1.103, P<0.001) were significantly associated with dry eye disease (DED).

Conclusions: Medical students suffer from a high rate of symptomatic dry eye; treating them with preservative-free eyedrops will improve their overall well-being and enhance their focus and concentration. Students with eczema and anxiety may find this particularly beneficial.

Prevalence of Keratoconus Among Patients With Vernal Keratoconjunctivitis in South Indian Population

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Purpose: To evaluate the corneal topographic changes and determine the prevalence of keratoconus (KC) among patients with vernal keratoconjunctivitis (VKC) in the South Indian population.

Methods: One hundred and five patients with VKC were included. Demographic details, clinical data, and corneal topography by Pentacam HR were collected and analyzed for signs of clinical keratoconus or topographical signs suspicious of keratoconus.

Results: The mean age of presentation was 15.2 years with a male preponderance (M: F =2.6:1). Overall, about 43.6 % of the study population had a best corrected visual acuity (BCVA) of 6/6, and 19.7% of patients had BCVA of <6/18. The distribution of clinical forms of VKC among the 210 eyes was as follows: 53.8% palpebral, 37.1 % mixed, followed by 9.1 % limbal form. Among the 210 eyes screened, 34.3 % had additional corneal topographic changes suggestive of

KC (Clinical KC – 12.4% & Topographical KC – 21.9%). Detailed analysis of topography changes showed 42 eyes (20%) had K value > 48D, 63 eyes (30%) had >1.4 D inferior-superior asymmetry, and 30 eyes (14.3%) had a corneal thickness of <480 microns. Scissors reflex was present in 31 eyes (14.76%), which helped identify early keratoconus. All 47 patients with keratoconus had a positive history of eye rubbing.

Conclusions: The prevalence of keratoconus/ KC suspects among patients with VKC was 45%. Hence, VKC is a significant risk factor for KC, and all patients require periodical screening for early diagnosis of KC.

Prostanoid FP and EP2 Receptor Agonists Cause Epithelial and Subepithelial Fibrosis in Human Conjunctival Fibroblasts in Different Manners

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Purpose: To examine the effects of prostanoid FP and EP2 receptor agonists, PGF2α and Omidenepag (OMD), respectively, on the transforming growth factor beta (TGF-β2) induced conjunctival fibrogenesis.

Methods: Two- dimensional (2D) and three-dimensional (3D) cultures of these fibroblasts were subjected to following analyses: (1) planar proliferation evaluated by transendothelial electron resistance measurements, (2) real-time metabolic analyses, (3) subepithelial proliferation evaluated by 3D spheroid size and stiffness measurements, and (4) the mRNA expression of extracellular matrix molecules and their modulators.

Results: TGF-β2 induced increase in the planar proliferation was significantly decreased or enhanced by PGF2α or OMD, respectively. The proportion of oxygen consumption required to drive ATP synthesis compared with that driving proton leakage was increased by PGF2α and OMD independently with TGF-β2. In contrast, maximal mitochondrial respiration was decreased by PGF2α and OMD, and the OMD-induced effect was further enhanced by the presence of TGF-β2. In addition, the TGF-β2 dependent increase in the glycolytic capacity was canceled by PGF2α and/or OMD. Alternatively, subepithelial proliferation, as evidenced by the stiffness of the 3D spheroids, was substantially increased by both PGF2α and OMD, and these were differently modulated by TGF-β2. The expression of several related factors, as aforementioned, fluctuated among the conditions for both 2D and 3D and TGF-β2 untreated or treated cultures.

Conclusions: The prostanoid FP or the EP2 receptor agonist may solely and differently induce the planar and subepithelial proliferation of HconF cells and these were also modulated by TGF-β2.

Pterygium Removal

*First Author: Leonel **PIZARRO***

Purpose: Evaluate the results of pterygium surgery.

Methods: A total of 301 eyes that underwent pterygium surgery were evaluated between May 1994 and August 2023. Among these, 299 cases involved simple resections with antimitotics (Mitomycin C 0.02%) administered for 7 days, and 2 cases underwent resection with conjunctival autograft.

Results: The surgical procedures included 173 men and 128 women, with ages ranging from 22 to 80 years and an average age of 46.67 years. Ages were not recorded for 32 patients. A majority of patients (91.08%) were older than 35 years. The surgeries were predominantly performed between March and September (autumn-winter), accounting for 92.02% of cases. All patients were evaluated on the first postoperative day, on the seventh day for suture removal, and on the twenty-first day for occlusion removal. The longest follow-up period extended to 20 years. Complications included 3 cases of recurrence, ocular hypertension observed in 2 patients on the first postoperative day and 4 patients on the seventh day, scleral thinning observed in one patient on the seventh postoperative day, and one patient with a recurring pterygium who experienced a corneal perforation 6 years after surgery, necessitating a scleral patch.

Conclusions: The technique of simple pterygium resection using Mitomycin C 0.02% for 7 days, coupled with occlusion for 21 days, proved to be an effective and safe approach, resulting in a low incidence of complications. The recurrence rate was found to be only 1%.

Pythium Keratitis – Paradigm Shift in Medical Therapy and Dynamic Response, Historical Comparative Case Series

*First Author: Mangala **P***

Purpose: To report successful medical management of Pythium insidiosum keratitis using a combination of 1%minocycline, along with 0.2% linezolid, 1% azithromycin, and oral minocycline/azitromycin.

Methods: This was a comparative, interventional case series involving 27 cases, diagnosed as pythium keratitis,21 cases during the period of2017-2021, received conventional treatment of 0.2% linezolid with PHMB/AZITHROMYCIN /PHMB+Azithromycin, their healing response and final treatment were noted. 6 cases from Jan 2022 to March 2023, were given,1%minocycline, along with 0.2% linezolid and oral minocycline, and their clinical response were noted. All these patients underwent routine clinical examination, corneal scrappings, and confocal microscopy. The treatment responses were monitored. Cases were followed up at regular intervals. Resolution manifested by a decrease in the number, and density of

tentacular extensions with a reduction in the cellularity of surrounding stroma. On follow-up, a formation of peripheral guttering surrounding the infiltrate was observed along deep vascularization.

Results: Medical treatment (1%minocycline, along with 0.2% linezolid and oral minocycline) resulted in the resolution of infection in all 6 cases of with medical management in a duration of 3 months. Cases healed with scarring without surgical intervention and drastic complications, compared to the previous group0.2% linezolid with PHMB/AZITHROMYCIN / PHMB+Azithromycin, where1 case resolved with medical management in small ulcer,15 cases went for surgical intervention, out of which 11 cases went for failed graft, 2 cases for evisceration and 3 for regraft for recurrence.

Conclusions: Early recognition and initiation of treatment (1%minocycline, along with 0.2% linezolid and oral minocycline) can not only save the globe but also restore useful vision. Topical minocycline is a promising drug in the treatment of pythium keratitis.

Recurrence Rate of Ocular Surface Squamous Neoplasia Post Treatment in a Corneal Center

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Purpose: Ocular surface squamous neoplasia (OSSN) is a spectrum of malignancy that includes intraepithelial dysplasia, carcinoma in-situ (CIS) of conjunctiva and cornea, and squamous carcinoma (SCC). This study aimed to investigate the predictors related to increased risk of recurrence.

Methods: This is a retrospective review of patients from a corneal center in Malaysia taken from 2011 to 2020. Statistical analysis was performed using the SPSS Version 27.

Results: There was a total of 60 patients who presented with OSSN between 2011 and early 2020. The average age of OSSN occurrence was 63.1% and 61.7% were patients aged above 60. Of the reported OSSN, 76.7% were male, and 23.3% were female. 87.5% who had recurrence were male. 50% of OSSN patients were Malays, 36.7% were Chinese, 8.3% were Indian, and 5% were others. Recurrence was significantly highest in the Chinese population (p=0.037). 60% of patients presented with tumors larger than 5mm (T2). 75% of patients who had recurrence had T2 tumors. Recurrence risk was higher in patients with multifocal tumors (22.2%) compared to those with unifocal tumors (9.8%). Higher grades of OSSN had a higher risk of recurrence that was 25% in CIS and 50% in SCC, however, it was not significant (p=0.09). The risk of recurrence in patients with positive margin was 22.7% compared to 5.9% in negative margin. The main predictors for recurrence are race, diagnosis, size, and positive margin.

Conclusions: OSSN requires adequate excision and cryotherapy, post excision Mitomycin C followed by thorough follow up to monitor any recurrence.

Relationship Between Hygiene Status and External Eye Disease in the Population of Islamic Boarding Schools in Rural Area

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Purpose: Islamic boarding schools have the characteristics of a large number of students in a limited area to carry out activities together. This condition poses a high risk of external eye disease, but research data in Indonesia is still small. This study was to analyze the relationship between hygiene status and external eye disease in the population of Islamic boarding schools in Tlogowaru District.

Methods: Data collection was carried out using a digital questionnaire consisting of a history of eye complaints and hygiene habits. A physical examination was performed for the evaluation of the anterior eye segment.

Results: Of the 381 respondents, women dominated (58.1%). The majority of the respondents have an elementary school education (51.4%). Respondents' attitudes towards eye health were also low, as indicated by never checking their eyes (81.3%) and only checking their eyes when they felt sore (18.3%). A history of eye complaints was dominated by itching in the eyes (36.5%). From a physical examination, we found a normal eye (71.6%), dry eye disease (12.8%), conjunctivitis (9.9%), and other (5.7%). A significant relationship was found between hygiene status and external eye diseases, especially in the habits of washing hands (p = 0.012), sharing personal tools (p = 0.001), number of people in one room (p = 0.028), and bedroom cleanliness (p = 0.000).

Conclusions: There is a relationship between hygiene status and external eye disease in the Islamic boarding school of Tlogowaru District. Health education and routine eye examinations need to be done to prevent external eye disease.

Risk Factors for Corneal Endothelial Decompensation After Penetrating Keratoplasty: A Population-Based Cohort Study

*First Author: Chao Kai **CHANG***
*Co-Author(s): Hung-chi **CHEN**, Chia-yi **LEE***

Purpose: To investigate possible risk factors for endothelial decompensation after penetrating keratopathy (PK).

Methods: This retrospective case-control study was conducted using the National Health Insurance Research Database (NHIRD) of Taiwan. Patients who received PK were enrolled in the study. The

main outcome was the development of endothelial decompensation after PK surgery. The effects of several potential risk factors were analyzed between patients with endothelial decompensation and those without endothelial decompensation via Cox proportional hazard regression, which produced the adjusted hazard ratio (aHR) and 95% confidence interval (CI).

Results: Endothelial decompensation was observed in 134 patients (40.00%) after PK surgery. After adjusting for possible confounding factors, the presence of diabetes mellitus (DM) (aHR:1.924, 95% CI:1.257-2.533, P = 0.0095) and cataract surgery (aHR:1.687, 95% CI:1.328-2.440, P = 0.0026) correlated with the development of endothelial decompensation. In the subgroup analysis, the existence of DM showed a significant association with the development of post-PK endothelial decompensation in all age and sex subgroups (all P < 0.05), while the correlation between cataract with surgery and post-PK endothelial decompensation was more prominent in patients aged > 60 years than in those younger counterpart (P = 0.0038).

Conclusions: The presence of DM and cataracts after surgery is associated with a higher incidence of post-PK endothelial decompensation.

Smart Phone Aided Blue Light Photography for Contact Lens Fit Assessment

*First Author: Aiman **KHAN***
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Purpose: To compare slit lamp-aided fitting of contact lens versus our novel do-it-yourself (DIY) smartphone-aided device.

Methods: Images were obtained from both the slit lamp and our DIY device by the same examiner. The images were randomized and transferred to an iPad. An independent examiner was asked to diagnose and grade the image quality of each image based on image characteristics and the grading system.

Results: Image quality and diagnosis of contact lens fit were comparable between the two photographic devices and were statistically significant.

Conclusions: Our DIY smartphone-aided device was non-inferior to the slit lamp in the assessment of contact lens fit, and can be considered a low-cost alternative to slit lamp for assessment and documentation.

Successful Management of Periosteal Graft in Corneal Perforation Due to Gonococcal Keratoconjunctivitis: A Case Report

*First Author: Othe **SYARIFUDDIN***

Purpose: To report the management of gonococcal keratoconjunctivitis with corneal perforation.

Methods: A 25-year-old woman was diagnosed with both eye gonococcal keratoconjunctivitis with corneal perforation in the right eye. The corneal perforation was managed with a periosteal graft.

Results: The history of promiscuity and genital discharge from the patient's husband was found through anamnesis two weeks before the eye symptoms. On eye examination, the visual acuity of the right eye was 1/60, and the left eye was 6/24. Both eyes showed hyperemia, edema, and purulent discharge. There was corneal perforation with iris prolapse on the right eye, sized 2,4mm x 1,8 mm. Chemosis and corneal erosion were noted in the left eye. Gram-negative diplococci bacteria were found in the microbiology examination. The patient underwent a periosteal graft in the right eye; improvement was noted as minimal hyperemia, no eye discharge, and closure of the perforation; the visual acuity of the right eye became 6/9; the left eye was 6/6 at 1-month follow-up.

Conclusions: The periosteal graft is one of the therapeutic options to preserve the eyeball and can provide good anatomical and functional results in managing corneal perforation due to its tectonic capabilities, faster revascularization process, and a smaller risk of infection.

Superior Limbic Keratoconjunctivitis in Behcet's Disease - A Rare Case

*First Author: Alazi **AJUM***
*Co-Author(s): Anang **TRIWIBOWO***

Purpose: To report and discuss a rare case of superior limbic keratoconjunctivitis at causa for deferential diagnosis and proper treatment.

Methods: A 48-year-old man complained of blurred vision in the left eye for 4 months ago.

Results: The patient experienced decreased visual acuity in the right eye with a vision of 1/300. On the patient's cornea, there is tissue such as a white membrane at 11 o'clock to 2 o'clock on the right eye and Keratopathy 10-1 o'clock on the left eye. White membranes on the patient's right and left eyes are suspected as the result of conjunctiva al redundancy and soft tissue microtrauma. Mechanical irritation occurs in the superior limbal area, such as loose conjunctival tissue that rubs against the limbus during the blinking process. Studies have shown that this repetitive trauma can cause damage, injury, and inflammation, which is characterized by increased levels of expressed matrix metalloproteinases. In the biopsy specimen from the superior tarsal conjunctiva, the patient showed an infiltration of polymorphonuclear leukocytes, lymphocytes, and plasma cells. Treatment for these patients is corticosteroid therapy. Low-dose topical corticosteroids may temporarily reduce symptoms.

Conclusions: Superior limbic keratoconjunctivitis (SLK) is a disease characterised by inflammation of the upper palpebral and superior bulbar conjunctiva, keratinisation of the superior limbus and corneal and conjunctival filaments. Treatment is aimed at altering the abnormal mechanical interaction of the upper lid and superior corneal limbus.

Surgical Management of Mycotic Keratitis

*First Author: Danica **TOMAS-ESTEBAN***
*Co-Author(s): Karlo Marco **CLAUDIO***

Purpose: This paper highlights a case of recalcitrant fungal keratitis which eventually led to corneal rupture and was subsequently managed with therapeutic penetrating keratoplasty.

Methods: Corneal opacity was noted on the left eye, starting with a foreign body sensation with eye redness, tearing, eye pain, and blurring of vision two months prior. Other histories were unremarkable. Topical medications afforded no relief and ended with corneal rupture. Visual acuity was hand movement with good light projection, with good color vision, as well as pupillary exam. The anterior chamber was shallow with 10 x 7 mm corneal opacity and epithelial defect, with iris prolapse from the area of rupture at 7 to 9 o'clock. Gram stain revealed septate hyphal elements. Itraconazole 100g/cap, one capsule once a day and hourly Natamycin eye drops as well as 1.5% Levofloxacin eye drops every 30 minutes were given. Intravenous Cefazolin and Gentamycin were also given empirically to prevent secondary bacterial infection. Tectonic penetrating keratoplasty under general anesthesia was done.

Results: The study of corneal button yielded findings consistent with fungal keratitis. Post-operative intraocular pressure spike was noted, hence, managed with oral and topical anti-glaucoma medications. Patient eventually improved and recovered, hence, discharged with topical and oral medications and was monitored at the out-patient department.

Conclusions: Due to the delay in the initiation of appropriate treatment brought about by delayed recognition of the disease, a complication of ruptured cornea occurred and ended up with a surgical intervention. Appropriate management and timely initiation of treatment are crucial in the management of mycotic keratitis.

Tear Film and Conjunctival Epithelium Changes After Diquafosol Sodium and Methylcellulose Eye Drop Administration in Primary Glaucoma Patients

*First Author: Havriza **VITRESIA***
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Purpose: Glaucoma patients need topical anti-glaucoma eye drops to control eye pressure. Long-term use of glaucoma medication causes ocular surface and tear film changes. Dry eye is one of the most common complaints of glaucoma patients with topical anti-glaucoma medication. Topical anti-glaucoma medication contains benzalkonium chloride as a preservative that causes squamous metaplasia in the conjunctival epithelium and affects the number and density of goblet cells, which in turn will affect the tear film and cause Dry Eye Disease.

Methods: This was an unpaired comparative analytic study with a cross-sectional design. The samples were primary glaucoma patients who used topical anti-glaucoma for one month to 2 years. Thirty-six participants were recruited and divided into 2 groups, and each received diquafosol sodium and methylcellulose eye drops. Ferning and impression cytology tests were conducted before and 2 weeks after artificial tear administration.

Results: This study showed that 86.1% of the samples with primary glaucoma had an Ocular Surface Disease Index (OSDI) value of >13. Abnormal Ferning test results were observed in 30.6% of patients and grade 3 impression cytology was found in 58.3% of patients. Diquafosol sodium improved Ferning and impression cytology results statistically significantly, meanwhile, methylcellulose only improved Ferning test results.

Conclusions: Diquafosol sodium and methylcellulose administration can improve epithelial morphology, increase tear film volume, stimulate mucin production by conjunctival goblet, and subsequently improve dry eye signs and symptoms.

Tear Film and Patient Characteristics as Predisposing Factors of Medication Overuse

*First Author: Shu-wen **CHANG***
*Co-Author(s): Wan-lin **WU***

Purpose: To investigate tear film and patient characteristics as predisposing factors of medication overuse in dry eye patients.

Methods: This retrospective cross-sectional investigation included 5,332 individuals diagnosed with dry eye between August 2015 and June 2021. Participants who applied at least a single artificial tear (AT) drop per hour were categorized as excessive users (EU, N=160), while those who used AT fewer than 4 times daily were classified as regular users (RU, N=5,172). Disparities in characteristics, self-reported

symptoms, and tear-related parameters including the severity of corneal staining (SPK) and FTBUT, count of expressible meibomian glands (MGE), the thickness of the lipid layer (LLT), meibography, and blink patterns were assessed. Subsequent comprehensive dry eye assessments were planned for follow-up at the 3-month mark.

Results: There was no difference in age and sex distribution between EU and RU. EUs had significantly higher symptom scores (p<0.001), more total blinks (p=0.001), lower Schirmer scores (p=0.002), higher SPK grade (p=0.001), shorter TBUT (p=0.026) and higher limbal redness score (p=0.003) than RUs. However, there was no difference in LLT, MGE, and meiboscale. The compliance rate in the follow-up examination was significantly higher in the EU group than in the RU group (p<0.001). Patients with better compliance and a Schirmer score of ≤3 mm had odds ratios of 4.077 and 1.653 in becoming EUs.

Conclusions: Mediation overuse accounted for 3.2% of moderate to severe dry eye patients. Patients with a baseline Schirmer score of ≤3 mm and better compliance were at higher risk of medication overuse.

The Effect of Using Contact Lens Type Amniotic Membrane in Patient With Moderate to Severe Dry Eye Disease

*First Author: Hong Kyun **KIM***
*Co-Author(s): Kyoungmin **KANG**, Che Gyem **YAE***

Purpose: To report the clinical efficacy of amniotic membrane contact lenses in patients with moderate to severe dry eye syndrome.

Methods: Before and after using the amniotic membrane contact lens procedure, ocular surface staining score (OSS), tear breakup time (TBUT), Schirmer test, and ocular surface disease index (OSDI) were evaluated at one week, one month, and three months.

Results: The OSS improved significantly from 4.88 ± 0.35 before the procedure to 1.86 ± 0.69 at one week, 3.67 ± 1.03 at one month, and 2.67 ± 1.21 at three months. TBUT improved from 1.71 ± 1.50 seconds before the procedure to 7.20 ± 2.49 seconds at one week, 3.33 ± 1.53 seconds at one month, and 3.75 ± 1.89 seconds at three months, with significant improvement observed only at one week. The Schirmer test and OSDI were 7.20 ± 2.49 mm and 79.48 ± 17.02 points, respectively, before the procedure, and although improvement was observed after the procedure, no significant difference was found. The contact lenses were maintained for an average of 6.00 ± 1.41 days after the procedure, with five cases showing proper positioning, two cases showing partial dislocation, and one case experiencing spontaneous dislocation at the one-week follow-up.

Conclusions: Amniotic membrane contact lenses are expected to be an effective treatment option for moderate to severe dry eye syndrome, as they can be conveniently applied in an outpatient setting.

The Impact of Second-Hand Smoking on Dry Eye Prevalence and Severity: A Population-Based Study in Hong Kong

*First Author: Kendrick **SHIH***
*Co-Author(s): Anakin **LAI**, Kin Pong **LAU**, Po Yin **WU***

Purpose: Smoking is an eye irritant which may cause dry eye in the patient, but only a few studies highlight the impacts of passive smoking (second-hand smoking) on dry eye. This study aims to investigate the impacts of passive smoking on dry eye prevalence and severity.

Methods: This is a cross sectional random population-based study on Chinese subjects aged 50 and above between the 1st of September 2021 to the 31st of August 2022. Patients underwent comprehensive dry eye assessment in order from least invasive to most invasive, including dry eye questionnaire (OSDI score), Non-invasive keratographic tear breakup time, tear meniscus height, tear breakup pattern, SMTube, NEI cornea staining score. The definition of dry eye was adopted from the Asia Dry Eye Society.

Results: Of 578 patients recruited, 88 had dry eye disease (15.2%), and second-hand smoking exposure was documented in 44 participants (7.61%). The average age was 62.8, and 209 were male (36.2%). OSDI score was found to be significantly higher in participants affected by passive smoking in both univariate (OR=4.75, CI95=1.20-8.29, p=0.009) and multivariate logistic regression (OR=7.21, CI95=2.59-11.84, p=0.002). The odds of developing dry eye disease were also significantly higher in participants with passive smoking in both univariate (OR=1.07, CI95=0.36-1.73, p=0.002) and multivariate analysis (OR=1.45, CI95=0.60-2.28, p<0.001). Linear regression did not show any correlation between the risk of dry eye and the duration of second-hand smoke exposure.

Conclusions: Our study showed that individuals with frequent second-hand smoke exposure were more likely to have dry eye disease.

The Outcome of Treatment of Infectious Keratitis in Inpatients of Ophthalmology Department of the First Central Hospital

*First Author: Undarmaa **TUMURBAATAR***

Purpose: Infectious keratitis is a disease caused by inflammation, infection, and other ocular damage to the outer and other deep layers of corneal epithelium. It is a major cause of monocular blindness and visual disability worldwide, regardless of age and gender. Therefore, we aimed to determine the clinical features and risk factors of infectious keratitis among

Mongolians, identify the causative microorganism, and compare them with the treatment results.

Methods: We collected data from 149 diagnosed with infectious keratitis at the Ophthalmology Department of the First State Central Hospital in 2017-2020 and used a case series model of descriptive study. Statistical analysis was calculated using Stata14 software.

Results: The majority of patients in our study were male, with a male-to-female ratio of 2.1:1. The risk factors of infectious keratitis were categorized, and eye injury-induced keratitis accounted for the highest percentage of 38.3% (n=57), with the majority being men 73.7% (n=42) (p=0.028). As for the type of treatment, antibacterial drugs 103 (69.1%) and evisceration 27 (45%) predominate.

Conclusions: Our study shows that the majority of infectious keratitis in Mongolia is due to trauma in male patients. Forty-five percent of all surgeries involve evisceration surgery, which reduces the client's quality of life.

The Price of Being a Fashionista

*First Author: Julianne **CHAM***

Purpose: This is to report a case of a 23-year-old female on Rituximab for multiple sclerosis who wore contact lenses for approximately 10 hours and incurred a corneal abrasion on both eyes upon removal. This case emphasizes to the general public the importance of properly fitted FDA-approved contact lenses.

Methods: This case report makes use of proper history taking and physical examination of the patient to arrive at a diagnosis.

Results: A 23-year-old female who initially presented with bilateral eye pain, on Rituximab for her multiple sclerosis, used contact lenses the day prior to consult. The patient noted abrupt bilateral eye pain after the removal of contact lenses that was accompanied by eye redness and tearing in both eyes, with no associated blurring of vision. The patient sought consultation at the ER, where fluorescein staining showed a ring-like uptake at the peripheral 5-6mm on the right eye and a central 5-6mm uptake on the left eye. She was started on antibiotics, lubricants, and bandage contact lenses. After periodic follow-ups, the abrasion healed.

Conclusions: While the use of contact lenses for cosmetic purposes poses little threat, it is important to counsel our patients about side effects they might experience with their use, especially if they are taking medications that have certain side effects like that of dry eyes, or if they bought the contact-lenses from a store with questionable safety standards. Further examination also revealed that her cornea was flat so we would suggest proper fitting of contact lenses should be done to avoid injuries.

The Unfortunate Dual Following Pterygium Excision

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*Co-Author(s): Maimunah **ABDUL**, Azlina **MOKHTAR**, Nurfarah Diba **SAIDI**, Suriana **SUAIBUN***

Purpose: To report a case of multiple complications following pterygium excision with conjunctival graf: host's conjunctival granuloma and recurrence of pterygium.

Methods: Case report.

Results: A 28-year-old gentleman with underlying psoriasis was under Ophthalmology Clinic follow-up for bilateral pterygium. He successfully underwent an uneventful Right Eye (RE) pterygium excision with a conjunctival graft. Postoperatively, he was prescribed topical corticosteroid and antibiotics. At 5 weeks post-operation, the presence of granuloma at the host site measuring 6.2mm x 3.6mm was noted. He was prescribed an ointment steroid and antibiotics in addition to the previous post-operative medications. During subsequent visits, the granuloma responded to the prescription given, and its size was reduced. After two months of medical treatment, the granuloma fully resolved, but unfortunately with evidence of recurrence of RE pterygium measuring 1mm from the limbus. 6 months later, his recurrence pterygium is stable in size with good, corrected vision.

Conclusions: This case illustrates multiple complications that can occur in one patient following pterygium excision with conjunctiva graft. Besides the recurrence of pterygium, he developed a rarer complication: granuloma at the host site. Fortunately, his granuloma resolved with medical management alone while some may need surgical excision of the granuloma.

Therapeutic Efficacy of Topical Placental Extracts Eyedrops Compared With Peripheral Blood Serum Eyedrops in Mice With Experimental Alkali Burn

*First Author: Hyeon-jeong **YOON***
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Purpose: To evaluate the therapeutic effects of placental extracts (PE) eyedrops compared with peripheral blood serum (PBS) eyedrops in mice with experimental alkali burn.

Methods: Chemical alkali burn was induced in C57BL/6 mice by the application of NaOH at the cornea. Mice were divided into five groups: untreated, NaOH, 0.5% carboxymethylcellulose (CMC)-treated, PBS-treated, and PE-treated groups. Area and diameters of corneal epithelial defects and corneal haze scores were measured at 3 and 7 days. After corneal tissues were excised at 7 days of treatment, transforming growth factor beta (TGF-β) was analyzed using enzyme-linked immunosorbent assay.

Results: Compared with the NAOH group, all treatment groups (CMC, PBS, and PE) showed an improvement in the area and density of corneal epithelial defects, and corneal haze score at 3 and 7 days of treatment. Compared with the CMC group, only PE groups showed decreased area of corneal epithelial defects. There was no difference in TGF-β levels among CMC, PBS, and PE-treated groups.

Conclusions: Topical PE eyedrops could decrease corneal wounds induced by alkali burn equivalent to topical PBS eyedrops.

Topical Insulin in Normal Saline Stability Study: Short-term Physical, Chemical and Microbiological Stability Study of 0.5 Unit (25IU/ ML) Topical Insulin in Normal Saline

*First Author: Mae Lynn **BASTION***
*Co-Author(s): Azura **ABDUL GHANI**, Wan Haslina **HALIM**, Birinder **KAUR**, Mazlina **MOHD SAID***

Purpose: Topical insulin at 25IU/ml (TI) is effective in normalizing healing of debrided cornea epithelium after vitreoretinal surgery, and for dry eye in diabetics. Hence we determined the physicochemical stability and sterility of TI in normal saline in eyedrop formulation.

Methods: The physicochemical stability of TI ophthalmic formulation in normal saline stored at 5°C ± 3°C and 30°C ± 2°C was studied. Samples were put in a condition of simulated use and analyzed weekly for stability parameters, including visual inspection, turbidity, UV spectral absorption, osmolality, and pH. A force degradation study was conducted by exposing the sample to a high temperature (70 ◦ C for 24 h) to exclude the potential formation of aggregates and fragments due to degradation. Insulin was quantified by stability-indicating high-performance liquid chromatographic method with diode-array detection (HPLC/DAD) using RP-C18 column, o-nitrophenol as an internal standard and UV detection set at 214 nm. The level of stability was set according to BP where concentration ranged between 90 and 110% of the initial concentration (including the limits of a 95% confidence interval of the measures) is considered as acceptable.

Results: All tested physicochemical parameters remained stable for one month in both conditions and no impact of potential temperature rises was observed on TI concentrations.

Conclusions: TI in normal saline is stable and can be prescribed to diabetic patients for corneal epithelial defects and dry eye, with a one-month shelf life.

Topographic Corneal Parametric Changes in Newly Diagnosed VKC Patients That Predict Keratoconus Development

*First Author: Ranjitha **KC***

Purpose: To study the various topographic parameters which aid in the diagnosis of subclinical and frank keratoconus in VKC patients.

Methods: This cross-sectional study conducted at a tertiary care center included 60 newly diagnosed cases of VKC with Scheimpflug-based corneal topography for topographic abnormalities and early keratoconus based on belin ambrosio enhanced ectatic display. best correct visual acuity, slit lamp examination, fundus examination and corneal topography were done in all patients, parameters like k1 and k2 and k max and thinnest pachymetry, front elevation and back elevation, astigmatism and bad score.

Results: A total of 60 patients,118 eyes were included in the study. The majority age group was between 6 to 15 years. Among the study eyes k max>47 was seen in 20 eyes, Sim k astigmatism >1.5d in 21 eyes and thinnest pachymetry <480 in 29 eyes, Front elevation >12microns in 14 eyes, back elevation>20 microns in 18 eyes, and BAD score of >2.6 in 20 both eyes of patients.

Conclusions: Though the incidence of keratoconus is proven in VKC patients, the incidence of subclinical keratoconus needs to be picked up in the early stages to prevent progression into frank keratoconus using corneal topographic parameters as a screening tool.

Trephinated Intrastromal Lenticule Implantation With Simultaneous Collagen Crosslinking for Advanced Keratoconus Cornea

*First Author: Olesia **ZIIATDINOVA***

Purpose: To present a clinical case with advanced-stage ecstatic cornea which was treated by intrastromal lenticule implantation with simultaneous crosslinking.

Methods: The man, 35 years old, has OD keratoconus stage 2-3. The left eye has advanced-stage 4 keratoconus disease. VIS OS 0.02 no answer for manifest refraction. The steepest K reading is 69.6 D, Pentacame astigmatism 1.3 D, and thinnest pachymetry 403 mkm. The lenticule of -10 diopters was created from donor cornea with SMILE regular procedure. The central hole with 3.5 mm in diameter was done by mechanical trephination. The trephinated lenticule was soaked in a riboflavin 1% solution and became yellow in color. The intrastromal pocket was created inside the patient's cornea, trephinated lenticule then implanted inside the pocket, centered related to the pupil. High-speed UV collagen crosslinking then was the following step.

Results: 1-month postop data: the peripheral corneal thickness increased up to 595 mkm. The K max

decreased to 68.6 The vision after 1 month postop 0.16 with pin hole 0.3.

Conclusions: Trephinated lenticule implantation with simultaneous collagen crosslinking improved corneal stability in case of advanced keratoconus.

Unearthing the Uncommon: Sporotrichosis Strikes the Unexpected!

*First Author: Nurul **AZMI***
*Co-Author(s): Rona Asnida **NASARUDDIN**, Wan Radziah **WAN NAWANG***

Purpose: To report a rare case of ocular sporotrichosis in a healthy individual.

Methods: Case report.

Results: A 5-year-old healthy boy presented with swelling and redness over his right upper eyelid for the past four months. He was initially brought to a general practitioner by his mother and was diagnosed with an insect bite. He was given multiple courses of topical antibiotic, however, symptoms worsened. He was then referred to an ophthalmologist for further investigation and expert opinion. Other than the eye lesion, the patient also complained of a lesion over the right cheek and left arm for one month. Otherwise, no other systemic symptoms such as fever, loss of weight, and loss of appetite. Upon examination at the eye clinic, bilateral eye vision (BEV) was 6/6 with no relative afferent pupillary defect. The right upper eyelid was erythematous with a crusted lesion seen near the eyelid margin. Otherwise, the anterior chamber was quiescence, and other findings were unremarkable. Bilateral fundus were normal. A systemic examination was done, and noted a lesion of a similar nature was present on the right cheek and left arm, respectively. The patient was then referred to a dermatologist for expert opinion, and a skin biopsy was done to investigate further. The result came back as sporotrichosis, and the patient was started with syrup itraconazole 100mg daily and topical miconazole over the lesion. After three months of treatment, the lesion disappeared and the patient was completely healed.

Conclusions: Ocular sporotrichosis is rare in healthy individuals and may mimic other common ocular diseases, making diagnosis difficult for the ophthalmologist, however early treatment initiation may lead to the complete disappearance of the lesion.

Unusual Case of Corneo Scleral Melt Treated With Scleral Patch Graft in a Patient of Scleroderma

*First Author: Leesha **JOSHI***

Purpose: To present an unusual case of corneo-scleral melt treated with scleral patch graft in a patient of Scleroderma.

Methods: Case report. A 21-year-old male with systemic scleroderma presented with a complaint of redness and a burning sensation in his left eye. The vision in the right eye was 6/9, and in the left eye was hand movement close to the face. Eyelids were thickening and tightening. Lagophthalmos was present in the left eye. In both eyes, there was a thinning of sclera. But in the left eye there was thinning of the sclera with uveal tissue exposure and associated with corneal ulcer with thinning cornea.

Results: Left eye therapeutic penetrating keratoplasty with scleral patch graft was done followed by cataract extraction. The patient was prescribed steroids, antibiotics, and lubricating agents. Due to the presence of lagopthalmos, tarsorraphy was also done in the left eye. Since the patient was on steroid and antibiotics with regular follow-up, later the patient developed a failed graft and band-shaped keratopathy in the left eye. Now the vision is perception of light only. The patient lost sight in that eye.

Conclusions: Systemic scleroderma is a progressive multisystem connective tissue disease. It is a group of rare diseases that involve the hardening and tightening of the skin. Ocular involvement includes keratoconjunctivitis sicca, progressive shallowing of conjunctival fornices, peripheral ulcerative keratitis and eyelid tightness. The ocular manifestations like scleral thinning and corneal perforation are rare but should be foreseen, investigated, and treated in patients with suspected scleroderma as the complication is grave and sight-threatening.

Visual Outcome in Patients of Manual Deep Anterior Lamellar Keratoplasty (DALK)

*First Author: Sangeeta **KALITA***

Purpose: To evaluate the visual outcome of patients undergoing manual DALK (Deep Anterior Lamellar keratoplasty) by a single surgeon in a tertiary care center in northeast India.

Methods: This was a retrospective cross-sectional study of fifteen eyes of fifteen patients which included twelve patients of advanced keratoconus (healed hydrops), one of macular corneal dystrophy, and one of post-chemical injury corneal scarring in the duration of July 2020 to July 2022, with a follow-up of minimum one year. All underwent manual DALK with layer-by-layer dissection by a single surgeon. Pre and postoperative best-corrected visual acuity, astigmatism, keratometry, ASOCT and complications, if any, would be analyzed.

Results: Mean BCVA preoperative was 0.99 and postoperative was 0.49 in LogMAR, with a p-value of 0.002+/-0.25and astigmatism pre and postoperative was -4.79 and -3.52 respectively with a p-value of 0.031+/-1.73. Hence, post-operative mean BCVA and astigmatism were found to be better and statistically significant. Keratometry K1 and K2 were statistically

significant in the pre and postoperative periods. The mean K1 in the preoperative period was 61.25 and the postoperative period was 56.03 with a p-value of 0.001, which was statistically significant. The mean K2 in preoperative was 63.29 and postoperative was 59.46, and the p-value was 0.014, which was statistically significant. The mean sphere was found not to be statistically significant. ASOCT post-op revealed a demarcation line between host DM and grafted stroma.

Conclusions: This is the largest series of DALK done manually by a single surgeon using the layer-by-layer dissection method with a good visual outcome in 73.3% of the patients in north-eastern India.

Visual Rehabilitation and Quality of Life With Corneoscleral Lens in Patients With Irregular Astigmatism

*First Author: Neethu **DANIEL***
*Co-Author(s): Jagadeesh Kumar **REDDY**, Vandhana **SUNDARAM***

Purpose: To assess the improvement in visual acuity achieved with corneoscleral contact lenses in patients with irregular astigmatism.

Methods: A detailed ophthalmological evaluation followed by the selection of the first trial lens based on corneal profile and fitting evaluation done. The lens trial was done for a total of 3 visits, by checking the fitting of the lens for a duration of 8 hours of contact lens wear on each visit and evaluated every 2 hours while in hospital before finally dispensing the lens. Patient satisfaction and wearing time were retrieved using the Contact Lens Impact On Quality of Life (CLIQ) questionnaire, given to patients on day 1, 1 month, and 6 months to be filled.

Results: Thirty-two eyes of 24 patients were analyzed; their ages ranged from 15-60 years. Statistically significant improvements were found in the best-corrected vision from before fitting to the visual acuity after fitting ($p<0.001$). The number of visits to achieve the correct fit of the lens increased with higher keratometry values. The mean comfortable wear time of the lens was 10.3 +1.61 hours per day. No statistically significant adverse changes developed in the corneas over this period.

Conclusions: Corneoscleral contact lenses will be an effective option, providing good visual acuity and optimal visual quality in patients with irregular astigmatism.

XENIA Implant - A Novel Treatment for Keratoconus - 4 years UK Experience

*First Author: Balasubramaniam **ILANGO***

Purpose: The management of keratoconus and post-LASIK ectasia can be challenging. Often these patients have poor unaided and aided vision; they are often spectacle & contact lens intolerant. We describe a form of SLAK using a XENIA™ Lenticule - a novel biocompatible corneal lenticule of highly purified corneal collagen fibers of porcine origin.

Methods: A total of 15 eyes of 14 patients have undergone the procedure.12 eyes with keratoconus and 3 with post-LASIK ectasia. A custom corneal stromal pocket of 100 to 160µm depth and 8.7mm diameter was created with a 3.7 mm access port using an Intralase femtosecond laser. A 120µm thick (initial 6 patients, 80 microns thick for 3 patients and 45 microns thick Xenia for 3 patients), 7.2/8 mm diameter Gebauer™ lenticule was implanted into this stromal pocket though the 3.7 mm port. No sutures were used. Pre and post-operative topography, pachymetry, and intraocular pressures were recorded as well as aided, unaided, and corrected vision.

Results: Following implantation of the lenticule, the average corneal thickness was increased from 401µm to 513µm. Average optical k readings were not statistically altered (51.4 D vs 51.5D). Anterior corneal astigmatism decreased from 7.4 D to 2.0 D. Unaided vision improved from 1.74 LogMar to 1.54 LogMar.

Conclusions: The XENIA Implant - two years results seem to be very promising in stabilizing keratoconic and post-LASIK ectasia eyes. Whether the epithelium is off or on does not seem to make any difference. The Deeper the femtosecond pocket, the better the flattening of the postoperative keratometry values.

Glaucoma

A Case Series and Literature Review: Outcomes of Surgical Management of Glaucoma Drainage Device Tube Exposure

*First Author: Nutnicha **NETI***
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Purpose: To present a case series of patients who underwent surgical repair for glaucoma drainage device (GDD) tube exposure and to conduct a comprehensive literature review to analyze various surgical techniques and their corresponding outcomes.

Methods: This study provides the details of GDD tube exposure repair at our hospital. Additionally, a comprehensive literature review was conducted using electronic databases including EMBASE, MEDLINE, and CENTRAL. Data extraction and analysis encompassed demographic information, surgical techniques, outcomes, and follow-up duration.

Results: We reported nine cases of GDD tube exposure repair, with an additional 109 cases from 24 previously published studies. One of our challenging cases encountered multiple tube revision failures by

the patch graft technique, the exposure issue was sustainably resolved by a hinge scleral flap with the buccal mucosa graft technique. Of all 118 cases, various surgical techniques were utilized, including patch grafts, hinge scleral flaps, primary conjunctival closure, rerouting, and buccal oral mucosa grafts. Among the cases, 61.6% were classified as difficult cases. The overall first, fifth, and thirteenth-year survival rates were 90.7%, 86.2%, and 86.2%, respectively. Rerouting and scleral flap/tunnel techniques demonstrated the highest survival rate. There were no statistically significant differences in survival outcomes observed among all methods (P = 0.547). The mean survival duration was 33.54 months. Follow-up duration was 35.01 months.

Conclusions: Surgical management of GDD tube exposure yields favorable outcomes. A hinge scleral flap with buccal oral mucosa grafts can serve as a good choice to deal with challenging cases. The findings can shape an algorithm managing GDD tube exposure.

A Non-penetrating Deep Sclerectomy (NPDS) as an Initial Surgery for Primary Congenital Glaucoma (PCG)

*First Author: Abdullah **KHAN***

Purpose: To show the outcomes of NPDS as an initial surgery in primary congenital glaucoma (PCG) patients. Explaining the rationale of being the preferred initial glaucoma surgery among trained ophthalmologists in the country with the second highest incidence of PCG worldwide.

Methods: A brief review of the current literature about NPDS to show its pros and cons. Demonstrate the surgical challenges and advice to perform this surgery.

Results: The published data on NPDS in our population showed the effectiveness and safety of NPDS with an overall success rate of 82.4% over the follow-up of 35.8 months.

Conclusions: We support managing primary congenital glaucoma by NPDS as initial glaucoma surgery instead of the conventional combined trabeculotomy and trabeculectomy (T&T). Due to the proven efficacy of NPDS to lower the IOP and comparable success rates, but with fewer complications when compared to T&T.

A Stitch in Time, Saves Nine: A Diagnosis in Time, Saves a Life!

*First Author: Aditi **KOCHAR***
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Purpose: When diagnosing glaucoma, ophthalmologists rely on disc findings, OCT changes and visual field defects. A misdiagnosis can result in serious consequences for the patient. Here, we present a case of glaucoma with a superimposed neurological disorder, diagnosed in time, saving the patient from the grave risk of a stroke.

Methods: A 64-year-old diabetic presented to our glaucoma outpatient department for a routine eye checkup. His best corrected visual acuity (BCVA) was 6/6 and N6 in both eyes (BE). Grade 1 relative afferent pupillary defect in RE. Fundus showed a cup disc ratio (CDR) of 0.7 in the right eye (RE) and 0.5 in the left eye (LE) with moderate nonproliferative diabetic changes in BE. His intra-ocular pressure was 12mmHg in RE and 14mmHg in LE. Visual fields showed defects in the superior and inferior temporal quadrants respecting the vertical midline in the RE, and in the LE, a superior arcuate with inferonasal defect was seen. The patient was advised to have a contrast-enhanced MRI brain.

Results: MR imaging revealed acute infarcts in the left cerebellar hemisphere with internal hemorrhages in the left occipital lobe and thalamus. The patient was immediately referred to a neurologist and was managed on a priority basis.

Conclusions: One must note that appearances can be deceptive, and what may appear like glaucoma may actually be something more sinister. A thorough workup ruling out possible neuro-ophthalmological disorders may also be required, as timely action may rescue a patient from grave complications. Thus in conclusion, a stitch in time saves nine!

AS-OCT Imaging Angle-Closure Mechanism Assessment Through Semi-supervised Clustering

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Purpose: To investigate the performance of limited label clustering algorithm in the AS-OCT imaging angle-closure mechanisms, and exploration of parameters in lens- and iris-based mechanisms.

Methods: This was a cross-sectional study conducted on 360-degree AS-OCT examination of 289 angle-closure patients. Out of the 4006 images, 108 images were labeled to identify angle closure mechanisms, which included open-angle, iris-based mechanisms (plateau iris configuration and thick peripheral iris roll), and lens-based mechanisms (pupil block and exaggerated lens vault). These labeled images served as the basis for KNN clustering. Correlation and drop-out methods were used in the variable selection process, and the corresponding parameters of each resulting group were then assessed through an unpaired t-test to further examine the performance. Statistically significant was considered at the level of $P < 0.05$.

Results: Among the patients examined, the semi-supervised clustering model utilized 108 labeled images as clustering references and achieved an accuracy of 0.76. Among the three resulting groups

(open-angle, iris-based mechanism group, and lens-based mechanism group), iris thickness (IT750) and anterior chamber depth (ACD) were found to be significantly larger in the iris-based mechanism group, while iris curvature was smaller. Lens thickness (LT) and lens volume (LV) were significantly higher in the lens-based mechanism group.

Conclusions: Using a small number of labels, the clustering algorithm was able to classify the angle-closure mechanisms of AS-OCT images with relatively acceptable accuracy, while exhibiting distinct differences in iris and lens parameters. Such an approach may provide quantified supplementary information for the angle-closure diagnosis and treatment plan while reducing the cost of data and model updating.

Ab-Externo Gonioscopy-Assisted Transluminal Trabeculotomy in Primary Congenital Glaucoma

*First Author: Sreyneang **SIM***

Purpose: To report a case of ab-externo gonioscopy-assisted transluminal trabeculotomy (GATT) in a patient with primary congenital glaucoma.

Methods: An observation of post-operative intraocular pressure in a seven-year-old girl who presented with buphthalmos and elevated intraocular pressure. Despite the presence of iris and iris processes extending to Schwalbe's line, ab-externo was performed successfully.

Results: The post-operative intraocular pressure was successfully archived in 3 months of follow-up without additional glaucoma medication.

Conclusions: Ab-externo GATT may be successful with primary congenital glaucoma especially when angle structures are not initially visible.

Age-Related Changes in Axonal and Glial Integrity of the Optic Nerve in the DBA/2J Mouse Model of Chronic Glaucoma

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Purpose: Although elevated intraocular pressure (IOP) and age are major risk factors for glaucoma, their effects on the neurodegenerative events in the visual pathway remain unclear. This study examined the age-related axonal and glial changes in the optic nerve of the DBA/2J mouse model of spontaneous chronic glaucoma.

Methods: Ten DBA/2J mice and 8 wild-type C57BL/6J mice were sacrificed at 5, 7, 9, and 12 months old (mos), and the prechiasmatic optic nerves were harvested for immunohistochemistry. Tonometry was performed binocularly before animal sacrifice. Phosphorylated neurofilament (pNF) and myelin basic protein (MBP) staining were used to evaluate axonal and myelin integrity. We also examined the cell infiltration, astrocytic reactivity, inflammatory activity, and Tau accumulation by acquiring confocal stitched series of the optic nerve sections labeled with 4',6-Diamidino-2-phenylindole (DAPI), anti-glial fibrillary acidic protein (GFAP), ionized calcium-binding adaptor molecule-1 (Iba1), and anti-Tau staining, respectively, across age.

Results: In the DBA/2J mice, increasing IOP elevation at 9 and 12 mos generally concurred with increasing severity of neurofilament loss, myelin damage, inflammation, and tauopathy in the visual pathway across age, whereas age-matched C57BL/6J mice only showed modest age-related changes.

Conclusions: The occurrence of defects in the visual pathway of DBA/2J mice generally coincided with a significant elevation of IOP, while continued high IOP was accompanied by increasing disease severity as the mice aged. Our findings demonstrate the interplay of age and IOP with the pathophysiological brain changes in experimental chronic glaucoma, and suggest the need to examine the visual system comprehensively for more effective and targeted vision preservation.

Anterior Segment Optical Coherence Tomography (AS-OCT) and Ocular Biometry in Various Subtypes of Primary Angle Closure Disease

*First Author: Vidya **CHELERKAR***
*Co-Author(s): Shilpa **DIKE***

Purpose: To study the AS-OCT parameters and ocular morphology using A scan biometry (IOL master) in patients in various subtypes of Primary Angle Closure Disease (PACD) and correlate these with the clinical presentation of the disease.

Methods: This was a prospective observational cross-sectional study where newly diagnosed patients of Primary Angle Closure Disease with grade 2 narrow-angle by Schaffer's grading system and 270 degrees of irido-trabecular contact were included. 200 eyes were classified based on ISGEO classification into 4 subgroups, Primary Angle Closure Suspects (n=121), Primary Angle Closure (n=30), Primary Angle Closure Glaucoma (n=42), and Acute Angle Closure (n=7). AS-OCT and IOL master was performed in all patients. Laser peripheral iridotomy was done and patients were followed up for 12 months. Depending on IOP, angle, and lens status, further need for anti-glaucoma medications, cataract extraction, or combined cataract extraction with trabeculectomy was decided.

Results: Eyes with acute primary angle closure crisis group had the narrowest angles, thickest iris, and largest lens vault. There was no significant difference in ASOCT and IOL master findings of primary angle closure and primary angle closure glaucoma groups.

Pairwise comparison by Tukey's test showed lens vault (LV), iris thickness at 750µm (IT 750), angle opening distance (AOD), and trabecular iris space area (TISA) are important variables that were associated with acute primary angle closure.

Conclusions: Primary angle closure suspect eyes have a more spacious anterior chamber and widest anterior chamber angle parameters compared with the other subgroups. The important variables associated with acute angle closure crisis were LV, IT750, AOD, and TISA.

Association Between Parapapillary Microvasculature Dropout and Central Retinal Vessel Trunk in Primary Open-Angle Glaucoma

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Purpose: To investigate the association between the microvasculature dropout and the central retinal vessel trunk in primary open-angle glaucoma eyes.

Methods: In total, 112 eyes of 112 patients with primary open-angle glaucoma were included. Matched 26 no microvasculature dropout eyes and 26 microvasculature dropout eyes, they had similar axial length and global retinal nerve fiber layer thickness. The central retinal vessel trunk shift index was calculated as the distance of the central retinal vessel trunk from the Bruch membrane opening center relative to that of the Bruch membrane opening border. The correlation between the presence, extent, and location of microvasculature dropout and the displacement extent and location of the central retina vessel trunk was analyzed.

Results: The central retinal vessel trunk shift index differed significantly between the 2 matched groups. Multivariate logistic analyses showed that in 112 eyes from 112 patients, eyes with microvasculature dropout were significantly associated with a larger shift index than eyes without microvasculature dropout. The angular circumference of microvasculature dropout was significantly associated with adjusted shift index (a linear mixed model was constructed, excluding the influence of axial length and global retinal nerve fiber layer thickness on shift index). The location of the microvasculature dropout and central retinal vessel trunk contralateral were significantly correlated.

Conclusions: In primary open-angle glaucoma eyes, microvasculature dropout and the central retinal vessel trunk were significantly correlated. Because the central retinal vessel trunk represents the structural stability of the lamina cribrosa, microvasculature dropout seems to correlate with lamina cribrosa's structural stability.

Association of Metformin Use and Risk of Glaucoma Among Diabetes Mellitus: A Systematic Review and Meta-analysis

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Purpose: Glaucoma is a significant risk factor for Diabetes Mellitus (DM). Metformin, an oral insulin-sensitizing drug of the biguanide class, is the most widely used and first-line treatment for DM. Recent studies indicate that metformin might play a protective role against glaucoma. Therefore, we aim to explore metformin use in lowering the risk of glaucoma.

Methods: Following the PRISMA 2020 guideline, we performed a systematic review by searching three databases: EBSCOHost, PubMed, and Proquest databases. We searched for studies that determine the association of metformin among DM patients and the risk of glaucoma compared to non-metformin users. The Newcastle-Ottawa Scale (NOS) was used to assess the quality of studies. We use Review Manager 5 to perform the statistical meta-analysis.

Results: Five studies were included in our meta-analysis, consisting of four cohort studies and one cross-sectional study. It involved a total of 432,036 participants. Our study revealed that participants treated with metformin had a lower risk of glaucoma in comparison to those not receiving metformin treatment (OR 0.57, 95% CI 0.34-0.94, P= 0.03). The non-metformin users include sulfonylurea, thiazolidinedione, meglitinide, glitazones, GLP-1 analogues, DDP-IV-inhibitors, α-glucosidase inhibitors, and insulin.

Conclusions: Metformin as an anti-diabetic agent is associated with a lower risk for glaucoma compared to other diabetic agents among DM patients. Further studies are needed to assess the protective effect of metformin in specific types of glaucoma.

Aurolab Aqueous Drainage Implant (AADI) Implantation: Evaluating Graft-Free Short Tunnel Flap vs. Scleral Patch Graft Approaches

*First Author: Bipul Kumer De **SARKER***
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Purpose: To compare the outcomes of the graft-free short tunnel flap (STF) technique with that of the scleral patch graft (SPG) in Aurolab aqueous drainage implant (AADI) implantation.

Methods: This was a comparative interventional study of 110 eyes of 100 patients with medically uncontrolled glaucoma, including 60 in the STF group and 50 in the SPG group. Patients were enrolled and assigned randomly to STF or SPG. The outcome measures were tube exposure, intraocular pressure (IOP), number of glaucoma medications, best-corrected visual acuity,

surgical complications, and success rate (defined as IOP >5 mmHg, ≤21 mmHg, and IOP reduction ≥20% from baseline at 2 consecutive visits after 3 months).

Results: The cumulative probability of success during the first year of follow-up was 85% in the STF group and 80% in the SPG group (P = 0.54). The final IOP decreased significantly from baseline and was comparable between both groups (P = 0.55). Postoperative complications developed in 7 patients in the STF group and 8 patients in the SPG group (P = 0.71). Only 3 patients in the SPG group developed tube exposure at 1-year follow-up.

Conclusions: The STF and SPG techniques had a comparable complication rate at the 1-year follow-up. Both techniques were comparable in terms of success rate, postoperative IOP, and glaucoma medications.

Bacillus Cereus Glaucoma Drainage Device Related Endophthalmitis: A Case Report

*First Author: Mohd Mustaqim **ZULKIFLI MARTIN***

Purpose: To report a case of Right Eye Glaucoma Drainage Device (GDD) related exogenous endophthalmitis in secondary to Bacillus Cereus in a 60-year-old male farmer.

Methods: Case report.

Results: A 60-year-old male farmer was diagnosed with bilateral eyes advanced Primary Open Angle Glaucoma (POAG) in 2020. He had a history of right eye cataract surgery complicated with nucleus drop. Pars plana vitrectomy (PPV) was done with nucleus removal and sulcus intraocular lens implantation. Post-operative intraocular pressure (IOP) was uncontrolled with maximum antiglaucoma, therefore underwent GDD insertion of Aurolab Aqueous Drainage Implant (AADI). The operation was uneventful; post-operative IOP improved from 24mmHg to 8mmHg and able to off 1 topical antiglaucoma. 10 weeks post-operation, the patient complained of right eye pain with headache for 4 days. Examination showed injected conjunctiva, granulomatous keratic precipitates over the cornea, cells in the anterior chamber with exudates surrounding the AADI tube, and vitritis. No tube or plate exposure. An intravitreal tap was done, and intravitreal antibiotic (Vancomycin & Ceftazidime) injections were given. Intravenous Ciprofloxacin with topical moxifloxacin was started. However, the vision worsened to hand movement, hence proceeded with AADI explantation, PPV, and second intravitreal antibiotic injection. Vitreous tap culture and sensitivity revealed organism Bacillus Cereus which originated from soil and topical Gentamicin was added according to sensitivity. After 1 month of treatment, significant improvement was seen with best-corrected vision of 6/24.

Conclusions: GDD-related endophthalmitis is uncommon, but early detection and treatment by GDD explantation with PPV render better visual outcomes.

Benefit of the Usage RAAS Inhibitors as the Anti-hypertensive Drugs for Patients With Glaucoma

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Purpose: Glaucoma is a significant ocular health concern that merits careful consideration due to its status as the primary cause of permanent blindness globally. The prevalence of this condition is steadily rising, particularly in the Asian region. The blood pressure exerts an influence on both the intraocular pressure (IOP) and the ocular perfusion pressure (OPP), which is the pressure that causes blood to flow to the eyeball. The importance of high blood pressure as the pathophysiology of glaucoma raises a question about which anti-hypertensive drugs will benefit against glaucoma.

Methods: RAAS has an essential role in the pathophysiology of hypertension. Components of RAAS are also found in the eye and have a role in the pathophysiology of glaucoma.

Results: RAAS inhibitor drugs like ACE-I, ARB, and AT1R antagonists have been shown to lower IOP and protect ganglion cells from apoptosis.

Conclusions: RAAS inhibitors may be used as a therapy option for glaucoma patients with hypertension as a risk factor.

Bent Angle Needle Goniotomy (BANG) Combined With Cataract Surgery: Evaluating Efficacy and Safety Across Glaucoma Spectrum

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Purpose: Minimally invasive glaucoma surgery (MIGS) is being increasingly adopted by ophthalmologists due to its effectiveness and lower risk of complications. An inexpensive alternative is the Bent Angle Needle Goniotomy (BANG), and our study evaluates its outcome in combination with cataract surgery across the spectrum of glaucoma cases.

Methods: All glaucoma subtypes with visually significant cataracts and intraocular pressure (IOP) of less than 30mmHg were included. The procedure consisted of performing goniotomy with a bent needle at the end of phacoemulsification. The value of IOP reduction and complications were studied over a 6-month follow-up period.

Results: A total of 26 eyes of 20 patients were studied (12 with open-angle glaucoma, 10 with angle-closure

glaucoma, and 4 with pseudoexfoliative glaucoma). The mean pre-intervention IOP was 18.52 ± 3.56 mmHg, which decreased postoperatively at all visits except for one week when there was a slight spike in IOP. At the last follow-up at six months, the IOP was 13.57 ± 2.92 mmHg. There was a significant decrease in the number of anti-glaucoma medications ($P < 0.005$). Eight patients experienced an IOP spike, mainly around the first week, and only two patients had hyphema, which resolved with conservative management.

Conclusions: Phacoemulsification with BANG is an effective procedure for reducing IOP and the medication burden across the spectrum of glaucoma patients. BANG Surgery is a low-cost MIGS technique that also demonstrates a favorable safety profile.

Bilateral Secondary Acute Angle-Closure Glaucoma Induced by Dietary Medicine: A Case Report

*First Author: Siti **SORAYA***

Purpose: This case report presents an approach to managing bilateral acute angle-closure glaucoma (AACG) induced by dietary medication that contains topiramate.

Methods: Case report.

Results: A 24-year-old female presented with blurry vision and discomfort in both eyes (BE) since 2 days before admission. The patient had a history of taking dietary supplements for 6 days. Initial examination showed best corrected visual acuity was 6/30 on the right eye and 6/40 on the left eye with S-4.00 correction. Intraocular pressure (IOP) was 34 mmHg on BE with ciliary injection and chemotic conjunctiva. The anterior chamber was shallow in the center and flat in the periphery. Ultrasound biomicroscopy of BE revealed thickening of the choroid, with supra-choroidal effusion. Bilateral ACCG secondary to topiramate was suspected. The patient was given topical anti-glaucoma medication, steroid eye drops, sodium diclofenac orally, and discontinuation of topiramate. Symptoms improved with VA on BE were 6/6 with S-1.00 correction and normal IOP. Topiramate is an oral medication for epilepsy, and migraine, and may be used off-label to help with weight loss. Topiramate might increase the permeability of the ciliochoroidal vasculature and cause edema of the choroid and ciliary body. This results in increased retrolenticular pressure, and pushes forward the iris-lens diaphragm. Ciliary body swelling rotates ciliary processes anteriorly, leading to angle closure. In addition, ciliary body swelling decreases zonular tension, which increases lens thickness. The anterior displacement of the lens and iris leads to myopic shift.

Conclusions: Secondary AACG due to topiramate is an ophthalmic emergency. Successful management.

Bilateral Simultaneous Acute Primary Angle Closure Glaucoma: A Remarkable Case

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Purpose: To present a rare case of bilateral Acute Primary Angle Closure Glaucoma (PACG).

Methods: A case report of a 64-year-old woman with a good outcome Acute PACG in both eyes who underwent phacotrabeculectomy surgery.

Results: A 64-year-old woman complained of acute pain in both eyes, accompanied by decreased vision, photophobia, and seeing halos for three weeks. There was no history of trauma, steroid or other systemic drugs used, or intraocular surgery before. Ophthalmologic examination revealed a right eye (RE) visual acuity of 0.1 and left eye (LE) 0.2. RE intraocular pressure (IOP) was 12 mmhg and LE: 36.4 mmHg in medication of timolol maleat ED and acetazolamide oral. Both eyes' anterior segments revealed mixed injection, corneal edema, shallow anterior chamber, posterior synechiae, mid-dilatation pupil with negative pupillary reflect, and cloudy lens without intumescent. There was a glaucomatous optic and closed iridocorneal angle on the gonioscopy. Initial treatments included oral acetazolamide and potassium aspartate 250 mg three times a day, timolol maleate ED 0.5% twice a day, and prednisolone acetate ED 1% four times a day. This patient underwent trabeculectomy, phacoemulsification, and implantation IOL in both eyes. One week after the surgeries, both eyes showed decreased IOP and good visual improvement.

Conclusions: Bilateral simultaneous Acute PACG is generally severe and results in a poor outcome. It causes rapidly progressive visual loss and is often irreversible. Phacotrabeculectomy has more benefits compared to only phacoemulsification for the intervention regarding the reduced IOP post-surgical.

Case Report of Choroidal Detachment Post Glaucoma Filtration Surgery

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Purpose: To report a case of choroidal detachment post glaucoma filtration surgery (trabeculectomy) in a high myopic patient on antiplatlet therapy.

Methods: A 74-year-old male with underlying hypertension, hypercholesterolemia, and ischemic heart disease on antiplatelet was diagnosed with bilateral eyes (BE) primary open-angle (POAG) – Right eye (RE) advanced, BE high myopia, BE pseudophakic and RE epiretinal membrane (ERM). He is also allergic to topical alpha-agonist and carbonic-anhydrase inhibitor. Pre-operatively, RE showed tunnel vision with visual acuity (VA) of 6/38, pinhole (pH) 6/12 and

intraocular pressure (IOP) of 20mmHg. Left eye (LE) VA was 6/24, pH 6/9 and showed glaucoma progression with uncontrolled IOP ranging 21-24mmHg. The patient underwent RE trabeculectomy/mitomycin C (MMC) 0.03% under local anaesthesia. Antiplatlet was withheld 5 days prior to surgery.

Results: Intraoperatively, the patient had high flow over thin scleral flap with anterior chamber shallowing requiring multiple fix sutures to secure the flap and reduce the flow. Viscoelastic was injected into the anterior chamber to anticipate overfiltration. Post operative day 1, RE VA showed perception of light, IOP 19 with fundus examination of choroidal detachment involving 270 degrees. The patient was treated with tablet prednisolone at a dose of 0.5mg/kg daily and topical Gutt Prednisolone acetate 1% to be administered every 2 hours. On post op day 4, there was resolving choroidal detachment. Subsequent follow-up, the patient was referred to the vitreoretinal (VR) team with no active VR intervention. His vision currently is slowly improving.

Conclusions: The present case report revealed that older age, high myopia, atherosclerosis, and the use of antiplatelets and anticoagulants are possible risk factors that increase the likelihood of developing choroidal detachment after trabeculectomy. We hope that this case report raises awareness to all ophthalmologists when managing similar situations.

Case Report: A Case of Iridocorneal Endothelial Syndrome with Secondary Angle Closure Glaucoma in a Male Patient in a Tertiary Hospital in Manila

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Purpose: This case report presents a case of iridocorneal endothelial (ICE) syndrome with secondary angle closure in a male patient in a tertiary hospital in Manila. As ICE syndrome occurs more in females, this is a rare case and provides an opportunity to highlight the management of this rare disease.

Methods: Case report.

Results: This is a case of a 37-year-old male who came in with a 4-month history of blurring of vision in his left eye which was described as “foggy.” The patient was eventually diagnosed as a case of Cogan-Reese Syndrome, a variant of iridocorneal endothelial syndrome, unusually seen in a male patient. The patient was able to undergo a glaucoma drainage device implantation and tube repriming. The best corrected visual acuity was eventually brought back to 20/21, with good intraocular pressure control. However, the prognosis is still guarded as the cup-to-disc ratio is already 0.8.

Conclusions: Iridocorneal endothelial syndrome is a rare unilateral syndrome that typically affects females and can cause glaucoma. We report a case of the Cogan-Reese syndrome variant of iridocorneal endothelial syndrome in a male patient. Early diagnosis, timely management, and close follow-up are paramount in preventing complications of this disease.

Case Report: Management of Acute Angle Closure Glaucoma

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Purpose: To present two case reports of acute angle closure glaucoma (AACG) and its different surgical management.

Methods: Report of two patients with acute angle closure glaucoma and its management approach.

Results: In this case report, two cases of acute angle closure glaucoma are presented. The first case was a 50-year-old woman with acute primary angle closure (APAC), and the second case was a 68-year-old woman with primary angle closure glaucoma (PACG) acute exacerbation. We planned different surgical management in these two cases based on the history and clinical features of each case. The surgical procedure was done after we gave initial therapy to lower intraocular pressure (IOP) and control the inflammation with antiglaucoma agents and topical steroid. In first case we performed trabeculectomy, meanwhile in second case we performed trabeculectomy combine with phacoemulsification and intraocular lens (IOL) implantation. The IOP was well controlled after the surgery procedure in both cases.

Conclusions: Acute angle closure glaucoma is an emergency ophthalmic condition and is very sight-threatening. Rapid and extreme increases in IOP can lead to permanent visual impairment, so timely diagnosis and appropriate management are essential to minimize vision loss. The initial therapy is to decrease IOP immediately and to control the inflammation with antiglaucoma and steroid topical agents. Then definitive therapy with laser or surgery was chosen based on its history and clinical features.

Changes in Brain Functional Connectivity and Emotional Well-being in Glaucoma Patients

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Purpose: To understand the change in emotional well-being and spontaneous resting brain activities in glaucoma patients.

Methods: Patients with primary open-angle glaucoma with preserved central vision and healthy subjects were prospectively enrolled. Whole-brain high-resolution anatomical images were obtained using a fast 3D spoiled gradient recalled (FSPGR) T1-weighted sequence and resting-state functional magnetic

resonance imaging scans using a T2-weighted gradient echo planar imaging sequence. Seed-based functional connectivity (FC) was employed to measure the linear temporal correlations between seed regions of abnormal densities in voxel-based morphometry and all other voxels within the brain. Pearson correlation was utilized to explore the relationship between altered FC and the Hospital Anxiety and Depression Scale (HADS) questionnaire scores.

Results: Eighteen healthy controls and 19 glaucoma patients were enrolled, but 6 controls and 2 glaucoma patients were excluded due to image distortion. Glaucoma patients exhibited higher HADS scores although age, sex, and educational background were comparable between groups. The voxel-wise gray matter volume was significantly smaller in glaucoma patients than control in the right lateral occipital cortex, right inferior frontal gyrus, right superior frontal gyrus, and left middle frontal gyrus, showing a negative correlation with HADS scores. The FC between the right superior frontal gyrus and left precentral gyrus was positively correlated with HADS scores, while the FC between the left middle frontal gyrus and right caudate displayed a negative correlation with HADS scores.

Conclusions: Glaucoma patients may experience both structural and functional alterations in brain regions related to emotional regulation.

Characteristics of Corvis ST Parameters in Primary Angle Closure Glaucoma

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Purpose: To compare Corvis ST (CST) parameters between healthy eyes and eyes with primary angle closure glaucoma (PACG).

Methods: Data from 38 healthy eyes and 64 eyes with and PACG, respectively, examined using CST, were retrospectively investigated. CST parameters were compared between healthy eyes and eyes with PACG using a linear mixed model (LMM).

Results: Compared to healthy eyes, eyes with PACG showed a significantly shorter axial length (AL), higher intraocular pressure (IOP), higher female proportion, deeper A1 deformation amplitude, shorter A2 time, deeper A2 deformation amplitude, shorter HC length, shorter peak distance (PD), and longer whole eye movement.

Conclusions: Eyes with PACG demonstrated higher IOP, more corneal concavity, and lower shock absorption characteristics.

Clinical Outcomes of Seven Minimally Invasive Glaucoma Surgeries in Moderate to Severe Glaucoma

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Purpose: To evaluate the safety and efficacy outcomes of seven minimally invasive glaucoma surgery (MIGS) devices, performed by a single glaucoma fellow within a training program.

Methods: Retrospectively reviewed 35 eyes receiving phacoemulsification with Hydrus, iStent, OMNI, STREAMLINE, iAccess, Kahook Dual Blade (KDB), or SION surgery (all n=5). Changes in intraocular pressure (IOP) and number of antiglaucoma medications (AGMs) from baseline were evaluated with paired sample t-tests.

Results: In Hydrus, iStent, OMNI, STREAMLINE, iAccess, KDB, and SION eyes, IOP was clinically reduced (by 14%, 4%, 20%, 14%, 8%, 21%, 11%) and AGMs were significantly reduced (by 71%, 88%, 67%, 50%, 100%, 56%, 38%), with no vision-threatening complications observed for up to 6-months. A high percentage of eyes (60%, 80%, 100%, 60%, 80%, 80%, 80%) achieved/maintained an IOP <17 mmHg.

Conclusions: Each MIGS procedure combined with phacoemulsification provided adequate IOP control and significant AGM burden reductions in eyes with moderate to severe glaucoma.

Clinical Profile and Management of Traumatic Glaucoma

*First Author: Vidya **CHELERKAR***
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Purpose: To assess the clinical features, management strategies, and outcomes in patients with traumatic glaucoma.

Methods: Prospective observational study of 100 patients with blunt and penetrating ocular trauma with IOP more than 21 mm Hg with or without disc damage. They underwent detailed clinical examinations and were given standard medical care. Surgical interventions were performed wherever indicated. Patients were followed up for 1 year noting the IOP and vision.

Results: The average age of patients was 38.01±17.42 years. Injury with blunt objects was the most common mode of trauma, seen in 84% of patients, and penetrating and chemical injury was seen in 16% of patients. Diminution of vision was the most common complaint. Only 42% of patients reported within 1 week of injury. 40 % patients had IOP between 20-30mmHg at presentation and 40 % had IOP >30mmHg. Iritis, hyphema, pupil affection, and cataracts were common. Angle recession was found in 15 % pts.

Retinal detachment and vitreous hemorrhage were the important posterior segment complications. Medical therapy was the primary mode of management in 85% of patients. Trabeculectomy was required in 12 % of patients. Other interventions required were corneal tear repair, vitrectomy, and cyclocryotherapy. 63% of patients showed significant improvement in vision, while 37 % had vision less than 6/60. 99% of patients had IOP ≤20 mm Hg at the end of 1 year (p=0.0001). Anti-glaucoma medications were required in some patients for long-term pressure control. No resurgery was done among patients who underwent trabeculectomy.

Conclusions: Early intervention is important to control the IOP and improve visual outcomes.

Clinical Profile of Phacolytic Glaucoma and the Outcome of Cataract Surgery in a Tertiary Center in South India's Rural Population

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Purpose: To determine the clinical presentations, management, and outcome of phacolytic glaucoma.

Methods: A prospective study of 30 patients with phacolytic glaucoma, who visited the Ophthalmology department were enrolled in the study from March 2022 till February 2023, for 12 months, after obtaining informed consent as per the declaration of Helsinki. A complete detailed history and ophthalmological examination were done. Demographic data, clinical presentations, management, and outcomes were recorded and analyzed.

Results: Thirty patients with phacolytic glaucoma were included in this study. The mean age at presentation was 66.67 ± 6.56 years. Female to male ratio was 3:2. The mean preoperative intraocular pressure (IOP) was 48.93 ± 9.45 mm Hg. Following surgery, the mean IOP was 24.20 ± 4.99 mm Hg. There was a highly significant reduction in IOP (p<0.001), following surgery. At discharge, 24 of 30 operated eyes (80%) achieved 6/60 or better. Of the most common intra-operative complications, 5 patients (16.67%) each had PC Rent, Rhexis Runoff and Zonular Dialysis. The major cause of Poor Visual Acuity was Iritis, which was noticed in 7 patients (23.33%). Macular scar and Optic atrophy in 2 patients each (6.67%). In 21 patients (70%), Posterior Chamber Intraocular Lenses (PCIOL) were used, and in 7 patients (23.33%), Iris Claw Lens were used.

Conclusions: Phacolytic glaucoma presented with the painful loss of vision. Removal of the cataractous lens results in a significant reduction in IOP and a better visual outcome. Early detection and surgical intervention with patient awareness is crucial to prevent phacolytic glaucoma.

Combination MIGS: Efficacy of Combining Goniotomy with Canaloplasty in Glaucoma Surgery

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Purpose: Minimally Invasive Glaucoma Surgery (MIGS) is becoming increasingly popular as an option to treat patients with nearly all types of glaucoma. The effectiveness of combining multiple MIGS has yet to be studied. Here we report outcomes up to 6 months for goniotomy and canaloplasty in combination with phacoemulsification in glaucomatous eyes.

Methods: We retrospectively reviewed 31 glaucomatous eyes that underwent phacoemulsification followed by goniotomy with Kahook Dual Blade or SION and canaloplasty with OMNI. Primary outcomes were a reduction in both intraocular pressure (IOP) and the number of antiglaucoma medications from baseline for up to 6 months post-operatively. Secondary outcomes included the percentage of eyes achieving an IOP ≤ 17 mmHg.

Results: The mean IOP at baseline was 17.1 ± 1.7 mmHg. Mean IOP was 14.0 ± 1.7 mmHg at 3 months (p=0.01) and 14.2 ± 2.1 mmHg at 6 months (p=0.04). The mean baseline number of medications was 1.6 ± 0.5. The mean number of medications at 3 months was 1.1 ± 0.5 at 3 months (p<0.001) and 1.2 ± 0.7 at 6 months (p<0.01). IOP measured below 17 mmHg for 81% of eyes at 3 months and 86% of eyes at 6 months.

Conclusions: Combined goniotomy and canaloplasty following phacoemulsification effectively decreased IOP and medications significantly. Minimal complications were reported.

Comparison of Choroidal Thickness and Lens Thickness Among Subtypes of Angle Closure Disease

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Purpose: To evaluate choroid thickness and lens thickness among various subtypes of angle closure disease and compare it with healthy controls.

Methods: It's an observational comparative study, including eyes with subtypes of angle closure disease and healthy controls. Lens thickness was measured using an optical biometer, and choroid thickness was measured using enhanced depth imaging spectral-domain optical coherence tomography. The lens thickness and average choroid thickness were compared among the four groups.

Results: A total of 124 eyes were included in the study including 31 healthy controls and 93 were angle closure

subtype eyes (primary angle closure suspect [PACS], 31 eyes; primary angle closure [PAC], 31 eyes; and primary angle closure glaucoma [PACG], 31 eyes). We found that PACS, PAC, and PACG eyes have significantly thicker choroid compared to healthy eyes and also found significant differences among the subtypes of angle closure disease with mean choroid thickness of PACS group was 247.19µm ± 40.97, PAC group was 318.81µm ± 24.81, PACG group was 383.81µm ± 53.06 and controls was 173.65µm ± 28.19 (P<0.001). The mean lens thickness was higher in all subtypes of angle closure disease (from 4.37mm ± 0.35 to 4.76mm ± 0.19) when compared to the control group (4.22mm ± 0.21) with (P < 0.01) It was also observed that there was a direct correlation between increasing age and increased lens thickness.

Conclusions: Increased choroid thickness might be another anatomic characteristic of angle closure eyes. This observation may support the hypothesis that choroidal expansion is a contributing factor to the development of angle closure disease.

Comparison of Peripapillary Vessel Density in Primary Angle Open and Closed Glaucoma Patients With Hemifield Visual Field Loss

*First Author: Hui-chen **LIN***

Purpose: To evaluate peripapillary vessel density (VD) and retinal nerve fiber layer (RNFL) in the eyes with primary angle-open and angle-closure glaucoma (POAG & PACG) with hemifield visual field (VF) loss and compare these parameters with normal eyes.

Methods: RNFL and VD were measured by OCTA for participants.

Results: Twenty-five PACG, 32 POAG eyes with superior VF defect, and 7 PACG, 13 POAG eyes with inferior VF defect were included. When compared to the 47 normal eyes, PACG eyes with superior VF defect showed significantly reduced RNFL and VD in all 8 sectors. In POAG eyes with superior VF defect, RNFL, and VD were also significantly decreased in all sectors except in the nasal sector. No significant difference in RNFL and VD was found between PACG and POAG eyes with superior VF defect except in the nasal sector (P = 0.018). When compared to the normal eyes, eyes with inferior VF defects showed significantly reduced RNFL and VD in the inferonasal sector in PACG eyes (P = 0.017 and P = 0.023; within the perimetrically intact regions). In POAG eyes with inferior VF defect, reduction of RNFL and VD was found in the inferonasal (P < 0.001 and P = 0.002) and inferior sector (P = 0.001 and P < 0.001).

Conclusions: RNFL thinning and VD dropout appear to precede functional deficit in glaucoma eyes. PACG and POAG eyes seem to have sectoral differences in structural changes (RNFL and VD). The pathomechanism for this variance needs more evidence to clarify.

Comparison of the BAERVELDT Glaucoma Implant with the PAUL Glaucoma Implant in Inverness

*First Author: Li Mun **TAN***

Purpose: To compare the postoperative outcomes of the 350-mm^2 BAERVELDT glaucoma implant (BGI; AMO, USA) with the PAUL glaucoma implant (PGI; AOI, Singapore) in the treatment of eyes with glaucoma.

Methods: Consecutive BGIs and PGIs implanted by two senior surgeons between September 2018 and April 2022 were analyzed. Primary outcome measures were a failure (intraocular pressure; IOP >18 and <6mmHg on 2 consecutive visits after 3 months, reoperation or explanation, or loss of light perception vision). Absolute success was achieved if no antiglaucoma medication was used and qualified success if otherwise. Secondary measures included the number of antiglaucoma medications and complications.

Results: Twenty-five eyes of 24 consecutive adult patients with at least 6 months follow-up were analyzed, of which 11 eyes underwent BGI, and 14 eyes underwent PGI implantation for uncontrolled glaucoma.18.2% BGI vs. 21.4% PGI were failures, 18.2% BGI vs. 35.7% PGI were complete successes, and 63.6% BGI vs. 42.9% PGI were qualified successes at final follow-up. The number of medications reduced from 3.0 to 2.0 drops (BGI) compared to 3.0 to 0.5 drops (PGI). Post-operative hypotony requiring intervention was recorded in the BGI (n=1) and PGI (n=2) groups. Both groups also had 1 surgical revision each.

Conclusions: Both drainage implants provide adequate postoperative IOP lowering in these preliminary results, with a reduction of eyedrops and few complications. These early 'real world' results are comparable to published failure/success rates for PGIs and BGIs.

Comparison of the Visual Outcomes of Enhanced and Standard Monofocal Intraocular Lens Implantations in Eyes With Early Glaucoma

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*Co-Author(s): Sang Woo **PARK***

Purpose: To compare the efficacies and safety of enhanced and standard monofocal intraocular lenses (IOLs) in eyes with early glaucoma.

Methods: Patients with concurrent cataracts and open-angle glaucoma (OAG) were enrolled. They underwent cataract surgery with IOL implantation. Manifest refraction; monocular uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), uncorrected intermediate visual acuity (UIVA), and uncorrected near visual acuity (UNVA); visual field (VF); contrast sensitivity (CS); defocus curves and questionnaires were assessed three months postoperatively.

Results: Thirty-four and 38 patients had enhanced and standard monofocal IOLs, respectively. The enhanced monofocal IOL provided better UIVA than the standard monofocal IOL (p = 0.003) but similar UDVA, CDVA, and UNVA. The enhanced monofocal IOL had more consistent defocus curves than the standard monofocal IOL, especially at -1 (P = 0.042) and -1.5 (P = 0.026) diopters. The enhanced monofocal IOL provided better satisfaction (P = 0.019) and lower spectacle dependence (p = 0.004) than the standard monofocal IOL for intermediate vision, with similar VF and CS.

Conclusions: The enhanced monofocal IOLs are recommended for patients with OAG because they provide better intermediate vision, higher satisfaction, and lower dependence on spectacles than standard monofocal IOLs, without worsening other visual outcomes.

Congenital Glaucoma Prevention Program; Patients' Knowledge and Relatives' Acceptance of Genetic Screening

*First Author: Leyla **ALI ALJASIM***

Purpose: Primary congenital glaucoma (PCG) is mostly inherited by autosomal recessive (AR) gene in Saudi, and its incidence is10 times the global incidence premarital screening for carriers and genetic counseling is the preventive method for AR diseases, as step one we needed to measure families knowledge about AR disease and community acceptance of genetic testing for PCG.

Methods: PCG patients +/_ family were interviewed by a genetic consultant and educated about AR. Blood samples were collected from them for genetic screening. Phone interviews were conducted to inform them of the genetic testing results. The first 100 patients who were informed of their results were given a questionnaire. Eight questions were knowledge-related, 3 attitude-related, 3 practice-related and 2 were general questions. Patients asked to inform unaffected family members to test for carriers.

Results: A total of 259 PCG tested positive for the (CYP1B1)AR gene. They were contacted about the result. Only 239 unaffected relatives came for carrier testing. For the questionnaire, they scored in the 90s in Knowledge questions, less in attitude & practice-related (≥70%). Results also showed 100% believed that genetic counseling is essential for families with PCG, while 95% agreed that health authorities must boost the awareness of the public about AR diseases. But only 73% shared their experience with family and friends.

Conclusions: Patients and families of PCG accepted genetic testing, they were well aware of AR transmission, but they were hesitant to share the findings with relatives, and some relatives believe that genetic testing is not needed if the core family has no affected child. More education is needed for the general community to implement congenital glaucoma prevention programs in Saudi.

Cyclocryotherapy as an Option to Temporary Lower Intraocular Pressure in Acute Primary Angle Closure Prior to Cataract Extraction

*First Author: Ardiella **YUNARD***
*Co-Author(s): Virna **ASRORY**, Yulinda **LAKSMITA**, Ikke **SUMANTRI**, Astrianda **SURYONO***

Purpose: To present a case with a satisfying end result utilizing cyclocryotherapy to temporary lower intraocular pressure (IOP) before cataract extraction in acute primary angle closure (APAC) with intumescent white cataract and very high IOP.

Methods: A 44-year-old man who had experienced a sudden, painful, blurry vision in the right eye with a headache since 1 month prior, was referred from another hospital with APAC. Presenting visual acuity (VA) was Light perception (LP), and IOP was 50 mmHg despite maximum medical therapy. The cornea was hazy with Descemet fold, a very shallow anterior chamber, and the lens was intumescent white cataract. Taking into consideration the poor VA, very high IOP, and cloudy cornea, we then chose to do cyclocryotherapy to lower IOP.

Results: Six weeks post-cyclocryotherapy, the IOP decreased to 9 mmHg on glaucoma therapy and the cornea became clear. We then performed phacoemulsification and intraocular lens implantation. A month following cataract extraction, the VA was 6/30 and IOP was 12 mmHg without medication.

Conclusions: Cyclocryotherapy can be an option to temporary lower IOP before cataract extraction in APAC with intumescent white cataracts and very high IOP.

Cyclocryotherapy for Pain Management in End Stage Glaucoma Patient: A Case Report

*First Author: Kiki **ARINDA***
*Co-Author(s): Fidalia **KAMAL**, Prima Maya **SARI***

Purpose: To report the cyclocryotherapy procedure to reduce the pain of an end-stage glaucoma patient by reducing aqueous production and lowering intraocular pressure (IOP).

Methods: The patient came to the hospital with severe pain in both eyes, no light perception of visual acuity in both eyes and high IOP; oculi dextra (OD) was 50.6 mmHg and oculi sinistra (OS) was 64.0 mmHg. This patient was already treated with 4 types of antiglaucoma drugs. The patient was diagnosed with end-stage glaucoma oculi dextra et sinistra and was planned to be treated with cyclocryotherapy. The complaints of pain and IOP after cyclocryotherapy were evaluated.

Results: The complaint of pain was reduced after the cyclocryotherapy procedure, from the ophthalmologic

examination revealed that the IOP was lower, for OD was 37.8 mmHg and OS was 30.2 mmHg. After 1 week post Cyclocryotherapy, there was no complaint of pain and the IOP lowered; for OD was 24.0 mmHg and OS was 22.5 mmHg.

Conclusions: In cases with end-stage glaucoma, with severe pain and high IOP, cyclocryotherapy should be considered to reduce the aqueous production by damaging or destroying the ciliary epithelium, so the IOP could be lower and reduce the pain.

Cyclocryotherapy for Secondary Glaucoma After Penetrating Keratoplasty: A Case Report

*First Author: Muhammad **BAQIR***
*Co-Author(s): Fidalia **KAMAL**, Prima Maya **SARI***

Purpose: To report a case of the management of secondary glaucoma after penetrating keratoplasty with cyclocryotherapy.

Methods: A 31-year-old male complained of pain in the left eye (LE) since 2 months ago. Patient underwent penetrating keratoplasty 7 months ago. 5 months post-op, there was an intraocular pressure (IOP) elevation. We diagnosed him with secondary glaucoma after penetrating keratoplasty.

Results: Ophthalmological findings on LE revealed 1/300 visual acuity, with the IOP in LE was 26 mmHg and the anterior segment examination showing the cornea hazy. A Fundus photo and SD-OCT cannot be evaluated, ocular ultrasound was normal, and the limited Anti-glaucoma medication failed to control IOP. The patient then underwent cyclocryotherapy. One month after cyclocryotherapy, the IOP was 16 mmHg, and the pain was relieved.

Conclusions: This patient was diagnosed with secondary glaucoma after penetrating keratoplasty. The management of this patient was done with cyclocryotherapy. Since conventional filtering surgeries and GDDs have a high failure rate, cyclophotocoagulation is a widely adopted procedure, because it is non-invasive and can be done as a low-cost outpatient procedure. Cyclocryotherapy has been shown to effectively reduce IOP. The complications of this procedure such as graft failure, visual loss, and phthisis bulbi.

Dilematic Surgical Management of Secondary Glaucoma in Patients Coexisting Cataract With Poor Visual Acuity: A Case Series in Rural Setting

*First Author: Heronita **PURNAMASARI***
*Co-Author(s): Sukoto **SUKOTO***

Purpose: To report a case series of patients suffering from cataracts with poor visual acuity accompanied by glaucoma with bad IOP control and its outcome of management.

Methods: Three patients with similar problems, who had cataracts with poor visual acuity accompanied by glaucoma with high IOP uncontrolled by medication, underwent trabeculectomy surgery first, and then phacoemulsification was carried out within two months. Patients were followed up on their visual acuity and IOP.

Results: Three patients with initial visual acuity of 6/60, 2/60, 1/300 (last eye) and mean IOP of 30.67, 28.33, 30 mmHg respectively, underwent trabeculectomy on superonasal site followed by phacoemulsification on temporal approach after 11 weeks (first and second patients) and 7.5 weeks (the third patient), showed an improvement in visual acuity to 6/12, 6/15, 6/30 (last eye) and the mean IOP post phacoemulsification were 20.15, 18.33, 16.17 mmHg while maintaining timol therapy (on the first and third patients) and without any glaucoma therapy on the second patient.

Conclusions: All three patients showed significant improvement in visual acuity and stable IOP after phacoemulsification within two months after trabeculectomy, therefore this method can be considered as an alternative choice for dilemmatic cases of uncontrolled glaucoma accompanied by cataracts with poor visual acuity, especially in a rural setting with limited facilities dan resources.

Dynamic Stretch Induces the Formation of Transmembrane Actin Nuclear Lines in Trabecular Meshwork Cells

*First Author: Hsuan-en **HUANG***
*Co-Author(s): Chien-chih **CHOU**, I-jong **WANG***

Purpose: We aim to investigate how mechanical stretching induces adaptive mechanisms that allow them to cope with environmental stresses.

Methods: We collected trabecular meshwork tissue and cultured trabecular meshwork cells from the anterior segment of the donor after corneal transplantation. The trabecular meshwork cells were further cyclically stretched using a cell stretching apparatus. We observed actin cytoskeletal changes; linkers of nucleoskeleton and cytoskeleton (LINC) complexes that include nesprins, SUN2 and lamins; myocilin expressions, and autophagy of trabecular meshwork cells.

Results: After the trabecular meshwork cells were stretched, we evaluated the distribution of actin and the LINC complex using confocal immunofluorescence microscopy. Cyclic stretch induces assembly of the LINC complex, forming actin stress fibers and transmembrane actin nuclear lines, which interact with proteins on the surface of the nucleus. Stretching of trabecular meshwork cells increases myocilin expression, and both mRNA and protein of myocilin show corresponding changes. Stretch also induces autophagy of trabecular meshwork cells.

Conclusions: The trabecular meshwork cells respond to mechanical stress through the formation of transmembrane actin nuclear lines, the activation of myocilin gene expression, and autophagy. LINC-anchored actin and transmembrane actin nuclear lines connect the extracellular environment with the cell nucleus, and may enable chromatin mechanic protection. These findings provide evidences of adaptive mechanisms to mechanical stimuli of trabecular meshwork cells.

Effect of Citicoline on Visual Pathway Electrophysiological Function in Individuals With Glaucoma: A Systematic Review

*First Author: Dewa Ayu Anggi **PARAMITHA***
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Purpose: Our review aims to evaluate the potential of citicoline in improving electrophysiological function along the visual pathway in glaucoma patients.

Methods: This systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and executed across four databases (PubMed, Science Direct, ProQuest, and Cochrane). The inclusion criteria comprised full-text studies investigating citicoline therapy on glaucomatous patients, while excluding non-English literature, animal studies, review articles, case reports/series, and editorials. The primary outcome is the assessment of Visual Evoked Potential (VEP), with a sub-analysis focusing on Pattern-Electroretinograms (PERG).

Results: A total of 222 patients (263 eyes) from seven studies met the inclusion criteria. Different formulations of citicoline were identified in our review, including oral, topical, and intramuscular injections, administered at various doses. Six out of seven studies showed a significant improvement by shortening VEP P100 peak latencies following the administration of citicoline compared to pretreatment conditions and placebo patients ($p<0.05$). Moreover, four studies reported a significant rise in VEP N75-P100 amplitudes ($p<0.05$). Five studies analyzing PERG parameters showed a significant rise in P50-N95 amplitudes and shorter P50 peak latencies ($p<0.01$). The duration of citicoline treatment ranged from 1-4 months, while the follow-up period extended from 1 month to 8 years.

Conclusions: Citicoline treatment demonstrated improved neural and retinal bioelectrical responses (VEP and PERG) in glaucoma patients, indicating its potential as an adjunctive therapeutic option for preventing visual pathway function loss in glaucoma patients. Further studies on the optimal dose and the formulation of citicoline for glaucoma treatment are needed.

Effect of Pre-operative Fluorometholone on the Tear Cytokine Profile and Post-trabeculectomy Outcomes of Medicated Asian Glaucoma Patients

*First Author: Olivia **HUANG***
*Co-Author(s): Annabel **CHEW**, Rachel **CHONG**, Jackie **SIM**, Tina **WONG***

Purpose: To determine if a 2-week pre-operative course of fluorometholone (FML) eyedrops in chronically medicated glaucoma patients reduces pro-inflammatory cytokines levels and improves bleb function after trabeculectomy or phaco-trabeculectomy.

Methods: A single-center, non-blinded, prospective pilot interventional case series of 36 FML-pretreated glaucoma patients, who received a 2-week pre-operative course of FML eyedrops, and 307 glaucoma patients without FML-pretreatment on chronic IOP-lowering topical medications undergoing trabeculectomy or phaco-trabeculectomy. Multiplex bead assay was used to quantify the presence of pro-inflammatory cytokines in tear samples before and after the use of FML eyedrops, prior to surgery. Clinical outcome measures of bleb function included IOP and additional post-operative interventions (i.e. needling, glaucoma medications and surgery) required to achieve the desired IOP at 6 months.

Results: There was no significant difference noted between groups who received pretreatment with FML or no pretreatment with FML in terms of cytokine profile (all $p > 005$), IOP (11.7mmHg vs 11.8mmHg, $p=0.892$) and percentage of patients requiring additional IOP-lowering medications (19.4% vs 28.3%, $p=0.258$), needling (27.8% vs 26.7%, $p=0.88$), or further surgical interventions (2.8% vs 0.7%, $p=0.21$) at 6 months post-surgery, after adjusting for significant confounding baseline characteristics.

Conclusions: The use of FML for 2 weeks pre-operatively did not alter pro-inflammatory cytokine levels and post-operative outcomes in patients going for trabeculectomy or phaco-trabeculectomy in our study. A longer period of pre-operative administration may be needed to reduce pro-inflammatory cytokine levels and improve post-operative outcomes.

Effectiveness of Managing Glaucoma in Iridocorneal Endothelial Syndrome With Virna Implant: A Case Report

*First Author: Muhammad **YOSERIZAL***

Purpose: To present a case of secondary glaucoma due to iridocorneal endothelial syndrome treated with Virna Glaucoma Implant (VGI).

Methods: We report a young 22-year-old female, diagnosed with secondary glaucoma due to iridocorneal endothelial syndrome. History included

decreased vision in one eye and high intraocular pressure. She underwent non-valve VGI surgery.

Results: The patient's intraocular pressure was safely controlled without any complications.

Conclusions: Virna Glaucoma Implant showed effectivity in lowering IOP in secondary glaucoma due to ICE syndrome.

Exploring the Link Between Fine Particulate Matters (PM2,5) and Glaucoma Development: A Systematic Review

*First Author: Febri **BAHARI***

Purpose: This study aims to assess recent research investigating the association between Fine Particulate Matter (PM2.5) and Glaucoma, particularly in urban areas worldwide, including Indonesia, where air quality is a concern.

Methods: Employing a systematic methodology, the approach involved searching through the latest medical literature available on PubMed, ClinicalKey, ScienceDirect, and Cochrane.

Results: Eight articles met the inclusion criteria. The majority of these studies indicate positive associations, highlighting that higher exposure to PM2.5 raises the risk of glaucoma, encompassing primary open-angle, primary angle-closure, and normal-tension glaucoma. PM2.5's potential role in inducing oxidative stress, inflammation, and vascular dysfunction is suggested.

Conclusions: Collectively, the studies demonstrate a consistent trend connecting PM2.5 exposure to the development of glaucoma. This systematic review underscores PM2.5's potential significance in the context of glaucoma development and its implications for public health. Further research is imperative to uncover the underlying mechanisms, address methodological limitations, and guide effective preventive strategies. Given the worldwide concern over environmental issues, reducing PM2.5 exposure could potentially alleviate the burden of glaucoma and help protect visual health.

Hallmark Sign of Glaucoma Congenital, How to Asses? A Case Report

*First Author: Deniz **MAWARNI***
*Co-Author(s): Fidalia **KAMAL**, Prima Maya **SARI***

Purpose: To report a case of Congenital Glaucoma in infant onset with trabeculectomy surgery as the operative management.

Methods: A baby boy, aged 4 months, came to Glaucoma Ophthalmology RSUP Dr. Moh Hoesin Hospital with a chief complaint that the diameter of the eyes looked bigger in both eyes since birth. The examination under anesthesia revealed that both palpebrae had blepharospasm, and the cornea was enlarged in both eyes. The intraocular pressure was 30.3 mmHg in the right eye and 31 mmHg in the left eye with tonometer Schiotz. From the transpalpebral ultrasonography, the axial length was 18.56 mm in the right eye and 17.63 mm in the left eye, showing that the axial lengths were larger than normal. Fundoscopy showed nasalization of blood vessels with cup-to-disc ratios being 0.6 in both eyes.

Results: The trabeculectomy was performed in both eyes, and the intraocular pressure led to a reduction in IOP with 10.5 mmHg in the right eye and 13.5 mmHg in the left eye 2 months later.

Conclusions: Congenital glaucoma in infants can be diagnosed by hallmark signs such as megalocornea, blepharospasm, and increased intraocular pressure. Other systemic conditions should be investigated in congenital glaucoma. Surgery is the definitive treatment of primary congenital glaucoma, such as trabeculectomy. Early diagnosis and therapy are the most important things in congenital glaucoma management.

Identification and Characterization of Dendritic Cells in Glaucomatous Eyes: A Promising Futuristic Target for Precision Anti-glaucoma Drug Delivery

*First Author: Rutusha **DODWAD***
*Co-Author(s): Harsha **BHATTACHARJEE**, Dipankar **DAS**, Nikita **SAH**, Shahinur **TAYAB***

Purpose: To identify and characterize dendritic cells in glaucomatous eyes.

Methods: An observational study, to assess the enucleated eyeballs optic nerve by gross pathology, microscopy (Leica S6D and Axioskop 40 with AxioCam MRc, ZEISS, Germany), routine stains with H&E, diffractive photography, hematoxylin-eosin (H&E), molecular pathology and Immunohistochemistry (IHC) studies to determine the anatomical pigmented cells arrangements in and around the edges of the optic disc.

Results: In all these cases, the (TM) trabecular meshwork and (RGC) retinal ganglion cells were studied for similar pigmented cells for the correlation. The presence of pigmented cells from the uveal tissues was documented near the peripheral edges of the optic nerve. Peripapillary cells were pigmented, dendritic shaped, globular, varied from 90 microns to 170 microns, and arranged in centrifugal configuration. TM cells mostly had a dendritic pattern. IHC with control was done for BAX, BCL2, and CD 68 for peripapillary cells, TM, and RGCs.

Conclusions: Connection of peripapillary pigmented cells, RGCs near the optic nerve head, and TM anteriorly may exist. BCL 2, BAX, and CD68 (dendritic cells) expression were seen in the glaucomatous eye and the control (post-mortem) eye. We know from our previous understanding, that peripapillary pigment

change in zone alpha and beta is frequently associated with glaucomatous optic atrophy but they are also seen in other conditions like myopia and aging. Our study showed pigmented DCs expression near the optic disc, RGCs, and TM. The study evaluated the presence of dendritic cells in the target sites of glaucoma.

Impact of Brain Microstructure on Regional Visual Field Loss in Bilateral Glaucoma Using Advanced Diffusion MRI and Archetypal Analysis

*First Author: Yueyin **PANG***
*Co-Author(s): Ji Won **BANG**, Kevin **CHAN**, Carlos **PARRA**, Joel **SCHUMAN**, Mengyu **WANG***

Purpose: Recent visual field (VF) perimetry and electrophysiological studies in bilateral glaucoma patients suggested the brain control of glaucomatous degeneration, such that local loss of VF function in one eye is often spared in the same VF region of the contralateral eye, maximizing residual binocular visual function. However, there is no direct evidence of how this brain control occurs to preserve complementary VF regions bilaterally. This study investigated the contributions of microstructural brain integrity to regional VF loss in both eyes of glaucoma patients using advanced diffusion MRI and archetypal (AT) analysis.

Methods: Thirteen early glaucoma, 28 advanced glaucoma, and 21 age-matched healthy subjects underwent 3-Tesla MRI. Diffusion tensor imaging (DTI), diffusion kurtosis imaging (DKI), and the DKI-extended white-matter-tract-integrity (WMTI) parameters were assessed in the optic radiation, and associated with 24-2 VF tests using partial correlations. The resulting VF models were aligned with 16 predefined AT patterns of VF loss using multivariate linear regression (PMID: 25505132).

Results: DTI's decreasing fractional anisotropy, DKI's decreasing radial kurtosis, and WMTI's decreasing intra-axonal-space axial diffusivity (IASD) and tortuosity correlated to worse overall VF loss (AT6) in both eyes. IASD, extra-axonal-space axial diffusivity, and tortuosity were also associated with the right eye's superior-altitudinal (AT8) VF and the left eye's inferior-altitudinal (AT13) VF areas.

Conclusions: Brain imaging biomarkers sensitive to axonal and glial integrity and neuroinflammation were not only associated with overall VF loss but also complementary AT patterns of VF loss between contralateral eyes, suggestive of their involvement in optimizing the compensatory changes in binocular visual function in glaucoma.

Impact of Continuity of Care on Risk for Glaucoma Surgery in Patients With New Onset Primary Open-Angle Glaucoma

*First Author: Seung Hoon **KIM***
*Co-Author(s): Yonghan **CHA**, Minah **PARK***

Purpose: We aimed to investigate the association between continuity of care (COC) and risk of glaucoma surgery among newly diagnosed primary open-angle glaucoma (POAG) patients aged ≥ 60 years.

Methods: A nationwide cohort study was conducted using data from the Korean National Health Insurance Service-Senior cohort from 2002 to 2019. Participants were categorized into a good and bad COC group according to the COC index. The main outcome was whether glaucoma surgery, including laser treatment, was performed. The Kaplan-Meier method was used to calculate the cumulative incidence of glaucoma surgery, and the incidence rate of glaucoma surgery was estimated using a Poisson regression. A Cox proportional hazards regression model was used to investigate associations between COC and the risk of glaucoma surgery in patients with POAG.

Results: Among 12,713 incident POAG patients, 6,769 (53.1%) were women, and the mean (SD) age was 66.58 (8.24) years. The cumulative incidence of glaucoma surgery was higher in POAG patients with bad than in those with good COC ($p < 0.001$). The incidence rates of glaucoma surgery were 734 and 452 cases per 100,000 person-years in patients with bad and good COC, respectively. POAG patients with bad COC had an increased incidence of overall glaucoma surgery (adjusted hazard ratio, 1.64; 95% confidence interval, 1.31–2.06, $p < 0.001$). An increased MOF risk in patients with bad COC was predominantly observed in females.

Conclusions: Good COC was associated with reduced surgical treatment in POAG. This study suggested that interventions that can improve COC in patients with POAG should be considered.

Increased Risk of Alzheimer's Disease Among Patients with Glaucoma: A Nationwide Population-based Study

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Purpose: Our objective was to elucidate the connection between glaucoma and Alzheimer's disease by assessing the risk of diagnosed Alzheimer's disease among patients with various types of glaucoma and evaluating its associated risk factors.

Methods: This retrospective population-based cohort study backtracked 101,000 subjects aged 45 or older who were diagnosed with glaucoma between 2000 and 2017, with a ratio of 1:1 between the case group and the control group according to sex, age, and the index

year. The Cohen's d method, the Kaplan-Meier method, and the log-rank test were used.

Results: Irrespective of gender, age, and concurrent health conditions, the glaucoma group exhibited a significantly greater risk of developing Alzheimer's disease compared to the control group (adjusted hazard ratio [aHR] = 1.33, 95% confidence interval [CI] = 1.23-1.44). The risk of Alzheimer's disease was notably increased across various age brackets (56-65, 66-75, and >75), as well as among individuals with diverse comorbidities (including diabetes, hypertension, hyperlipidemia, COPD, osteoporosis, coronary artery disease, and depression). Our investigation further categorized glaucoma into distinct subtypes, namely open-angle glaucoma, normal-tension glaucoma, angle-closure glaucoma, and unspecified glaucoma. In comparison to the control group, the risk of Alzheimer's disease was significantly amplified in each type of the glaucoma group, with the highest risk observed in normal-tension glaucoma (aHR = 1.49, 95% CI = 1.20-1.86).

Conclusions: Alzheimer's disease and glaucoma are both age-related conditions and are susceptible to being comorbidities due to shared risk factors. Our observation revealed that among the identified subtypes, normal-tension glaucoma presented the highest risk.

Intereye Peripapillary Vessel Density Asymmetry in Subjects Presenting Asymmetric Cupping, With and Without Visual Field Loss

*First Author: Hui-chen **LIN***

Purpose: To characterize intereye peripapillary vessel density (VD) asymmetry in subjects with asymmetric cupping.

Methods: Subjects presenting asymmetric cupping with (asymmetric glaucoma, AG) and without visual field defect (glaucoma suspect, GS), and normal volunteers were enrolled. All subjects underwent comprehensive eye examinations and optical coherence tomography angiography (OCT-A) scan. Areas under the receiver operating characteristic curves (AUROC) and the Youden Index cutoffs were used to determine the best sensitivities and specificities for differentiation between AG and normal subjects.

Results: Data from 30 AG, 42 GS, and 71 normal subjects were used for the final analysis. Intereye OCT-A parameters asymmetry including whole image peripapillary vessel density (wiVD), mean and four quadrants radial peripapillary capillary (RPC)VD, retinal nerve fiber layer (RNFL), and ganglion cell complex (GCC) were all significantly higher in AG than those in normal and GS subjects. Macular GCC showed the greatest intereye asymmetry with 8 times asymmetry in AG subjects. Intereye RNFL asymmetry had the highest AUROC for distinguishing AG from normal subjects (0.962), followed by GCC (0.957), wiVD (0.892), and mean RPCVD (0.886). Intereye GCC asymmetry had the best sensitivity (0.964) and specificity (0.972). The cutoff values for identifying AG from normal subjects were intereye wiVD asymmetry 4.3%, RPCVD asymmetry 4.2%, RNFL asymmetry 8.5 µm, and GCC asymmetry 8.0 µm.

Conclusions: Intereye asymmetry of peripapillary VD had a modest ability to differentiate AG from normal subjects. Longitudinal and large-scale studies are needed to determine whether intereye asymmetry of OCT-A measures can provide early detection and progression monitoring of glaucoma.

Intraocular Pressure Fluctuation During the Dark-Room Prone Position Test in Patients With Primary Angle Closure Disease Using the Sensimed Triggerfish Contact Lens Sensor

*First Author: Takanori **MIZOGUCHI***

Purpose: To evaluate the intraocular pressure (IOP) fluctuation during the dark-room prone position test (DRPT) in patients with primary angle closure suspect (PACS) and primary angle closure (PAC) using SENSIMED Triggerfish contact lens sensor (CLS).

Methods: Patients aged > 50 years with PACS and PAC underwent ultrasound biomicroscope (UBM) in A dark room. Relative pupillary block (RPB) and forward bowing of the iris lens diaphragm (ILD) were defined by UBM in all 4 quadrants. After wearing CLS, DRPT was performed for 90 minutes in the dark room.

Results: Eleven eyes of 11 patients with PACS (4 eyes) and PAC (7 eyes) were examined. All patients had 4 quadrants of irido-trabecular contact (ITC) by UBM images. IOP fluctuations of CLS during DRPT were divided into 2 types. IOP profile continuously increased throughout DRPT (A type; PACS 1, PAC 4) or initially increased, but suddenly decreased (B type; PACS 3, PAC 3). There were no significant differences in the baseline characteristics and anterior segment parameters between the two types. The mean quadrant numbers of RPB in A group and B group were 2.2 ± 0.84 and 3.7 ± 0.52 (p=0.006), respectively, while those of ILD were 1.8 ± 0.84 and 0.3 ± 0.52 (p=0.006), respectively.

Conclusions: The present results demonstrated that the degree of IOP fluctuations during DRPT varied depending on the mechanism of angle closure. The risk of developing angle closure may be higher in ILD than RPB.

Karachi SLT study

*First Author: Azfar **NAFEES***
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Purpose: The aim of this study was to evaluate the effectiveness of selective laser trabeculoplasty (SLT) at lowering intraocular pressure (IOP) as initial or adjunctive treatment in patients with all types of

glaucoma including primary open-angle glaucoma (POAG) and secondary open-angle glaucoma.

Methods: A prospective study. Three tertiary care centers in Karachi, Pakistan. Data was collected as per the designed proforma to gather maximum information such as baseline IOP, BCVA, number of drops, energy used, and pigmentation of the angle. Patients were then followed up over a period of 6 months.

Results: Overall, 59 eyes of 37 patients were included in the study. The average age of the patients was 49.3±12.6, with a minimum of 20 years and a maximum of 68 years. Most of the patients had primary open-angle glaucoma (94%) followed by secondary open-angle glaucoma (4.5%) and ocular hypertension (1.5%). IOP was also recorded 45 min after the SLT. None of the patients, even in the SOAG sub-group, had any spikes noted. No difference was noted in the BCVA pre and post-SLT. No significant difference was noted in the mean number of drops pre and post-SLT, possibly due to hesitancy by the physicians and patients in reducing drops due to the possible risk of being lost to follow-ups.

Conclusions: Significant IOP reduction was noted with both Primary as well as secondary-open angle glaucoma patients. Most of the patients achieved qualified success of less than 20 IOP with and without IOP lowering drops.

Malignant Glaucoma Following Glaucoma Tube Shunt Surgery: A Report of Successful Management

*First Author: Kevin **HENDRAWAN***
*Co-Author(s): Ni Kompyang **RAHAYU**, I Gusti Ayu **SURYANINGRUM***

Purpose: To report successful management of a case of malignant glaucoma developed after glaucoma tube shunt surgery.

Methods: We describe a case of malignant glaucoma that occurred following glaucoma tube shunt surgery on a 41-year-old male patient with juvenile glaucoma. The malignant glaucoma occurred 3 days following the uncomplicated glaucoma tube implantation surgery. He underwent glaucoma tube shunt surgery using Virna Glaucoma Implant without complication and the intraocular pressure 1 day post-operative was under control. We gave levofloxacin, prednisolone acetate, and timolol 0.5% eyedrops postoperatively. Three days after the surgery, the patient came with a complaint of severe headache, and it was found that he developed an increased intraocular pressure at 60 mmHg, shallow central and peripheral anterior chamber then diagnosed with malignant glaucoma. A simple pars plana vitrectomy was done afterward.

Results: After the pars plana vitrectomy, the anterior chamber was deepened with an opened iridocorneal angle resulting in lowered intraocular pressure. Six months after the pars plana vitrectomy, the intraocular pressure remained under control with stable visual acuity. The patients showed no progression on optic nerve head structural anatomy based on ocular tomography examination and no further progression on visual field loss based on Humphrey visual field test six months after the surgery. No further complications were recorded at the six-month follow-up.

Conclusions: Malignant glaucoma following a tube shunt surgery may develop, although the incidence is very rare. Prompt management of malignant glaucoma is important to preserve the patient's vision. Accurate diagnosis and prompt treatment can help clinicians to prevent further permanent vision loss.

Management of Late-Onset Bleb Leaks in Trabeculectomy – A Case Report

*First Author: Chenda **KIM***
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Purpose: To report an outcome of the surgical revision in delayed bleb leaking.

Methods: we reviewed a case of chronic angle closure glaucoma in the advanced stage with bleb leaking following 10 months of trabeculectomy. The management strategy consisted of initial conservative treatment, and surgery was performed with bleb excision and conjunctival advancement technique. Measures included bleb characteristics, intraocular pressure, visual acuity, and complications.

Results: Following the surgery, leaking was resolved with sustained functioning filter bleb and visual acuity improved from baseline. The patient was free of anti-glaucoma medication, and no complication was found in 1 year follow-up period.

Conclusions: Bleb excision and conjunctival advancement technique can be a treatment option with a safety profile and effective procedure for reconstructing a filtering bleb in the management of late bleb leaking after trabeculectomy.

Micropulse Cyclophotocoagulation for Secondary Glaucoma Caused by Metastatic Iris Tumor: A Case Report

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Purpose: To report a case of secondary glaucoma caused by metastatic iris tumor from lung primary small cell carcinoma. In this case, intraocular pressure (IOP) was successfully controlled by micropulse transscleral cyclophotocoagulation (MP-CPC).

Methods: Case: A 57-year-old male. During chemotherapy for lung cancer, hyperemia appeared in his right eye (OD). The best-corrected visual acuity (BCVA) and IOP was 0.15 and 31mmHg, respectively,

OD. Corneal edema, anterior chamber cells, and an iris mass with neovascularization also were observed in OD. Since a metastatic iris tumor was suspected, an MRI of the brain was performed, which also revealed brain metastases. Metastatic tumors were treated with 30 Gray of radiation therapy. After radiation therapy, the brain and iris tumors regressed, but the IOP OD was refractory to the treatment of anti-glaucoma medications. Therefore, MP-CPC was administered with a Cyclo G6 glaucoma laser (Iridex) OD. The Micropulse P3 probe was placed on 1 mm away from the limbal margin, and laser was delivered at 2000 mW for 80 seconds each on the upper and lower hemispheres OD.

Results: After MP-CPC, IOP OD was 17 mmHg at 1 week, 20 mmHg at 1 month, and 17 mmHg at 6 months. The BCVA OD was 0.8 at 6 months after MP-CPC. He had ocular pain on the day of MP-CPC, otherwise, no surgical complication was recorded.

Conclusions: MP-CPC was an effective treatment in this case with refractory secondary glaucoma due to metastatic iris tumor.

Ocular Characteristics of Pseudophakic Eyes With Malignant Glaucoma

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Purpose: To investigate the clinical characteristics and treatment outcomes of the pseudophakic eyes with malignant glaucoma (MG).

Methods: This retrospective study enrolled patients with primary angle-closure glaucoma (PACG) having cataract surgery history, including 19 patients (25 eyes) diagnosed with MG and 28 patients (28 eyes) without MG as the match. Fourteen patients (18 eyes) underwent zonulo-hyaloido-vitrectomy (ZHV) and the other 5 patients (7 eyes) received conservative treatments. The refraction status, intraocular pressure (IOP), classes of anti-glaucoma medications and ultrasound biomicroscopy (UBM) examination were recorded.

Results: In pseudophakic MG, the IOP cannot be controlled compared to the matched eyes (27.24±8.72 mmHg vs 14.30±2.63 mmHg, P<0.001). There was also a difference in the average spherical equivalent refractive error (-2.23±0.84 D in MG vs -0.12±0.64 D in the matched eyes, P<0.001). By UBM analysis, the anterior chamber depth (ACD) was shallower in MG than the match (2.34±0.20 mm vs 3.47±0.29 mm, P<0.001). After being treated with ZHV, the IOP was greatly decreased from 27.84±10.14 mmHg to 15.85±4.41 mmHg (P<0.001). The refractive error also changed from -2.11±0.91 D to +0.42±0.99 D (P<0.001) with the central ACD deepened from 2.30±0.39 mm to 3.30±0.31 mm (P<0.001).

Conclusions: Uncontrolled IOP and shallow anterior chamber both centrally and peripherally are the primary clinical characteristics of pseudophakic MG. An unexpected myopic shift for the eyes with PACG after cataract surgery can be an important hint for diagnosis. UBM image shows an anterior displacement of the lens-iris diaphragm and a bow-shaped change of the intraocular lens. The ZHV can be an effective treatment.

One-Year Results of a Multicenter Study: Intraocular Pressure Lowering Effect of Phacoemulsification, Goniosynechialysis and Goniotomy for Advanced Primary Angle-Closure Glaucoma With Cataract

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Purpose: To evaluate the surgical effect of phacoemulsification with intraocular lens implantation (PEI), goniosynechialysis (GSL), and goniotomy (GT) in eyes of advanced primary angle-closure glaucoma (PACG) with cataract.

Methods: We enrolled 83 eyes of 83 patients with advanced PACG who received PEI+GSL+GT at eight ophthalmic institutes. Each patient was assessed before treatment and 1 day, 7 days, 1 month, 3 months, 6 months, and 12 months post-surgery. The criteria for complete success were IOP within 6–18 mmHg and at least 20% reduction in IOP from baseline without ocular hypotensive medications or reoperation. The definition of qualified success was similar to that of complete success, except for the need for ocular hypotensive medications. The potential prognostic factors for surgical success were investigated using a multivariate logistic model.

Results: All participants completed 1 year of follow-up. Complete and qualified success was achieved in 74 (89.1%) and 79 (95.2%) of 83 eyes, respectively. The mean preoperative and postsurgical IOPs were 27.4±7.3 mmHg and 14.2±2.6 mmHg, respectively. Participants used an average of 2.0 and 0.3 types of ocular hypotensive medications before and after surgery respectively. The chief complications included hyphema (n=9), IOP spike (n=9), and corneal edema (n=8). None of the eyes required reoperation or developed vision-threatening complications. Multivariate analysis showed that older age was associated with a higher probability of complete success (OR=1.13, 95%CI: 1.02–1.25, P=0.020).

Conclusions: The 1-year results of a combination of PEI+GSL+GT in treating advanced PACG cases with cataracts appear to be safe and effective. Further large-scale multi-nation and multi-center studies are warranted.

Ophthalmologist Acceptance of Selective Laser Trabeculoplasty for the Management of Glaucoma in Saudi Arabia

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Purpose: Selective laser trabeculoplasty (SLT) is effective as a primary treatment for glaucoma, even shown to be superior to medical management. It is a simple outpatient procedure with minimal side effects. The aim of this study is to evaluate the acceptance, among Saudi ophthalmologists, of the use of SLT as a first-line treatment for glaucoma.

Methods: A cross-sectional study enrolled 128 ophthalmologists who practice in Saudi Arabia. A structured online questionnaire was used for data collection. The questionnaire evaluated sociodemographic data, current glaucoma practice, technology acceptance model (TAM) and potential barriers to incorporating SLT as the primary treatment for glaucoma.

Results: The mean age of the participants was 40±9.6 years, 65.6% males. Almost one-third were glaucoma specialists and 89% followed the American Academy of Ophthalmology recommendations for managing glaucoma patients. The majority (96.1%) used medical treatment as the initial therapy, 72.7% agreed that SLT is safe and 59.4% agreed that it controls intraocular pressure. Almost half of the participants were willing to use SLT as the primary treatment, however, only 42.2% considered themselves experienced enough to do so. The most reported barriers were inadequate training, non-availability of SLT machine and low efficacy reported by; 47.7%, 41.4%, and 27.3% of participants, respectively.

Conclusions: Despite the good overall acceptance of SLT as a first-line treatment for glaucoma, the majority of participants were still using medical therapy as the primary treatment. The outcomes of this study indicate that to overcome the barriers to incorporating SLT, Saudi ophthalmologists require more training to effectively implement this modality into their practices.

Outcome of Trabeculectomy Along With Scleral Buckling or After Scleral Buckling With Vitreoretinal Surgery

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Purpose: To determine the outcome of trabeculectomy done in combination with scleral buckling or after scleral buckling or band buckle along with vitreoretinal surgery.

Methods: Retrospective observation study which included patients undergoing trabeculectomy done in combination with isolated scleral buckling or requiring trabeculectomy after scleral buckling or band buckle surgery done along with vitreoretinal surgery between 2000- 2020 with a minimum follow-up of 6 months for up to 5 years. Based on the type of surgery done, patients were grouped into the scleral buckling along with the trabeculectomy group, the phacotrabeculectomy group, the trabeculectomy group and silicon oil removal along with trabeculectomy group. Success was defined as IOP >6 or < 18 mm Hg with and without anti-glaucoma medications by Kaplan Meier Analysis.

Results: A total of 37 eyes were analyzed. The median duration of follow-up was 12 months. Secondary glaucoma was the most common cause requiring trabeculectomy in 52.5% . The overall surgical success rate by Kaplan Meir analysis in the scleral buckling along with trabeculectomy group and in the silicon oil removal+ trabeculectomy group was 50 % respectively while in the phacotrabeculectomy group it was 80% and in the trabeculectomy group it was 70%.

Conclusions: Trabeculectomy may have moderate success in eyes with scleral buckle and after scleral buckling with Vitreoretinal surgery.

Outcomes of Trabeculectomy With Mitomycin C in Juvenile Open Angle Glaucoma

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Purpose: To evaluate outcomes of trabeculectomy with Mitomycin C (MMC) in patients with juvenile open-angle glaucoma (JOAG).

Methods: A retrospective analysis of patients who underwent trabeculectomy with MMC, between January 2019 and October 2022 with minimum 6 months follow-up was conducted. Outcome measures were a complete success (IOP 5-21mmHg without antiglaucoma medications (AGM)), qualified success (IOP 5-21mmHg with AGM), and failure (IOP<5mmHg or >21mmHg with AGM).

Results: The study included 54 eyes of 41 JOAG patients who underwent trabeculectomy with MMC. Of the 41 patients, 32 were males and 9 were females. The average age at surgery was 28.9+/-10.54 years. At 6 months of surgery, 87.04% of patients had complete success, and 12.09% of patients had qualified success. There were no failures at 6 months. The average IOP reduced from 29.26 ± 11.38 preoperatively to 13.02 ± 4.76 at 6 months. A significant reduction was seen in the number of medications required per eye (3.85±1 pre-operatively to 0.2 ± 0.51 at post-op 6 months). In post-op complications, choroidal folds due to hypotony were seen in 9.25% of eyes, and bleb leak was seen in 7.41% of eyes.

Conclusions: Trabeculectomy with MMC provides promising results in JOAG patients presenting at a young age with poor IOP control despite maximum medical therapy.

Outcomes of Trabeculectomy and Ahmed Glaucoma Valve Implantation in Patients with Iridocorneal Endothelial Syndrome

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Purpose: To evaluate the long-term outcome of trabeculectomy and Ahmed glaucoma valve (AGV) implantation in iridocorneal endothelial syndrome (ICE).

Methods: Patients with glaucoma secondary to ICE syndrome who underwent either trabeculectomy or AGV surgery from 2009 to 2020 were included. All patients were followed for at least 2 years. Surgical success was defined as complete according to the levels of IOP (<18) and at least 20% reduction from preoperative IOP without medications and qualified as a complete success but with medications, where the number of medications was less than preoperative numbers. Cumulative success was the sum of the qualified and complete success.

Results: Twenty-nine eyes of 29 patients were included. Trabeculectomy was done in 13 patients (group A, 44.8%), and 16 patients underwent AGV surgery (group B, 55.2%). The mean age was 49.8+7.8 and 44.6+8.8 years in groups A and B, respectively (p value=0.10). Mean IOP was not significantly different between groups preoperatively (p=0.70), and the effect of the type of surgery on IOP was not statistically significant at multiple follow-up time points (p=0.44). The effect of the type of surgery was not significant on the total number of IOP-lowering medications used throughout the study (p=0.81). Kaplan-Meier analysis showed complete success in 14 patients (48.3%), 11 patients (37.9%), and 7 patients (24.1%) at 6-month, 1 year and 2 years follow-up, respectively. The cumulative success rate was 95% at two years of follow-up for all patients.

Conclusions: In 2-year follow-up, trabeculectomy or AGV could significantly reduce the IOP in glaucoma patients secondary to ICE syndrome.

Panophthalmitis After Aurolab Aqueous Drainage Implant (Aadi) in Refractory Glaucoma With Vogt-Koyanagi-Harada Syndrome (Vkh): A Case Report From Bangladesh

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Purpose: To report a case of panophthalmitis following a valveless glaucoma drainage device (GDD) implant in refractory glaucoma with Vogt-Koyanagi-Harada Syndrome (VKH).

Methods: This case report of Vogt-Koyanagi-Harada (VKH) disease underwent Aurolab Aqueous Drainage Implantation (AADI) for refractory glaucoma and was on regular follow-up.

Results: The patient developed postoperative (2-month) panophthalmitis, characterized by sudden visual loss, moderate pain, redness, and purulent discharge. Systemic, topical, and intravitreal antibiotic therapy was started immediately, and evisceration was performed.

Conclusions: Endophthalmitis is an uncommon and typically delayed consequence following GDD implantation. GDD-associated endophthalmitis can be fatal and requires immediate treatment. In the case of panophthalmitis, this may be due to a comparatively long delay between symptom onset and presentation.

Pattern of Visual Field Defects in Newly Diagnosed Primary Open Angle Glaucoma Patients Attending Tertiary Care Hospital, Kathmandu, Nepal

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Purpose: The purpose of this study was to evaluate the location and pattern of visual field defects as measured by Humphrey Field Analyzer (HFA 24-2) in newly diagnosed primary open-angle glaucoma (POAG) attending a tertiary care hospital.

Methods: This was a cross-sectional, descriptive, hospital-based study. One hundred and four eyes of 52 patients during one year were included in this study. Patients with glaucomatous optic disc changes like vertically elongated optic cups, asymmetry of cup disc ratio (CDR) >0.2, thinning or notching of Neuro Retinal Rim (NNR), nerve fiber layer defect, Intraocular pressure (IOP) >20mmHg were included in the study. All 52 patients were examined with Humphrey visual field using 24-2 of both eyes. They were classified as mild, moderate, and severe glaucoma according to severity.

Results: The most prevalent visual field abnormality detected in mild glaucoma was a paracentral scotoma in the superotemporal and superonasal areas. Among those in the moderate stage, a superior arcuate defect was frequently observed, while a double arcuate defect was common in severe cases of primary open-angle glaucoma (POAG). There was a significant association between the severity of glaucoma and the pattern of visual field defect (p=0.000). The superior hemifield was affected twice more than the inferior hemifield in newly diagnosed cases of POAG.

Conclusions: Our study suggests that paracentral scotoma in the superotemporal and superonasal regions was the most frequent visual field defect observed in mild glaucoma. Superior arcuate defect and double arcuate defect were commonly seen among moderate and severe stages of newly diagnosed POAG, respectively.

Phacoemulsification Combined With High-Frequency Deep Sclerotomy (HFDS) in Primary Open Angle Glaucoma Patients in DR. Achmad Mochtar Bukittinggi Hospital

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Purpose: Glaucoma is the leading cause of irreversible blindness. Phacoemulsification-trabeculectomy combined procedure is performed for cataract and glaucoma patients. High-Frequency Deep Sclerotomy is a minimally invasive surgical technique to control IOP in POAG. The study aims to investigate whether IOP can be significantly reduced by phacoemulsification-HFDS combined procedure.

Methods: Data were collected from August 2022 to August 2023 in this retrospective non-randomized study. A total of 20 eye patients had undergone phacoemulsification combined with High-Frequency Deep Sclerotomy (HDFS). Intraocular pressure (IOP) was measured before and after surgery on the first day, 1, 2, 3 weeks, and 1 and 3 months postoperatively.

Results: After performing phacoemulsification combined with HDFS, the IOP was reduced from 29,87 mmHg to 16,67 mmHg, which is highly significant (p< 0,001). Mild hyphema is present in 1 (5%) case after the procedure.

Conclusions: HFDS combined with phacoemulsification is a potent surgical method that significantly reduces the IOP.

Pigment Dispersion Induced Ocular Pressure Rise Following Posterior Chamber Phakic Implantable Collamer Lens (ICL) Implantation

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Purpose: To describe a series of patients who developed pigment dispersion and secondary ocular hypertension (OHT) or glaucoma following ICL implantation.

Methods: Retrospective case note review of patients seen at a Malaysian tertiary eye center (ISEC KL) with high intraocular pressures (IOP) following ICL implantation elsewhere over an 18-month period (February 2022 - July 2023).

Results: Six patients were identified (Age range 25-32 years). All patients had prior uneventful implantation of posterior chamber ICLs with a central hole design at an eye center elsewhere. They presented with raised IOPs despite being already started on glaucoma medication. Medicated IOPs on presentation ranged from 20 mmHg to 30 mmHg, with the highest IOPs at various time points noted at 40 mmHg for 3 patients. Pigment dispersion was ubiquitous in all patients with chronic presence of pigmented cells and flare in the anterior chamber (AC), pigment on the ICL surface, and heavy pigmentation of the trabecular meshwork (TM). Secondary synaechial angle closure was noted in 2 patients. Secondary glaucoma was present in 3 patients who went on to require Glaucoma Drainage Devices for persistently high IOPs despite ICL explantation. One of these patients was also diagnosed with concurrent myopic choroidal neovascular membrane (CNV) in both eyes requiring intravitreal anti-VEGF injections. Pre-operative optical coherence tomogram (OCT) confirmed normal maculae. IOPs normalised gradually in 1 patient without explanation, and 2 patients were lost to follow up.

Conclusions: ICL implantation is mostly safe but pigment dispersion and secondary glaucoma are potentially devastating complications with some patients requiring major Glaucoma surgery thereafter.

Posterior Segment Complications Following Valve Surgery in Vitrectomized Eyes

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Purpose: To describe vision-threatening posterior segment complications and discuss their management, following Ahmed Glaucoma Valve (AGV) in eyes with previous vitreous surgery.

Methods: AGV surgery was performed in two vitrectomized eyes with intractable glaucoma. The first case was an 8-year-old boy with angle-recession glaucoma, who had previously undergone pars plana vitrectomy for dense vitreous hemorrhage in his right eye, following an injury with a cricket ball. The intraocular pressure (IOP) in his right eye was not controlled despite maximal medical therapy. The second case was a 63-year-old female who underwent vitrectomy in her right eye for non-resolving vitreous hemorrhage following complicated cataract surgery. The BCVA was 20/80 and IOP was 42mm Hg on maximum anti-glaucoma drugs and oral acetazolamide.

Results: Both eyes had severe hypotony (IOP < 4mm Hg) on the first post-operative day. The first case developed pre-macular sub-ILM bleed, which clotted and became more organized with thickening and wrinkling of overlying ILM after 4 weeks. In the second patient, kissing choroidal detachment developed, which did not resolve with systemic and periocular steroids. Both cases required further surgical intervention. The thick, firmly adherent ILM was removed successfully in the first case, and in the second case, suprachoroidal fluid was drained using a modified sclerotomy technique.

Conclusions: AGV surgery in vitrectomized eyes can lead to severe vision-threatening complications. The absence of vitreous support in such eyes could be the possible cause of sudden decompression, and severe hypotony leading to posterior segment complications. Both cases in our study were managed successfully.

Pupillary Block Following Retropupillary Iris-Claw Intra Ocular Lens Implantation

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Purpose: To report a case of pupillary block developed 5 days following retropupillary iris-claw intraocular lens (IOL) implantation.

Methods: To present a case report.

Results: A 65-year-old male visited a tertiary eye hospital due to right ocular pain lasting for two days. This complaint was accompanied by blurred vision, redness, nausea, and vomiting. He underwent pars plana vitrectomy, pars plana lensectomy, and retropupillary iris-claw IOL implantation surgery five days ago for dropped lens management due to a history of blunt trauma of his right eye. Examination of the right eye revealed visual acuity was 1/60, intraocular pressure (IOP) was 50 mmHg, corneal edema, shallow anterior chamber, oval pupil, and retropupillary iris-claw IOL presented. Ultrasound biomicroscopy showed iris-claw IOL malposition with the convex side up in retropupillary implantation. Posterior segment examination of the right eye was done using ultrasonography and was within normal limits. An examination of the left eye was within normal limits. The patient was diagnosed with secondary glaucoma in the right eye due to pupillary block caused by malposition of iris-claw IOL. The patient was given ocular hypotensive agents and underwent laser peripheral iridectomy (LPI). One day following LPI, his IOP decreased to 18 mmHg. He was discharged with topical corticosteroid tapered weekly and topical hypotensive agent therapy. After three weeks, his best corrected visual acuity improved to 0.63, and the IOP reduced to 14 mmHg.

Conclusions: The IOL implantation malposition causes secondary glaucoma due to pupillary block. LPI might eliminate the pupillary block and adjust the normal iris position.

Real-world Study on Ocular Surface Condition in Patients With Primary Angle-Closure (PAC) and Primary Angle-Closure Glaucoma (PACG) Before Treatment

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Purpose: This study aimed to investigate the real-world ocular surface condition in PAC and PACG patients before treatment and evaluate its relationship with disease severity.

Methods: We conducted a retrospective analysis of clinical data from a group of PAC and PACG patients. Parameters included age, gender, Ocular Surface Disease Index (OSDI), Schimer's test, Ocular Surface Comprehensive Analysis, Confocal Microscopy Examination, IL-6 Detection. Disease severity was also assessed and correlated with anterior segment condition.

Results: A total of 30 PAC, 30 PACG, 20 dry eye patients, and 30 healthy controls were included. Abnormal anterior segment conditions were commonly observed before treatment. The Schirmer test results in the dry eye group were lower than those in the PAC group, PACG group, and control group.

Conclusions: Ocular surface parameters and baseline data of untreated PAC and PACG patients were better than those of the dry eye population but significantly lower than those of the healthy control group. Among them, the ocular surface status of untreated PAC patients was better than that of PACG patients. This suggests that the ocular surface microenvironment of PAC and PACG patients is already in a poor state before the use of intraocular pressure-lowering medications.

Refinements in Trabeculectomy Technique to Enhance the Safety and Success of Glaucoma Filtration Surgery

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Purpose: The purpose of this study was to describe a modified surgical technique with releasable sutures and evaluate its safety and efficacy in lowering intraocular pressure (IOP) in glaucoma patients.

Methods: This was a randomized-controlled prospective clinical trial that included 100 eyes of 85 patients diagnosed with primary open-angle glaucoma. They were divided into two groups: the 'trabeculectomy with single suture (group A) and the 'modified trabeculectomy with releasable sutures (group B) with adjunctive application of mitomycin-C (MMC) in both groups. The main outcome results included the cumulative probability of surgical success, IOP values, complications and the number of antiglaucoma drugs needed.

Results: There was a highly significant reduction in IOP to baseline values in both groups at the last visit at 24 months. Group B achieved a higher success rate with fewer early and late postoperative complications ($P < 0.05$). Shallow anterior chamber and iridocorneal touch occurred significantly less in group B than in group A. No significant adverse effects were caused by this modified technique with releasable sutures.

Conclusions: Both procedures appear to be equivalent in lowering IOP in surgical management of glaucoma. But Modified trabeculectomy with releasable sutures could be an efficient, relatively safer technique for a successful trabeculectomy due to fewer early complications related to excessive aqueous outflow than single suture.

Related Literature in the Field of High Myopia with Glaucoma in the Past Ten Years — Visual Analysis based on CiteSpace

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Purpose: To analyze the current situation and hotspots in the field of high myopia with glaucoma using the bibliometrics method.

Methods: Articles about high myopia with glaucoma were retrieved systematically from the core database of Web of Science in the past ten years (2012-2022). The annual publication volume, countries, institutions, author cooperations, keywords, and clusters were analyzed using CiteSpace software.

Results: A total of 453 articles were retrieved and included in this study. The country with the highest publication volume was China (103 papers). The institution with the highest number of papers was Heidelberg University (46 papers), followed by Capital Medical University (35 papers), and Seoul National University (23 papers). Professor Jost B. Jonas (48 papers) ranks first in this field. The top five keywords are “Glaucoma”, “Myopia”, “Optical coherence tomography”, “High myopia”, and “Open-angle glaucoma”. The research directions in this field focus on myopia-related refraction research, glaucoma-specific optic nerve changes, and high myopia-related optic nerve changes in glaucoma.

Conclusions: High myopia combined with glaucoma is a hot field worldwide. China is at the leading level in this research. The research hotspots focus on fundus-related changes and are expected to guide the early screening and diagnosis of glaucoma in the future.

Retrospective Study on the Efficacy and Safety of Netarsudil Eyedrops in the Treatment of Glaucoma: A Real-world Analysis

*First Author: Piyush **JAIN***

Purpose: Glaucoma is a chronic, progressive eye disease that can lead to irreversible vision loss if left untreated. Netarsudil, a novel Rho kinase inhibitor, has emerged as a promising therapeutic option for reducing intraocular pressure (IOP) in patients with glaucoma. This retrospective study aims to evaluate the efficacy and safety profile of netarsudil eyedrops in a real-world setting.

Methods: A retrospective analysis was conducted on the medical records of glaucoma patients who were prescribed netarsudil eyedrops at a tertiary eye care center over a specified period. Data regarding demographic characteristics, baseline IOP, duration of treatment, and changes in IOP were collected. Adverse events and tolerability were also assessed.

Results: A total of 146 patients (mean age: 58 years) were included in the study. The average duration of netarsudil treatment was 6 months. The analysis revealed a statistically significant reduction in mean IOP from baseline ($p<0.001$). The mean IOP reduction at 3 months and 6 months was 3.2 mmHg (16.4%) and 3.8 mmHg (19.5%), respectively. Subgroup analysis based on the type of glaucoma demonstrated consistent IOP-lowering effects of netarsudil across various glaucoma subtypes. Adverse events were reported in 8% of patients, with the most common being conjunctival hyperemia (4%) and ocular discomfort (2%).

Conclusions: This retrospective study suggests that netarsudil eyedrops are effective in reducing IOP in patients with glaucoma in a real-world clinical setting. The treatment was well-tolerated, with a low incidence of adverse events. Netarsudil shows promise as an adjunctive therapy or alternative treatment option for glaucoma patients, providing a favorable risk-benefit profile.

STREAMLINE®: 12-Month Outcomes of a Novel Glaucoma Surgical Device

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Purpose: STREAMLINE is a minimally invasive glaucoma surgical device that creates localized goniotomies and injects viscoelastic to dilate Schlemm’s canal. We report the efficacy and safety of this device for up to 12 months of follow-up.

Methods: We retrospectively reviewed 21 eyes with primary open-angle glaucoma (POAG) that underwent surgery with STREAMLINE and 31 eyes with POAG that underwent STREAMLINE surgery with phacoemulsification. Primary outcomes include intraocular pressure (IOP) and the number of glaucoma medications recorded at multiple time points until 12 months post-surgery. Statistical analysis was performed with paired sample t-tests. Secondary outcomes include intraoperative and postoperative complications.

Results: For patients who underwent standalone STREAMLINE surgery, the mean IOP at baseline was 23.6 mm Hg, and at 12 months it was 19.2 mm Hg ($p=0.02$). The mean number of glaucoma medications at baseline was 2.1, and at 12 months it was 1.9 ($p=0.72$). Complications included an IOP spike in two patients following surgery and a steroid response in one patient. For patients who underwent STREAMLINE surgery with cataract extraction, the mean IOP at baseline was 17.9 mm Hg and at 12 months was 13.8 mm Hg ($p=0.01$). The mean number of glaucoma medications at baseline was 1.4 and at 12 months was 0.6 ($p<0.001$).

Conclusions: STREAMLINE Surgical System is safe and effective at lowering IOP as both a standalone treatment and in conjunction with cataract extraction in patients with POAG. The number of prescribed glaucoma medications at 12 months also decreased significantly in the STREAMLINE with cataract extraction cohort. Minimal complications were reported.

Safety and Effectiveness of Canaloplasty With Trabeculotomy in Pseudophakic Eyes With Severe Glaucoma

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Purpose: To evaluate the safety and effectiveness of standalone canaloplasty and trabeculotomy with the OMNI Surgical System in the treatment of severe primary open-angle glaucoma (POAG).

Methods: Twelve eyes were evaluated at baseline. Primary outcome measures were changes in intraocular pressure (IOP) and number of antiglaucoma medications (AGMs) from baseline through 3- and 6-months of follow-up, analyzed with paired sample t-tests. Secondary outcome measures included the percentage of eyes achieving an IOP < 14 mmHg, an IOP < 17 mmHg, and > 20% IOP reduction from baseline at 6 months.

Results: No vision-threatening complications or adverse effects were observed in any eye throughout the follow-up period. At 3 months (n=7), IOP was reduced from 28.0 ± 3.3 mmHg to 14.1 ± 2.6 mmHg (49% reduction; p<0.01), and the number of AGMs was reduced from 1.3 ± 0.5 to 0.9 ± 0.3 (33% reduction; p=0.08). At 6 months (n=6), IOP was reduced from 25.8 ± 4.6 mmHg to 13.3 ± 2.3 mmHg (48% reduction; p<0.01), and the number of AGMs was reduced from 1.3 ± 0.5 to 1 (25% reduction; p<0.05). The percentage of eyes achieving an IOP < 14 mmHg, an IOP < 17 mmHg, and > 20% reduction from baseline at 6 months was 67%, 100%, and 83%, respectively. One-third of eyes experienced reduction by > 1 AGM.

Conclusions: Through 6 months, canaloplasty/trabeculotomy with OMNI produced significant IOP reductions and an excellent safety profile. The procedure appears effective in the treatment of pseudophakic eyes with severe glaucoma.

Safety and Efficacy of Ab-Interno Canaloplasty (ABiC) Using the iTrack in Angle Closure Glaucoma: 12-Month Results

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Purpose: Report the safety and efficacy of ab-interno canaloplasty using the iTrack™ device (Nova Eye Medical, Fremont, USA) in patients with primary angle closure glaucoma (PACG).

Methods: Prospective multicenter (Australia, USA, Canada, United Kingdom) case series of 45 eyes in 45 patients with PACG undergoing canaloplasty via an ab-interno technique, with or without cataract extraction. Data was retrieved from the International Glaucoma Surgery Registry. Outcome measures included intraocular pressure (IOP), number of glaucoma medications, and adverse events. 12-month results are presented.

Results: Mean IOP and number of medications decreased from 21.0±6.2mmHg and 1.98±1.47 to 13.5±3.4 mmHg (p<0.01) and 0.96±1.34 (p<.001) at 6 months (n=26), and to 14.9±4.1 mmHg (p=0.004) and 0.64±0.92 (p=0.003) at 12 months (n=11). The 5 eyes operated with canaloplasty as a standalone procedure had baseline IOP and meds of 22 mmHg and 2 respectively which reduced to 15 mmHg and 1 at 6M postoperatively. 20% and 27% of the eyes had an IOP ≤15mmHg and ≤18mmHg at baseline, respectively, Vs 65% and 31% at 6M postoperatively; 64% (7/11) of the eyes were medication-free at 12M from 18% (8/45) at baseline. One eye had a hyphema (>10% anterior chamber) that resolved without late sequela.

Conclusions: Canaloplasty, with or without phacoemulsification, performed on PACG eyes resulted in significant IOP and medication reductions with most eyes medication-free at 12 months.

Safety and Efficacy of the Hydrus Microstent During the Initial Learning Curve

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Purpose: To examine the safety and efficacy of Hydrus Microstent during the learning curve of surgeons new to the procedure.

Methods: A retrospective study including a consecutive series of the first 38 Hydrus procedures performed by 3 surgeons. Two were experienced cataract and glaucoma surgeons with previous experience in MIGS but not Hydrus, and one was a glaucoma fellow. In 37 cases, Hydrus was combined with cataract surgery. Patients were followed for a minimum of 3 months, with the primary outcomes percentage and absolute change in intraocular (IOP) at the time of listing for surgery compared to the visit after and closest to 3 months post-op. The relationship between the order of surgery and IOP reduction was examined using regression analyses.

Results: The mean baseline IOP was 20.5±6.5 mmHg (range 11-35 mmHg), using an average of 2.0 topical medications. The average mean deviation was -9.9±7.4dB. Peak IOP prior to surgery was 26.3±5.8 mmHg. The average IOP at 3 months was 14.8±3.6

mmHg, significantly lower than baseline (P<0.001). 29 of 38 eyes (81.6%) had ≥20% reduction in IOP on the same or fewer medications. The average reduction in IOP was 23.3±27.1% (5.7±6.7 mmHg), with an average reduction of 1.4±1.2 medications. Eyes with higher baseline IOP had significantly greater IOP reduction (0.9, 95% CI 0.7 to 1.1 mmHg, greater IOP reduction per 1 mmHg higher baseline IOP, P<0.001). Surgeon experience did not significantly influence efficacy. Two patients had transient hyphaema resolving by 1 week.

Conclusions: Surgeon experience during the initial learning curve for Hydrus had no apparent effect on efficacy or safety at 3 months.

Short-term Outcomes of Ab-Externo MicroShunt in Patients With Primary Open-Angle Glaucoma and Exfoliation Glaucoma

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Purpose: To evaluate the short-term outcomes of the ab-externo MicroShunt (PRESARFLO™) in patients with primary open-angle glaucoma (POAG) and exfoliation glaucoma (EXG).

Methods: This non-randomized, observational study included eyes diagnosed with either POAG or EXG that underwent MicroShunt surgery. Twenty-five eyes from patients with POAG and nine eyes from patients with EXG were analyzed. Preoperative and postoperative intraocular pressure (IOP), best corrected visual acuity (BCVA), and the number of anti-glaucoma medications administered were recorded at each visit for up to 3 months. IOP readings higher than a) 20 mmHg and b) 15 mmHg during two consecutive visits were considered pressure failures. Surgical revisions, secondary IOP-lowering interventions, or severe adverse events, such as loss of light perception, were categorized as surgical failures. To compare postoperative outcomes between the POAG and EXG groups, survival curves were generated, and log-rank tests were conducted.

Results: The baseline IOP was 21.7 ± 6.2 mmHg for the POAG group and 27.6 ± 10.8 mmHg for the EXG group (p=0.07). There was no significant difference in postoperative IOP at the final visit between the POAG (14.2 ± 5.1 mmHg) and EXG groups (14.3 ± 6.7 mmHg) (p=1.0). Based on criteria a), survival rates were 73.1% for POAG and 57.1% for EXG (p=0.3). For criteria b), the rates were 81.5% for POAG and 71.4% for EXG (p=0.5).

Conclusions: The newly developed MicroShunt effectively reduced IOP in both POAG and EXG eyes, though postoperative IOP was slightly elevated in EXG eyes compared to POAG.

Steroid Induced Glaucoma: Causes, Retinal Nerve Fiber Layer Characteristics, and Outcomes of Management. A Study in a Tertiary Hospital in Malang, Indonesia

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Purpose: To describe the causes, the retinal nerve fiber layer (RNFL) characteristics, and the outcomes of management in steroid-induced glaucoma (SIG) patients.

Methods: A total of 24 medical records consisting of patients with IOP elevation and a history of steroid use who have optical coherence tomography (OCT) results between January 2019 - June 2023 were reviewed retrospectively. This study was carried out in Tertiary Hospital in Malang, Indonesia. If average RNFL thickness > 92.7 µm classified as normal and if < 60.2 µm classified as SIG.

Results: There were 46 eyes of 24 patients. The mean age was 25.42 years old, with 91.7% of cases being bilateral. 83.3% of patients used steroid eye drops, 66.7% of patients used steroid for more than a year, 54.2% of patients got the steroid easily without prescription. The mean IOP at the initial visit was 33.28 mmHg, 71.7% of eyes were treated by antiglaucoma therapy, and 28.3% of eyes underwent glaucoma surgery. 82.6% of eyes achieved the initial target pressure, with the mean IOP after treatment being 14.56 mmHg. From the OCT, 26.1% of eyes had normal of average RNFL thickness, and 54.3% of eyes were classified as SIG. Inferior and superior quadrants had a higher percentage thinning of RNFL (38.61% and 34.29%, respectively) than nasal and temporal quadrants (21.45% and 18.86%, respectively).

Conclusions: Steroid eye drop is the most common cause of IOP elevation. In this study, the IOP can be controlled by antiglaucoma therapy. In SIG, RNFL thinning is more commonly found in the inferior and superior quadrants.

Surgical Approach of Secondary Angle Closure Glaucoma After Trauma: A Case Series

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Purpose: Secondary angle-closure glaucoma can occur due to pupillary blockage induced by lens dislocation after trauma. Trauma can lead to a shallow anterior chamber, which eventually elevates intraocular pressure. Therefore, the aim of this study is to report a case series and comprehend surgical approaches in managing secondary angle-closure glaucoma due to traumatic events.

Methods: To present a case series.

Results: Case 1: A forty-four-year-old male presented with blurred vision in his left eye after being hit by a table. The intraocular pressure of his left eye was 50 mmHg during the initial visit. He was diagnosed with secondary angle-closure glaucoma of the left eye caused by a subluxated lens with traumatic cataract. He underwent phacoemulsification combined with trabeculectomy. Case 2: A fifty-eight-year-old male presented with blurred vision in his left eye after being hit by a shuttlecock. The intraocular pressure of his left eye was 42 mmHg during the first visit. He was diagnosed with secondary angle-closure glaucoma of the left eye with traumatic cataract. He underwent intracapsular cataract extraction combined with anterior vitrectomy.

Conclusions: The most common etiology of secondary angle-closure glaucoma caused by lens dislocation is trauma. Lens extraction is the definitive treatment for managing secondary angle-closure glaucoma caused by lens subluxation. A comprehensive clinical assessment is necessary to assist in selecting the appropriate management for the patient.

Surgical Outcomes of Additional Ab Interno 240° Trabeculotomy as the Second Surgery Using a Suture in Patients With Exfoliation Glaucoma

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Purpose: In this retrospective 12-month follow-up study, we investigated the surgical outcomes of additional ab interno 240° trabeculotomy using a suture (S-TLO) in patients with exfoliation glaucoma (XFG) who had previously undergone ab externo 120° trabeculotomy using a metal probe (M-TLO) as the first surgery.

Methods: This retrospective study enrolled 7 eyes of 7 patients with XFG who underwent S-TLO between January 2015 and August 2022. We investigated the following parameters: the period from first M-TLO to second S-TLO, intraocular pressure (IOP), the number of IOP-lowering medications, the incidence rate of early postoperative complications (hyphema with niveau formation and transient IOP spikes), and the success rate by Kaplan–Meier survival analysis. The postoperative IOP and number of IOP-lowering medications were obtained at 1, 3, 6, 9, and 12 months post-surgery.

Results: The mean period was 57.4 months from the first M-TLO to the second S-TLO. The median IOP was 25.3 mmHg at baseline and 14, 13, 15, 13, and 15 mmHg at 1, 3, 6, 9, and 12 months post-surgery. The median IOP was significantly lower until 6 months post-surgery compared with baseline ($p<0.05$). The mean number of IOP-lowering medications was 3.9 at baseline and 2.9, 3.0, 3.3, 3.4, and 3.4 at 1, 3, 6, 9, and 12 months post-surgery (no significant differences between these time points compared with baseline). Kaplan–Meier cumulative survival analyses showed an 85.7% success rate. Incidences of hyphema and transient IOP spikes were confirmed in 0 and 3 eyes.

Conclusions: S-TLO as a second surgery could be a useful operation to avoid trabeculectomy.

Suture GATT With X-Nit Sfiol as a Savior for Aphakic Glaucoma Following Open Globe Injury in the Developing World

*First Author: Indira **PEGU***
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Purpose: To emphasize the applicability of suture GATT (Gonioscopy assisted transluminal Trabeculotomy) and X-NIT SFIOL (Scleral fixated IOL) in secondary glaucoma in a developing country.

Methods: A 42-year-old female presented with a corneal tear with a subluxated lens. The patient was operated on for corneal tear repair, and lens extraction with automated vitrectomy. On subsequent follow-up, she developed aphakic glaucoma with IOP -24 mm Hg by applanation, b0.7 cupping, and inferior notching. She underwent GATT with X-NIT SFIOL in the same sitting.

Results: IOP is well controlled at 14 mm Hg without any anti-glaucoma medications till the last visit 9 9-month post-operative period and attained a BCVA of 6/9.

Conclusions: Glaucoma surgeries are evolving, and we need a safe, effective, and affordable option. Minimally invasive glaucoma surgeries including suture GATT are kept for mild to moderate glaucoma only. But here we want to put forward suture GATT for secondary glaucoma as in our case of aphakic glaucoma following open globe injury. We were successful in controlling IOP at 14 mm Hg and attaining a BCVA of 6/9 by performing GATT and SFIOL in the same sitting, making it an affordable and effective surgery in such a situation in addition to avoiding the need for multiple surgeries.

The Challenges in Management of Aqueous Misdirection After Glaucoma Filtration Surgery: A Case Series

*First Author: Arini Safira Nurul **AKBAR***

Purpose: To report challenges in the management of aqueous misdirection after glaucoma filtration surgery.

Methods: A case series. Two patients developed aqueous misdirection after undergoing glaucoma filtration surgery. The first case was a male, 71 years old, with primary angle closure glaucoma (PACG) who had trabeculectomy and subsequent cataract extraction. Two weeks after the surgery, the intraocular pressure (IOP) was 36 and the anterior chamber (AC) was shallow despite a patent peripheral iridectomy. The second case was also male, 90 years old, with primary open-angle glaucoma (POAG) and had a combination

procedure of phacotrabeculectomy. Several weeks after the procedure, the IOP was 25 and the AC was shallowing with a patent peripheral iridectomy.

Results: Initially, both cases were treated with anti-glaucoma medication but had refractory high IOP. Laser capsular-hyaloidectomy was performed in both cases with neodymium-yytrium alumunium garnet (Nd-YAG) laser. Immediately afterward, the AC deepened and the IOP lowered. On the follow-up the IOP was controlled without any glaucoma medication in both cases.

Conclusions: Aqueous misdirection, also known as malignant glaucoma, is a rare yet devastating complication of glaucoma filtration surgery. It can happen in cases with PACG and PAOG. Early diagnosis and prompt treatment are of utmost importance in the management of these cases. In our cases, Nd-YAG laser capsular-hyaloidectomy was sufficient to resolve the condition and gave good results.

The Effect of Prednisone Acetate Eyedrop Exposure on the Thickness of the Inner Wall of Schlemm's Canal in Wistar Rats

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Purpose: To determine the effect of prolonged exposure to prednisolone acetate eye drops on the inner wall thickness of Schlemm's canal in Wistar rats.

Methods: This is a true experimental study with a posttest-only controlled group design. 28 Wistar rats were divided into four groups: 2 treatment groups (prednisolone acetate eyedrop) and 2 control groups (placebo). The inner wall thickness of Schlemm's canal in the treatment and control groups was observed for 4 and 6 weeks, respectively. Staining of preparations using hematoxylin-eosin (HE) for histopathological analysis by pathologists.

Results: The thickness of the inner wall of Schlemm's canal after exposure to prednisolone acetate eye drops in treatment group 1 (4 weeks) was thicker than the control group 1 ($p < 0.001$), treatment group 2 (6 weeks) was thicker than the control group 2 ($p < 0.001$), and treatment group 2 was thicker than treatment group 1 ($p < 0.001$).

Conclusions: The length of exposure time of prednisolone acetate eyedrop remodels the thickness of the inner wall of the Schlemm's canal in Wistar rats.

The First Fifty Cases of Trabeculectomy With Mitomycin-C: A Two-Year Retrospective Cohort Study and Lessons Learned

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Purpose: This report presents a two-year assessment of intra-ocular pressure and subsequent complications following trabeculectomy.

Methods: The study involves glaucoma patients who underwent primary trabeculectomy. Data on demographic, clinical, and therapeutic variables were gathered. The primary outcome is surgical success or failure, with failure being defined as a reduction in intra-ocular pressure of less than 20% from the baseline, hypotony, re-operation, or loss of light perception.

Results: During the two-year review, there were 34 patients, with men comprising 61.76% of the total. The patients were 39.74 ± 13.52 years old on average. Primary open-angle glaucoma and uveitic glaucoma are the two most prevalent, and most cases (81.82%) involved advanced stages. At two years of follow-up, intra-ocular pressure dropped from 30.55 ± 14.93 to 11.25 ± 1.26 mmHg ($p < .0001$). The number of anti-glaucoma medications used considerably dropped from five to at least one (median, $p < .05$). Severe anterior chamber inflammation was seen in 41.82% of the patients ($n = 23$) in the early postoperative period, but failed blebs (16.36%) were more frequent later. Further treatment was needed in 12 eyes (21.82%) where surgical revision was the most frequently performed (41.47%) in order to achieve appropriate pressure control. Only 69.23% of patients (out of 13 eyes) still had success after 18 months after surgery, compared to 67.86% (out of 28 eyes) at 12 months.

Conclusions: In our experience, mitomycin-C augmented trabeculectomy provides favorable outcomes for pressure control and a decrease in the need for anti-glaucoma medications up to two years after the surgery.

The Influence of Citicoline on Visual Field Impairment in Individuals Afflicted by Glaucoma: A Systematic Review

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Purpose: Our review aims to provide a comprehensive understanding of citicoline's efficacy in improving visual field defects caused by glaucoma.

Methods: This systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline and was conducted in four databases (PubMed, Science Direct, ProQuest, and Cochrane). We included studies with available full-text containing citicoline therapy on glaucomatous

patients. Non-English studies, animal studies, review articles, case studies, and editorial letters were excluded. The outcome of interest in this review is Visual Field examination and Retinal Nerve Fiber Layers (RNFL) thickness as a secondary outcome.

Results: From four studies, a total of 202 patients (202 eyes) were included. Various citicoline preparation and visual field machines were used in our study. Glaucoma progression rate was significantly reduced in two studies using visual field as its parameter (all p<0.05). Recovery of visual field defects (ranging from 0,1 to 1,1 MD difference) was significantly detected in three out of four studies (p<0.05). Specifically, one of these studies demonstrated these enhancements within the initial year of assessment, while the other two studies indicated considerable effects during the second year of investigation. RNFL thickness was evaluated in two studies, and a statistically significant decrease (p<0.05) was found. The total period of one trial was 24 months, while the other extended to 36 months.

Conclusions: Citicoline treatment has been shown to improve visual field defect, reduce glaucoma progression, and increase RNFL thickness in patients with glaucoma. Overall, citicoline addition to treatment is effective in improving visual function in glaucoma patients.

The Initial Learning Curve, Safety and Efficacy of the OMNI Procedure

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Purpose: To examine the safety and efficacy of the OMNI procedure.

Methods: Thirty-three consecutive patients were included and performed by two surgeons (AT and MLC). Both surgeons were experienced with canal-based minimally invasive glaucoma surgery (MIGS) but had no previous experience with OMNI. 23 cases were combined with phaco and 10 were standalone procedures. All patients had 360-degree canaloplasty performed by 120- to 180-degree trabeculotomy, with the exception of one patient treated with 360-degree trabeculectomy.

Results: 78.8% (26/33) eyes had ≥20% reduction in IOP on the same or fewer medications at 3 months postoperatively, with an average reduction in IOP of 31.3 +/- 18.9%. Mean pre-operative IOP was 20.4 +/- 6.1 mmHg (range 11 to 40 mmHg), reduced to 13.4 +/- 3.5 mmHg (range 8 to 21 mmHg) at 3 months, P<0.001. The number of medications used decreased from an average of 2.5 +/- 1.0 (range 1 to 4) to 1.1 +/- 1.1 (range 0 to 3). Regression analyses revealed no significant relationship between surgeon experience with OMNI (recorded as n_th OMNI procedure performed) and percentage reduction in IOP (P=0.300). Eyes with higher IOP at listing had greater percentage reductions in IOP (P=0.001), with each 1mmHg higher IOP at listing associated with a 1.7% greater reduction in IOP. Percentage reductions in IOP were not significantly different between combined and standalone procedures.

Conclusions: The OMNI procedure has a short learning curve, with no significant difference in outcome over the first cases performed by two surgeons. OMNI produced significant reductions in IOP regardless of whether it was combined with cataract surgery.

The Role of Stem Cells on Glaucoma

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Purpose: IOP reduction is currently achieved through a variety of means, including drug therapy and surgical intervention. However, there is no therapy that can restore the patient's eyesight for the better because there has been extensive RGC death and it cannot regenerate. Therefore, stem cells can be the only option to restore vision. Previous studies have shown that pluripotent stem cells (PSC), retinal progenitor cells (RPC), and Muller cells can be used to regenerate RGC.

Methods: The authors performed a review of the literature using PubMed databases, Medline databases and Google Scholar. The main inclusion criterion for this review was data of stem cell used in glaucoma. To provide the most up-to-date evidence, we preferred to choose more recent articles that were published in the last five years.

Results: In a study conducted by Weiss et al. with a sample size of 300 participants in the United States, it was observed that the administration of autologous stem cells derived from bone marrow through retrobulbar, subtenon, and intravitreal injections resulted in a notable enhancement in visual acuity. Furthermore, the study revealed improvements in macular thickness and retinal nerve fiber layer thickness within a timeframe of 3 to 6 months post-therapy.

Conclusions: Stem cell therapy holds significant potential as a treatment modality for individuals suffering from glaucoma, particularly those in advanced stages characterized by irreversible optic nerve damage. Current therapeutic approaches, such as intraocular pressure-lowering medications and surgical interventions, have proven inadequate in addressing this specific aspect of glaucoma pathology.

The Thickened of the Inner Wall of Schlemm's Canals as a Result of Long-term Exposure to Dexamethasone Eye Drop

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Purpose: The purpose of this study was to reveal the effect of long exposure time to dexamethasone eye drop on the Wistar rat inner wall thickness of Schlemm's canal.

Methods: The study used a posttest-only controlled group design. A total of 21 rats were allocated into 3 groups: 2 groups of treatment groups (dexamethasone 0,1 % were given 4 times a day), which Group 1 was observed for 4 weeks and Group 2 was observed for 6 weeks, and control groups received no treatment. The inner wall of Schlemm's canal thickness changes were graded using histopathology scores, and data were analyzed with the Kruskal Wallis and Mann Whitney Test.

Results: The inner wall thickening of the Schlemm canal in Group 1 was thicker than the control group ($p = 0.001$), Group 2 was thicker than the control group ($p = 0.001$); Group 2 was thicker than Group 1 ($p = 0.002$). The study showed that there was a significant inner wall thickening of Schlemm's canal at control, Group 1 and Group 2. ($p < 0,001$).

Conclusions: This study showed that the long exposure time of dexamethasone eye drops could increase the inner wall thickness of Schlemm's canal.

The United Kingdom PACS Plus Criteria: A Retrospective Cohort Review of 612 Consecutive Patients Treated With Bilateral YAG Peripheral Iridotomies

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Purpose: With better life expectancy, the prevalence of angle closure disease is expected to increase by 20% per decade. In 2022, the Royal College of Ophthalmologists (RCOphth) UK issued a guideline on managing angle closure disease. Hospital eye service (HES) referral and prophylactic treatment are recommended only for primary angle closure suspects (PACS) with "Plus" features only. We aimed to examine patients previously treated with YAG peripheral iridotomies (YAG PI) for the presence of "PACS Plus" features.

Methods: A retrospective cohort study of consecutive patients treated with YAG PI between 2015 to 2019 at a tertiary public-funded center was reviewed. Cases were examined to classify patients into Primary Angle Closure (PAC), PACS, and Primary Angle Closure Glaucoma (PACG). Patients with PACS were studied for "Plus" features.

Results: A total of 612 patients with gonioscopy-confirmed angle closure treated with YAG PI from years 2015 to 2019 were included. The mean age of patients presenting with angle closure disease was 68.5 years (SD 11.3). There were 390 (63.7%) patients with PACS, 102 (16.6%) with PAC, and 120 (19.7%) with PACG. Of the PACS patients, 159 (40.8%) patients had no "Plus" features. 181 (40.2%) patients had 1 "Plus" feature, 37 (9.5%) had 2 "Plus" features, and 13 (3.3%) patients had 3 "Plus" features.

Conclusions: In our cohort, a considerable proportion (40.8%) of PACS patients treated with YAG PI did not have Plus features and, therefore would not meet the proposed criteria for HES referral and YAG PI. With the proposed guidance, we expect a considerable reduction in HES referrals.

Two Case Reports of Giant Bleb Formation After Ahmed Glaucoma Valve Implantation

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Purpose: The objective of this study is to present two different types of giant bleb formation after Ahmed Glaucoma Valve (AGV) implantation: an anterior enlarged giant bleb and a posterior enlarged giant bleb.

Methods: Case report.

Results: In Case 1, a 70-year-old Japanese man underwent AGV implantation for neovascular glaucoma in his right eye (OD). Prior to the surgery, his intraocular pressure (IOP) was 23 mmHg, and his best-corrected visual acuity (BCVA) was 0.6 while using three antiglaucoma medications. Two months following the procedure, he developed double vision. Slit lamp examination revealed no issues, but T2-weighted orbital MRI indicated a posteriorly enlarged giant bleb in the upper temporal quadrant of the OD, pushing the eyeball. The patient underwent surgical excision of the anterior bleb wall. Three weeks later, the double vision resolved, and his IOP and BCVA were 17 mmHg and 0.7, respectively. In Case 2, a 10-year-old Japanese girl with childhood glaucoma due to a congenital cataract in her OD underwent AGV implantation along with pars plana vitrectomy. Prior to the surgery, her IOP was 30 mmHg, and her BCVA was 0.5 while using three antiglaucoma medications. After seven months, a slit lamp examination revealed an anteriorly enlarged giant bleb, which only caused her cosmetic concerns.

Conclusions: Two categories of significant bleb expansion after AGV implantation exist, determined by the enlargement direction: an anterior enlarged giant bleb and a posterior enlarged giant bleb. This classification's introduction aids in comprehending and

addressing this uncommon surgical complication more effectively.

Unmasking the Culprit: Post-traumatic Late-Onset Chronic Angle Recession Glaucoma Masked by a Concurrent Rhegmatogenous Retinal Detachment

*First Author: Cherry Vhie **ORTEGA***

Purpose: Angle recession glaucoma is an open angle glaucoma resulting from blunt ocular trauma. Intraocular pressure (IOP) elevation and glaucomatous optic neuropathy can develop insidiously, remaining unnoticed long after the initial injury. Conversely, retinal detachments typically reduce IOP as fluid exits through the exposed retinal pigment epithelium. This report discusses the diagnostic and management challenges in a case of angle recession glaucoma potentially masked by a concurrent rhegmatogenous retinal detachment.

Methods: A 61-year-old male presented with sudden-onset blurring of vision in his left eye. History was generally unremarkable except for a blunt eye trauma four decades prior. Initial examination revealed rhegmatogenous retinal detachment on the left eye. IOP was normal in both eyes. Urgent retinal detachment repair (Phacoemulsification with intraocular lens implantation-pars plana vitrectomy-endolaser-silicone oil tamponade) was then done. Following successful retinal reattachment, persistent IOP elevation prompted a more comprehensive evaluation.

Results: Gonioscopy and ultrasound biomicroscopy revealed a 360-degree angle recession. Severe generalized optic disc cupping, retinal nerve fiber layer thinning, and visual field depression suggested a chronic glaucomatous process, likely present prior to the onset of retinal detachment. Maximum anti-glaucoma medications initially controlled the IOP, however, elevation recurred after silicone oil removal, necessitating a subsequent glaucoma drainage device implantation.

Conclusions: This report highlights the significance of meticulous ophthalmic evaluation and awareness of potential diagnostic masking effects in managing intricate ocular conditions, even in cases with a remote and unrecalled history of eye trauma. The concealed elevation of IOP due to angle recession, alongside a coexisting retinal detachment, illustrates the complexity of clinical presentations.

Visual Field Areas Affecting Quality of Vision in Glaucoma Patients

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Purpose: To examine the visual field areas that influence the quality of vision (QOV) scores using the 25-item National Eye Institute Visual Function Questionnaire (NEI VFQ-25) in glaucoma patients.

Methods: Two hundred ten patients with primary open-angle glaucoma (POAG) or normal-tension glaucoma (NTG) who answered the NEI VFQ-25 were enrolled. The mean age was 59.1±11.5 years old. High myopia patients with axial lengths more than 28mm were excluded. This study used the actual threshold, total deviation, and pattern deviation of Humphrey Field Analyzer (HFA) 24-2 and 10-2 programs. Univariate regression analysis was used to determine scaled regression coefficients for Rasch-calibrated composite scores and 12 subscales (general health, general vision, ocular pain, near vision, distance vision, social function, mental health, role limitations, dependency, driving, color vision, and peripheral vision.) of each measurement point in the visual field.

Results: In HFA 10-2, the area connecting the optic disc to the fovea and macula was identified as a region that strongly affected QOV. Subscales excluding eye pain, color vision, and driving showed similar trends. In HFA 24-2, areas near Marriott's blind spot, inferior visual field, and near the fovea were identified as areas with a strong effect on QOV. HFA 10-2 had more test points that correlated strongly with QOV than HFA24-2. In comparing the actual threshold, total deviation, and pattern deviation, the actual threshold had the highest correlation with QOV.

Conclusions: The papillomacular and papillofoveal regions in HFA10-2 are important for QOV in glaucoma patients.

Visual Field Test for Glaucoma Patients by Imo Vifa Perimetry

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Purpose: The imo vifa (vifa) is a newly developed perimetry as a successor of the imo perimeter (Matsumoto C, et al. PloS One. 2016). We compared the test results of the vifa to those of the imo with glaucoma patients.

Methods: Subjects are fifty-two eyes of 26 glaucoma patients who underwent the 30-2 visual field test (VF) with the vifa and the imo on the same day. Mean deviation (MD) and pattern standard deviation (PSD) were compared with the vifa and the imo. Spearman's rank correlation coefficient of MD and PSD were also

calculated for analyzing the relationships between VF results of these 2 perimeters.

Results: The mean age of subjects was 63.8±10.4 (y). There was no significant difference in MD (p=0.42) and PSD (p=0.15) between the vifa and the imo. A significant correlation was observed in VF results with 2 perimeters, correlation coefficient of MD and PSD were 0.82 (p<0.01) and 0.91 (p<0.01). The test time of the vifa (9min 37sec±136sec) was significantly shorter than the imo (10min 52sec±188sec).

Conclusions: MD and PSD of the vifa show a strong correlation with those of the imo. The vifa possesses a comparable capability for detecting glaucomatous VF changes with the imo in a shorter test time.

Visual Outcomes of XEN Gel Stent in Comparison With Trabeculectomy as a Primary Surgical Procedure for Advanced Glaucoma

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*Co-Author(s): Eun Ji **LEE***

Purpose: The purpose of this study was to determine the visual outcome of XEN45 gel stent implantation in comparison with that of trabeculectomy (TLE) as a primary surgical treatment for advanced open-angle glaucoma (OAG).

Methods: Patients with advanced OAG (visual field [VF] mean deviation [MD] < -10 dB), who received primary XEN (n=67) or primary TLE (n=101), and were followed up over postoperative 6 months were included. Postoperative changes in the best-corrected visual acuity (BCVA) and VF MD were assessed to determine the visual outcome, together with a decrease in the intraocular pressure (IOP).

Results: BCVA significantly worsened postoperatively in both XEN (p<0.001) and TLE (p<0.001) groups, with the change not being significantly different between the groups (p=0.948). VF MD did not change significantly either in the XEN (p=0.174), or in the TLE (p=0.819) groups. The TLE group achieved a larger reduction of IOP than the XEN group (p<0.001). While hypotony-related complications were less frequent in the XEN group (p≤0.043), the incidence of visually significant postoperative complications was comparable between the groups. Eyes that underwent XEN required more frequent bleb needling than those that underwent TLE (p=0.03).

Conclusions: In patients with advanced OAG, significant visual loss occurred after XEN implant without significant VF change over 6 months postoperatively, which was similar to the outcome of TLE. Although hypotony-related complications were less frequent after XEN, patients required more frequent bleb needling than those receiving TLE, and visually significant complications did not differ between XEN and TLE groups.

Wipe-out Syndrome After Preserflo Implantation in a Patient With Pseudoexfoliation Glaucoma

*First Author: Jesspreet Kaur **HARBAN SINGH***
*Co-Author(s): Safinaz **MOHD KHIALDIN**, Norshamsiah **MD DIN**, Rupini **YOGESVARAN***

Purpose: Reporting a case of wipe-out syndrome after Preserflo Microshunt implantation in a case of pseudoexfoliative glaucoma.

Methods: Case report.

Results: A 72-year-old male with underlying diabetes mellitus, hypertension, dyslipidemia and rheumatoid arthritis. He had a history of treated bilateral eyes, ischemic central retinal vein occlusion, anterior uveitis, and advanced pseudoexfoliative glaucoma in the pseudophakia eye on maximum medical therapy. Right eye Humphrey visual field showed progression with macular split. Bilateral visual acuity was 6/9 with a pale 0.9 cup-disc ratio. He underwent right eye Preserflo Microshunt implantation with Mitomycin C 0.02% in October 2022. Post-procedure was complicated with hypotony due to ciliary shutdown and hypotony maculopathy. His vision was 6/24, and intensive topical steroids were given. At postoperative week 3, he presented with a vision of perception to light, IOP of 00, no sign of overfiltration and cellular activity of 1+. The anterior chamber was injected with high molecular weight viscoelastic, and IOP increased to 15mmHg. The next day, his IOP increased to 54 mmHg. Anterior chamber paracentesis was done twice to reduce the IOP but his vision did not improve. Currently, the patient has no light perception in the right eye with IOP of 40mmHg without glaucoma medication.

Conclusions: Glaucoma surgery, even with MIGS like the Preserflo Microshunt, in an eye with a previous single episode of uveitis may still be complicated with ciliary shutdown. The advanced stage of glaucomatous disc damage may tilt the course of disease to go south when postoperative hypotony occurs resulting in a wipe-out syndrome.

"Through the Eyes of a Child", a FOX C1 Gene-Related Primary Congenital Glaucoma

*First Author: Jose Eduardo **DE GUZMAN***
*Co-Author(s): Miriam Louella **FEMRIN**, Manolito **REYES***

Purpose: This paper aims to discuss a case of Primary Congenital Glaucoma (PCG) managed holistically. This report calls attention to the importance of comprehensive evaluation, early recognition, genetic counselling, and adequate management of such a visually disabling disease.

Methods: Examination under anesthesia confirmed our working diagnosis of bilateral PCG. Patient underwent glaucoma drainage device placement on the right eye and goniotomy on the left. The patient was also

referred to an ocular geneticist where testing and counseling was done.

Results: Glaucoma surgery has been successful in lowering A FOXC1 gene mutation was detected in our patient. This FOXC1 variant (c.532G>C (p.Asp178His) has not yet been reported in literature in individuals with primary congenital glaucoma.

Conclusions: Primary congenital glaucoma is a debilitating disorder caused by increased IOP in infants. A comprehensive approach to history taking and ophthalmological examination in patients who manifest with these symptoms is crucial to curb the progression of this sight-threatening disease. Thus, detection of symptoms early in this patient was key to a timely treatment course. PCG carries a poor prognosis if left unmanaged, but holds a favorable outcome if treated without delay. This case illustrates how a high index of suspicion, along with appropriate management, may help curtail such an ill-fated disease. This FOXC1 variant has not yet been reported in literature in individuals with primary congenital glaucoma. With ongoing genetic studies, It may be the first in the Philippines if proven pathogenic.

Intraocular Inflammation, Uveitis and Scleritis

A Case of Scleromalacia Perforans Due to Ocular Tuberculosis

*First Author: Rastha **SASMAKA***
*Co-Author(s): Rosy **ALDINA***

Purpose: To describe the clinical manifestation and management of scleromalacia perforans due to ocular tuberculosis.

Methods: The diagnosis was made based on history taking, complete ophthalmology examination and systemic examination to explore the underlying diseases.

Results: A 35-year-old woman consulted with a progressive blurry vision on her right eye since a month, accompanied by pain and a watery eye. The Neurology Department diagnosed her with cerebral toxoplasmosis. Visual acuity was hand movement in the right eye. There was a ciliary injection, choroidal shadowing on the inferior sclera, corneal edema and Kp's. The anterior chamber was shallow. The Posterior segment was hard to evaluate. She underwent a sputum examination and there was positive result of pulmonary tuberculosis. She was diagnosed with scleromalacia perforans due to ocular tuberculosis. She was treated with oral corticosteroid, topical corticosteroid (tapering off), and artificial tears. She also received treatment from the Neurology Department for toxoplasmosis and the Pulmonology Department for tuberculosis. After receiving therapy, her complaints of pain in the right eye were significantly reduced even though there was no improvement in vision. On the examination, the inflammation of the sclera was reduced.

Conclusions: Scleromalacia perforans due to ocular tuberculosis is a condition that occurs as a result of the inflammatory process of tuberculosis in the eye. Diagnosis and management of this case requires multidisciplinary approaches from the Ophthalmology, Neurology and Pulmonology Departments.

A Dilemma of Vitreous Opacity in a Patient With Proliferative Diabetic Retinopathy and Presumed Chronic Endophthalmitis

*First Author: Mei-hua **WU***
*Co-Author(s): Wen-jung **LO**, Yi-an **LU***

Purpose: To report a case with proliferative diabetic retinopathy and presumed propionibacterium endophthalmitis developed vitreous opacity, which turned out to be multidrug resistant enterobacter cloacae and pseudomonas aeruginosa coinfection after vitreous biopsy.

Methods: A case report.

Results: A 72-year-old female with endometrial cancer status post chemotherapy and diabetes mellitus was found with vitreous opacity and creamy plaques on the back of the intraocular lens during a regular ocular exam since she had no light perception of that eye. Propionibacterium endophthalmitis was impressed and the patient received intravitreal injection of vancomycin every other day for 4 times. However, no obvious improvement was noted, so she received an intravitreal injection of Avastin and was arranged for Intraocular lens removal and vitreous biopsy. Retina was seen the day after the surgery but blurred the other day. The vitreous culture showed enterobacter cloacae and pseudomonas aeruginosa coinfection 3 days after the biopsy. Antibiotic sensitivity test showed multidrug resistance with only Amikacin sensitive to both species. Therefore, she received an intravitreal injection of Amikacin once. Her vitreous has remained clean since then.

Conclusions: In patients with proliferative diabetic retinopathy and presumed chronic endophthalmitis, vitreous opacity can result either from vitreous hemorrhage or infection. Therefore, a vitreous biopsy is vital for the confirmation.

A Mysterious Case of Unilateral Disc Edema

*First Author: Nikita **GUPTA***
*Co-Author(s): Hardik **KIRI**, Anuja **PATIL**, Gauri **KHARE***

Purpose: To describe a case of Atypical Vogt Kayanagi Harada presenting as unilateral disc edema.

Methods: A 43- year-old female presented with diminished vision in her right eye for 5 months (visual acuity of FCCF) associated with mild pain and headache. Upon examination, she had grade 5 disc edema with peripapillary fluid and partial macular star. The fellow eye was clinically normal. All investigations, including Lyme serology, tests for TB, sarcoid, syphilis and HIV were negative. MRI brain and optic nerve were normal. OCT scans passing through the macula showed RPE undulations, multiple subretinal fluid pockets at the macula and bacillary layer detachment (BLD). The subfoveal choroid was thickened in both eyes. FFA showed pinpoint hyperfluorescence at the posterior pole and nasal to disc with late pooling of dye inferior to the disc. The left eye also showed pinpoint hyperfluoresence at the macula with no pooling. ICGA could not be done for the patient. A diagnosis of atypical VKH was made, and she was started on oral steroids (1mg/kg) and immunosuppressants.

Results: The subretinal fluid and BLD showed resolution in 4 weeks following treatment with steroids and immunosuppressants. The disc edema resolved completely. At 6-month follow-up the patient had a visual acuity of 6/18 in her right eye with no evidence of any fluid.

Conclusions: VKH can present atypically as unilateral neuroretinitis and should be kept in the differentials of disc edema where other diagnoses have been ruled out. Multimodal imaging with OCT along with FFA/ICGA should be performed in all suspicious cases.

A Series of Unfortunate Events: Sudden Blurring of Vision Following Evisceration for Penetrating Injury of the Contralateral Eye

*First Author: Janin Lou **BILLANO***

Purpose: We report a case of a 34-year-old female who developed sympathetic ophthalmia on the right eye, three weeks after a penetrating eye trauma on the left, to which she underwent evisceration.

Methods: Case report.

Results: The patient presented with a 2-day history of eye pain, photophobia, and blurring of vision on the only seeing eye. Fundus examination revealed serous retinal detachments on the posterior pole as corroborated by ocular coherence tomography and fluorescein angiography. High-dose oral and topical corticosteroids were immediately initiated, and the patient was monitored for progression of the disease. After two months of oral corticosteroids (2mg/kg/day), visual acuity improved from Counting Fingers at 3 feet to 20/20 (-0.5 sph).

Conclusions: Our case showed that current medical management with systemic corticosteroids presents effective treatment of this potentially devastating disease. Early detection of sympathetic ophthalmia is paramount to achieving a favorable visual outcome.

Alterations in Choroidal Circulatory Dynamics and Choroidal Thickness Before and After Treatment in Posterior Scleritis

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*Co-Author(s): Kiriko **HIROOKA**, Susumu **ISHIDA**, Satoru **KASE**, Yui **YAMASHITA***

Purpose: The aim of this study was to present a case of posterior scleritis and analyze choroidal circulatory and structural changes using laser speckle flowgraphy (LSFG) and optical coherence tomography (OCT), respectively.

Methods: A 64-year-old man was presented to our department because of hyperemia of the left eye for one week, diplopia, ocular pain, and distorted vision. At an initial examination, his best-corrected visual acuity (BCVA) was 1.0 oculi uterque (OU), with mild conjunctival hyperemia OD (oculus dexter) and marked conjunctival hyperemia oculus sinister (OS). Color fundus photographs revealed a cluster of choroidal folds extending from the macula to the inferior retinal region OS. Swept-Source (SS-)OCT showed choroidal thickening OU, and bacillary layer detachment and paracentral middle maculopathy OS. Fluorescein angiography (FA) showed hyperfluorescence in optic nerve papillae and window defects around the macula OU. Indocyanine green angiography (ICGA) showed mottled choroidal vascular hyperpermeability in the late stage. B-mode echography displayed thickening of the posterior wall of the left eye. The patient was diagnosed with posterior scleritis, and oral prednisolone 30 mg was then started and tapered off over the next 4 months.

Results: The rate of change in macular blood flow assessed by the mean blur rate on LSFG was 20.5% and 20.2% decrease OD and OS, respectively. The central choroidal thickness showed 8.8% and 37.8% decrease OD and OS, respectively.

Conclusions: Posterior scleritis complicated with choroiditis was suggested to show different choroidal circulatory dynamics than the usual pattern of choroidal inflammation.

Asymmetrical Presentation of Acute Vogt-Koyanagi-Harada (VKH) Disease

*First Author: Zhenlin **ANG***
*Co-Author(s): Sowkathali **BASHAJAN***

Purpose: Vogt-Koyanagi-Harada (VKH) disease is a rare autoimmune disorder primarily affecting the eyes and skin. It is characterized by bilateral panuveitis, choroidal swelling, and serous retinal detachments. However, atypical cases like the one described here emphasize the importance of considering VKH even in unilateral and asymmetrical scenarios.

Methods: A 57-year-old woman presented to our clinic with complaints of right eye blurred vision, pain, and redness. The intraocular pressure was elevated,

prompting the decision for laser peripheral iridotomy. Fundal examination of the right eye demonstrated choroidal detachments and multiple serous retinal detachments. In contrast, the left eye appeared normal.

Results: Retinal imaging of the right eye revealed distinct features consistent with VKH disease. Differential diagnoses were considered, including uveal effusion syndrome. In light of the unilateral presentation, further evaluation was performed to exclude other potential causes. The patient exhibited substantial clinical improvement following the initiation of oral prednisolone treatment.

Conclusions: This case highlights the significance of acknowledging the potential for subclinical involvement of the fellow eye. Early use of imaging techniques such as indocyanine green angiography can aid in the accurate diagnosis of VKH and the detection of subclinical manifestations. Timely and meticulous diagnosis is critical to promptly initiate corticosteroid therapy, manage inflammation, and prevent deterioration of visual acuity.

Autogenous Fascia Lata Graft in a Rare Case of Scleromalacia Perforans in Young Adult Male

First Author: Siti Shalihah Ramadhani ***NOVIZAR***
Co-Author(s): Petty ***PURWANITA****, Anang* ***TRIWIBOWO***

Purpose: To report a successful autogenous fascia lata graft in the rare case of scleromalacia perforans in a young adult male.

Methods: A 19-year-old male from a rural area came with a painless bluish-black mass on the white portion of the right eye (RE) for one month. He had a non-functioning RE with a history of blunt trauma one year ago, followed by a history of cataract surgery 6 months prior. The RE's visual acuity was no light perception. The RE showed a greyish discoloration, staphyloma at the superotemporal quadrant (10 mm x 10mm), and surrounding dilated scleral vessels in the absence of any apparent inflammation. The corneal showed neovascularization with a central-paracentral corneal leukoma and lipid deposits at 8-9 o'clock. Completed laboratory tests, including ANA test and X-ray of the thorax and sacroiliac were normal, and Rheumatologists ruled out the possibility of autoimmune disease. CT Scan indicated scleritis on RE. He was diagnosed with scleromalacia perforans and treated with immunosuppressant along with fascia lata grafting to reinforce large scleral defects, avoid perforation, maintain the integrity of the eyeball, and prevent further thinning of the sclera.

Results: After 4 months after follow-up, the graft was properly integrated with no sign of discoloration or thinning. The fascia lata graft was successful as a tectonic graft with no signs of recurrences and immunologic rejection.

Conclusions: Surgical treatment of scleromalacia perforans with autogenous fascia lata graft was preferred as a tectonic graft since it is easy to harvest and handle, durable, and has a lower inflammatory reaction and risk of rejection.

Bevacizumab Eye Drop Decrease Corneal Neovascularization in AIDS-Associated Panuveitis

First Author: Silvia ***ROZA***
Co-Author(s): Heru Ardila ***PUTRA****, Getry* ***SUKMAWATI****, Atika* ***SYAFENDRA****, Havriza* ***VITRESIA***

Purpose: This case report presented the efficacy of bevacizumab eye drops in reducing corneal neovascularization in patients with AIDS-associated panuveitis.

Methods: A 44-year-old patient with bilateral visual loss. Light perception in the right eye and no light perception in the left eye. A history of HIV/AIDS on Highly Active Antiretroviral Therapy (HAART) presented ocular surface on both eyes with neovascularization and conjunctival injection (+) along with ciliary injection (+). Corneal neovascularization of 360 degrees was observed, along with iris neovascularization. Vitreous opacities were detected via ultrasonography, and fundus examination was inconclusive. The serology test showed positive immunoglobulin-G of cytomegalovirus and toxoplasmosis. The patient was administered topical bevacizumab eye drops, prepared by diluting 1cc bevacizumab in to 3cc artificial tears. Bevacizumab eye drop was continued for 1-2 weeks.

Results: After one week of treatment, the corneal neovascularization decreased significantly, leading to improved corneal clarity. Although there was no objective change in visual acuity, the patient subjectively reported brighter vision. This showed that bevacizumab eye drops can effectively reduce corneal neovascularization.

Conclusions: Bevacizumab eye drop administration is considered for managing corneal neovascularization in AIDS patients. Bevacizumab eye drops can be considered as a supportive therapy to enhance ocular surface and reduce corneal neovascularization in AIDS-associated panuveitis, subsequently improving vision subjectively.

Beyond Skin Deep: The Resurgence of Ocular Leprosy in the Last Decade

First Author: Jyoti ***GOYAL***
Co-Author(s): Vishal ***JADHAV****, Anup* ***KELGAONKAR***

Purpose: The primary purpose of this study is to highlight the ocular inflammatory conditions linked to Hansen's disease, underline their diagnostic utility, and foster awareness about the renewed incidence of leprosy as a uveitis-related condition in the past decade.

Methods: A retrospective observational study was conducted, focusing on a single center's electronic medical records spanning from 2012 to 2022 that included cases pre-diagnosed with leprosy and those incidentally discovered to have the condition. Analysis of demographic profile, ocular findings including BCVA, and signs of intra-ocular inflammation was done and reported.

Results: Out of 125 leprosy patients, 19 presented with various types of ocular inflammation ranging from anterior uveitis (acute or chronic) (13), Intermediate uveitis (2), pan-uveitis (2), and necrotizing scleritis (2) leading to staphyloma. Systemic manifestations included old healed skin lesions and ulcerations with leonine facies and madarosis. The mean age of the patients was 56.2 years old with baseline and final follow-up BCVA was 1.06 and 1.04 logMAR.

Conclusions: Leprosy is not an entity of the past, but is on the comeback with prominent ocular manifestations being necrotising scleritis and non-granulomatous anterior uveitis. Ocular manifestations are present at the beginning, during, and even after complete treatment of leprosy by Multidrug therapy (MDT). Early detection, treatment, and frequent eye monitoring after the resolution of the systemic disease are vital to prevent late visual loss.

Bilateral Blindness From Neglected Sinonasal Tumor: What Should We Be Aware of?

*First Author: Dewinta **KURNIAWARDHANI***
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Purpose: This case report focuses on diagnosing and managing complications in sinonasal tumors with orbital involvement.

Methods: A case report.

Results: A 53-year-old male presented with fever, eyelid swelling, pain, and decreased vision in both eyes over the past two weeks. He had a history of nasal polyps since childhood and a previously unnoticed bone deformity on the right orbital rim. Ophthalmological examination unveiled visual acuity was no light perception on both eyes, abscesses and fistulas around the eyelids and nose bridge, actively discharging pus and blood, proptosis, conjunctival chemosis, and ophthalmoplegia were noted. Computed Tomography (CT) scan of the orbit and paranasal sinuses revealed a hyperdense mass with a prominent cancellous bone component expanding into sinonasal, maxillary sinuses, orbits with intracranial involvement, leading to right eye proptosis and left superior ophthalmic vein dilatation due to mass-induced pressure. CT scans also showed orbital soft tissue thickening and inflammation, suggesting an infection. Blood laboratory tests disclosed leucocytosis, high C-reactive protein, high Procalcitonin, hyperglycemia and hypercoagulability. Microbiological analysis of pus from fistula confirmed Staphylococcus epidermidis. Aggressive management encompassing antibiotics, heparinization, blood glucose control, and debulking mass was done to avert further complications.

Conclusions: In all instances of sinonasal tumors, the potential for orbital and intracranial invasion warrants consideration. The primary focus should be on addressing the infection promptly, all the while keeping in consideration the need for swift attention to the underlying cause. An interdisciplinary approach is imperative to optimize local control, minimize morbidity, and enhance rates of orbital preservation.

Call for Experts: The Future of Fecal Pills in Treating Uveitis

*First Author: Diannisa **SUSANTONO***
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Purpose: To explore and shape the future landscape of fecal pills as a potential treatment modality for uveitis in Asia-Pacific. Uveitis poses significant therapeutic challenges, causing blindness in 25% of cases in developing countries. Studies have shown 30-60% of uveitis are idiopathic. In Asia Pacific, non-infectious etiologies are the major cause. Despite the development of biologic agents, the establishment of the gut-eye axis demonstrates the potential for modulating immune responses by nurturing and maintaining the gut microbiome balance via fecal microbiota transplantation (FMT) pills. Thus, Asia-Pacific collaborative efforts are needed to further elucidate the potential of FMT in the management of non-infectious uveitis.

Methods: A systematic search was performed, synthesizing studies from January 2001 to March 2023, indexed on PubMed, ClinicalKey, Google Scholar, EBSCOhost, and CrossRef. We call for experts in the fields of ophthalmology to explore the potential of fecal pills in uveitis treatment.

Results: The gut-eye axis involves findings of molecular mimicry, pro-inflammatory cytokines, gut epithelial barrier disruption and suspected microbiota translocation. Targeting the gut-eye axis for a therapeutic approach focuses on altering the gut microbiome and restoring the physiologic gut barrier. Animal studies have shown that FMT leads to the attenuation of spontaneous uveitis and shortened disease duration. Meanwhile, the use of FMT in humans has shown no serious adverse effects.

Conclusions: FMT shows promising potential as a targeted treatment for uveitis. Global collaborative efforts are needed to further establish the safety protocols and sustainability studies to reshape the future of ocular inflammation therapeutics in the Asia-Pacific.

Case Report: Omalizumab-Associated Uveitis in Pediatric Patient

*First Author: Yueh-chang **LEE***

Purpose: Omalizumab is a humanized monoclonal anti-IgE antibody. Apart from reported systemic side effects, little is known about its ocular adverse reactions. Here in, we present a rare case of omalizumab-associated uveitis in an atopic dermatitis patient.

Methods: A case report.

Results: A 14-year-old boy with atopic dermatitis has received 22 dosages of dupilumab in the past 2 years, and 3 dosages of omalizumab in the recent half year. Recently, after the last dosage of omalizumab, he started to notice discomfort in his left eye. On examination, acute non-granulomatous anterior uveitis was impressed. Ancillary tests showed no evidence of common anterior uveitis etiologies in the 14-year-old patient. The anterior uveitis of his left eye subsided after giving topical prednisolone acetate eye drops. However, after another 3 doses of omalizumab, he presented with a new onset of blurred vision with red eye and photophobia of the right eye. On examination, recurrent granulomatous anterior uveitis of both eyes, complicated with macula, was noted. With a high suspicion of drug-induced anterior uveitis, omalizumab was discontinued. However, optic disc edema of the right eye occurred 3 weeks later. In addition to topical prednisolone acetate and oral diclofenac, a sub-tenon injection of triamcinolone in his right eye was performed. With the gradual improvement of uveitis, visual acuity returned to 20/15 in both eyes one month later.

Conclusions: To our knowledge, this is the first case report of omalizumab-induced uveitis. In the era of biologics, it is important for healthcare practitioners to remain alert to the associated side effects while accommodating contemporary treatments for atopic diseases.

Case of Bilateral Ocular Sarcoidosis With Multi-Modal Imaging

*First Author: Zhenlin **ANG***
*Co-Author(s): Sowkathali **BASHAJAN***

Purpose: Ocular sarcoidosis is a challenging diagnostic entity due to its varied clinical manifestations. This case report aims to highlight the importance of multi-modal imaging in diagnosing, monitoring, and managing bilateral ocular sarcoidosis.

Methods: A 43-year-old woman presented with a 3-month history of bilateral blurred vision, accompanied by alopecia, headache, non-vertiginous giddiness, and depressed mood. She had previously received treatment for idiopathic uveitis with topical steroid eye drops and oral prednisolone at a regional center. Neuroimaging of the brain yielded no abnormalities.

Results: Fundal examination revealed the presence of multiple choroidal granulomas. Optical coherence tomography (OCT) of the macula exhibited a choroidal granuloma in the right eye. Fundus fluorescein angiography (FFA) demonstrated a normal arm retina time and lace-like hyperfluorescence in the perifoveal region, indicative of choroidal neovascularization. Indocyanine green angiography (ICG) revealed persistent hypocyanescent spots, suggesting choroidal granulomas. A diagnosis of bilateral posterior uveitis with choroidal nodules suspicious of ocular sarcoidosis was made, with white dot syndrome included as a differential diagnosis.

Conclusions: Ocular sarcoidosis poses diagnostic challenges due to its diverse clinical presentations. The utilization of multi-modal imaging techniques is crucial in distinguishing sarcoidosis from other uveitis conditions. Clinicians should remain vigilant for ocular sarcoidosis, considering its protean manifestations. Early detection is of paramount importance to prevent complications arising from chronic inflammation. Moreover, multi-modal imaging facilitates monitoring granuloma size and response to treatment, enabling accurate prognostication.

Casting Shadows: A Rare Ocular Odyssey to Endogenous Pan-Ophthalmitis

*First Author: Stephan **SUDHAKAR***
*Co-Author(s): Supreetha **K***

Purpose: Metastatic pan-ophthalmitis is commonly observed following resistant UTI. It typically occurs from an endogenous foci. This case highlights an unusual presentation, where patient developed metastatic pan-ophthalmitis secondary to diabetic foot ulcer and gluteal abscess.

Methods: The patient presented with pain, redness and discharge from the right eye, and severe headache for 1 month. The patient was a known diabetic on medication (OHA and insulin) for 6 years and was being treated for the left diabetic foot ulcer and gluteal abscess for the past 3 months. She had undergone left great toe amputation, abscess drainage and was treated with antibiotics. On examination, the patient was found to have right eyelid edema, chemosis, hypopyon, infiltration of cornea and dilated pupil. There was no perception of light in the right eye and IOP was highly elevated. B scan showed moderately reflective dot echoes, highly reflective membranous echoes, retino-choroidal scleral thickening and sub-tenon's fluid, suggestive of pan-ophthalmitis. The patient was started on INJ. PIPTAZ and INJ. VANCOMYCIN and showed poor response. Hence was posted for evisceration with an orbital implant with a vitreous tap.

Results: Culture reports showed growth of klebsiella pneumoniae and were susceptible only to POLYMYXIN B. On post-op day 4, a wound gaping with a dislocated

implant was noted due to high intra-orbital pressure, caused by orbital cellulitis. After an antibiotic course for 2 weeks, the patient started responding and was symptomatically better.

Conclusions: Culture from the gluteal abscess and post-op vitreous tap were both positive for klebsiella pneumoniae. Hence, a correlation between gluteal abscess and pan-ophthalmitis was established.

Cat Scratch Disease: A Rare Case of Neuroretinitis

*First Author: Andi **JAYANEGARA***
*Co-Author(s): Yulia **AZIZA**, Michael **HARTONO**, Andi Marsa **NADHIRA**, Yura **PRADIPTAMA**, Jessica **ZARWAN***

Purpose: Cat scratch disease (CSD) usually presents as a self-limiting disease caused by Bartonella henselae following a cat scratch and bite, or from cat fleas. We aim to share our experience in the successful treatment of neuroretinitis as a classical but rare manifestation of CSD.

Methods: A 32-year-old woman presented with a 9-day history of blurred vision in the right eye (RE) associated with central scotoma. Three weeks before eye symptoms, she complained of fever and fatigue; one week later, she complained of an enlarged lymph node at the inguinal region. In the RE, visual acuity was 6/24, with relative afferent pupillary defect (RAPD) positive. Posterior segment evaluation showed optic disc swelling with a macular star without any infiltrate. The diagnosis of neuroretinitis CSD has been made based on the history of cat scratches and clinical findings. The patient was treated with oral doxycycline and corticosteroid, with improvement in visual acuity and funduscopy examination at the last visit.

Results: Typical manifestations of CSD include papule at the inoculation site, regional lymphadenopathy, fever, and fatigue. Neuroretinitis with macular star accompanied by lymphadenopathy is considered a classical sign of neuroretinitis CSD, along with other retinal findings such as hemorrhages and cotton wool spots. It occurs in 1–2% of patients. Antibiotic and corticosteroid therapy may improve the visual outcomes and shorten the length of the disease.

Conclusions: CSD neuroretinitis shall be considered in patients with close contact with the cat. It was associated with a better outcome if treated with combined antibiotics and corticosteroids.

Clinical Experience With Outpatient Oral Treatment for Ocular Syphilis in a Large Metropolitan Safety Net Setting

*First Author: Brian **TOY***
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Purpose: Starting Jan 2022, outpatient oral doxycycline was offered as neurosyphilis treatment for infectious disease at our large metropolitan safety-net medical system through shared medical decision-making. Compared with standard-of-care intravenous penicillin G, this regimen may reduce inpatient stays and associated patient/health systems costs. We describe the clinical features and treatment outcomes of patients with ocular syphilis treated with these two regimens.

Methods: Retrospective consecutive case series of ocular syphilis diagnosed from 1 Jan 2022 to 1 Aug 2023 were identified by electronic medical record (EMR) query. Chart review recorded clinical features and treatment response. Primary outcome measures included visual acuity (VA) and resolution of ocular inflammation at 1 month after treatment.

Results: Ten consecutive cases from each treatment group were identified. Among the 20 patients, the median (IQR) age was 44 (32-68) years, and 16% were female. The racial breakdown was: 30% Caucasian, 25% Black, 40% Latino, 10% Asian, and 5% other. Common ocular manifestations were panuveitis (46%) and anterior uveitis (33%). 66% of patients were HIV+, with median CD4 227cells/mm^3 (range:28-332). At presentation, all patients were RPR+ with a median titer of 1:320 (range: 1:32-1:1024). Median VA was 20/80 (range:20/30-HM). 50% of patients returned for 1-month follow-up, and all eyes had improved ocular inflammation with the median VA 20/40 (range:20/20-20/100). There was no significant difference in the resolution of uveitis or VA between the two treatment groups.

Conclusions: Outpatient treatment of ocular syphilis with PO doxycycline may be a safe and effective alternative to IV PCN treatment. There is considerable risk of patients being lost to follow-up.

Clinical Features and Surgical Outcomes in a Series of Patients With Acute Retinal Necrosis Presenting With Retinal Detachment

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Purpose: To study clinical features, anatomical and visual outcomes in eyes having rhegmatogenous retinal detachment (RRD) as the presenting feature of acute retinal necrosis (ARN).

Methods: Retrospective analysis of ARN cases with retinal detachment at presentation undergoing surgical intervention. Anatomic outcomes were assessed at 3 months after surgery, and visual outcomes were assessed at the final follow-up.

Results: We analyzed 15 eyes of 10 patients, of which 9 were males, and the disease was bilateral (BARN) in 6 cases. Surgery was performed for 14 eyes, and retinitis was active in 8 (53.3%) eyes. The median follow-up was 11 months (range 0-30 months); the follow-up was adequate for 12 cases. Five cases were HIV

positive, of which 3 were undiagnosed prior to ocular presentation. The best corrected LogMAR visual acuity (BCVA) at baseline was 1.77±0.89, which improved to 1.06±0.97 at the final follow-up. Functional success (vision better than logMAR 1.3) was seen in 9/12 (75%) eyes. Anatomical success (retinal attachment at final follow-up) was seen in 10/12 (83%) eyes. Causes of poor visual acuity at the final follow-up were cataract, epiretinal membrane, cystoid macular edema, atrophy involving the posterior pole, and tractional retinal detachment.

Conclusions: Retinal detachment in ARN can occur during the active phase of infection. High anatomical and functional success can be seen with appropriate medical and surgical management.

Clinical Profile of Vogt-Koyanagi-Harada Disease in a Tertiary Hospital in the Philippines Over a 20-Month Period

*First Author: Jose Carlo **ARTIAGA***
*Co-Author(s): Faye **LEVINA**, Laurence Lester **TAN***

Purpose: This study aims to describe the clinical demographics of Vogt-Koyanagi-Harada (VKH) patients presenting at a tertiary referral center in the Philippines.

Methods: Electronic medical records of patients referred to the uveitis clinic and clinically diagnosed as Vogt-Koyanagi Harada Disease between January 2022 and August 2023 were reviewed. Baseline characteristics such as age at presentation, sex, laterality, and classification as either acute or chronic VKH were collected. Clinical features of the anterior segment such as the presence of anterior chamber cells, keratic precipitates, cataracts, posterior synechiae, and iris atrophy, were collected. Acute and chronic signs of posterior segment involvement, such as serous retinal detachment, nummular depigmented lesions, subretinal fibrosis and sunset glow fundus, were collected.

Results: Thirty-one patients were identified. More patients were females (55%), and the mean age at presentation was 37.97 +/- 12.75 years old (range 18-61). Seventy-seven percent (77%) were classified into chronic VKH. Sixty-eight percent (68%) of patients have signs of anterior chamber activity at presentation, while 16% had elevated intraocular pressure. More than ninety percent of patients had either cataracts or a history of cataract surgery. Of patients with an adequate view of the posterior pole, nummular depigmented lesions were noted in 61%, sunset glow fundus in 52% and active serous detachment in only 22%.

Conclusions: The majority of patients in our cohort present in the chronic phase of Vogt-Koyanagi-Harada Disease and are already with visually disabling complications. This emphasizes the need for prompt detection and immediate treatment during the early phases of the disease.

Clinical Series of Endogenous Klebsiella Endophthalmitis: Understanding an Aggressive Invasive Pathogen

*First Author: Atiqah **WAN KHAIRUZZAMAN***
*Co-Author(s): Mae-lynn Catherine **BASTION**, Jemaima **CHE HAMZAH**, Niki **HO**, Chenshen **LAM**, Rona Asnida **NASARUDDIN***

Purpose: We aim to delve into the characteristics of endogenous endophthalmitis, a severe ocular condition caused by various microorganisms. Notably, Klebsiella pneumoniae has emerged as the predominant causative agent in our region. This study seeks to analyse the clinical manifestations, systemic risk factors, source of the microorganism, and treatment outcomes within three of our patients.

Methods: A retrospective case series of three patients diagnosed with Klebsiella endophthalmitis at Hospital Canselor Tuanku Muhriz between the years 2021 and 2023.

Results: The entirety of the patient cohort exhibited classical symptoms of eye redness, pain, and vision impairment, referred to the Ophthalmology team within the first week of symptoms onset. All patients presented with discernible systemic risk factors, all having diabetes mellitus. In all cases, there were identifiable sources of bacteraemia, which included a liver abscess in the first case, pneumonia and intraabdominal collection in the second case, and a hand abscess in the third case. From the vitreous, positive cultures of Klebsiella pneumoniae were obtained in two out of three cases. Nonetheless, all patients demonstrated bacteraemia that yielded positive Klebsiella pneumoniae growth. Late-stage unsalvageable presentations were observed in the first two cases, necessitating evisceration of the affected eye. The third case received medical treatment through intravitreal injections; however, eventually this patient succumbed to multiorgan failure stemming from sepsis.

Conclusions: Despite prompt management of Klebsiella endophthalmitis, all patients in this series had unfavourable visual or survival outcomes. Prevention in the form of good systemic control of diabetes is crucial to prevent this life and sight-threatening complication.

Comparative Analysis of First-Line Immunomodulators Tacrolimus and Cyclosporine for the Treatment of Vernal Keratoconjunctivitis: A Systematic Review

*First Author: Ajeng **KARTIKA***
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Purpose: Vernal keratoconjunctivitis (VKC) is a chronic sight-threatening inflammatory eye disease commonly observed in children and adolescents.

Immunomodulatory medications like cyclosporine are employed for its treatment, while tacrolimus serves as an alternative immunomodulatory agent. This review aims to compare the efficacy and safety of both immunomodulators for VKC treatment.

Methods: Literature research was performed on 4 online databases: PubMed, Cochrane, ProQuest, and ScienceDirect. We included all research conducted on immunomodulator treatment for VKC in children, published in full-text English-language journals from 2019 to 2023. The study selection process will be presented according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.

Results: A review of five journals, involving 188 participants with VKC (average age 8.74 ± 1.28), showed that most studies found both tacrolimus and cyclosporine significantly improved subjective and objective symptom scores. However, there were no statistically significant differences between the two drug groups in most studies ($p>0.05$). Nonetheless, two studies concluded that tacrolimus was the preferred drug, showing greater improvement based on predefined criteria. None of the studies reported any significant adverse events related to ocular health, except for one study that noted a burning sensation (80.95% of cases) and redness in the eyes (19.04% of cases) with cyclosporine use.

Conclusions: Both tacrolimus and cyclosporine effectively reduce VKC symptoms, with tacrolimus performing better. Both drugs are generally safe, but some reported occasional eye burning with cyclosporine. The choice between them may depend on individual factors, warranting further research for better clarification.

Complete Resolution of Massive Solitary Choroidal Tuberculoma in an Asymptomatic Patient: A Case Report

First Author: Therese Chaye Chui ***ONG***
Co-Author(s): Thiam Hou ***LIM***

Purpose: Choroidal tuberculoma is an atypical manifestation of ocular tuberculosis which can often result in severe visual sequelae, depending on its location and size. We herein report an unusual case of massive solitary choroidal tuberculoma in an otherwise asymptomatic patient detected during routine eye screening.

Methods: Case report.

Results: Retinal evaluation of a middle-aged gentleman with a known diabetic history without diminution of vision showed a massive amelanotic elevated choroidal lesion of about 6-to-7-disc diameter in size, located 3-disc diameter temporal to the fovea, extending to the superior arcade. No sign of ocular inflammation was manifested. B scan demonstrated a hyperechoic choroidal lesion with low-to-medium internal reflectivity. Systemic evaluation involving serological and radiological studies was cleared and excluded metastatic causes as well as evidence of pulmonary and systemic tuberculosis. However, the diagnosis of isolated choroidal tuberculoma was presumed by a positive tuberculin skin test. Significant shrinkage of presumed choroidal tuberculoma two months after commencing anti-tubercular treatment had been observed. Serial fundus photos revealed complete involution of a choroidal lesion by the sixth month of treatment. A presumptive diagnosis of choroidal tuberculoma was confirmed, with no sign of recurrence detected during the follow-up period spanning the entire 9-month of anti-tubercular treatment. Notably, there was no objective or subjective visual impairment exhibited throughout the clinical course of the disease.

Conclusions: Massive choroidal tuberculomas usually lead to sudden vision loss. Prompt treatment in this incidental case prevented irreversible damage, underscoring the importance of suspecting tuberculosis even without microbiological and histopathological confirmation.

Complete Type of Behçet's Disease: A Rare Case

First Author: Syafira ***FATHONI***
Co-Author(s): Angga ***FAJRIANSYAH****, Elfa Ali* ***IDRUS****, Patriotika* ***MUSLIMA****, Arief* ***MUSTARAM***

Purpose: Behçet's Disease (BD) is a rare, chronic, relapsing, multisystem inflammatory disorder of unknown etiology. Early diagnosis and immediate intervention are needed to decrease the morbidity and mortality in BD. Diagnosis of BD is clinical, based on multiple systemic findings. It's challenging due to the lack of any pathognomonic laboratory findings. This case report is intended to explain the manifestations of a complete type of BD.

Methods: A 38-year-old man presented with the chief complaint of blurred vision in both eyes since 2 years ago. The blurred vision started with the right eye, followed by the left eye. He also experienced recurrent oral aphthous, skin and genital lesions that frequently appeared many years ago. The visual acuity was 1/60 on the right eye and 2/60 on the left eye. Anterior segment examination revealed a hazy lens with iris pigment on the right eye, and the left lens was relatively clear. Funduscopic examinations on both eyes revealed the signs of vasculitis including vitreous cells, vascular sheathing, dot blots, and infiltrates. The patient was treated with oral and topical steroids, oral immunomodulators, and topical cycloplegics. He was also routinely checked by the Rheumatology Department.

Results: After a routine follow-up for a year, the ocular manifestations remain stable.

Conclusions: This case report showed the complete type of Behçet's Disease. A close follow-up and good compliance have led to stable ocular manifestations. Comprehensive treatment, arranged with a multidisciplinary approach, is mandatory to delay the progression of the disease and prevent other complications.

Comprehensive Understanding of Tubulointerstitial Nephritis and Uveitis (TINU) Syndrome: A Case Report

*First Author: Nien **CHAN-WEI***
*Co-Author(s): Chen **YU-HSU***

Purpose: This case report aims to provide a thorough insight into the clinical presentation, diagnosis, and management of tubulointerstitial nephritis and uveitis (TINU) syndrome, emphasizing the importance of prompt recognition and collaborative care.

Methods: We present an in-depth case study of TINU syndrome, highlighting its diverse clinical aspects, diagnostic challenges, and multidisciplinary management.

Results: A 38-year-old female with diabetes mellitus and end-stage renal disease undergoing hemodialysis exhibited acute kidney injury (AKI) and subsequent bilateral anterior uveitis. A renal biopsy confirmed active tubulointerstitial nephritis and chronic interstitial atrophy, signifying persistent inflammation. Rapid-onset blurred vision prompted a referral to our ophthalmology clinic. Left eye visual acuity was 20/100, accompanied by significant anterior chamber inflammation. Timely intervention with prednisolone acetate eye drops and cycloplegic agents yielded remarkable improvement in visual acuity and alleviation of ocular inflammation.

Conclusions: This case underscores the critical significance of promptly recognizing and holistically managing ocular manifestations in TINU syndrome, a rare disorder affecting renal interstitium and uveal tissue. By highlighting the collaborative efforts between nephrologists and ophthalmologists, we aim to raise awareness, promote early intervention, prevent complications, and enhance overall patient outcomes.

Correlation Between Ocular Manifestations With Lymphopenia Among Human Immunodeficiency Viruses Patients: A Cross-sectional Study

*First Author: Putu **AGRASIDI***
*Co-Author(s): I Gusti Ayu **JULIARI**, Ida Ayu Ary **PRAMITA***

Purpose: Microvascular abnormalities and opportunistic infections cause the majority of ophthalmic lesions seen in HIV (Human Immunodeficiency Viruses)-infected individuals. There is scant evidence supporting the link between lymphopenia and ocular manifestation. The study aimed to investigate the correlation between ocular manifestation and lymphopenia among HIV patients.

Methods: This study was a hospital-based analytic retrospective study conducted from June 2020 to May 2023, and 160 HIV-positive patients were examined by ophthalmology residents for ocular-related complaints in Denpasar, Bali.

Results: The study showed that the association between ocular manifestation and total lymphocyte count among HIV patients was significant statistically, with a p-value <0.05.

Conclusions: There was a significant correlation between total lymphocyte count and ocular manifestation among HIV patients. Further studies are needed to investigate the correlation of total lymphocyte level in the developments of ocular manifestations.

Effect of Pregnancy and Lactation on the Clinical Course of Vogt-Koyanagi-Harada Disease: Is There a Difference?

*First Author: Navya **CHERUKURI***

Purpose: To evaluate whether pregnancy and lactation alter the clinical spectrum and treatment outcomes in Vogt-Koyanagi-Harada disease (VKH).

Methods: Retrospectives case series of 11 patients who were pregnant or lactational and developed VKH or were on treatment for VKH and conceived were included. Best-corrected visual acuity (BCVA), fundus examination, optical coherence tomography (OCT), and primary diagnosis were noted. Treatment outcomes, and ocular and systemic complications during treatment were documented.

Results: The mean age at presentation was 27.5 years. Of eleven patients, six were pregnant and two were lactational at the time of disease onset, whereas three became pregnant while on treatment. Three had acute exacerbation of inflammation, of which one had two episodes for which intravenous methylprednisolone was given and two received additional posterior sub-tenon triamcinolone injections (PST) and oral steroids for disease control. Complications included glaucoma in two patients and systemic complications included pancytopenia due to immunosuppressives in three patients. One patient had a spontaneous termination of pregnancy in the second trimester.

Conclusions: Although pregnancy is considered to be an immune-suppressed state, our observations showed that patients even on immunosuppression had acute exacerbations, and it depends on disease severity at onset, associated anterior segment inflammation, time of presentation, and compliance to treatment. Close follow-up and safer alternate routes, such as posterior sub-tenon injections and oral steroids need to be considered. This group of patients is at higher risk for hematological and fetal complications due to

immunomodulators and needs close monitoring both for maternal and fetal health.

Exploring Histopathological Analysis of Idiopathic Orbital Inflammation: Insights Into the Inflammatory Process in the Orbit and Ocular Adnexa

*First Author: Nikita **SAH***
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Purpose: To identify the specific histological features and patterns of inflammation present in the affected tissues, which can help in diagnosing and managing the condition.

Methods: For infectious pathology, Grocott's methenamine silver (GMS) stain for fungus, tissue Gram's stain for bacteria, and Acid-fast stains for Tubercular bacilli were done. Immunohistochemistry (IHCs) was carried out and panels were done for CD 20 (B-cells), CD-3 (T-cells), CD-45 (Leucocyte common antigen, LCA) BCL-2, CD-138 (Plasma-cells), Kappa, Lambda, IgG4 in tissue, IgG 4 in serum etc. IHCs were done using kit methods (Standardized).

Results: In our study, grossly, the lesions displayed greyish-white colored tissues, and microscopically, it revealed inflammation in the orbital structures and cellular infiltrates that were focal, multifocal, or diffuse. Pathology of typical non-specific orbital inflammation was characterized by cellular infiltrate, vascular congested tissues, altered lacrimal gland tissue, and disturbances in other orbital structures.

Conclusions: Idiopathic orbital inflammation may involve a number of structures in the orbit, the clinical presentations and imaging findings of which are variable and overlapping. Biopsy-supported study on non-specific orbital inflammation was important to know the pattern of the disease and further management.

Infiltrate of Leukemic Cells in Acute Lymphoblastic Leukemia Presenting As Preseptal Cellulitis: A Case Report

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Purpose: Leukemia can have various ocular manifestations. One of the manifestations in the orbit is tumor, preseptal and orbital cellulitis. Leukemia can develop rare solid tumors of primitive precursors of granulocytic series of leucocytes termed chloroma. These tumors are most common in Acute Myeloid Leukemia (AML).

Methods: An 8-year-old female patient with Acute Lymphoblastic Leukemia (ALL) was consulted to the ophthalmology department with complaints of hyperemic and swelling upper lid, diagnosed with suspected preseptal cellulitis of the right eye. Visual acuity is 20/20 in both eyes. On ophthalmological examination, the eyelids were hyperemic, swelling with a solid and dark colour mass. The patient was diagnosed with preseptal cellulitis and a suspected tumor mass. The patient was given a broad-spectrum antibiotic injection and antibiotic eye drops, and a biopsy was planned. After 1 week of treatment, there was no clinical improvement. The patient's condition worsened, and the mass became increasingly solid and blackish. A few days later, Black lesions mass appeared on the lid of the opposite eye. This condition was a suspected infiltration of leukemia cells and chloroma. Unfortunately, a biopsy could not be performed yet and chemotherapy could not be given due to the patient's condition. The patient died after ten days of hospitalization.

Results: Infiltration of leukemia cells in the eyelids can take the form of choloroma in the eyelids, whose manifestations mimic preseptal cellulitis.

Conclusions: Infiltration of leukemia cells can be presented as preseptal cellulitis in patients with ALL. Although rare, chloroma can occur in patients with ALL.

Isle of White in the Sea of Red

*First Author: Qi Xiong **NG***
*Co-Author(s): Hanizasurana **HASHIM**, Wendy **SEE***

Purpose: To report a case of right eye infective panophthalmitis complicated with fungal scleral abscess.

Methods: Case report.

Results: A 56-year-old gentleman presented with a red and painful right eye with blurring of vision for 6 days. Visual acuity was light perception and 6/9 on the right and left eye respectively. A reverse relative afferent pupillary defect was present over the right eye. Extraocular muscle movement was limited over the right eye at all gazes. The right eyelid was erythematous and swollen. There was diffuse chemosis circumferentially with injected conjunctiva, focal scleral abscess superiorly, corneal edema, and a deep anterior chamber with hypopyon and fibrin membrane with no fundus view. B-scan revealed vitreous loculations, T-sign, and scleral thickening. Left eye examination showed nuclear sclerotic cataract, optic disc pallor with a cup-to-disc ratio of 0.9, dull foveal reflex, and flat retina. Intraocular pressure was 32mmHg and 24mmHg on the right and left eye, respectively. Systemic examinations were unremarkable. Blood investigations showed leukocytosis with elevated C-reactive protein. Echocardiogram was normal. Ultrasound of the liver revealed a partially liquefied abscess. Contrast-enhanced computed tomography suggests endophthalmitis. Aqueous and vitreous fluid sampling yielded Klebsiella pneumoniae. Topical, systemic, intravitreal antibiotics and topical anti-glaucomas were initiated. Right eye evisceration ensued, which was complicated with recurrent scleral

fungal abscess at postoperative day 4. Culture sampling revealed mixed fungal organisms. Wound debridement was performed, and responded well with topical and systemic antifungals.

Conclusions: This case highlights the importance of reculture and the possibility of secondary fungal infection in scleral abscess post evisceration. Early initiation of antifungals in addition to debridement is necessary to eliminate infection.

Mastering the Challenge: Overcoming Preseptal Cellulitis Arising From Dental Abscess and Diabetes at a Rural Area Hospital

*First Author: Aniek **LUFTYANNISA***
*Co-Author(s): Athi' **PURNASARI***

Purpose: Preseptal cellulitis is an inflammation of the anterior to the orbital septum. If left uncontrolled, it can extend post-septal and progress into orbital cellulitis, leading to blindness. This study aims to report the effective management of preseptal cellulitis as a complication of dental abscess and type 2 diabetes mellitus (T2DM) in a peripheral hospital.

Methods: A 56-year-old woman presented to the Emergency Room with pain in her right eyelid, sandy sensation, swelling, and redness on her face. The symptoms began with pain in the upper right teeth with pus and fever. Ophthalmology examination of the right eye revealed a visual acuity of 0.3, intraocular pressure within normal limits, spasm, edema, and hyperemic in the right palpebra, with conjunctival injection. Eye movement was unrestricted and non-painful. The fundoscopy examination was within normal limits. The left eye was within normal limits. Laboratory showed leukocytosis of 16.4x103/µL and HbA1c of 8.5%. The diagnosis for this patient is preseptal cellulitis of the right eye as a complication of dental abscess and T2DM.

Results: The patient was treated with intravenous metronidazole, gentamicin and levofloxacin eye ointments, and managed collaboratively with the internal medicine department which administered insulin Glargine, and a dentist who administered Benzydamine and extracted the upper right tooth. The patient's visual acuity showed improvement following treatments.

Conclusions: Preseptal cellulitis can occur from dental abscess and T2DM. Multidisciplinary management involving a dentist and an internist is necessary in this case to ensure a favorable prognosis.

Multimodal Imaging in Progressive Outer Retinal Necrosis

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Purpose: To discuss multimodal imaging features in progressive outer retinal necrosis.

Methods: Ten eyes of 6 patients were included in this study to discuss clinical findings, OCT (optical coherence tomography) and FFA (fundus fluorescence angiography) features in eyes with progressive outer retinal necrosis.

Results: Comparison of fundus images and OCT show that the retinal opacification corresponds to the retinal hyper-reflectivity, which is predominantly inner retinal and not just outer retinal. Clearing of the retinitis lesions is accompanied by full-thickness loss of tissue. Dye based angiography and OCTA findings suggest a role of ischemia in the pathogenesis.

Conclusions: The term Progressive "Outer" Retinal Necrosis (PORN) is a misconception. It has both outer as well as inner retinal necrosis. Rapidly Progressive Herpetic Retinal Necrosis (RPHRN) is a better terminology to describe this entity.

Multiple Evanescent White Dot Syndrome (MEWDS) Presenting in Possibly Associated With Previous Covid-19 Infection: A Case Report

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Purpose: To characterize a rare condition of multiple evanescent white dot syndrome (MEWDS). In the absence of proper diagnostic tools, clinicians face a significant challenge in completely comprehending the pathogenesis and diagnosis of MEWDS as one of the distinguished white dot syndrome family groups of inflammatory chorioretinopathies.

Methods: A review of clinical records and multimodal imaging techniques such as fundus photography, fundus autofluorescence (FAF), and optical coherence tomography (OCT).

Results: A 32-year-old male presented with symptoms of blurry vision, floaters, visual field loss, pain, and redness of the right eye for 2 weeks before admission. He denied any systemic symptoms such as fever, skin rash, and arthralgia, but he already had Covid-19 infection four times in the last three years. Presenting visual acuity was 3/60. External examination, ocular motility, and anterior segment were within normal limits. Dilated fundus examination showed areas of deep white lesions extending from the periphery to the mid-peripheral retina with perimacular edema. The mean macular thickness was 370 µm. Fundus

autofluorescence shows hyperfluorescent dots in the perimacular to the mid-peripheral retina. Humphrey 24-2 showed a marked visual field defect in the supero-temporal area. The patient was treated with Valaciclovir 3x1000 mg for two weeks and there was a slight clinical improvement and we plan to observe the patient attentively.

Conclusions: In order to appropriately diagnose and treat MEWDS, clinicians should acquire complete histories from patients. Multimodal imaging techniques must be done to confirm the diagnosis of MEWDS. Treatment is supportive, with stern monitoring to achieve a better visual prognosis.

Off the Hook, Not! Sympathetic Ophthalmia Occurring One Day After Enucleation of a Perforated Eye From a Fish Hook Injury

*First Author: Mara Augustine **GALANG***
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Purpose: To describe the clinical features and outcome of a patient who had sympathetic ophthalmia after enucleation of an eye and was treated with corticosteroids and corticosteroid-sparing agents.

Methods: This is a descriptive case report.

Results: An otherwise healthy 23-year-old Filipino male seafarer sustained a perforating ocular injury. Initial evaluation of the right eye was 20/20, and that of the left eye was no light perception with overt endophthalmitis. The patient underwent enucleation of the left eye and was monitored for post-operative care. On Days 1-2 after enucleation, the patient complained of blurred vision in the right eye. Upon examination, visual acuity was 20/25, with unremarkable anterior segment findings. Dilated fundus examination (DFE) showed multiple blister-like elevations involving the inferior macula and few focal elevations at the temporal periphery. The patient was immediately started on intravenous methylprednisolone 1g for 3 days. Optical Coherence Tomography (OCT) showed multiple areas of neurosensory detachments with septations, and fluorescein angiography (FA) showed areas of hyperfluorescences corresponding to the DFE findings. Upon discharge, oral Prednisone 1mg/kg/day and Methotrexate 15mg weekly were initiated. Oral steroid was gradually tapered and discontinued, with inflammation controlled after 6 weeks. On follow-up, visual acuity was 20/20, with a quiet eye and no untoward systemic side effects. On the 12th week, repeat OCT showed resolved multifocal neurosensory detachments.

Conclusions: Early recognition is key in diagnosing SO and early intervention with corticosteroids and corticosteroid-sparing agents are important in controlling the condition. Adequate and thorough patient education is imperative since compliance with medication and diligent follow-up are part and parcel of an ophthalmologist's management.

Ophthalmic Manifestations Post COVID-19 Infection

*First Author: Sameeksha **AGRAWAL***
*Co-Author(s): Krishna Kumar **AGRAWAL**, Vijay Kumar **AGRAWAL**, Ankit **AGRAWAL***

Purpose: To report Ophthalmic manifestations in patients after coronavirus disease 2019 infection.

Methods: Patients coming to general eye OPD with a history of COVID-19 infection.

Results: Conjunctivitis is the most common manifestation and can develop at any stage of the disease. The posterior segment manifestations included cotton wool spots, retinal hemorrhages, CSR, papillophlebitis, optic neuritis, panuveitis, multifocal retinitis, necrotizing retinitis, and central retinal artery/vein occlusion.

Conclusions: There is an association between COVID-19 and uveitic, retinovascular, and neuro-ophthalmic diseases. COVID-19 patients can experience ophthalmic complications even after recovery. These patients, even if asymptomatic for eye symptoms, should undergo eye evaluation to rule out posterior segment involvement. Ophthalmologists should be aware of possible associations of ocular diseases with SARS-CoV-2 in order to look for specific signs, diagnose and initiate early treatment for vision-threatening complications.

Possible SARS Cov2 Related CMV Retinitis in a Young Immunocompetent Patient

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Purpose: To demonstrate a possible association between SARS Cov2 infection and CMV Retinitis in a young immunocompetent patient.

Methods: A 29-year-old male presented with a drop in vision in his left eye for 5 days. His vision was counting finger 1½ mt., with fundus showing classical pizza pie retinopathy s/o CMV retinitis. There was no past history of any systemic illness. His viral profile came out negative for HIV, HBsAg & HCV. Since he presented during 2nd COVID wave & a lot of association b/w ocular inflammation & COVID was being made, he was asked for h/o COVID infection, which he denied. Also he was not vaccinated.

Results: To rule out past COVID, he was advised to get IgG antibodies for SARS-CoV-2 which came out positive. CMV retinitis was treated with intravitreal ganciclovir plus oral valganciclovir & the retinitis resolved. At 2 months follow-up, vision improved to 6/9.

Conclusions: CMV retinitis occurring in a young immunocompetent person possibly indicates a potential causal association b/w Sars-CoV-2 & CMV, which may result in potentially severe ocular disability

if not diagnosed in a timely manner. Luckily, our patient had a good visual outcome.

Posterior Scleritis Masquerading As Unilateral Acute Angle Closure- a Case Series

First Author: Deepika ***MAKAM***
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Purpose: To analyse the clinical profile of patients with posterior scleritis (PS) masquerading as unilateral angle closure.

Methods: This retrospective study included 18 patients of posterior scleritis, among which 8 patients were identified with unilateral angle closure. Medical records of these 8 patients were analysed.

Results: All 8 patients were referred to our hospital as angle closure suspects. All patients on evaluation were found to have posterior scleritis. Presenting symptoms were pain (8 eyes), redness (4 eyes), and decreased vision (3 eyes). A shallow anterior chamber of Van Herick grading 1 (5 eyes) and grade 0 (3 eyes) were noted. High intraocular pressure was noted in 2 eyes. Associated anterior scleritis was seen in 4 patients. Fundus changes included disc hyperaemia & edema (4 eyes), retinal striae (2 eyes), choroidal folds (5 eyes), exudative retinal detachment (1 eye), sub-retinal mass (1 eye), choroidal detachment (3 eyes). Ultrasonography revealed T sign (7 eyes), choroidal detachment (4 eyes) retinochoroidoscleral thickening (8 eyes). All patients showed good response to topical or oral steroids.

Conclusions: Posterior scleritis is relatively uncommon and often misdiagnosed due to its protean manifestations. In our series, all 8 patients were referred for unilateral angle closure management. The inflamed sclera causes impermeability to transscleral outflow, resulting in the accumulation of fluid in the choroidal space, causing anterior rotation of the ciliary body and acute angle closure. Normal fellow eye, presence of pain & anterior scleritis, and presence of disc changes (if seen in undilated fundus) may give clues to differential diagnosis. It is important to consider PS in mind in cases of unilateral acute angle closure as underlying pathology and management strategies differ.

Prognoses and Clinical Outcomes of Bacterial Endophthalmitis – A Ten-Year Review in a Tertiary Referral Hospital in Taiwan

First Author: De-kuang ***HWANG***

Purpose: To review the pattern and outcome of bacterial endophthalmitis in a tertiary medical center in Taiwan.

Methods: The inclusion criteria of this retrospective study were: (1) Diagnosed with infectious bacterial endophthalmitis. (2) All ocular treatments were provided in our Hospital. The exclusion criteria were: (1) Endophthalmitis caused by corneal ulcer or orbital abscess. (2) A lack of medical information. (3) Follow-up for less than 6 months.

Results: A total of 112 patients were enrolled and analyzed in this study. Patients with exogenous endophthalmitis had significantly better visual outcomes than those with endogenous endophthalmitis (44.4% had a final visual acuity (VA) ≥ 20/40 in the exogenous group versus 15.0% in the endogenous group). Of exogenous endophthalmitis, 55% occurred after cataract surgeries, 13% occurred after anti-glaucomatous surgeries, 10% occurred after vitrectomies, and 9% occurred after intravitreal injections. Regarding endogenous endophthalmitis, univariate analysis showed that initial VA and painful sensation at the presentation were correlated with final VA. Whereas in exogenous endophthalmitis, multivariate analysis showed patient's age, comorbid with diabetes, surgical types, and culture results were correlated with final VA. While exploring correlation factors for visual improvement, we found that intervention with vitrectomy and time to vitrectomy were significant factors for more visual improvement.

Conclusions: Our study showed that etiological factors, patients' characteristics, and treatments may relate to the clinical outcomes of bacterial endophthalmitis. For those patients who require surgical treatment, performing vitrectomy earlier may result in greater visual improvement.

Risk of Recurrences of Anterior Uveitis: A Systematic Review of Published Literature

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Purpose: Anterior uveitis is inflammation primarily affecting the front part of the eye - the iris and adjacent ciliary body. Uveitis itself can be caused by either infectious or non-infectious in origin. This systematic review aims to identify risk factors associated with the recurrence of anterior uveitis through an analysis of published literature.

Methods: Following a systematic review approach, studies were searched on PubMed, Cochrane, and Scopus databases using the keywords "(anterior uveitis) AND (recurrence) AND (risk)". Among the 430 studies that were discovered and screened for duplications, as well as evaluated against the inclusion and exclusion criteria, four studies were included.

Results: The review included four studies that investigated the risk of recurrences of anterior uveitis. Identified risk factors include: 1) presence of focal posterior synechiae at diagnosis (hazard ratio of 6.97-fold compared to the absence of synechiae (95% confidence interval [CI], 2.20-22.11; p<0.001)), 2) use of systemic high-dose steroid therapy more than 7 days

after visual symptom onset (hazard ratio of 4.55 [95% CI, 1.27-16.40; p = 0.020]), 3) age (hazard ratio [18- to 35-year-old persons vs. 35- to 55-year-old persons] 2.7; 95% CI, 1.3-6.0), and 4) previous relapses of anterior uveitis.

Conclusions: Risk of recurrence factors for anterior uveitis involves the presence of posterior synechiae, delayed high-dose steroid therapy, younger age, and previous recurrences. A comprehensive understanding of these factors can guide personalized management approaches to minimize recurrence and its impact on patient vision and quality of life.

Story of Posterior Uveitis Due to Mycobacterium tuberculosis in a Tertiary Eye Institute in Bangladesh

*First Author: Pankaj **ROY***
*Co-Author(s): Pankaj **ROY**, Sujit **SARKAR***

Purpose: In South East Asia, mycobacterium Tuberculosis infection is very common. Many cases presented as posterior uveitis. This study was conducted to find out the cause of unexplained vision loss in patients who attended the Uvea Retina Clinic and to arouse interest in the causation of posterior uveitis by mycobacterium tuberculosis.

Methods: The study is a prospective purposive case control study conducted from July 2016 to December 2022. A total of 98 posterior uveitis patients of unknown etiology were included in this study. 60 patients were MT positive (>15mm) and received anti-TB drugs. No recurrences were found in them during the follow-up period. They were regarded as the study group. 38 patients were MT negative and were regarded as control group of this study.

Results: A total of 60 patients' 84 eyes were affected. There was vasculitis with or without retinal hemorrhage in 20 eyes (24 %), multifocal choroiditis in 18 eyes (21%), disseminated choroiditis in 17 eyes (20%), vitreous hemorrhage in 8 eyes (10%), single focal choroiditis in 6 eyes (7%), vasculitis with BRVO in 5 eyes (6%), serpiginous choroiditis in 4 eyes (5%), vasculitis with tractional retinal detachment in 3 eyes (4%), exudative detachment due to choroiditis in 3 eyes (4%).

Conclusions: Sixty patients (61%) of a group of 98 patients with chronic posterior uveitis had tuberculosis. Posterior uveitis presented as focal, multifocal, or diffuse areas of retinitis or choroiditis, with varying degrees of vitreous cellular activity and /or involvement of the retinal vasculature. Early diagnosis and treatment are needed to reduce visual morbidity and mortality due to posterior uveitis resulting from Mycobacterium tuberculosis.

Tattoo-associated Uveitis

*First Author: Ezann **SIEBERT***

Purpose: To collaborate with uveitis specialists in the Australasia region - to tailor the workup and management of this entity. To create awareness. To further understand this condition.

Methods: Collaborating with Uveitis Specialists in the Australasia region.

Results: Created awareness.

Conclusions: Tattoo-associated ocular inflammation has recently emerged as a sight-threatening condition of concern to uveitis specialists. There may be particular tattoo dyes or pigments which are risky. Specific treatments or management strategies may be more or less effective in these patients. By collaborating in collecting information, we hope to better understand this condition. We may then be able to intervene preventively through instituting appropriate awareness and public health strategies. We may also be able to identify the most effective therapies.

The Efficacy High Dose Steroid Therapy for Behçet's Disease – A Rare Case

*First Author: Widya **PUTRI***
*Co-Author(s): Syarif **GRAHA**, Petty **PURWANITA***

Purpose: To report the efficacy of high dose intravenous steroid therapy followed by oral steroid for treatment of ocular involvement in Behçet's disease.

Methods: A 52-year-old man presented acute visual loss in the right eye and came to the emergency room since 2 days ago and also experienced recurrent painful oral ulcerations and genital ulcerations for a half year. The man was diagnosed with Behçet's disease, and was treated with high-dose intravenous steroid followed by oral steroid therapy. The visual acuities and improvement in ocular signs after high-dose intravenous steroid followed by oral steroid were evaluated.

Results: The ophthalmologic examination revealed that visual acuity was hand motion on the right eye (RE) and 20/20 on the left eye (LE). The Intraocular pressure (IOP) was 54 mmHg and 12 mmHg in RE and LE. On slit-lamp examination, the conjunctiva was hyperemia the cornea was clear, and the pupil was not reactive with no posterior synechia. However, unilateral hypopyon was detected in his right eye. Five days after treatment, an improvement in visual acuity was detected, from hand motion to 5/60.

Conclusions: In cases with acute visual loss, followed by oral mucosal ulcerations, skin lesions and also unilateral hypopyon, inflammatory diseases such as Behcet's disease should be considered. High-dose intravenous steroid followed by oral steroid is effective in controlling severe, vision-threatening acute posterior

segment Behçet's uveitis attacks and in improving visual function in a short period of time.

There's More Than Meets the Eye: A Posterior Pole Conundrum

*First Author: Isha **AGARWAL***
*Co-Author(s): Manisha **AGARWAL**, Rashmi **RAWAT***

Purpose: This interesting case highlights the importance of a good clinical examination along with the support of multi-modal imaging in inflammatory retinal disorders for making a diagnosis and providing timely treatment to the patient for restoring good vision.

Methods: A 39-year-old male presented with a diminution of vision in his left eye associated with ocular pain for the past 1 month. On examination, his blood pressure was raised, and his Best corrected visual acuity (BCVA) in the right eye was 6/6 N6, and 1/60 in the affected eye. Fundus examination revealed features of optic neuropathy, along with branch retinal artery occlusion (BRAO). However, there was also a large subretinal fluid pocket over the posterior pole. OCT revealed a large retinochoroidal elevation, with subretinal fluid pockets. B scan revealed a thickened retino-choroidal-scleral complex over posterior pole, and shallow subretinal fluid. A Uveitis profile, along with a physician review, was done. A diagnosis of posterior scleritis along with features of optic neuritis and secondary BRAO was made. A trial of oral steroids was given.

Results: The patient was symptomatically better, with a marked reduction in pain, and improvement in visual acuity to 6/18. The fluid pocket over the posterior pole had resolved with a reduction in retinal whitening and choroidal thickness.

Conclusions: Multimodal imaging is the key to diagnosis in such cases with atypical presentations. In addition, a strong index of clinical suspicion is needed for clinching the diagnosis and the right management of such patients.

Topiramate and the Ocular Enigma: Unraveling Rare Adverse Reactions

*First Author: Jyoti **GOYAL***
*Co-Author(s): Anup **KELGAONKAR**, Aparna **RAO***

Purpose: To report rare and unusual features of topiramate-induced ocular adverse reactions in 2 patients, its pathophysiological mechanisms, and management.

Methods: A 56-year-old female on polytherapy for various metabolic disorders and bipolar depression presented with complaints of pain and redness in both eyes for 1 week. She was started on topical steroids and anti-glaucoma medications for raised intra-ocular pressures (IOP) elsewhere 3 days ago. The best-corrected visual acuity (BCVA) in both eyes was 0.1 logMAR. Bilateral shallow Anterior chamber (AC), cells 4+, flare 1+, fibrin, posterior synechiae, peripheral choroidal detachments, and folds at the posterior pole were noted. On revisiting history, the use of topiramate was elicited. In another case, a 25-year-old male on topiramate for 6 days for migraine presented with complaints of blurring of vision and swelling of the white part in both his eyes. His uncorrected visual acuity (UCVA) in his right eye was 0.8 logMAR and his left eye was 0.7 logMAR. Bilateral AC was shallow with raised IOP and conjunctival chemosis.

Results: Marked improvement was noted with drug dechallenge and treatment with topical steroids and cycloplegics in both cases. Naranjo's Adverse drug reaction probability scale- revealed a "probable" association with topiramate.

Conclusions: Peripheral choroidal detachments due to ciliochoroidal effusion and conjunctival chemosis secondary to lymphatic obstruction are rarely reported adverse drug reactions associated with topiramate. Cessation of Topiramate and starting the patient on the aforementioned treatment should be the next step to prevent further complications.

Treatment Outcomes in Cytomegalovirus Anterior Uveitis

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Purpose: To compare the treatment outcomes of cytomegalovirus anterior uveitis (CMV AU) between regional antiviral therapy and systemic antiviral medication.

Methods: This retrospective cohort study was conducted at Siriraj Hospital from 2002 to 2022. All patients diagnosed with CMV AU were included. Treatment modalities were divided into the topical group (2% ganciclovir eye drops or 0.2% ganciclovir gel) and the systemic group (intravenous ganciclovir or oral valganciclovir). A comparison of response rates, time to response, recurrent rates, time to recurrence, and complications was performed.

Results: Forty-four patients (male 54.5%), with a mean age of 56 (9.87) years were enrolled. There were 31 eyes in the topical group, and 13 eyes in the systemic group. The median time to response was significantly slower in the topical group compared to the systemic group (63 days) (IQR 28-112) and 28 days (IQR 24-59), respectively (p 0.04). In the topical group and systemic group, the treatment response rates were 87.1% (27/31) and 100% (13/13) (p 0.30), the recurrence rates were 37% (10/27) and 69.2% (9/13) (p 0.05) and the median time to recurrence was 483 [IQR 145-1388] days and 392 [IQR 203.5-1907.5] days (p 0.20), respectively. Only 12.9% of patients were tried to discontinue the topical medication, whereas 84.6%

of patients were tried to discontinue the systemic medication.

Conclusions: Treatment of CMV AU with either topical ganciclovir or systemic ganciclovir showed favorable outcomes. Systemic ganciclovir can rapidly control intraocular inflammation. Continuation of topical ganciclovir can be considered as a long-term maintenance therapy to prevent recurrent inflammation.

Tuberculin Skin Test as a Diagnostic Tool for Sarcoidosis Uveitis

*First Author: Salinthip **CHIMDIST***

Purpose: To assess the diagnostic utility of the tuberculin skin test (TST) compared to high-resolution computed tomography (HRCT) chest as a non-invasive tool for identifying sarcoidosis uveitis among patients presenting at the uveitis clinic.

Methods: A retrospective review of medical records was conducted for patients who visited the uveitis clinic between January 2006 and December 2021. Inclusion criteria comprised patients who underwent both TST and HRCT chest as the diagnostic workup. TST results were considered positive for the diagnosis of sarcoidosis uveitis as criteria. HRCT chest findings indicative of sarcoidosis, such as bilateral lymphadenopathy, mediastinal lymphadenopathy, and lung parenchymal involvement of micronodules with a perilymphatic distribution, were used as the gold standard.

Results: A total of 48 patients with uveitis were included in this study, with 19 (39.6%) showing findings consistent with sarcoidosis on the HRCT chest. Among these sarcoidosis patients, 18 (94.7%) exhibited a positive TST, while 1 (5.3%) showed a negative TST. Statistical analysis demonstrated a significant association between TST and HRCT chest findings ($p< 0.001$). The sensitivity, specificity, PPV, and NPV were calculated as 94.7%, 55.2%, 58.1%, and 94.1%, respectively.

Conclusions: Our analysis suggests that the TST has potential as a non-invasive diagnostic tool for sarcoidosis uveitis when compared to HRCT chest findings. A positive TST in our study (<10 mm) result showed a significant association with the presence of sarcoidosis on the HRCT chest. Integration of the TST with HRCT chest to diagnose sarcoidosis uveitis may enhance early detection and appropriate management of patients, leading to improved clinical outcomes.

Tuberculous Panophthalmitis in Children: A Rare Case Report

*First Author: Giovanni **SANTOSO***
*Co-Author(s): Elfa Ali **IDRUS**, Patriotika **MUSLIMA**, Arief **MUSTARAM***

Purpose: To present the clinical features and management of a rare case of Tuberculous Panophthalmitis.

Methods: A 9-year-old girl came with the chief complaint of pain in her left eye for five days before admission. One day after, she noticed a white spot appeared on the cornea accompanied by scleral abscess and eye discharge. An ophthalmological examination of the left eye showed poor light perception, corneal infiltrate, and it was full of hypopyon in the anterior chamber. Ultrasonography examination of the left eye revealed vitreous opacity due to inflammatory cells with a positive double layer and T sign. The Tuberculin test showed a positive induration of 10 mm. Based on the examination, the patient was diagnosed with tuberculous panophthalmitis.

Results: The evisceration of the left eye was performed based on disease progression and a painful blind eye. Histopathological examination of the eviscerated eye showed atypical Langerhans giant cells, multinucleated giant cells and epithelioid cells with marked inflammatory cells. An antituberculosis therapy (ATT) was started.

Conclusions: Tuberculous panophthalmitis is a rare manifestation of ocular tuberculosis. Establishing the diagnosis remains challenging. Early recognition of the symptoms, diagnostic evaluation, and early treatment are important to prevent severe complications.

Unilateral Panuveitis as a Manifestation of Sympathetic Ophthalmia Following Vitreoretinal Surgery: A Comprehensive Case Report

*First Author: Nien **CHAN-WEI***
*Co-Author(s): Cheng **YA-FENG***

Purpose: This case report aims to elucidate the rare occurrence of unilateral panuveitis as an atypical presentation of sympathetic ophthalmia (SO) subsequent to trans pars plana vitrectomy, highlighting the significance of early recognition and management in preventing visual morbidity.

Methods: We present a comprehensive case study of a patient who developed unilateral panuveitis secondary to sympathetic ophthalmia following vitreoretinal surgery.

Results: A 66-year-old female underwent trans pars plana vitrectomy with silicone oil implantation in the left eye. On subsequent visits, she exhibited a silicone oil droplet in the anterior chamber and posterior synechiae. A month later, she experienced acute blurred

vision in the right eye with serous retinal detachment and intraocular inflammation. A clinical diagnosis of sympathetic ophthalmia was established. Intravenous pulse methylprednisolone and oral prednisolone with methotrexate resulted in retinal detachment regression and visual acuity recovery.

Conclusions: This case underscores the atypical manifestation of unilateral panuveitis in sympathetic ophthalmia following vitreoretinal surgery, emphasizing the need for vigilance and prompt intervention. While SO is commonly bilateral, unilateral involvement should not be disregarded, especially when one eye is evaluable. Ophthalmologists must remain vigilant regarding the potential emergence of SO post-vitreoretinal surgery and ensure appropriate interventions to mitigate visual morbidity.

Myopia

Altered Expression of Circadian Rhythm-Related Genes in Mice After Form Deprivation Interacted With Dopamine

*First Author: Jiahe **GAN***
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Purpose: To investigate the effect of long- and short-term form deprivation, interacted with dopamine, on the expression of circadian rhythm-related genes in the retina of mice.

Methods: Monocular form deprivation was induced in C57BL/6J mice for one day (contralateral eye as control) and four weeks (natural rearing as control), respectively. Based on the one-day experiment, mice were intraperitoneally injected with dopamine agonists (6,7-ADTN hydrobromide) at 20:00 pm. PCR was used to measure Bmal1, Clock, Cry1, Opn4m, and Per1 in the retina at four weeks and Zeitgeber time (ZT) = 0, 4, 8, 12, 16, and 20 h.

Results: Within one day, there was an increase of Clock at ZT = 20 ($P < 0.001$), Per1 at ZT = 4 ($P = 0.047$), and 20 ($P < 0.001$) of form-deprived eyes relative to the contralateral eyes, and a decrease of Opn4m at ZT = 0 ($P < 0.001$), 8 ($P = 0.014$) and 16 ($P < 0.001$), Clock, Cry1, Per1 at ZT = 0 ($P < 0.001$), Bmal1 at ZT = 4 ($P = 0.039$). Dopamine agonists up-regulated Opn4m and down-regulated Bmal1, Clock and Per1. At four weeks, significant axial elongation (0.39 mm, $p = 0.016$) and myopic shift (-8.33 diopters, $p < 0.001$) developed, and a significant increase in Cry1 was observed ($p < 0.05$).

Conclusions: Form deprivation disturbed endogenous circadian rhythms signaling pathways in the retina at an early stage and in the long term, whereas exogenous dopamine altered the expression of Opn4m and circadian rhythm-related genes, which might link the dysregulation of circadian rhythm with myopia development.

Beyond Glasses: A Systematic Review of Orthokeratology for Controlling Axial Length Progression in Myopic Children

*First Author: Fierda **AZHARI***
*Co-Author(s): Gabriella **HAFIDHA BADRUDDIN**, Stella **NATHANIA**, Endang **RAHAYUNINGSIH**, Lisa K **WIDIASMOKO***

Purpose: This study aims to examine the efficacy of orthokeratology (Ortho-K) in slowing axial length progression in myopic children.

Methods: The Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines were followed when conducting this review. PubMed, Google Scholar, Science Direct, and Cochrane were the four web databases used for a thorough literature search. Keywords used were 'Orthokeratology', 'myopia', 'eye disease', 'contact lens', and their respective MeSH terms. The screening procedure was carried out using Rayyan, an online based tool. Studies included were myopic children with or without astigmatism ≤-2.5D and available in full text containing Ortho-K with axial length outcome. Adult studies with other refractive or ocular disorders, non-English studies, animal studies, review studies, and case reports were excluded. We examined the progression of axial length in myopic children from all studies.

Results: Four randomized control trials (RCTs) and one cohort study with a total of 300 subjects, ages 6-16 years old were analyzed. Results showed that subjects treated with Ortho-K showed slower axial length progression with a range of reduction 0.05 - 0.32mm, compared to subjects treated with single-vision spectacles and contact lenses after evaluation ranging from 6 to 24 months. The cohort study with a seven-year follow-up duration demonstrated the long-term efficacy of Ortho-K. Statistically significant slower axial length progression was found in all studies with $p < 0,001$ except for one RCT study where $p = 0.043$.

Conclusions: Ortho-K is effective for controlling axial length in myopic children.

Comparative Analysis of Visual Performance With Multifocal and Monovision Soft Contact Lens in Myopic Patients With Presbyopia

*First Author: Suan **HWANG***
*Co-Author(s): Shu-hua **CHANG**, Kun-shiang **CHEN**, Shu-chun **KUO***

Purpose: The aim was to compare the visual performance of wearing monofocal soft contact lenses (SCL) using the monovision method and multifocal SCL in myopic patients with presbyopia.

Methods: This prospective clinical study recruited ten patients ranging in age from 40 to 55 years with

myopia (mean right eye: -4.10±2.51D and left eye: -4.03±2.30D). All the participants were randomly assigned to the monofocal SCL group that used the monovision method and the multifocal SCL group lasting one month. At one month post-fitting, the visual performance, including distance visual acuity, near visual acuity, night vision, contrast sensitivity, and stereopsis, was recorded and analyzed. Then, all the patients were switched to the other presbyopia correction method and evaluated after a month wearing.

Results: Objective distance visual acuity showed no statistically significant differences between the two groups. However, the multifocal SCL did perform better in near visual acuity (P<0.05). The differences in contrast sensitivity tests between each group were small and not statistically significant, while the current study showed a significant difference in stereopsis (P<0.05).

Conclusions: In short, this study revealed that multifocal SCL resulted in significantly better near visual acuity and improvement in stereopsis when compared to the monovision corrections method, though distance visual acuity and contrast sensitivity showed similar performance. This preliminary result should be confirmed in studies with larger samples.

Comparison of Myopic Control Between the Orthokeratology Contact Lenses and Defocus Incorporated Multiple Segments' Spectacle Lenses

*First Author: Chia-yi **LEE***
*Co-Author(s): Chao Kai **CHANG***

Purpose: To compare the effect of myopic control between orthokeratology contact lenses (OK lenses) and defocus incorporated multiple segments' (DIMS) spectacle lenses.

Methods: A retrospective cohort study was conducted, and patients who received OK lens or DIMS spectacle lens treatments were included. A total of 194 eyes of 97 individuals and 46 eyes of 23 individuals were enrolled in the OK group and DIMS group, respectively. The primary outcomes were the change of spherical equivalent refraction (SER) and axial length (AXL) between the two groups. The generalized estimate equation was adopted to calculate the adjusted odds ratio (aOR) and 95% confidence interval (CI) of the OK group compared to the DIMS group.

Results: The SER progression was lower in the OK group and in the DIMS group, and the latter showed a prominent SER progression (P < 0.001), and the AXL elongations were similar between the OK and DIMS groups (P = 0.344). In the multivariable analysis, the SER progression during the study interval was significantly lower in the OK group compared to the DIMS group (aOR: 0.426, 95% CI: 0.279-0.650, P < 0.001), while the AXL elongation between the OK and DIMS populations did not illustrate significant difference (aOR: 1.749, 95% CI: 0.364-2.241, P = 0.501). In a subgroup analysis of moderate astigmatism, better AXL control was found in the DIMS subgroup compared to the OK lens subgroup (P = 0.043).

Conclusions: The OK lenses showed a better effect on SER control but a similar influence on AXL control compared to the DIMS spectacle lenses.

Comparison of the Intralase FS200 Femtosecond Laser and Med-Logic Microkeratome for Flap Cutting in LASIK

*First Author: Tsetsegjargal **BAASANJAV***

Purpose: To evaluate laser in situ keratomileusis (LASIK) flap thickness predictability and morphology by femtosecond (FS) laser and microkeratome (ML) using anterior segment optical coherence tomography.

Methods: Ninety-two candidates for the LASIK procedure were stratified into two groups: FS laser-assisted (Intralase FS-200) and MK flap creation (Med-Logic). Flap thickness was determined at five points. LASIK flap assessment was performed one month postoperatively by Cirrus_6000 anterior segment optical coherence tomography.

Results: Fifty-two patients (93 eyes) were recruited; 49 eyes were stratified to the FS group and 44 eyes to the MK group. The FS group had relatively even flap configurations, and the MK group had meniscus-shaped flaps. Mean differences between planned and actual flap thickness were 6.21±10.98 and 11.18±7.24 µm. In the FS-LASIK group, planned flap thickness of 110 µm was significantly more predictable, and actual flap thickness of 113.68±20.20, respectively. Meanwhile, in MK-LASIK patients, actual flap thickness was 118.82±7.24 µm respectively.

Conclusions: Comparable flap thickness predictability was achieved in thicker flaps (130 µm), while the FS laser technique yielded a more predictable result in thinner flaps (100 to 110 µm). Different flap morphology was observed in meniscus flaps in MK-LASIK and flap morphology in FS-LASIK.

Evaluation of Risk Factors of Progressive Myopia and Associated Accommodation Anomalies Among Children in North Bengal, India

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Purpose: To describe risk factors of progressive myopia and associated accommodation anomalies among children in North Bengal, India.

Methods: Children with progressive axial myopia (≥-0.50D increase in 6 months) were included in

the study. Family history and time spent on near work, digital device exposure, outdoor activities, and sunlight exposure were noted. Cycloplegic refraction was performed. Assessment of amplitude of accommodation and accommodative response by monocular estimate method (MEM) was done. Axial length measured by optical biometry (OA-2000, Tomey). Children with corneal, retinal, or optic nerve pathology were excluded from the study.

Results: A total of 48 children (25 boys, 23 girls) between 4 and 20 years old were enrolled over 8 months. 19 (39.6%) had at least one parent myopic. The average time spent on near work activities was 6.7 hours (2.5-10 hours), of which 1.68 hours (0-6 hours) were spent on digital devices. The average time for outdoor activities was 25 minutes (0-2 hours), of which <20 minutes (0-1hr) was spent in sunlight. Average myopia progression was 0.96D in the last 1 year (range of myopia -0.75D to -10.25D). The accommodative response was normal in 27 children (56.25%), with significant lag (MEM≥+0.75D, and amplitude of accommodation at least 1D less than requirement) present in 12 children (25%), significant lead (MEM<0, amplitude of accommodation more than required) in 9 children (18.75%).

Conclusions: Prolonged near work and restricted outdoor activities were the main factors for myopia progression identified in our study. A significant number of children showed accommodation anomalies, suggesting the role of vision therapy prior to starting myopia control treatment, and a customized treatment plan for every child based on their ocular parameters.

Foveal Thickness in Myopia in Central India

First Author: Sheetal ***BAJORIA***
Co-Author(s): Vinay ***NANGIA***

Purpose: A healthy fovea is important for good visual acuity. Myopia is an important cause of visual impairment in Asia. To study the thickness of the fovea and to determine its ocular correlations in subjects in Central India.

Methods: A total of 280 subjects (559 eyes) were studied. Of these 188 subjects (375 eyes) were included in the final analysis. Exclusion criteria were subjects below 10 years, and those with vitreomacular traction, epiretinal membrane, and grade 4/5 myopic macular degeneration. All subjects underwent digital biometry, optical coherence tomography using spectral domain (SDOCT), and color photography. Foveal thickness (FT) was measured manually on SDOCT. Data were analyzed using the SPSS statistical software.

Results: The mean age was 27.78 ±12.33 years, mean sph.equ. was -5.98 ±4.48 D, BCVA was 0.74 ±0.28, mean axial length was 25.56 ±2.03 mm. The mean foveal thickness was 230.74 ±43.47 um. Myopic macular degeneration grade 0 was seen in 220 eyes, grade 1 in 135, and grade 2 in 20 eyes. Foveal thickness showed a positive significant correlation with age (P<0.05; r=0.10), axial length (P<0.001; r=0.338), peripapillary atrophy (PPA) (P<0.001; r=-0.251), extent of PPA (P<0.001; r=0.225), Disc diameter horizontal (DDH) (P<0.001; r=0.204). Negatively significant correlation with BCVA (P<0.001 ;r=-0.26), Temporo superior RNFLT (P<0.001; r=-0.248), Temporoinferior RNFLT (P<0.001; r=-0.193).

Conclusions: Foveal thickness positively correlates with axial length in myopia.

Laser in Situ Keratomileusis for All Levels Myopia in Mongolians

First Author: Tsetsegjargal ***BAASANJAV***

Purpose: To compare the pre and post-operative outcomes of Mongolian patients who had LASIK surgery.

Methods: We conducted a hospital-based prospective study. A total of 176 consecutive patients who underwent conventional LASIK were examined for the correction of myopia. Study participants were followed for 5 years after surgery.

Results: The mean age was 29.89 ± 6.42 years. 145 patients were female and 31 were male. The mean UCVA was 0.10 ± 0.09 Decimal and the mean BCVA was 0.81 ± 0.16 Decimal. Preoperative analysis showed that UCVA and BCVA were significantly different in mild, moderate, and high myopia groups. Especially, patients with mild myopia had higher acuity compared to other groups (0.21 ± 0.13 and 0.86 ± 0.12, respectively). Moreover, the manifest spherical equivalent the of mild myopia group also had significantly lower compared to the other two groups (-1.73 ± 1.17).

Conclusions: Our results support the view that preoperative clinical examination is an extremely important part of the LASIK procedure to improve refractive predictability.

Long-term Follow-up RGP Contact Lens Therapy in Adolescent With Amblyopia Anisometropia: A Case Series

First Author: Christina ***ARITONANG***

Purpose: The purpose of the case report is to document the effectiveness, safety, and potential benefit of using the RGP Contact Lens in patients with amblyopia anisometropia.

Methods: This was a descriptive observational case series study that reported 2 patients with amblyopia anisometropia and high myopia.

Results: First patient: A 13-year-old male adolescent came with blurred vision in both eyes. The patient had a history of high myopia and wearing glasses with prescription S-10.00 on the right eye and S-2.00 on the left eye. After using an RGP lens for ten years on both eyes, the visual acuity became 5/5 on both eyes.

No anterior segment complication in both eyes after 10 years of usage. Second Patient: A young 15-year-old female adolescent referred to refractive division with blurred vision in both eyes. The patient also has a history of high myopia and wearing glasses with the prescription S-13.00 on the right eye and S-3.75 on the left eye. After using an RGP lens for six months on both eyes, the visual acuity becomes 5/5. and no complications in both eyes after six months of follow-up.

Conclusions: RGP contact lens is an effective and safe method for managing amblyopia and anisometropia in young adolescents, with a potential benefit in inhibiting myopia progression and complications caused by high myopia. RGP Contact lenses have emerged as a preferred option for managing anisometropic amblyopia in adolescents due to their ability to lower lens vision distortions and reduce magnification/minification caused by vertex distance compared to eyeglasses.

Myopia, A New Risk Factor for Central Serous Chorioretinopathy in Taiwan: A Nationwide Population-Based Study

*First Author: Yuh-shin **CHANG***
*Co-Author(s): James **CHANG**, Han-yi **JAN**, Shih-feng **WENG***

Purpose: To investigate the association between central serous chorioretinopathy (CSCR) and myopia.

Methods: Data were collected from the Longitudinal Health Insurance Database 2000, which consists of randomly selected medical claim data from one million of the 23 million residents in Taiwan. The study cohort comprised all patients diagnosed with CSCR between January 2001 and December 2010 (n = 2921). The control group consisted of randomly selected patients (n = 17526) who were matched with the study patients according to age, sex, geographic region, and date of index medical care. Demographic characteristics and risk factors were examined using univariate logistic regression, and the Student's t test was used for continuous variables. Adjusted logistic regression was used to compare the odds ratio (OR) of prognosis of CSCR patients with that of controls.

Results: In the patients with CSCR, we observed an increased prevalence of myopia (OR = 6.723, 95% confidence interval [CI] = 5.030–8.987, P < .0001). After we adjusted for age, sex, the geographic location of the patient's residence, myopia, hypertension, diabetes mellitus, hyperlipidemia, chronic renal disease, peptic ulcer disease, psychiatric disease, allergic respiratory disease, and systemic steroid and topical steroid use, conditional logistic regression analysis revealed that CSCR patients were more likely to have been previously diagnosed with myopia than were the controls (OR = 4.722, 95% CI = 3.433–6.497, P < .0001).

Conclusions: Myopia was significantly more common among CSCR patients than among the controls.

Orthokeratology Fitting in a Post-LASIK Patient: A Case Report

*First Author: Weni **PUSPITASARI***

Purpose: Refractive surgery patients may have residual refractive errors. Orthokeratology (OK) lenses are a less common option for correcting refractive errors in post-refractive surgery patients. This case discusses OK lenses as an alternative to LASIK enhancement, patient selection, and fitting.

Methods: A 34-year-old male complained of blurred vision in both eyes. He presented to our clinic with a refraction in the right eye (RE) of S -2.50 cyl -1.25 x 90 and in the the left eye (LE) of S -2.5.00 cyl -1.00 x 80. He underwent bilateral LASIK surgery 10 years ago with recalled refraction of approximately –6.00D in both eyes. The corneal topography showed large central of zone corneal flattening due to LASIK and no evidence of corneal ectasia. He was highly motivated to improve his vision without another enhancement surgery.

Results: The OK lenses were prescribed on the RE with BC 8.5, diameter 10 mm, power +0,75D, and the LE with BC 8.6, diameter 10 mm, power +0,75D. Following one week of lens wear, the residual refraction of RE −1.50 −0.50 x 90 and LE −1.50 −0.50 x 80. After one month, the refraction in RE −1.00 −0.50 x 90 and LE −1.00 −0.25 x 80. Following six months, the refraction of RE was -1.00 cyl−0.25 x 90 and -1.00 cyl -0.25x 80 in the LE. He was well satisfied with the level of uncorrected vision throughout the day.

Conclusions: OK lenses are an effective alternative to LASIK enhancement. Proper patient selection is vital to achieve a satisfied patient.

Soft Contact Lens as the Preferable Option in Anisometropic Amblyopia: A Case Report

*First Author: Chynta **VANVIE***
*Co-Author(s): Ani **ISMAIL***

Purpose: To report a case of anisometropic amblyopia caused by unilateral high myopia with soft contact lens (SCL) as the management.

Methods: A 17-year-old female had a chief complaint of blurry vision during a far sighting. She was identified holistically for her ophthalmological status, then corrected maximally for refractive status. Thorough examinations revealed high myopia with anisometropic amblyopia in the right eye. It was recommended that she wear soft contact lenses. The pre-fitting examination of SCL was completed, and contact lens fitting and a post-fitting were evaluated.

Results: The ophthalmology examination showed the uncorrected visual acuity (VA) in the left eye was 6/6 at both distance and near; however, the right eye was

4/60 pinhole 6/21. The best corrected visual acuity was 6/9 with S -6.50, while the visual crowding was 6/7,5, presenting amblyopia. The base curve measurement of the SCL was 8.69 mm, performed with a set of SCL fittings with power and diameter of the right eye was -6.00 diopters, 13 mm, respectively. After the contact lens was attached, over-refraction was performed, it was obtained that S-6.00 D for the right eye could reach 6/9, and the patient felt comfortable compared with the spectacle. Moreover, the binocular vision reached the optimal VA of 6/6.

Conclusions: SCL is a preferable option for correcting refractive errors in unilateral anisometropic amblyopia. This management can be done to maintain binocular vision and minimize aniseikonia. Good contact lens fitting results are comfortable, better vision, and improved quality of life for the patient.

Neuro-Ophthalmology

3-year Retrospective Study Regarding the Clinical Profile and Visual Outcome of PTON Patients in a Tertiary Hospital in the Philippines From 2018-2020

*First Author: Kim **AGUSTIN***
*Co-Author(s): Lourdes **ANG**, April **MENDOZA-DIZON**, Karen **REYES***

Purpose: This study aims to describe the clinical presentation and visual outcomes of diagnosed cases of Post-Traumatic Optic Neuropathy (PTON) in a tertiary government hospital in the Philippines from January 2018 to December 2020.

Methods: This is a retrospective chart review of diagnosed PTON cases consulting at our outpatient clinic, inpatients and ER departments from years 2018 to 2020. A total of 21 clinically diagnosed PTON cases were included.

Results: The annual TON incidence rate ranged from 0.11% to 0.56% among all ophthalmology outpatients and 0.90% to 1.48% among ophthalmic trauma cases for the years 2018- 2020. Most patients were young males, indirect type, involving one eye, and secondary to blunt injury, from a motor vehicular accident, consulting more than 7 days post-injury. The blurring of vision was the most common symptom. Decline in VA, RAPD, dyschromatopsia and visual field defects were the most common signs. The optic nerve is normal-looking in the majority of cases. Most are with poor initial visual acuity on presentation.

Conclusions: Post-traumatic optic neuropathy cases seen in our institution have similar profiles with other studies, with male predominance and in the younger age group, usually sustaining injuries from motor vehicular accidents and mauling. Improvement of visual acuity was observed among patients seen within 3 days post-injury that were managed with low to moderate doses of oral steroids. Prospective studies with more cases and a longer follow-up period are recommended to determine visual outcomes with steroid treatment and the rate of spontaneous improvement of TON cases locally.

A Cat and Stars in the Eyes of a Child

*First Author: Sita **AYUNINGTYAS***
*Co-Author(s): Salmarezka **DEWIPUTRI**, Mohamad **SIDIK***

Purpose: To demonstrate successful management of a fulminant clinical manifestation of cat scratch disease/ CSD presenting as neuroretinitis in children.

Methods: A case report of a 13-year-old girl presented with sudden blurred vision in both eyes for a week. Floaters were reported. No redness, pain on gaze, or fever were found. She kept a cat in close contact. She had been scratched by a wild cat one month before. The visual acuity/VA in both eyes/OU was hand movement. A positive RAPD was observed in RE, while vitreous cells were found in OU. The funduscopy revealed an indistinct edge, hyperemia, elevated disc, and macular star in OU. The diagnosis of neuroretinitis due to CSD was made.

Results: The infection work-up demonstrated reactive IgG for Toxoplasma, Rubella, and CMV, with negative IgM. The chest x-ray was normal. Intravenous methylprednisolone (1g/day) for 3 days and doxycycline (2 x100 mg/day) were administered. At 2 weeks, the VA of OU improved to 3/60. The perimetry showed a central-to-temporal defect in RE; a central-to-superotemporal defect in LE. At 6 weeks, the VA of OU improved to 6/30, while the vitreous cells, disc edema, and macular star were significantly improved. In 3-months, the VA of OU significantly improved to 6/9.

Conclusions: There is no gold standard for diagnostic tests in CSD. A thorough history and ophthalmological examination are mandatory in diagnosing neuroretinitis due to CSD. A combination of systemic antibiotics and corticosteroids in moderate to severe vision loss is associated with significant visual acuity improvement.

A Rare Case Report of a Young Male Patient With Parinaud Syndrome

*First Author: Purna Adi **PUTRA***
*Co-Author(s): Yunita **MANSYUR**, Batari **UMAR***

Purpose: The most common cause of Parinaud syndrome (dorsal midbrain syndrome) in young patients is a pineal region tumour, followed by midbrain haemorrhage, infarct, and others. We report a case of a young patient with vertical gaze palsy, convergence-retraction nystagmus, and light near dissociation which is appropriate for Parinaud syndrome due to infection.

Methods: The diagnosis was made based on a typical triad of ocular movement disorders. Ophthalmological

examination, magnetic resonance imaging (MRI), laboratory testing, and digital subtraction angiography were conducted to explore the cause.

Results: A 22-year-old male patient with Parinaud syndrome presented with a normal MRI and only showed tortuosity in the basilar artery in an angiography examination. Laboratory examination revealed increased IgG levels of anti-toxoplasmosis, anti-rubella, and anti-cytomegalovirus. The patient then received clindamycin and neurotropic therapy and on laboratory follow-up there were decreased levels of anti-toxoplasmosis IgG (157 IU/ml), anti-rubella IgG (72 IU/ml), and anti-cytomegalovirus IgG (21 IU/ml).

Conclusions: Parinaud syndrome may be caused by toxoplasmosis, rubella, or cytomegalovirus infection events, though it is still uncertain which is the main cause.

A Rare Case of Orbital Inflammatory Syndrome Presenting As Bilateral Optic Perineuritis

*First Author: Rholter Dave **LEE***
*Co-Author(s): Maria Karina **MONTESINES***

Purpose: To present a case of an 83-year-old female diagnosed with Orbital Inflammatory Syndrome (OIS) presenting as Bilateral Optic Perineuritis (OPN).

Methods: This is a case report of OIS presenting as Bilateral OPN exhibiting gradual, progressive, and sequential loss of vision accompanied by pain and marked limitation of eye movement. Steroid treatment significantly improved vision and extraocular movement (EOM), and resolved eye pain.

Results: An examination revealed light perception on the nasal field of the right eye and no light perception on the left, with both pupils reacting sluggishly to light with a relative afferent pupillary defect on the left. Limitation and pain on EOM were noted bilaterally. A confrontation examination revealed diffuse visual field loss on both eyes only sparing the superonasal quadrant of the right eye. Elevated white blood cell count and C-reactive protein were observed. Optical coherence tomography of the nerve revealed bilateral thickening of the retinal nerve fiber layer. Visual evoked potential revealed conduction disorder along the visual pathways. A contrast-enhanced MRI revealed bilateral and circumferential thickening with enhancement of the optic nerve sheath (tram track and doughnut signs) with inflammatory changes of the intraconal fat representing OPN.

Conclusions: OIS presenting as OPN is difficult to differentiate from optic neuritis and other inflammatory conditions because of similar clinical presentations. It is crucial to know the subtle differences in clinical presentations between these disorders to appropriately request the ancillary procedures that will provide an accurate and timely diagnosis of the disease since the manner and timing of treatment will remarkably affect the prognosis of the patient.

A Retrospective Review of Neuro-Ophthalmic Disorders in a Level III Government Hospital in Metro Manila From 2017-2019

*First Author: Vien Christian **LANSANGAN***
*Co-Author(s): Miriam Louella **FERMIN***

Purpose: To determine the pattern of neuro-ophthalmic disorders in a level III government hospital from 2017-2019.

Methods: A retrospective review of 110 neuro-ophthalmologic cases seen in a 3-year period from January 1, 2017, to December 31, 2019. Demographic data, co-morbidities, presenting symptoms, and clinical diagnoses were gathered.

Results: The 3-year incidence rate of neuro-ophthalmic disorders is 0.9%. Male patients and those above 60 years old were more likely to suffer from neuro-ophthalmic disorders. The most frequent presenting symptom was decreased vision. Leading co-morbid conditions associated with neuro-ophthalmic disorders were hypertension, diabetes, cerebrovascular accidents, and hyperlipidemia. The most commonly observed disease in the pediatric age group was ocular myasthenia gravis. For patients aged 19 to 39 years, papilledema and bitemporal hemianopsia secondary to intracranial tumors were the leading diagnoses. For adults aged 40-59 years old, the most frequently encountered disorders were non-arteritic anterior ischemic optic neuropathy and abducens nerve palsy. Elderly patients aged 60 years and older were more likely to suffer from homonymous hemianopsia.

Conclusions: The most common disease classification was disorders of the optic nerve. The majority of cases were ischemic in nature with vasculopathic risk factors. Better control of co-morbid systemic conditions is essential to prevent neuro-ophthalmic disease.

An Interesting Presentation of Bilateral Simultaneous Acute Neuro-Retinitis in an Immuno-Competent Adult Female- a Single Patient Report

*First Author: Manoj **VASUDEVAN***
*Co-Author(s): Sridhar **BARATAN**, Siva Mohan **HALAHARVI***

Purpose: This presentation is a single patient report to highlight the importance of a complete clinical analysis with a good history and correlation of the acute presentation to identify the cause for such a presentation initially before proceeding with an elaborate laboratory panel of tests.

Methods: The patient presented with a sudden onset of vision deterioration in both eyes of 2 days duration, on examination both eyes showed sluggish reacting pupils to light, and the anterior segment was otherwise

normal. The anterior vitreous face showed 2+ cells in both eyes, and the dilated fundus showed both eyes optic disc edema with multiple pin-point lesions in the sub-retina layers; the left eye had 3 and the right eye 1 in the posterior pole. The macula showed early macular star configuration retinal exudation in the left eye more than in the right eye. The patient had undergone peri-anal abscess drainage under spinal anesthesia 3 weeks prior to this presentation.

Results: The patient showed good, steady improvement in vision, and the signs of inflammation reduced with the start of systemic steroids and antibiotics and then the steroids were tapered off over 6 weeks.

Conclusions: A complete workup of any patient starts with a good history taking, a complete clinical examination with a revisit to the past history if mandated to identify the cause of the clinical presentation, and a working diagnosis before doing any investigations. Acute neuro-retinitis secondary to systemic bacteremia is not uncommon but has to be kept in mind of such a presentation with a past history of peri-anal abscess in healthy young individuals.

An Unusual Presentation of Central Nervous System Lymphoma

*First Author: Li Faung **TAN***
*Co-Author(s): Li Mun **TAN**, Yong Zheng **WAI***

Purpose: We describe a rare presentation of primary central nervous system (CNS) lymphoma manifesting as bilateral internuclear ophthalmoplegia (INO).

Methods: Case report.

Results: A 36-year-old gentleman with untreated HIV (human immunodeficiency virus) presented with a one-week history of double vision associated with right lower limb weakness. Visual acuity was 6/9 in bilateral eyes (BE) with normal pupillary response. Intraocular pressure was normal BE. Ocular motility examination revealed bilateral restricted adduction and abducting nystagmus upon rightward and leftward gaze. Upward and downward gaze were unremarkable. Primary gaze was central, and convergence was spared. Computed Tomography (CT) scan of the brain demonstrated a left intra-axial parietal lesion with vasogenic oedema suggestive of lymphoma or cerebral toxoplasmosis with no evidence of lesion over the brainstem. Subsequent evaluation with Magnetic Resonance Imaging of the brain showed increasing multiple enhancing intra-axial lesions demonstrating restricted diffusion on diffuse weighted imaging and raised choline which is suggestive of CNS lymphoma. There was a hyperintense signal on FLAIR at the posterior aspect of the pons corresponding to his symptoms. He deteriorated during his hospital stay as he developed right upper limb weakness with worsening lower limb weakness. Repeated CT revealed progression of mass effect abutting the right lateral ventricle.

Conclusions: This is a unique case of a patient with CNS lymphoma presenting as bilateral INO. Physical examination is all that is required to diagnose a case of INO. MRI is superior to CT scan in terms of localization of the lesion.

Bilateral Cranial Nerve VI Palsy as a Manifestation of Neurosyphilis: A Case Report

*First Author: Jasmine **RASHID***
*Co-Author(s): Atikah **ASINI***

Purpose: To report an atypical case of Neurosyphilis manifested as bilateral Cranial Nerve VI palsy.

Methods: A case report.

Results: A 22-year-old female with a previous history of treated pulmonary Tuberculosis presented with a three-month history of binocular diplopia. She reported having 2 previous male partners of unknown sexual promiscuity but denied any history of sexually transmitted infections. Examination revealed a vision of 20/20 in the right eye and 20/30 in the left. There were 2+ anterior chamber cells in both eyes with 360-degree posterior synechiae over the left eye. Fundus examination was normal bilaterally. Systemic examination was unremarkable. Neurologic examination revealed bilateral abducens nerve palsy. Extremities were normotonic, normoreflexic, and there were no cerebellar or meningeal signs. Her contrast-enhanced cranial and orbit computed tomography showed unremarkable results. Chest radiography did not reveal hilar adenopathy or signs of tuberculosis. On further work-up, her serum was Rapid Plasma reagin (RPR) reactive with a titer of 1:32 and positive for Treponema pallidum particle agglutination (TPPA). However, she strongly refused cerebrospinal fluid analysis. There was no evidence of concomitant Human Immunodeficiency Virus infection. She was co-managed with the infectious disease team and treated inpatient with IV Penicillin G 4 million units 4 hourly for 14 days with no adverse reactions. Symptomatic improvement was noted at the completion of treatment.

Conclusions: Neurosyphilis should be considered as a cause of isolated ophthalmoplegia, particularly when it is bilateral. Timely recognition of this disease by ophthalmologists can help orient patients to the appropriate neurology and infectious disease services they require.

Brain Metastasis of Non-Hodgkin Lymphoma Manifested as Bilateral Sudden Visual Loss: A Rare Case in Children

*First Author: Anak Agung Mas **TRININGRAT***

Purpose: To present a case of Non-Hodgkin Lymphoma brain metastasis, presented as bilateral sudden visual loss.

Methods: An 8-year-old male came with bilateral sudden visual loss 1 week before the initial assessment, which worsened 3 days prior. There were no other ocular symptoms. The patient fell into a sitting position 2 weeks before, followed by lower limb weakness 3 days after. Visual acuity revealed light perception, sluggish pupillary reflex on both eyes, sixth nerve palsy on the left eye, and bilateral optic disc swelling. MRI revealed mass on both Rosenmüller fossa which infiltrated and extended to the intrasellar aspect, and mass on both the temporal lobe and parietal region under the scalp suspected as malignant mass appearance. Abdominal USG found a para-aortic mass. Biopsy was done on the parietal mass and revealed Malignant Round Cell Tumor considered Non-Hodgkin Lymphoma, Diffuse, Intermediate Type. Bone marrow biopsy indicated a leukemic phase of lymphoma.

Results: Brain metastasis of Non-Hodgkin Lymphoma rarely manifested with ophthalmology symptoms, especially with bilateral sudden visual loss. Optic nerve infiltration of malignant mass can be suspected in this patient despite the age prevalence of lymphoma. Early diagnosis by the ophthalmologist plays an important role in this case to serve appropriate treatment in order to preserve visual function because lymphoma generally responds well to chemotherapy.

Conclusions: Even though ocular manifestations are rare, considering optic nerve infiltration by lymphoma in children with sudden visual loss accompanied by cerebral mass is important for early diagnosis and prompt treatment.

Bruns Nystagmus: An Important Clinical Clue for Cerebellopontine Angle Tumours

*First Author: Dianita **GINTING***
*Co-Author(s): Antonia **INDRIATI**, Rusti **SARI**, Prettyla **YOLLAMANDA***

Purpose: To present an important clue to Bruns nystagmus in cerebellopontine angle (CPA) tumours.

Methods: A case report.

Results: A 27-year-old man presented with blurred vision in both eyes and hearing impairment on the right side in the last two weeks. He denied any headache, nausea, tinnitus, dysphagia, and unsteadiness of gait. Ophthalmological examination revealed a coarse, horizontal nystagmus with low oscillatory frequency as the patient looked toward the side of the lesion, but a fine, high-frequency primary-position nystagmus that increased as the patient looked to the side opposite the lesion, consistent with Bruns nystagmus. The visual acuity of both eyes was 0,5. Fundus examination revealed optic disc swelling in both eyes. Visual field examination revealed an enlargement of blind spots in both eyes. Computed Tomography scan of the brain and orbits with contras documented communicans hydrocephalus and left cerebellopontine angle mass that formed an “ice cream cone” appearance suspected a vestibular schwannoma. The patient then consulted a neurosurgeon for a ventriculoperitoneal shunt and tumour removal.

Conclusions: The CPA is the most common site for posterior fossa neoplasms. It is a triangular space that is bounded by the tentorium superiorly, the brainstem posteromedially, and the petrous part of the temporal bone posterolaterally. Bruns nystagmus, a rare variant of bidirectional nystagmus, has an important localizing property as it aids in the diagnosis of CPA tumours. Knowledge of this rare variant of bidirectional nystagmus is important as it aids in making a prompt clinical diagnosis of CPA tumours.

Case Series of Paediatric Optic Neuritis in Myelin Oligodendrocyte Glycoprotein Antibody-Associated Disease (MOGAD)

*First Author: Nur ‘Attiyyah **JASMI***
*Co-Author(s): Nor Fadhilah **MOHAMAD***

Purpose: To report case series of paediatric optic neuritis in MOGAD.

Methods: Case series.

Results: Case 1: A 5-year-old girl presented with bilateral blurring of vision and left eye pain. The vision was non-perception to light (NPL) bilaterally. RAPD was negative and funduscopy showed bilateral optic disc swelling. MRI brain and cerebrospinal fluid analysis were normal. She was treated as MOGAD with bilateral optic neuritis as her anti-MOG was positive, and she had full visual recovery after Methylprednisolone treatment. She then had two MOGAD relapses after 4 years. The first relapse was with optic neuritis where her vision improved from 1/60 to 6/24 on the right eye and hand movement to 6/60 on the left eye after methylprednisolone. The second relapse was 2 months later with acute disseminated encephalomyelitis. MRI of the brain showed extensive supratentorial white matter changes. She achieved complete remission after Methylprednisolone and IV immunoglobulin infusion and was continued with azathioprine. Case 2: A 7-year-old boy with left blurring of vision and headache for 1 month. The left vision was perception of light (PL) with positive RAPD. Right vision was 6/9. On funduscopy, both optic discs were pale. MRI brain and cerebrospinal fluid analysis were normal. A trial of methylprednisolone was commenced, and there was improvement of vision to 1/60 on the left and 6/6 on the right eye. His anti-MOG turned out to be positive and he was then diagnosed as MOGAD.

Conclusions: Anti-MOG is now an important biomarker to help in the diagnosis, treatment and counselling of paediatric patients with optic neuritis.

Cerebellopontine Angle Mass in a 21-Year-Old Female Presenting As Pseudo-Gradenigo's Syndrome

*First Author: Reesha Rona **DATUKON***

Purpose: To present a case of a 21-year-old female with cerebellopontine angle mass who presented with lagophthalmos, blurring of vision, diplopia, ipsilateral hearing loss, and ipsilateral loss of facial sensation.

Methods: A 21-year-old female with a twenty-two-month history of progressive hearing loss on the right associated with gait ataxia, dysmetria, and ipsilateral facial asymmetry. Radiologic imaging revealed a cerebellopontine angle mass. Excision of mass was done and histopathology examination was consistent with vestibular schwannoma. The patient was referred by Neurosurgery service post-operatively for evaluation. On examination of the right eye, visual acuity was counting fingers at 3 feet. Exposure to keratopathy secondary to paralytic lagophthalmos was noted, with limited abduction of the right eye. Other neurologic findings were decreased sensation on the right side of the face, right facial asymmetry, and decreased hearing in the right ear. The rest of the cranial nerves were intact. The sensory system, motor system, and coordination were unremarkable.

Results: Antibiotic eyedrops and lubricating eye gel were given, and lateral tarsorrhaphy was done which improved the vision and eye redness of the patient.

Conclusions: Early recognition and extensive investigation are necessary to establish the diagnosis of these types of tumors. Tumors presenting with hearing loss, vestibular symptoms, abduction deficit, and decreased corneal sensitivity should be extensively investigated to exclude other entities, as management and prognosis would depend on the diagnosis.

Chronic Postpartum Optic Neuropathy: To Treat or To Ignore?

*First Author: Ferdian **RAMADHAN***
*Co-Author(s): Balgis **DESY***

Purpose: Presenting a rare case from a remote area in Madura of bilateral optic neuropathy 2 months after delivery, which experienced changes in visual acuity after steroid administration.

Methods: A 26-year-old lady who delivered a healthy baby by normal vaginal delivery 2 months back presented with a history of painful progressive visual loss of 1-month duration. No redness of eyes or discharge, no previous history of visual disturbances, preeclampsia, or any disturbances during pregnancy. Visual acuity was no light perception in both eyes. The pupillary light reflex was sluggish in both eyes, and the fundus reflex showed bilateral optic atrophy. Brain with contrast magnetic resonance imaging (MRI) showed T2 hyperintensity involving the intraorbital optic nerve. The decision to treat this lady due to difficult accommodation (remote island) with IVMP (1 gram per day for 5 days) showed hand movement visual acuity in the right eye and light perception in the left eye. She was discharged with oral steroids.

Results: Vision loss in the postpartum period is a very rare case. Reported etiologies include preeclampsia or any disease that results in hypoperfusion or embolism in the posterior ciliary arteries. Myelin Oligodendrocyte Glycoprotein (MOG) associated disorder (MOGAD) is one of the common causes of visual loss in the postpartum period. Optic Neuropathy in MOGAD has a severe visual loss at presentation but shows remarkable recovery with steroids.

Conclusions: The decision to give steroid in this case provided a good change in the patient, further examination is needed to confirm the diagnosis of MOG.

Clinical Observation of Idiopathic Pediatric Optic Neuritis With Optic Disc Edema

*First Author: Huaxin **ZUO***
*Co-Author(s): Li **LI**, Chunxia **PENG**, Wei **SHI***

Purpose: Clinical observation at the initial episode of idiopathic optic neuritis in children with optic disc edema (ODE).

Methods: A total of 49 children (78 eyes) first diagnosed with IPON were divided into two groups depending on whether the optic disc was edema at the onset. The clinical features and visual recovery after treatment of glucocorticosteroid were observed.

Results: Thirty-one cases (49 eyes) presented with ODE and 18 cases (29 eyes) presented without ODE. 52.9% and 50% of patients showed seropositivity for myelin oligodendrocyte glycoprotein antibody (MOG-Ab) in the two groups, respectively. The mean best corrected visual acuity (BCVA) at the final visit of the edema group was 0.53 ± 0.1 (logMAR) and of the non-edema group was 0.14 ± 0.3 (logMAR) ($p=0.004$) after treatment. Yet, the edema group showed better visual recovery at the last visit ($p=0.004$). The average and temporal-quadrant thickness of the RNFL of the edema group was significantly thicker than the other at one week of follow-up ($p<0.01$).

Conclusions: Children with IPON often presented with ODE and received better visual improvement after interference with glucocorticosteroid than those without papilledema.

Complete Left Homonymous Hemianopsia Without Macular Sparring in Late-Onset Ischemic Stroke: A Case Report

*First Author: Nicholas Dwiki **TANONG***
*Co-Author(s): Reinne Natali **CHRISTINE**, Gilbert W S **SIMANJUNTAK**, Marcelina **SILITONGA***

Purpose: We report a case of complete left HH in late-onset ischemic stroke.

Methods: A 49-year-old male patient presented with a chief complaint of sudden blurry vision on the left side of both eyes since 2 months prior. The patient had a history of systemic hypertension, and type 2 diabetes mellitus and was a heavy smoker (for more than 20 years). Upon examination, the visual acuity was 5/6 in both eyes. His left visual field was narrowed in both eyes, Marcus Gunn pupil on both eyes, normal funduscopy, and IOP of 14 mmHg for the right eye and 16 mmHg for the left eye. VFA revealed left-sided HH. Optic head OCT revealed a slight reduction in RNFL on the temporal side of his right eye. MRI showed chronic right infarction on the occipital and frontoparietal lobe. Citicoline, clopidogrel and atorvastatin were given immediately. The patient was also referred for Visual Rehabilitation. After treatment for 3 months, there had not been any progress regarding the visual field defect.

Results: The incidence rate of HH in stroke was 0.5%. Only 8.3% of stroke in the occipital area would develop HH. The main reason for HH was injury to the optic radiation located in the occipital lobe. Until today, there is still no standarized treatment for visual field defects in cases of chronic infarction. Visual rehabilitation can help persons with HH, however there is very low-quality evidence of no effect on the outcome.

Conclusions: This case of complete left HH in old stroke has a poor outcome despite undergoing visual rehabilitation and adequate treatment.

Complete Oculomotor Cranial Nerve Palsy With Pupillary Involvement in Pediatric Patient With Meningitis and Hydrocephalus Non-communicating: A Case Report

*First Author: Muhammad Ilham **MALDA***
*Co-Author(s): Senyum **INDRAKILA***

Purpose: The purpose of this study is to present a case of unilateral complete oculomotor cranial nerve palsy with pupillary involvement due to meningitis tuberculosis with non-communicating hydrocephalus.

Methods: A 16-year-old female came with a chief complaint of a dropped right eyelid three months ago, headache, nausea, and general weakness, but there was no pain around the eye. An ophthalmological examination showed exotropia, limitation in ocular motility, and ptosis in the right eye. The patient previously had a history of pulmonary tuberculosis medication only for 3 days. A CT scan revealed meningitis and non-communicating hydrocephalus.

Results: The patient was diagnosed with complete oculomotor nerve palsy with pupillary involvement of the right eye due to TB. The patient was treated with oral methylprednisolone, oral mecobalamine, calcium, and vitamin D supplementation. For the brain meningitis, an anti-tuberculosis drug regimen was given. Complete oculomotor nerve palsy with pupillary involvement is an emergency and life-threatening condition because it is commonly caused by an intracranial aneurysm.

Conclusions: Appropriate history-taking, physical and ophthalmological examinations and imaging are needed to diagnose the etiology of a patient with oculomotor nerve palsy. Hematogenous spread of Mycobacterium tuberculosis to the CNS causing meningitis. Anti-tuberculosis drug regimens are needed, whereas steroid therapy can be given as an adjunctive therapy. Multi-department approaches are important to gain the best outcome for the patient, not only through management therapy from an ophthalmologist but also from neurologists, pulmonologists, and pediatricians.

Diagnostic Approach and Management of Miller Fisher Syndrome: A Case Report

*First Author: Novia **RAHAYU***
*Co-Author(s): Ii Husein **BARNEDH***

Purpose: To report a rare case of Miller Fisher Syndrome (MFS), its diagnostic method and treatment modalities.

Methods: A case report of a young, 30-year-old woman who was admitted through the emergency department with chief complaints of dizziness and nausea. She had been experiencing flu-like symptoms since one week prior. The patient also complained of double vision and inability to sit or stand upright. Brain and orbital MRI showed no abnormalities. Blood tests also came out normal, with no signs of infection or malignancies. Cerebrospinal fluid test was suggestive of Guillain Barre Syndromes. Electromyography examination showed signs of polyradiculoneuropathy.

Results: The patient was treated with Intravenous Immunoglobulin (IVIg) 2 mg/kg, divided over 5 days. On the third day of the IVIg therapy, the tingling sensation subsided. On the fifth day, her dizziness was resolved. However, the diplopia remained until the next few weeks. On her last visit 6 weeks after treatment, there was no more diplopia when gazing near objects. Eight weeks after treatment, no more diplopia.

Conclusions: Miller Fisher Syndrome was diagnosed in this patient firstly from the typical triad of ataxia, areflexia, and ophthalmoplegia, following a period of bacterial/viral illness. The diagnosis also was supported by the result of cerebrospinal fluid analysis and electromyography, which were highly suggestive of Guillain Barre Syndrome. Intravenous Immunoglobulin was given to accelerate clinical improvement, despite

the favorable prognosis. Within 6 weeks, most of the patient's symptoms had subsided.

Direct Carotid Cavernous Fistula: A Rare Case of Spontaneous Resolution

First Author: Wan Nurul Hanan W. ***AHMAD***
Co-Author(s): Norhalwani ***HUSAIN****, Mohamad* ***SHAHIDATUL ADHA***

Purpose: To report a rare case of spontaneous near-complete resolution of direct carotid cavernous fistula (CCF).

Methods: Case report.

Results: A healthy 38-year-old lady presented with a sudden onset of left eye protrusion, redness, tearing, and discomfort associated with headache and whooshing noise for three days. Her symptoms began with left blurry vision and ptosis a week prior. History was unremarkable, with no antecedent trauma. Her best corrected visual acuity (BCVA) was 6/6 on the right and 6/18 on the left. No RAPD was observed. There was axial proptosis of the left eye with complete ptosis and total ophthalmoplegia. The left anterior segment examination showed conjunctival injection, inferior chemosis, and corkscrew vessels. Intraocular pressure (IOP) was elevated at 23 mmHg. There was palpable thrill and bruit on auscultation. Right eye examinations were unremarkable. CECT of brain demonstrated linear hypodensity within the left cavernous sinus (CS) suspicious of thrombosis and bulging of bilateral CS with dilatation of left superior ophthalmic vein. Digital subtraction angiography confirmed the diagnosis of direct left CCF type A. The patient refused surgical interventions. She was started on IOP-lowering medications and closely monitored. She developed central retinal vein occlusion at 1-year follow-up, complicated with proliferative retinopathy, requiring pan-retinal photocoagulation laser therapy. Her left proptosis remained constant over 2 years, but ptosis and ophthalmoplegia have significantly improved, with a final BCVA of 6/36.

Conclusions: Spontaneous regression is extremely rare in direct CCFs, thus conservative treatment should be carefully restricted in patients with normal or minimal visual impairment.

Efficacy and Complications of Full Dose Versus Half Dose of Botulinum Toxin Type A Injection in Benign Essential Blepharospasm

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Purpose: To compare the effectiveness, patient satisfaction, and complications associated with pretarsal botulinum toxin type A (BTX-A) injections using half versus full doses of benign essential blepharospasm (BEB) cases.

Methods: A prospective double-masked randomized control trial was conducted in 40 eyes of 20 patients. Each patient was randomized to receive either 40 or 80 units of Abobotulinumtoxin A (Dysport®) with a pretarsal injection technique. The primary outcome measures were frequency and severity using the Jankovic rating scale (JRS), latency to response, self-response scale, and patient satisfaction scale at 4 weeks and 12 weeks post-injection. The secondary outcome measures were complications of injection in each visit.

Results: There were no significant differences between groups receiving half-dose and full-dose BTX-A injections in the self-response scale (2.60 ± 0.52 vs. 2.00 ± 1.15, p = 0.277), patient satisfaction scale (8.30 ± 1.57 vs. 7.00 ± 1.49, p = 0.063) at 4 weeks and JRS frequency (1.00 ± 0.82 vs. 1.20 ± 0.92, p = 0.687), JRS severity (1.30 ± 1.16 vs. 1.40 ± 0.97, p = 0.784), latency to response (5.80±1.99 vs. 6.80±1.93, p = 0.214), self-response scale (2.70 ± 0.48 vs 2.20 ± 0.63, p = 0.067), and patient satisfaction scale (8.10 ± 1.60 vs. 8.30 ± 1.49, p = 0.776) at 12 weeks. Complications, including epiphora, dry eye, and lagophthalmos, were observed in both two groups.

Conclusions: This study indicates no significant differences between half-dose and full-dose BTX-A pretarsal injections. Either dose shows comparable efficacy and safety in treating BEB.

Evaluation of Oxidative Stress Markers in Tears and Serum of Patients with Alzheimer's Disease

First Author: Chin Shi ***TANG***
Co-Author(s): Shatriah ***ISMAIL****, Juni Eat* ***JU YING****, Wan Hazabbah* ***WAN HITAM***

Purpose: To identify the correlation between oxidative stress levels in tears and serum among Alzheimer's Disease patients.

Methods: A cross-sectional study was conducted from November 2017 to December 2019 involving Alzheimer patients who attended a psychiatric clinic and controls who attended the ophthalmology clinic at Hospital Universiti Sains Malaysia (HUSM). Tears samples were collected using Schirmer paper, while blood samples were collected using plain tube bottles. Laboratory analysis was performed using commercially available oxidative stress markers kits. Statistical analysis was done using Statistical Package for the Social Science (SPSS Inc Version 26).

Results: A total of 50 patients (25 Alzheimer's disease and 25 controls) were recruited. Mean superoxide dismutase (p=0.008) and glutathione peroxidase (p=0.003) in tears were significantly lower in Alzheimer patients compared to controls with a mean difference of 0.02 (95% confidence interval 0.01,0.03) and 437.02 (95% confident interval 171.22,702.83) respectively while mean superoxide dismutase in serum was

significantly higher (p=0.045) in Alzheimer patients with a mean difference of -0.01 (95% confident interval -0.03,-0.00)] as compared to control, after adjusting for age, smoking and medical problems. There was a very weak correlation in superoxide dismutase, glutathione peroxidase and malondialdehyde between serum and tears in Alzheimer patients.

Conclusions: This study showed significantly low superoxide dismutase and glutathione peroxidase activities in tears while high superoxide dismutase activity in serum among Alzheimer patients as compared to controls.

Evaluation of Retinal Nerve Fibre Layer Thickness and Visual Electrophysiological Parameters in Alzheimer's Disease

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Purpose: To study the retinal nerve fibre layer (RNFL) thickness and visual electrophysiological parameters in patients with Alzheimer's disease (AD).

Methods: A cross-sectional, hospital-based study. 25 AD subjects and 25 controls were recruited. Candidates that fulfill the criteria with normal ocular examinations then proceed with Pattern Electroretinogram (PERG) and Pattern Visual Evoked Potential (PVEP) examinations of the right eye. RNFL thickness, PERG and PVEP readings were evaluated.

Results: In AD, the mean of average RNFL thickness was 45.28µm, SD= 3.61, P<0.001 (P<0.05) while superior RNFL thickness was 54.44µm, SD=2.85, p<0.001 (P<0.05) and inferior RNFL thickness was 47.11µm, SD=4.52, p= <0.001 (P<0.05). For PERG, mean P50 latency was 63.88ms, SD=7.94, P<0.001 (P<0.05) and the mean amplitudes of P50- waves were 1.79µV, SD=0.64, P<0.001 (P<0.05) and N95- waves were 2.43µV, SD=0.90, P<0.001 (P<0.05). For PVEP, mean latency of P100 was 119.00ms, SD=9.07, P<0.001 (P<0.05) while mean latency of N135 was 145.20 ms, SD=8.53, P<0.001 (P<0.05). The mean amplitude of P100- waves was 3.71µV, SD=1.60, P<0.001 (P<0.05) whereas mean amplitude of N135- waves was 3.67µV, SD=2.02, P<0.001 (P<0.05). RNFL thickness strongly correlate with PERG readings, with P50 latency R=0.582, R2= 0.339, P=0.002 (P<0.05), amplitude of P50- wave at R=0.749, R2=0.561, P=<0.001 (P<0.05) and amplitude of N95- wave at R=0.500, R2=0.250, P=0.011 (P<0.05). No significant difference or correlation was observed in PVEP readings.

Conclusions: The mean of the average, superior and inferior RNFL thickness was significantly lower in the AD group compared to control. There is also a significant difference in PERG and PVEP parameters between AD and controls.

Eyes Kearn't Move: Kearns-Sayre Syndrome: A Case Report

*First Author: Elmer Luigi Jr. **LOZADA***
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Purpose: To present a case of a 26-year-old female with a clinical diagnosis of Kearn's Sayre Syndrome.

Methods: This is a case report of Kearns Sayre Syndrome with short stature who presented with chronic progressive external ophthalmoplegia, ptosis, pigmentary retinopathy, and conduction abnormality. Genetic testing with complete Endocrinology, Cardiology, and Neurology workup was advised by an Ocular Geneticist.

Results: An ocular examination revealed the best visual acuity in both eyes. The patient presented with the following lid vital signs on both eyes: MRD1 of -4mm, MRD 2 of 3mm, and LFT of 2 mm. Limitations of eye movements were recorded -4 on SR, IR, 10 and SO and -3 on LR and MR. Funduscopic findings revealed CDR of 0.7 and 0.8 respectively with salt and pepper retinopathy. OCT of the ONH revealed generalized thinning of RNFL. Electrocardiography revealed an incomplete right bundle branch block.

Conclusions: Kearns-Sayre Syndrome is a multi-systemic disease that affects the mtDNA. A high index of suspicion, early detection, and prompt treatment are necessary. Symptomatic management is the mainstay of treatment and warrants close monitoring of life-threatening complications. Proper counseling for patients and family members is an integral part of the holistic approach to this condition.

Foreseeing Bilateral Involvement in NAION: The Significance of Serial OCTA

*First Author: Syntia **NUSANTI***
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Purpose: To highlight the importance of serial Optical Coherence Tomography Angiography (OCTA) in Non Arteritic Ischemic Optic Neuropathy (NAION) patients.

Methods: Data was obtained from medical records with ethical and patient consent.

Results: A 49-year-old diabetic woman came with NAION on the left eye. The patient complained of sudden, painless blurry vision along with altitudinal inferior visual field defect on Humphrey examination and edema of the optic nerve head of the left eye. OCTA at presentation showed normal perfusion of both eyes. No abnormality was found in the right eye. Serial OCTA was performed. A one-month follow-up showed decreased perfusion in the inferior and superior regions of the left eye while right eye perfusion remained normal. Five months later, the patient had blurry vision of both eyes with neovascularization seen in funduscopy thus diagnosed as proliferative diabetic

retinopathy of the right eye and not known to have any findings associated with NAION on the right eye. The next one year, OCTA follow-up showed decrease perfusion in superior and inferior region of the right eye without accompanying new symptoms. This finding indicates the beginning of new NAION on the fellow eye.

Conclusions: The early progression of NAION might not exhibit observable symptoms, particularly in the presence of other ophthalmological issues. Therefore, performing serial OCTA on NAION patients is advisable to objectively assess the emergence of NAION in the initially unaffected eye.

Glial Autoantibody Prevalence in Chinese Optic Neuritis With Onset After Age 45: Clinical Factors for Diagnosis

*First Author: Honglu **SONG***
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Purpose: As glial autoantibody testing is not yet available in some areas of the world, an alternative approach is to use clinical indicators to predict which subtypes of middle-aged and elderly-onset optic neuritis (age > 45 years) have manifested.

Methods: This study was a single-center hospital-based retrospective cohort study.

Results: From January 2016 to January 2020, there were 81 patients with middle-aged and elderly-onset ON, including 32 (39.5%) AQP4-ON cases, 19 (23.4%) MOG-ON cases, and 30 (37.0%) Seronegative-ON cases. Bilateral involvement (47.4%, P = 0.025) was most common in the MOG-ON group. The MOG-ON group had the best follow-up BCVA (89.5% ≤ 1.0 LogMAR, P = 0.001). The most sensitive diagnostic factors for MOG-ON were 'follow-up VA ≤ 0.1 logMAR' (sensitivity 0.89), 'bilateral involvement or follow-up VA ≤ 0.1 logMAR' (sensitivity 0.95), 'bilateral involvement or without neurological history' (sensitivity 1.00), and 'follow-up VA ≤ 0.1 logMAR or without neurological history' (sensitivity 1.00), and the most specific factor was 'bilateral involvement' (specificity 0.81). The most sensitive diagnostic factors for AQP4-ON were 'unilateral involvement' (sensitivity 0.88), 'unilateral involvement or neurological history' (sensitivity 0.91), and 'unilateral involvement or other autoimmune antibodies' (sensitivity 1.00), and the most specific factor was neurological history (specificity 0.98).

Conclusions: Based on our cohort study of middle-aged and elderly-onset ON, MOG-ON is less prevalent than AQP4-ON and Seronegative-ON. Using multiple combined parameters improves the sensitivity and NPV for diagnosing middle-aged and elderly-onset MOG-ON and AQP4-ON. These combined parameters can help physicians identify and treat ON early when glial autoantibody status is not available.

Idiopathic Bilateral Optic Neuritis: A Rare Case Report

*First Author: Pranisha **SINGH***

Purpose: Idiopathic bilateral optic neuritis in adults has been reported very rarely. The purpose of this report is to present a case of idiopathic bilateral optic neuritis in an adult and treatment responses.

Methods: A nineteen-year-old female presented with bilateral optic neuritis. It was characterized by decreased visual acuity, painful ocular motility, and sluggish pupillary reaction with Relative Afferent Pupillary Defect (RAPD) in the left eye, hyperemic and generalized optic disc swelling, and central scotoma in Humphrey visual field of both eyes. MRI showed diffuse thickening and irregularly outlined optic nerves in both eyes.

Results: Prompt treatment with optic neuritis treatment trial (ONTT) improved the visual outcome.

Conclusions: Idiopathic bilateral optic neuritis in adults is a rare presentation and it responded well to ONTT in our case.

Idiopathic Intracranial Hypertension With Underlying Iron Deficiency Anemia

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Purpose: To report a case of Idiopathic intracranial hypertension with underlying iron deficiency anemia.

Methods: Case report.

Results: A 32-year-old female presented with blurred vision for 2 months associated with headaches, nausea, and vomiting. She was previously diagnosed with symptomatic anemia, and a blood transfusion was given. On presentation, her vision in both eyes was counting fingers, and the fundus showed bilateral papilloedema. Lumbar puncture opening pressure was 50 cmH2O, but other investigations were unremarkable. She was treated with acetazolamide, and a series of therapeutic Lumbar punctures were performed due to persistent symptoms and high closing pressure. A VP shunt was done. The patient showed improvement in vision and symptoms after the procedure. One week after the VP shunt, vision improved remarkably in both eyes: 6/15 over the right eye and 6/12 over the left eye. Despite improvement in vision, the visual field showed inferior arcuate scotomas. Early detection is essential for detecting irreversible visual field defects.

Conclusions: A multidisciplinary approach is necessary to prevent the worsening of the end result.

Improvement of Homonymous Visual Field Defect After Correction of Chiasmal Descent Due to Previous Pituitary Macroadenoma Resection

*First Author: Jane **SHI***
*Co-Author(s): Helen **DANESH-MEYER**, Taras **PAPCHENKO***

Purpose: We describe a case of visual field deficit following pituitary macroadenoma resection and subsequent progress following chiasmopexy.

Methods: We describe a case of a 35-year-old gentleman with months of nasal discharge diagnosed with macroprolactinoma causing cerebrospinal fluid (CSF) rhinorrhea who underwent transsphenoidal resection of the giant prolactinoma. Almost three years post-surgery, the patient presented with dense left homonymous hemianopia, right relative afferent pupillary defect, and progressive retinal nerve fiber layer thinning on OCT. Chiasmal herniation was demonstrated on repeat neuroimaging.

Results: Our patient underwent endoscopic chiasmopexy with CSF leak repair. No immediate improvement in visual function was observed. At three months post-chiasmopexy, the left homonymous hemianopia appeared less dense. By 11 months post-chiasmopexy, the visual fields were further improved with only mild left homonymous superior quadrantanopic changes in both eyes.

Conclusions: Chiasmal descent into a secondary empty sella is a complication following pituitary adenoma resection. As causality is uncertain between the degree of chiasmal descent and visual symptomatology, the efficacy of surgical elevation of the descended optic chiasm via chiasmopexy is unable to be concluded.

Increased Incidence of Carotid Cavernous Fistula During the COVID-19 Pandemic: a 6-Year Review

*First Author: Mohamad **SHAHIDATUL ADHA***
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Purpose: To determine the clinical profile of carotid cavernous fistula (CCF) in a tertiary referral center.

Methods: Retrospective review of patients with confirmed diagnosis of CCF, between June 2017 and May 2023 in a tertiary referral center.

Results: Thirteen patients (9 females, 4 males, with a mean age 50.7 ± 14.6 years) were included, of which 9 cases (69.2%) were presented between 2020 to 2021. 53.8% of patients had diabetes, 61.5% were hypertensive and 38.5% of patients had hyperlipidaemia. Presenting symptoms include blurry vision (69.2%), headache and nausea (46.2%), eye pain (30.8%) and diplopia (23.1%). Conjunctival hyperemia was present in all patients, while corkscrew vessels were evident in 9 patients (69.2%). Ocular examination revealed proptosis (92.3%), elevated IOP (69.2%) followed by chemosis, ophthalmoplegia, and bruit (46.2%). Five patients had a history of trauma; four of them presented within the first two weeks while another after three months. Bilateral CCF was observed in five patients (38.5%). Direct CCF was found in four patients (30.8%). Among indirect CCF, there were Barrow Type B and Barrow Type C (22.2% each), and Barrow Type D (55.6%). Three out of four patients were successfully treated with endovascular intervention. Conservative treatment includes IOP-lowering eyedrops (69.2%) and lubricants (84.6%). Irrespective of the treatment and duration of symptoms, the final visual outcome and IOP were not significantly different from the presentation.

Conclusions: Covid-19 vasculopathy may be the cause of the increased incidence of CCF during the pandemic. A high index of suspicion for CCF is important as timely diagnosis and treatment prevent permanent visual impairment.

Isolated Abducens Nerve Palsy Due to Internal Carotid Artery Aneurysm in Postpartum Women

*First Author: Disti **HARDIYANTI***

Purpose: To present a case report of women with isolated abducens nerve palsy due to internal carotid artery (ICA) aneurysm in postpartum women.

Methods: A case report of a 39-year-old woman with isolated abducens nerve palsy due to an ICA aneurysm after giving birth.

Results: A 39-year-old woman was admitted to our hospital with chief complaints of double vision within 7 months after giving birth by cesarean section. The patient had been treated at the other hospital for 6 months, but there was no improvement. Complaints of blurred, red, and painful eyes are denied. Headaches are found but are not accompanied by nausea and vomiting. There were no systemic diseases. Ocular motility examination revealed limitations in lateral gaze in the right eye. Hirsberg test 15' esotropia in the right eye. There were no abnormalities in visual acuity, pupillary, and ophthalmoscopy examination. Horizontal diplopia is felt especially when looking in the superotemporal, temporal, and inferotemporal directions. Magnetic resonance imaging (MRI) and magnetic resonance angiography (MRA) brain with contrast found a saccular aneurysm (extradura) in the right internal carotid artery (ICA), C4 segmen (cavernous) measuring 1,6 x 1,6 cm with dome directed posterolateral. The patient consulted with the neurosurgery department.

Conclusions: Isolated abducens nerve palsy can be caused by an internal carotid artery (ICA) aneurysm, especially after giving birth. It is a very rare case and often diagnosed as ordinary esotropia. Therefore, history taking, physical examination, and immediate

imaging examination are needed to diagnose correctly to carry out the correct treatment.

Juvenile Myasthenia Gravis: 5-Year Case Series in a Tertiary Level Hospital

*First Author: Dikshya **BISTA***
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Purpose: To evaluate the presenting signs, treatment, and clinical outcomes of Juvenile Myasthenia Gravis presenting in a tertiary eye hospital.

Methods: Retrospective case series including pediatric patients of age < 18 years diagnosed as juvenile ocular myasthenia gravis presenting in a single tertiary level institution over 5 years. The demographic features, presentation, management, and disease course were recorded.

Results: Ten patients were diagnosed with Juvenile Myasthenia gravis with a mean age of 10.2 years (age range 4-16 years) with equal gender distribution. 50 % of the cases had involvement of bilateral eyes at the time of presentation. Presenting signs included Ptosis (100%), limitation of ocular movement (40 %), and diplopia (20%). ACH receptor antibody was positive in 1 case; nerve conduction study was positive in 7 cases. All patients were started on neostigmine and oral steroids, and 1 patient also received other 2nd line steroid-sparing immunosuppressive therapy. During follow-up, none of the cases had generalization of symptoms, and all had stabilized symptoms with medications.

Conclusions: Juvenile Myasthenia gravis is a rare disease presenting with variable features. Generalization to systemic disease is seen as less common than in adults and ocular manifestations stabilize in all children with medication. A high degree of suspicion, early diagnosis, and management are the key to proper management.

Known Entity With Unknown Manifestation!

*First Author: Vidhya **DHARANI***
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Purpose: To report an uncommon manifestation of optic nerve head drusen (ONHD) as acute optic neuropathy in a young, healthy female.

Methods: Retrospective case report.

Results: A 21-year-old female presented with a sudden drop in vision in the right eye (OD) for eleven days associated with a mild headache. On examination, the best corrected visual acuity and color vision were normal. A relative afferent pupillary defect was present in OD. Fundus examination revealed ONHD bilaterally. She had three quadrant visual field defects in OD and an infero nasal defect in her left eye (OS). At this juncture, bilateral optic neuritis was suspected, but MRI of the brain and orbit and serology for atypical optic neuritis were normal. She was strongly suspected to have compressive optic neuropathy secondary to ONHD.

Conclusions: ONHD an entity found incidentally, is usually asymptomatic but can occasionally present with transient visual obscurations or gradual insidious visual field defects. This case report highlights the unusual presentation of ONHD as acute compressive optic neuropathy.

Management Dilemma in a Case of Idiopathic Intracranial Hypertension (IIH) in Pregnancy

*First Author: Nur 'Attiyyah **JASMI***
*Co-Author(s): Nor Fadhilah **MOHAMAD***

Purpose: To report the management dilemma in IIH in pregnancy.

Methods: Case report.

Results: A 34-year-old obese lady at 15 weeks period of gestation presented with right eye blurring of vision of unsure duration. Right vision was 4/60 and left was 6/12. Right RAPD was positive with an abnormal optic nerve function test. Funduscopy revealed both optic discs swelling. HVF showed a restricted right visual field. MRI brain was normal. Lumbar puncture (LP) noted high opening pressure of 33.5cmH20 with normal cerebrospinal fluid analysis. She was treated as IIH and weekly LP was done. Right vision improved to 6/12 and left to 6/6 with resolution of disc swelling, however the right optic disc was pale with evidence of retinal nerve fibre layer thinning on OCT. A multidisciplinary meeting involving neurology, obstetric, and ophthalmology teams was held to discuss the alternatives to reduce ICP to prevent further deterioration of her optic nerves, which included a ventriculoperitoneal shunt that could provide a long-term ICP lowering effect; however, there is a risk of infection to the fetus. The patient agreed to be started on acetazolamide after discussion regarding its benefit and possible teratogenicity. She defaulted her follow-up until she went for an emergency caesarean section for fetal distress, where she delivered a healthy baby girl with no malformation. Upon continuing her eye clinic follow-up, her optic nerve function test remained stable with no medication.

Conclusions: A multidisciplinary approach is important in managing IIH in pregnancy as it remains a challenge to weigh the benefit of treatment to the patient and the fetus.

Mom, My Head Hurts! And I See a Copy Image of You!! Idiopathic Intracranial Hypertension in Children- Our Experience

*First Author: Vidhya **DHARANI***

Purpose: To describe the clinical manifestations, investigations, and treatment response of idiopathic

intracranial hypertension (IIH) in the pediatric age group (age < 18 years).

Methods: Retrospective analysis of electronic medical charts of 6 children diagnosed with IIH based on modified Dandys criteria. Their clinical presentation, investigation, and treatment outcome were analyzed.

Results: Of the 6 children, the youngest child was 1 year old. The commonest symptom was headache and diplopia. The most common sign was bilateral disc edema. Optical coherence tomography was done in four patients. The average RNFL thickness was 234 µm in the right eye and 249 µm in the left eye. The mean cerebrospinal opening pressure was 260 mmH2O. 5 patients had complete resolution of symptoms with medical management. 1 patient had fulminant IIH and needed surgical intervention.

Conclusions: IIH is a rare entity in the pediatric age group, even rarer in prepubertal age, and is less frequently reported. Though clinical features are similar to adults, there is growing evidence that pediatric IIH is different from adult disease. Early and prompt treatment is needed to prevent permanent visual deficits.

Multimodal Retinal Imaging in Pediatric Phakomatoses

*First Author: Najia **UZAIR***

Purpose: To present 3 cases of phakomatoses in the pediatric age group with retinal findings, cutaneous and neuro-ophthalmological manifestations.

Methods: (1) Neurofibromatosis type 2 in a 6-year-old girl, with combined hamartomas of the retina and retinal pigment epithelium, left pupil involving oculomotor nerve palsy and subtle facial palsy. Magnetic resonance imaging (MRI) of the brain revealed bilateral acoustic neuromas and left oculomotor nerve schwannoma. (2) Tuberous sclerosis in an 8-year-old boy with multiple retinal astrocytomas, adenoma sebaceum and a history of seizures. MRI of the brain showed multiple cortical tubers. (3) Racemose hemangioma presenting with central retinal vein occlusion (CRVO) in a 12-year-old boy. MRI brain ruled out Wyburn Mason syndrome. MRI findings and multimodal retinal imaging {fundus images, spectral domain Optical Coherence Tomography (SD-OCT), fundus autofluorescence (FAF), OCT angiography, fundus fluorescein angiogram (FFA)} have been shown where applicable.

Results: (1) Patient with neurofibromatosis type 2 underwent gamma knife radiosurgery for acoustic neuroma (incidentally discovered to be life-threatening on MRI). Retinal lesions are under observation. Squint and ptosis due to oculomotor nerve palsy is scheduled for surgical correction. (2) Retinal astrocytomas of the Tuberous sclerosis patient are being observed. Patient's seizures are well controlled on anti-epileptic medication. (3) Racemose hemangioma patient with CRVO is being managed with intravitreal anti-VEGF agents.

Conclusions: Diagnosing phakomatoses can be challenging due to the varied manifestations involving various organs of the body. The ophthalmologist may be the first clinician to diagnose these conditions due to the characteristic retinal findings. Management has to be tailored according to each patient.

Myriad of Presentations of 3rd Nerve Palsy: A Case Series

*First Author: Pragya **AHUJA***

Purpose: To understand the myriad of presentations of 3rd cranial nerve palsy and how they can be managed.

Methods: A series of cases were collected from the strabismus clinic of a tertiary care hospital in north India and their findings were recorded and followed over a period of time till the resolution of symptoms while giving appropriate care wherever required.

Results: These case series will be an interesting area of discussion to discuss multiple causations for 3rd nerve palsy and the available management options. The evolution of the disease with Hess charting and photographs will give a comprehensive understanding of this disease.

Conclusions: Serial photographs are the best way to discuss the progression of nerve palsies. It is imperative to identify the danger signs and decide when to operate.

NAION Unveiled: Decoding Clinical Patterns and Risk Factors

*First Author: Kunalini **ANPALAGAN***
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Purpose: NAION (non-arteritic anterior ischemic optic neuropathy) is the leading cause of ischemic optic neuropathy and the second most common optic neuropathy. This study aims to provide a comprehensive analysis of clinical characteristics and potential risk factors associated with NAION cases at a tertiary center.

Methods: In this retrospective descriptive study, we reviewed medical records of NAION-diagnosed patients from April 2019 to April 2023.

Results: Among the 14 NAION cases included, patients averaged 60 years old, with male predominance (71% male, 29% female). The most common presenting symptom was sudden painless vision loss in one eye (71% of cases). Visual acuity at presentation varied; 43% had visual acuity worse than 6/60. Analysis of potential risk factors revealed that all NAION cases had systemic hypertension histories, followed by 71% with diabetes mellitus and 36% with hyperlipidemia.

7% had previous cardiovascular events, 7% with cerebrovascular events, and 14% were active smokers. All patients exhibited disc edema on fundoscopic examination, which resolved in 2-9 months. In cases with visual acuity initially worse than 6/60, only 17% improved to better than 6/60.

Conclusions: The findings highlight the importance of monitoring and managing systemic conditions such as hypertension, diabetes, and hyperlipidemia in patients at risk for NAION, to prevent permanent vision loss, and advocating smoking avoidance in patients with hypertension.

Neuro-Ophthalmic Manifestation of Invasive Fungal Sinusitis

*First Author: Li-wei **CHAN***
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Purpose: Rhino-orbito-cerebral mucormycosis and aspergillosis are both very invasive and rapidly progressive fungal infections. Most cases are immunocompromised, and with initial presentations of symptoms resulting from nasal mucosal and sinus infection. As the pathogen spreads, there comes orbital apex involvement, and finally cerebral involvement. We aim to report three cases of invasive fungal sinusitis with neuro-ophthalmic manifestation.

Methods: Description of clinical history, examination, neuroimaging, and treatment of three cases of invasive fungal sinusitis with orbital involvement.

Results: The first two cases were caused by mucormycosis, and the third case was due to aspergillosis. All cases had the initial symptom of diplopia and eyelid swelling. In the first case, the 61-year-old immunocompetent woman initially presented with nonspecific symptoms, but progressed rapidly to ophthalmoplegia in both eyes within 3 days and bilateral eyeball rupture within 5 days. Although intensive intravenous and intravitreal amphotericin B treatment, the patient passed away 25 days later. Clinicians should consider invasive mucormycosis as a differential diagnosis and ophthalmoplegia as a warning sign even in an immunocompetent patient.

Conclusions: Ophthalmoplegia could be a red flag sign, even in immunocompetent patients. Early diagnosis and prompt treatment are absolutely necessary to reduce the mortality of invasive fungal infections.

Neuro-Ophthalmic Manifestations of Tuberculosis: A Case Series

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Purpose: Tuberculosis is an endemic disease in the developing world and is a significant cause of morbidity. Through this case series, we describe the various neuro-ophthalmic manifestations of tuberculosis (TB), their management and the visual outcome.

Methods: This was a retrospective study where electronic medical records of patients referred to the neuro-ophthalmology clinic with the diagnosis of TB from the years 2021 to 2022 were reviewed. Demographic data, detailed history, and comprehensive ocular examination were done. The final diagnosis was based on clinical data and neuroimaging.

Results: A total of 10 patients were included in the study. The affected population was young, with a mean age of 27.6 +/-10.16 years. The most common presentation was multiple cranial nerve palsies, which were seen in four patients, with their aetiology being tuberculoma and TB meningitis. This was followed by ethambutol-induced toxic optic neuropathy, which was seen in three patients. Other manifestations included bilateral optic atrophy post meningitis and bilateral optic neuritis. The visual outcome was variable.

Conclusions: In this case series, we found that the young population was primarily affected. Very little is known about the neuro-ophthalmic manifestations of tuberculosis. In this case series, different neuro-ophthalmic manifestations of TB have been discussed. In patients presenting with such manifestations, a strong suspicion of TB should be held in mind and should be ruled out with detailed history taking and available laboratory tests.

Neuroretinitis in a Seaside Adolescent: A Unique Presentation

*First Author: Syazwan **BIN MOHD SUFIAN***
*Co-Author(s): Sangeeta **KUGANASAN***

Purpose: This study presents an exceptional case of neuroretinitis in a 17-year-old male, emphasizing diagnosis and treatment modalities.

Methods: A comprehensive ophthalmic examination, with supporting relevant investigations, including Burkholderia serology, was conducted. Treatment comprised intravenous Fortum, methylprednisolone, topical prednisolone, and oral Bactrim.

Results: The patient, exposed to coastal living conditions, developed sudden right eye blurring with an inferior field defect. Examination revealed a swollen optic disc, vasculitis, and vitritis. Fluorescein angiography confirmed the arteriovenous delay, engorged veins, and a hot disc. Empirical Bactrim yielded visual improvement. Burkholderia titers were 1:320. Upon discharge, right eye vision was at 2/60, improving to 6/9 during the subsequent review.

Conclusions: This distinctive neuroretinitis case highlights the impact of environmental exposure, particularly in coastal settings. Swift, tailored therapy involving antibiotics and corticosteroids facilitated substantial visual recovery. Burkholderia should be considered for neuroretinitis cases in coastal regions.

Ophthalmoplegia Due to Miller Fisher Syndrome

*First Author: Tan **TZE ERN CARYN***
*Co-Author(s): Yuen Keat **GAN**, Fazliana **ISMAIL***

Purpose: To report a case of Miller Fisher Syndrome.

Methods: A 17-year-old male with no underlying illness presented to us with a complaint of diplopia for 3 days associated with dizziness and vomiting. He was admitted to the eye ward for further investigation, and subsequently developed bilateral lower limb weakness leading to difficulty in ambulating independently. Upon examination, he was noted to have a left eye partial ptosis with slight hypertropia, and nystagmus on right lateral gaze. He has a complex ophthalmoplegia in all directions of gaze, with significant asymmetrical inferior gaze palsy causing binocular diplopia at inferior upon down gaze. Anterior and posterior segment ocular examinations were otherwise unremarkable. His systemic examination revealed features of right seventh cranial nerve palsy with an ataxic gait and a positive Romberg test. His deep tendon reflexes were absent.

Results: An urgent contrast-enhanced computed tomography (CECT) scan was done and revealed no evidence of space occupying lesion. He was referred to the neuromedical team for further evaluation. His lumbar puncture showed clear cerebrospinal fluid (CSF) with no growth on culture. Antiganglioside antibodies (AGA) were sent for investigation. He was started on intravenous immunoglobulin (IVIG) for 5 days. Upon discharge, he was able to ambulate without aid. His diplopia has also resolved.

Conclusions: Vigilance in clinically diagnosing acute inflammatory demyelinating polyneuropathy should be made promptly to prevent the occurrence of possible life-threatening complications.

Optic Neuritis After COVID-19 Vaccination: A Case Series

*First Author: Sheng-chi **YANG***
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Purpose: The coronavirus disease (COVID-19) pandemic broke out in March 2020, causing tremendous damage to public health and more than 6 million deaths. After authorization for emergency use of COVID-19 vaccines, various adverse events have been reported, including optic neuritis. COVID-19 vaccination was implemented in Taiwan in March 2021.

Methods: We report patients who developed optic neuritis after COVID-19 vaccination at a tertiary medical center in Taiwan between March 2021 and December 2022.

Results: A total of five patients were identified, all women, with a mean ± standard deviation age 44.0 ± 17.0 years (range 24–68 years). Three had bilateral involvement, three had papillitis, and two developed other co-existing neurological manifestations. Four brands of vaccine used were as follows: Moderna, Pfizer-BioNTech, Medigen, and Oxford AstraZeneca. Optic neuritis developed after the first dose of vaccination in four patients whereas, in one patient it developed after the second shot. In the three patients with poor initial visual acuity, intravenous methylprednisolone pulse therapy achieved substantial improvement.

Conclusions: Optic neuritis is a rare but potentially vision-threatening adverse effect of the COVID-19 vaccination. We suggest early diagnosis and treatment to maximize visual outcomes.

Optical Coherence Tomography (OCT) Parameters – Indicators for Prognosis of Idiopathic Intracranial Hypertension (IIH)

*First Author: Dhaanyashri **THEIVEEGAN***
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Purpose: To correlate optical coherence tomography (OCT) measurements with the visual prognosis of Idiopathic Intracranial Hypertension (IIH), which might aid in early recognition of the disease prognosis and need for aggressive treatment.

Methods: A prospective observational study was conducted with 89 newly diagnosed IIH patients based on Modified Dandy's criteria. A detailed ophthalmic evaluation and visual field tests were done at presentation, 1st month, 3rd month, and 6th month of follow-up. OCT analysis, including retinal nerve fiber layer (RNFL) thickness and ganglion cell complex (GCC) thickness, was performed at the time of presentation. All patients were started on medical therapy, and those with severe disease underwent optic nerve sheath decompression procedure (ONSD). Visual outcome grading was analysed in all visits and compared with OCT parameters.

Results: The mean baseline RNFL thickness was 253.48 microns, suggesting oedema of the nerve fiber layer. The mean baseline GCC thickness was 60.84 microns, indicating loss of ganglion cells. At the end of 6 months, 5 patients showed poor visual outcomes; the rest all showed good visual outcomes. RNFL thickness showed no significant correlation with visual outcome, whereas reduced GCC thickness at the time of presentation showed an association with poor visual outcome.

Conclusions: GCC thickness was reduced in IIH patients. Reduced GCC thickness at the time of presentation has been associated with poor visual outcome at the end of 6 months. Hence, GCC analysis can be used as a prognostic factor in IIH patients, which can aid in the need for aggressive treatment at the time of presentation.

Papilledema Secondary to Cerebral Venous Sinus Thrombosis: A Challenge in Diagnosis

*First Author: Adessa **RACHMA***
*Co-Author(s): Antonia **INDRIATI**, Rusti **SARI**, Prettyla **YOLLAMANDA***

Purpose: Papilledema is one of the ophthalmologic diagnoses that is related to neurological conditions. Other than visual complaints, headache is a prominent symptom. Cerebral venous sinus thrombosis (CVST) is a relatively rare cause of papilledema, in which delay in identification might potentially result in visual loss. In this study, we present a case report of papilledema due to CVST as an underlying cause.

Methods: A 41-year-old male came with a chief complaint of blurred vision, accompanied by a headache. No history of systemic conditions. Body mass index (BMI) was normal. Ophthalmology examination showed decreased visual acuity, the right eye (RE) was 0.5 and the left eye (LE) 0.2. Funduscopy examination showed a blurry-circumscribed optic nerve head with dome-shaped and peripapillary hemorrhages, such findings in Frisen grade 5. Visual field examination revealed the enlargement of a blind spot. Brain computerized tomography (CT) scan revealed no pathologic changes. However, brain magnetic resonance imaging (MRI) and magnetic resonance venography (MRV) showed a diminution of transverse sinus caliber, supporting a CVST diagnosis. The patient was then treated with warfarin in collaboration with the neurology department.

Results: At a two-month interval, the visual acuity was restored along with an excellent improvement of funduscopy findings. The patient achieved a visual acuity of 0.8 on RE and 0.5 on LE. Papilledema was degraded into Frisen grade 3.

Conclusions: Papilledema caused by CVST could be found in young adults with unknown history of risk factors. Prompt diagnosis is important to determine further management and preserve the visual prognosis of the patient.

Pattern Reversal Visual Evoked Potential in Indonesian Adults: Normative Data and the Effect of Gender

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Purpose: Visual evoked potential (VEP) waves can be affected by various factors, including age, gender, and technique. Therefore, each laboratory must establish its own normative data. The purpose of this study is to determine the normal values of latency and amplitude of pattern reversal VEP (PRVEP) in Indonesian adults, as well as the effect of gender on VEP.

Methods: This cross-sectional study was conducted on 100 healthy subjects consisting of 50 males and 50 females between 20 and 44 years old. Vital signs, blood sugar level, head circumference, visual acuity, and ophthalmology examination were performed, then continued with monocular PRVEP recording using a 15 min and 60 min check size stimulus. The standard procedures of the International Society for Clinical Electrophysiology of Vision were followed. PREVP parameter data, including latency, amplitude, interocular latency, and interocular amplitude differences for each gender, were collected.

Results: The mean head circumferences of males and females were 55,4±1,59 cm and 53,73±1,85 cm (P = 0,001), respectively. The normal values of latency using a 15 min check size for males and females were 104,52±3,74 ms and 102,76±4,04 ms, respectively, as well as 16,3±5,94 µV and 19,21±7,4 µV for amplitude. The normal values of latency using a 60 min check size were 103,37±3,91 ms and 102,2±3,56 ms, while 12,67±3,51 µV and 14,95±5,27 µV for amplitude.

Conclusions: There are significant differences between the PRVEP amplitude in males and females, which are possibly due to the significantly smaller head circumference in females. Therefore, normative data are suggested to be provided for each gender.

Possible Immunoglobulin G4-Related Hypertrophic Pachymeningitis Leading to Bilateral Visual Loss

*First Author: Pai-huei **PENG***

Purpose: Immunoglobulin G4-related disease (IgG4-RD) is a fibro-inflammatory disorder affecting numerous organs. The most common sites of involvement are the pancreas, lungs, thyroid gland, lymph nodes, bile duct, retroperitoneum, and lacrimal and salivary glands. Hypertrophic pachymeningitis is a very rare manifestation of IgG4-RD. Here we describe an old man who suffered from painless, progressive bilateral visual loss.

Methods: Case report.

Results: On ocular examination, his vision was hand motion in the right eye and no light perception in the left eye. A fundus examination showed severe papilledema with pre-retinal hemorrhage. Brain computed tomography revealed hydrocephalus. Lumbar puncture confirmed high intra-cranial pressure. Brain magnetic resonance imaging uncovered dural thickening at the left hemisphere and tentorium. His serum IgG4 level was elevated. However, dural biopsy did not present the hallmarks of IgG4-RD features. As there was suspicion of IgG4-related hypertrophic pachymeningitis, he received oral low-dose steroid treatment. Unfortunately, his vision and thickened dura had not improved after 4 months of steroid treatment.

Conclusions: Hypertrophic pachymeningitis is a rare manifestation of IgG4-RD. Only a few cases of visual loss resulting from IgG4-hypertrophic pachymeningitis have been reported. Clinicians should be familiar with this disease because a prompt therapeutic approach may save a patient's vision and even his/her life.

Potentially Harmful Toxic Optic Neuropathy as a Reversible Side Effect to Linezolid Use: A Case Report

First Author: Lily ***PUTRI***
Co-Author(s): Sita ***AYUNINGTYAS****, Salmarezka* ***DEWIPUTRI****, Syntia* ***NUSANTI****, Mohamad* ***SIDIK****, Agnes* ***VANIA LUMINTANG***

Purpose: Toxic Optic Neuropathy (TON) is visual impairment due to optic nerve damage resulting in temporary or permanent visual loss caused by toxins including antitubercular drugs such as linezolid. The aim of this study is to demonstrate a case of linezolid-induced toxic optic neuropathy with reversible visual outcome in a patient with multi-drug resistant tuberculosis (MDR-TB).

Methods: A 25-year-old female came with progressive bilateral blurry vision and foggy central vision defect two months before admission. She has brownish discoloration of her skin tone. She was previously diagnosed with multidrug-resistant tuberculous lymphadenitis and bilateral pulmonary tuberculosis and was given a linezolid-containing regiment for nine months. The visual acuity was 1/60 of the right eye and 3/60 of the left eye, optic nerve head hyperemia, and indistinct margin were found along with central scotoma visual field defect, color vision defect, reduced contrast sensitivity, and ganglion cell thinning.

Results: Linezolid-induced TON was diagnosed and linezolid cessation was recommended to the pulmonologist, along with the prescription of citicoline 1000 mg/day and zinc 20 mg/day. Albeit initial worsening of the visual field defect and ganglion cell thinning at six months, the visual field defect was improved and ganglion cell thinning was stabilized after a twelve-month follow-up. On the last follow-up, the patient gained full recovery of her visual acuity (6/6 bilaterally) along with improvement of color vision and contrast sensitivity.

Conclusions: Linezolid-induced TON is a complication of the MDR-TB therapy containing linezolid. Early detection and discontinuation of linezolid were needed to minimize further deterioration of the visual impairment in patients with Linezolid-induced TON.

Pseudo Foster-Kennedy Syndrome in a Young Patient

First Author: Zubaida ***SIRANG***

Purpose: The purpose of this case report is to present the case of pseudo-foster Kennedy syndrome in a young patient, probably due to bilateral sequential optic neuritis.

Methods: A 35-year-old man with no known co-morbidities presented to our outpatient eye camp with a sudden reduction in left eye vision and pain in eye movement. His VA was 6/7.5 in the right eye and CF 3m in the left eye. IOP and anterior segment exam were unremarkable. On the fundus exam, he had optic nerve pallor in the right eye and optic disc swelling in the left eye. On further probing, he revealed that he had a similar episode of right loss of VA along with pain in eye movement almost a year ago and he regained most of the VA without seeing an ophthalmologist and without treatment in a few weeks' time. His MRI head and orbits were unremarkable. Blood tests were unremarkable. We didn't have perimetry in the clinic. His OCT revealed RNFL thinning in the right eye with swelling in the left eye.

Results: Based on history and clinical findings, we made the diagnosis of pseudo-foster Kennedy syndrome, most portably due to bilateral sequential optic neuritis. We started him on I/V Methylprednisolone 1 g BD for 3 days and oral Prednisolone 1mg/kg/day for 11 days. His VA after 6 weeks is 6/60.

Conclusions: Our case report shows that pseudo-foster Kennedy syndrome can present with bilateral sequential optic neuritis.

Simultaneously Central Retinal Artery Occlusion (CRAO) and Traumatic Optic Neuropathy (TON) After Facial Blunt Trauma

First Author: Made ***WIJAYATI***

Purpose: To describe a case of facial blunt trauma with rare ocular coexisting complications.

Methods: A 26-year-old man was consulted by the surgery department with complaints of a blurred left eye (LE) after a traffic accident on the left part of the head 6 days before. Visual acuity on the LE was hand movement. There was RAPD grade 2 on the LE, the optic nerve was normal but there was inferotemporal subretinal bleeding and the presence of a cherry red spot which indicated the occurrence of CRAO. Head CT-Scan showed a fracture of the right and left frontal bones, fracture of the left superior and inferior orbital rims, left orbital floor, left fronto-zygoma, left maxilla, and hyperdense appearance of the optic nerve that runs in the optic canal, that increasing the possibility of trauma to the optic nerve.

Results: The patient was given a massage and Timolol eye drops. The patient also underwent a trial of high-dose steroids with 250 mg methylprednisolone 4 times a day for a total of 12 times, followed by oral prednisolone but there was no improvement in visual acuity after 1 week of therapy.

Conclusions: Simultaneously complications of CRAO and TON following facial blunt trauma could happen

due to compression force from facial contusion to the orbit resulting in a blood vessel stretching that cause endothelial damage, thrombus formation, vessel occlusion with impact on retinal and optic nerve ischemic.

Spectrum of Phakomatoses

*First Author: Surabhi **DEKA***
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Purpose: To present a case series of phakomatoses with typical and atypical features.

Methods: Study design- Institutional-based, observational & interventional case series. Cases were seen in a tertiary eye care center in northeast India for the past 1 year. Each case underwent complete ophthalmic and systemic examination, and constellations of signs were fully documented. Various specialties of medicine were consulted before the final diagnosis. Additional biopsies were done in few cases.

Results: Case series (n=9) comprises neurofibromatosis type 1 (n=2) and type 2 (n=1), von Hippel-Lindau syndrome (n=2), Sturge -Weber syndrome (n=2), tuberous sclerosis (n=1) Wyburn Mason syndrome (n=1). Skin biopsy from NF 1 and tuberous sclerosis were done. Optic nerve glioma was diagnosed histopathologically in one of the cases of NF1.

Conclusions: Phakomatoses have characteristic retinal and uveal lesions. They have many cutaneous lesions and characteristic CNS syndromes. Miscellaneous systemic features are specific to syndromes. Ophthalmologists should be aware of the characteristic features of phakomatoses. Additional histopathological diagnosis is helpful in selected cases.

Suprasellar Meningioma Mimicking Optic Neuritis Presentation

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Purpose: Suprasellar meningioma typically presents as a headache and visual disturbance. We report an unusual presentation of suprasellar meningioma mimicking retrobulbar optic neuritis presentation.

Methods: Case report.

Results: A 40-year-old female presented with progressive blurring of vision in the left eye and reduced color vision for 2 weeks. Visual acuity in the left eye was hand motion with positive relative afferent pupillary defect. Optic nerve function tests were also affected. Fundoscopy showed a normal optic disc in both eyes. She was suspected of having left retrobulbar optic neuritis. While waiting for the radioimaging she was started on intravenous methylprednisolone 1 gram daily for 3 days. However, the visual acuity remained the same. Magnetic resonance imaging (MRI) showed features of suprasellar meningioma. The patient was referred to a neurosurgical team. She underwent tumor debulking. Her final visual acuity was not improved.

Conclusions: Suprasellar meningioma may mimic optic neuritis presentation. Radio imaging is an important investigation to detect the presence of any tumor in the brain.

The Correlation Between Color Vision With Retinal Nerve Fiber Layer Thickness in Patients Diagnosed With Papilledema

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*Co-Author(s): Rusti **HANINDYA**, Rani **PITTA**, Pretyla **YOLLAMANDA***

Purpose: To determine the correlation between color vision and the thickness of the RNFL layer in patients diagnosed with papilledema.

Methods: This study is a retrospective analytic observational with a cross-sectional design using medical records of patients diagnosed with papilledema at the Neuro-ophthalmology (NO) unit between the period from January 2016 to December 2020.

Results: There were 102 patients (204 eyes) with papilledema enrolled in this study, with a median age of 41 years. There were 32 patients (31%) male and 70 patients (69%) female. Brain neuroimaging results were intracranial tumors in 88 patients (87.52%) with suggestive meningioma in 42 patients. The median value of color vision obtained was 2,63% and the median of RNFL average thickness was 179,50 µm. Statistical analysis showed $r = 0.185$ ($r < 0.2$).

Conclusions: There was a very weak correlation between color vision and RNFL mean thickness in patients with papilledema.

The Dynamic Healing Process of Neuroretinitis Secondary to Cat Scratch Disease: A Case Report With Follow-up Through Optical Coherence Tomography

*First Author: Syena **RIZA***
*Co-Author(s): Devi Azri **WAHYUNI***

Purpose: To report a case about the clinical features and dynamic healing process in neuroretinitis secondary to cat scratch disease.

Methods: To present a case report.

Results: A 21-year-old woman presented with sudden, painless, blurry vision over the left eye (LE) since 2 weeks ago and had a history of fever of unknown origin. The patient also reported a history of breeding cats. She presented with LE poor vision, and positive relative afferent pupillary defect. From a posterior segment of LE showed neuroretinitis characterized by optic disc swelling, macular star, intraretinal haemorrhage, and exudates. Optical Coherence Tomography (OCT)

macula showed exudative fovea detachment with surrounding retinal exudates. Serology confirmed the presence of Bartonella henselae antibodies, indicating a diagnosis of cat scratch disease. She was treated with oral prednisolone and Trimethoprim/sulfamethoxazole because she had an allergy to the tetracycline drug group. Three weeks after taking the medication, the macular edema completely resolved, and there was a visual improvement from being able to count fingers at a distance of 1 meter to having a visual acuity of 6/30.

Conclusions: With a presentation of neuroretinitis with a history of a cat scratch or contact with cats, Bartonella neuroretinitis should be considered as one of the possible causes. Utilizing the proper combination of systemic steroids and antibiotics can lead to successful management with limited vision recovery.

The Progress in Clinical Applications of Monoclonal Antibodies in the Treatment of Neuromyelitis Optica Spectrum Disorder in China

*First Author: Shihui **WEI***
*Co-Author(s): Honglu **SONG***

Purpose: Neuromyelitis optica spectrum disorder (NMOD) is a kind of demyelinating disease of the central nervous system which mainly affects the optic nerve and the spinal cord. Because of its serious blindness and disability, how to effectively prevent relapse has become the focus of ophthalmologists.

Methods: Demyelinating optic neuritis (DON) coexisting with seropositive aquaporin-4 antibody or myelin oligodendrocyte glycoprotein antibody is different from the typical optic neuritis in immunopathological, clinical and radiological features, as well as therapeutic response.

Results: With a deep understanding of the pathogenesis and the progress of scientific and technological means, more and more monoclonal antibodies (mAb) continue to enter clinical trials. B cell surface antigen CD20 blocker, rituximab, has become a first-line drug for the treatment of NMOSD in China. CD19 blocker, inebilizumab, can reduce the recurrence and disability of NMOSD patients. The addition of interleukin 6 receptor blocker, satralizumab, and complement C5 inhibitor, eculizumab, reduce the recurrence. Some mAbs such as natalizumab and alemtuzumab may not be effective for the treatment of NMOSD.

Conclusions: The expansion of mAb treatment indications and the launch of new drugs still require more clinical trials, which are of large scales and require international cooperation. At the same time, its potential adverse events and cost issues cannot be ignored.

The Retinal Vascular Perfusion in the Superficial and Deep Slab Using by OCT Angiography in Amaurosis Fugax

*First Author: Ari **KAMEI***

Purpose: To evaluate the difference in retinal vascular perfusion, especially in the superficial and deep slab between the affected and unaffected eyes in patients with unilateral amaurosis fugax.

Methods: Fourteen eyes of seven patients with unilateral amaurosis fugax in the past were performed OCT angiography 6x6mm cube scan using Ver. 10.0 AngioPlex on the Cirrus HD-OCT model 5000. Then, vascular perfusion in the superficial and deep slab was calculated in predefined ETDRS segments which are in the central, inner, outer, inner upper, inner lower, inner nasal, inner temporal, outer upper, outer lower, outer nasal, and outer temporal regions.

Results: The vascular perfusion in the superficial slab showed a significant difference between the affected and unaffected eyes in almost all regions (P=0.017), the central, inner, outer, inner upper, inner lower, inner temporal, outer upper, outer lower, Outer temporal and the Inner nasal (P=0.027) except in the outer nasal (P=0.115). In the deep slab, the vascular perfusion also showed a significant difference between the affected and unaffected eyes in almost all regions (P=0.017), the inner, outer, inner upper, inner lower, inner nasal, outer upper, outer lower, the outer temporal (P=0.023), the Inner temporal (P=0.027) and the central (P=0.043) except in the outer nasal (P=0.128).

Conclusions: In unilateral amaurosis fugax, the superficial and deep retinal vascular perfusion in the affected eyes was decreased in all regions except the Outer nasal regions.

Thirteen-and-a-Half Syndrome in a 14-Year-Old Female

*First Author: Jose Martin Iv **VELASCO***

Purpose: This case will discuss a rare thirteen-and-a-half syndrome presenting in a young female with no comorbidities to stress the importance of a proper neurologic exam which aids in localization, especially in a young patient.

Methods: This is a case report of a 14-year-old female who presented with thirteen-and-a-half syndrome in a tertiary hospital in Metro Manila, Philippines.

Results: A 14-year-old female initially presented with a one-day history of right-sided weakness. There was associated binocular diplopia, dizziness, three episodes of spontaneous projectile vomiting, slurring of speech, and dropping of the left lip. The following day, the patient sought a consultation at the Ophthalmology outpatient department due to diplopia but was advised to seek an emergency department (ED) consult. At the ED, the patient underwent a plain cranial CT scan

which showed a left-sided pontine hemorrhage hence admission. There was noted exotropia of the right eye on primary gaze with -4 on adduction and abducting nystagmus, -4 on abduction and adduction of the left eye, loss of convergence, left facial weakness, and decreased left facial sensation. This constellation of findings is in line with a thirteen-and-a-half syndrome that can be localized to the dorsal pons.

Conclusions: This is a rare case that shows a thirteen-and-a-half syndrome in a young female who presented with ophthalmologic signs consistent with this syndrome. It is often taught that brainstem lesions cause "crossed findings," but this syndrome is an exception to this rule. It is important to always consider ischemic and hemorrhagic causes in the young despite their lack of comorbidities.

Thymoma As the Culprit of Isolated Myasthenia Gravis in an Elderly Male: A Journey to Find Diagnosis and Treatment

*First Author: Isma Zul **JAYA***
*Co-Author(s): Lukisiari **AGUSTINI***

Purpose: Thymomas are neoplasms derived from thymic epithelial cells and are usually of the cortical subtype. About half of the cases of thymoma develop myasthenia gravis, characterised by fatigable weakness of extraocular muscles, levator palpebra, and orbicularis oculi, resulting in fatigable ptosis and binocular diplopia.

Methods: Case Report: A 65-year-old male patient came to the outpatient clinic with the chief complaint of drooping of the upper left eyelid on both eyes. The symptoms worsened during the evening and improved after rest. Ocular examination revealed variable bilateral ocular movement deficits and ptosis in both eyes. An MG clinical examination showed a positive result for the ice pack test, Cogan's test, fatigue test, and sleep test. A chest CT scan with contrast was performed and showed an enhancing solid mass in the anterior mediastinum, which concluded thymoma. The diagnosis of bilateral ocular MG and thymoma was established, and initial treatment started with pyridostigmine 60 mg three times a day and methylprednisolone 32 mg two times a day combined with surgical thymectomy. The ocular symptoms completely diminished after 8 weeks of post-surgical follow-up.

Results: OMG should be considered in patients with any pattern of unilateral or bilateral, pupil-spared, painless, diplopia, ptosis, or ophthalmoplegia. Chest CT for atypical cases (e.g. strictly unilateral OMG) is the first choice modality. Surgical thymectomy is the mainstay treatment of myasthenia gravis with thymoma.

Conclusions: Extended thymectomy offers considerable outcomes with a low recurrence rate of thymoma; moreover, surgery leads to remarkable neurologic results.

Traditional Chinese Medicine Combined With Western Medicine for Traumatic Optic Neuropathy

*First Author: Caiwen **XIAO***

Purpose: To compare the differences in condition and prognosis after combined treatment of traumatic optic neuropathy with traditional Chinese medicine (TCM) and only surgical treatment.

Methods: The clinical data of 76 patients who underwent nasal endoscopic surgery therapy in optic nerve decompression in the Department of Ophthalmology of Shanghai Ninth People's Hospital from January 2018 to April 2023 were retrospectively analyzed to compare the characteristics of the prognostic visual acuity recovery in patients in the traditional Chinese medicine combined with western medicine (WM) group and western medicine group.

Results: The visual acuity improvement rate, VEP amplitude, and visual field were improved in the WM group and TCM combined WM treatment group. There was a significant difference ($P<0.05$) between the two groups, indicating that the combined Chinese treatment group was better than the simple surgery group in improving visual acuity, P100 wave amplitude, and expanding the visual field. The postoperative visual acuity improvement rate of patients with residual vision in the TCM combined WM treatment group was 75%. The postoperative visual acuity improvement rate of patients in the WM was 60.5%, of which 78.6% of patients with preoperative residual vision had improved postoperative visual acuity.

Conclusions: Both treatment groups were effective, but the efficacy of the TCM combined WM treatment group was better than that of the WM group alone. Acupuncture has a therapeutic effect of unblocking meridians, while importantly dilating blood vessels and opening up circulation. In conclusion, the efficacy of TCM combined WM treatment is reliable and suitable for popularization.

Unilateral Disc Changes in Idiopathic Intracranial Hypertension– Asymmetric Papilledema

*First Author: Shagun **KORLA***
*Co-Author(s): Ravinder **GUPTA**, Pallavi **KUMARI***

Purpose: Asymmetric papilledema is rare in Idiopathic Intracranial Hypertension (IIH), occurring in less than 4% of patients with definite Idiopathic Intracranial Hypertension and its mechanism remains unclear. Although several mechanisms have been suggested to explain very asymmetric papilledema, such as optic nerve sheath defects and loss of lamina cribrosa compliance, its mechanism remains unclear.

Methods: A 55-year-old female presented with blurring of vision in her left eye for 3 months, which was painless and non-progressive with no systemic complaints. An anterior segment examination was normal in both eyes. A dilated fundus examination showed a normal posterior segment in the right eye and disc edema in the left eye. Contrast Enhanced Magnetic Resonance Imaging of the brain showed widening of sella with cerebrospinal fluid signal within and flattening of pituitary suggestive of empty sella with flattening of posterior sclera bilaterally.

Results: Diagnosis of Asymmetric Idiopathic Intracranial Hypertension was made, and treatment was given accordingly.

Conclusions: In patients with unilateral disc edema, we think of many causes, but asymmetric papilledema rarely comes into our thoughts. In our case, due to aging, a decrease in compliance of lamina cribrosa may be the reason for asymmetric papilledema. Therefore, though rare, it should be kept in mind in cases involving unilateral disc edema.

Unspecified Visual Symptoms as an Initial Manifestation in Patient With Intracranial Tumor

*First Author: Prettyla **YOLLAMANDA***
*Co-Author(s): Rusti **SARI**, Dianita **VEULINA***

Purpose: Ophthalmic manifestations may occur as initial presentations in about 46.8-88.6% of patients with intracranial tumors. Signs and symptoms include decreased visual acuity, visual field defects, ophthalmoplegia, papilledema, and optic atrophy. In this study, we present a case report of unspecified visual symptoms as an initial manifestation in intracranial tumor.

Methods: A 32-year-old female came with a chief complaint of left eye discomfort since 2 weeks before presentation, accompanied by headache. There were no other visual or systemic complaints noticed by the patient. She had no history of systemic conditions. Ophthalmology examination showed visual acuity of 1.0 on both eyes, with grade 1 relative afferent pupillary defect on her left eye. The funduscopy examination was normal on her right eye, and showed slight swelling on her left optic nerve head. There was no dyschromatopsia. The Humphrey visual field examination revealed superior arcuate visual field defect on her left eye. The patient was suggested to undergo a brain computerized tomography (CT) scan for further evaluation.

Results: The patient came with a brain CT scan result that showed a hyperdense mass, sized 6.0 x 6.9 x 5.5 cm in her left anterior parietal lobe with a 9 mm midline shift, suggesting a meningioma. The patient was then referred to the neurosurgery department for further management.

Conclusions: Ophthalmologists are frequently the first physicians to encounter patients with clinical manifestations of intracranial tumors that may cause life-threatening conditions. Therefore, careful evaluation and diagnosis are important to determine further management and prevent debilitating complications.

Visual Improvement Following External Manual Carotid Compression in Indirect Carotid-Cavernous Fistula: A Case Report

*First Author: Yasir **HADY***
*Co-Author(s): Rusti **SARI**, Dianita **VEULINA**, Prettyla **YOLLAMANDA***

Purpose: Carotid-cavernous fistula (CCF) is an abnormal connection between the carotid arterial system and the venous vessel of the cavernous sinus. Early diagnosis and appropriate treatment are essential to avoid vision loss. External manual carotid compression (EMCC) has been reported to occlude indirect CCF in up to 30% of patients. This study aims to report a case of indirect CCF treated with EMCC.

Methods: To present a case report of A 55-year-old female who came with a chief complaint of blurred vision in her left eye (LE) 6 months ago. Her complaint was accompanied by redness and tearing on LE, with occasional tinnitus. She had a history of hypertension. She denied any history of trauma. Ophthalmology examination revealed that the Best Corrected Visual Acuity (BCVA) was 0.63 LE, episcleral injection with corkscrew appearance, relative afferent pupillary defect (RAPD) on LE, mild retinal vascular tortuosity, and diminished foveal reflex. Computed Tomography (CT) scan revealed a dilated superior ophthalmic vein on LE.

Results: She was instructed to do EMCC daily while referred to the Neuro-surgery Department for Digital Subtraction Angiography (DSA). On two weeks of follow-up, clinical signs and symptoms were improved and her BCVA was 1.0 LE.

Conclusions: Indirect CCF commonly occurs in older female patients with systemic conditions and may occur spontaneously. It may resolve spontaneously without surgical intervention. The established treatment for indirect CCF is EMCC which prevents vision loss in this condition.

Visual Outcome of Patient with Endovascular Treatment in Carotid Cavernous Fistule: A Case Report

*First Author: Canda **ARDITYA***
*Co-Author(s): Riski **PRIHATNINGTIAS***

Purpose: Carotid cavernous fistula (CCF) is a medical condition characterized by an abnormal connection between the carotid artery and the cavernous sinus. The objective of this case report was to present

the outcomes of a patient with CCF treated with endovascular methods.

Methods: A 46-year-old woman experienced blurry vision for the past three months. She had also reported redness in her left eye, double vision, and dizziness. Ophthalmological assessment at the time revealed the following: VOD: 6/7.5; VOS 1/60, IOP OD 12.2 mmHg, OS 25.8 mmHg. Ocular movements of the right eye had shown unrestricted movement in all directions, whereas the left eye had exhibited restriction (-3) in the temporal, superotemporal, and inferotemporal directions, accompanied by pain. Hertel exophthalmometry measurements had indicated a baseline of 107mm for the right eye and 18mm for the left eye. She had been diagnosed with left eye proptosis and ophthalmoplegia, with a suspicion of CCF. The treatment plan had included the administration of Timolol 0.5% Eye drops 2x1 OS and consultation with a radiology specialist for a cerebral angiogram, specifically Digital Subtraction Angiography (DSA), along with potential endovascular intervention.

Results: She had undergone endovascular treatment, which had included coiling and ballooning. The test one week following the procedure showed that her left eye's visual acuity had improved to 2/60, and its intraocular pressure (IOP) had measured 15.9 mmHg.

Conclusions: The symptoms of CCF typically included chemosis, pulsatile exophthalmos, and ocular bruit. Medical treatments for CCF might have encompassed compression therapy, endovascular intervention, aqueous suppressants, and outflow drugs.

When You See Nothing At All: A Case of Posterior Reversible Encephalopathy Syndrome (PRES)

*First Author: Marie Chemantha Alexandria **BUSCAYNO***

Purpose: PRES is a clinico-radiological condition in which clinical manifestations include encephalopathy (28-94%) and seizures (74-87%). Visual symptoms are present in only 39% of cases. It's an underdiagnosed condition which, although benign, may lead to significant morbidity and mortality. Appropriate management resolves the symptoms, hence, prompt recognition and diagnosis is necessary.

Methods: This paper presents a case report of PRES with visual disturbance as the presenting symptom.

Results: An 18-year-old G1P0, 37 weeks AOG patient complained of bilateral loss of vision. She came to the ER with a one-day history of sudden, generalized vision loss in both eyes. On examination, blood pressure was 130/80 mmHg. An eye exam revealed visual acuity (VA) of hand motions with good light projection on both eyes with grade 2 RAPD on the right eye. Fundoscopy was unremarkable. The neurologic exam was normal. The patient was given antihypertensive medications and underwent an emergency cesarian section for impending eclampsia. Plain cranial MRI showed white matter hyperintensities of both parietal, occipital, and right frontal lobes. Immediately after delivery, VA improved to 20/200 on both eyes, and the color vision test was 5/16 and 7/16 on the right and left eyes, respectively. One week later, further improvement was noted with VA of 20/20 for both eyes, and color vision of 12/16 for both eyes.

Conclusions: The exact pathophysiology of PRES remains unclear but three theories have been proposed: (1) cerebral vasoconstriction, (2) failure of cerebral autoregulation, and (3) blood-brain barrier damage. Whatever the exact cause, early diagnosis and management should be initiated to prevent morbidity and mortality.

Ocular Imaging

A Novel Method of Assessing Systemic Atherosclerosis in Healthy Young Adults Using a Color Laser Scanning Ophthalmoscope

*First Author: Takato **SAKONO***
*Co-Author(s): Ryoh **FUNATSU**, Taiji **SAKAMOTO**, Hiroto **TERASAKI***

Purpose: We have previously reported that retinal vessel colors in color scanning laser ophthalmoscope (SLO) images are associated with the Cardio-Ankle Vascular Index (CAVI), an index of systemic atherosclerosis, in elderly patients (The 126th annual meeting of the Japanese Ophthalmological Society). This study aims to investigate the correlation in the population, including the young adult eyes.

Methods: This single institute, retrospective study includes the healthy people examined by color SLO (Mirante, Nidek) images and CAVI. The optic disc-fovea-retinal artery angle was calculated from the color SLO images. The color tones of retinal arterioles from 60 degrees to 90 degrees of the angle were quantified as red/green/blue signal intensity using ImageJ, and the ratio of green to red was defined as the Retinal Artery Sclerosis Index (RAS Index). The correlation between the RAS Index and CAVI was examined by Spearman's rank correlation coefficient.

Results: A total of 103 eyes (26 male, 28 female) with a mean age of 60.1 ± 18.9 years (24-82) were included. The mean of the RAS Index was 0.61±0.07, and the RAS Index showed a significant positive correlation with CAVI ($P<0.001$, $r = 0.679$).

Conclusions: The color of the retinal arteries in color SLO may predict systemic atherosclerosis at any age.

A Novel Quantitative Method for the Choroidal Vasculature in Central Serous Chorioretinopathy Using En Face Wide-Field Optical Coherence Tomography

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Purpose: This study investigates the differences in choroidal vascular structure between central serous chorioretinopathy (CSC) and healthy eyes using en-face widefield optical coherence tomography (WFOCT).

Methods: Twenty-two CSC eyes (13 males, mean age of 52.9 years) and 18 healthy eyes (16 males, mean age of 52.5 years) were included in this study. We obtained volume data (20mm×20mm) using WFOCT and acquired widefield en-face OCT images whose reference lines were Bruch's membrane and the chorio-scleral interface. The en-face images were divided into four regions (supratemporal (ST), supranasal (SN), infratemporal (IT), infranasal (IN)) by a line passing through the fovea and optic disc and a line orthogonal to the line at the optic disc. We developed software to calculate each region's luminal proportion and mean vessel diameter. These values were compared between CSC and normal eyes by the Mann-Whiteney U test.

Results: The luminal proportions and the mean choroidal vessel diameters (pixels) of each region in CSC eyes were 47% and 10.9 for ST, 45% and 10.2 for SN, 46% and 10.4 for IT, 44% and 9.2 for IN; those in normal eyes were 43% and 9.6 for ST, 41% and 8.9 for SN, 43% and 9.3 for IT, and 41% and 8.5 for IN, respectively. Both values were higher in CSC eyes than in healthy eyes in all regions ($P<0.05$).

Conclusions: In CSC eyes, the choroidal luminal proportion and mean choroidal vessel diameter of the en-face WFOCT image were larger. This indicated that the pathogenesis of CSC may extend to the entire fundus.

Association of Intravenous Fluorescein Angiography and Adaptive Optics Imaging in Diabetic Retinopathy: A Prospective Case Series

*First Author: Ryan S. **HUANG***
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Purpose: To our knowledge, we present the first case series investigating the relationship between adaptive optics (AO) imaging and intravenous fluorescein angiography (IVFA) parameters in patients with diabetic retinopathy (DR).

Methods: Consecutive patients with DR over the age of 18 years presenting to a single center in Toronto, Canada from 2020-2021 were recruited. AO was performed with the RTX1 camera (Imagine Eyes, Orsay, France). IVFA was assessed with the artificial intelligence-based RETICAD system to extract blood flow, perfusion, and blood-retinal barrier (BRB) permeability values from IVFA images. Correlations between AO and IVFA parameters at various eccentricities were calculated using Pearson's correlation coefficient.

Results: Across nine cases, a significant positive correlation existed between photoreceptor spacing on AO and BRB permeability ($r=0.303$, $P=0.027$), as well as perfusion ($r=0.272$, $P=0.049$) on IVFA. When stratified by location, a significant positive correlation was found between photoreceptor dispersion and both BRB permeability and perfusion ($r=0.770$, $P=0.043$; $r=0.846$, $P=0.034$, respectively). A significant negative correlation between photoreceptor regularity ($r=-0.974$, $P=0.026$) and density ($r=-0.819$, $P=0.046$) with BRB permeability was also observed.

Conclusions: Photoreceptor spacing on AO was significantly correlated with BRB permeability and perfusion on IVFA in patients with DR. Future studies with larger sample sizes are needed to understand the relationship between AO and IVFA parameters in diverse patient populations.

Investigation of the Morphology of the Vortex Vein Ampullae in Eyes With Pachychoroid-Spectrum Disorders

*First Author: Kazuki **FUJIWARA***
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Purpose: Vortex venous ampulla (VVA) stasis has been proposed as the pathogenesis of pachychoroid spectrum disorders (PSD), a hypothesis called "Venous overload choroidopathy". However, due to the limited angle of view of previous methods, there was no method to quantify the three-dimensional structure of the VVA, and the VVA morphology in the PSD eye was unknown. We reported on the VVA quantification method using Silverstone (Optos plc), which can acquire optical coherence tomography (OCT) images under ultra-widefield fundus image guidance (The 39th Annual Meeting of Japanese Society for Ocular Circulation). This study aims to compare the differences in VVA morphology between PSD and healthy eyes using this technique.

Methods: PSD eyes and normal eyes attending Kagoshima University Hospital were included in the study. Several OCT images were acquired from the VVA using Silverstone to create a VVA composite image. Luminal volume and mean vessel diameter within the designated area of the VVA were calculated and compared between PSD and healthy eyes.

Results: The subjects included 8 PSD eyes (6 males, mean age 58, mean axial length 23.1, mean central choroidal thickness 459µm) and 4 healthy eyes (3 males, mean age 64, mean axial length 24.5,

mean central choroidal thickness 254µm). The luminal volume (pixel) was 8.9*10^6±2.9*10^6 and 4.6*10^6±1.7*10^6 and the mean vessel diameter (pixel) was 25.1±4.2 and 20.5±2.9 in the PSD and healthy groups, respectively, for the VVA quantitative values.

Conclusions: The VVA vessels were dilated in the PSD eye, suggesting the possibility of VVA stasis in the PSD.

Low Cost Widefield OCT

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Purpose: To describe an innovative solution for obtaining widefield OCT images with a traditional OCT machine with minimal extra cost.

Methods: The study was done in a tertiary care eye hospital in North India. Ten patients with pre-existing diabetic macular edema were examined. A spectacle frame fitted with +20D lens in both eyes was worn by the patients while undergoing OCT imaging. The image obtained was compared with the images obtained without wearing the spectacles.

Results: The scan area covered in the OCT images with the spectacles worn was much larger than the scan obtained without spectacles.

Conclusions: In patients with DR, the DME may be present in the region which may not be covered in a single OCT image of the macula by a traditional machine. The light rays from a wider region are converged by the +20D lens, thus giving a wider field of scan. This innovation increases the field of imaging, and can help capture those areas which may have been missed earlier due to machine limitations, thus making widefield OCT imaging accessible to ophthalmologists at a much lower cost. This is especially useful in Third World and developing countries where access to new high-end OCT machines may not be possible for every ophthalmologist.

Marfan Syndrome With Bilateral Ectopia Lentis

*First Author: Jayant **SHARMA***
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Purpose: Marfan syndrome (MFS) is an inheritable disorder and has clinical features which involve cardiovascular, skeletal, craniofacial, ocular, and cutaneous abnormalities.

Methods: A sixteen-year-old boy presented with a diminution of vision in both eyes for four years. On ocular examination, his best corrected visual acuity in the right and left eye was 20/40 and 20/200 respectively. Dilated Slit lamp examination showed bilateral superotemporal mild and moderate degrees of subluxation of the crystalline lens with intact zonules in the right eye and left eye respectively. Rest ocular examination was normal. Systemic features included Mitral valve prolapsed with severe MR with TR and high arched palate, Pectus Carinatum, Scolosis, Arachnodactyly, Thumb laxity, Wrist sign, and Genu Valgum.

Results: Diagnosis of Marfan Syndrome with Bilateral Ectopia Lentis was made and managed accordingly.

Conclusions: Marfan Syndrome is a rare disease, and the aforesaid signs should be looked for by all ophthalmologists.

Multi-Parametric MRI of the Sclera, Retina, and Optic Nerve in Healthy and Glaucomatous Human Eyes

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*Co-Author(s): Ji Won **BANG**, Kevin **CHAN**, Giles **HAMILTON-FLETCHER**, Faiq **MUNEEB**, Carlos **PARRA***

Purpose: Multi-parametric MRI can provide a non-destructive means of evaluating the microstructural organization and macromolecular compositions of the whole eye without depth limitations. Here, we tested the feasibility and sensitivity of submillimeter-resolution T2 relaxometry, magnetization transfer MRI (MTI), and diffusion tensor MRI (DTI) at a high magnetic field to characterize different ocular structures in healthy and glaucomatous eyes.

Methods: Twelve healthy and six age-matched glaucomatous human donor eyes were suspended in agarose gel and subjected to ex-vivo T2 relaxometry, MTI, and DTI using a 7-Tesla Bruker MRI scanner. The absolute T2 value, magnetization transfer ratio (MTR), fractional anisotropy (FA), axial diffusivity (AD), radial diffusivity (RD), and mean diffusivity (MD) were measured in different ocular structures and compared between healthy and glaucomatous eyes.

Results: Significantly lower T2 values were observed in both myelinated and unmyelinated optic nerves and the central retina of glaucomatous eyes, indicating reduced overall mobile water protons. DTI demonstrated significantly higher AD, RD, and MD in the central and peripheral retinas and myelinated and unmyelinated optic nerves, along with lower FA in the myelinated optic nerve and anterior sclera. No significant MTR difference was observed between healthy and glaucomatous eyes.

Conclusions: An increase in the diffusivities (AD, RD, and MD) and a decrease in T2 and FA values in the optic nerve and retina suggest the loss of retinal ganglion cells and axons, disrupted fiber organization, and degenerative changes in the ocular neuronal tissues in glaucoma. The FA change in the anterior sclera suggests interactions between scleral tissues and glaucoma.

Normative Database of Retinal Nerve Fiber Layer Thickness in Cambodian Population

*First Author: Guechlaing **CHEA***
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Purpose: To assess the retinal nerve fiber layer (RNFL) thickness of healthy eyes in the Cambodian population and its correlation with laterality of eyes, age, and gender.

Methods: The RNFL thickness of 240 eyes, aged over 20 with no ocular pathology, was imaged using Spectral-domain OCT in a descriptive cross-sectional study. Participants' demographic data, ocular parameters, and RNFL thickness were recorded. The distribution of RNFL thickness and its relationship with demographic data were analyzed.

Results: Among 120 patients who participated in the study, there were 64 women (53.33%) and 56 men (46.67%). Ranging from 20 to 69 years old, the majority of participants (78.3%) were aged below 40 years old. The average of retinal nerve fiber layer thickness in Cambodians was 100.42 +/- 8.61 micrometers. The thickness decreased with aging at a rate of 0.272 micrometers per year. From the study, the retinal nerve fiber layer of the right eyes was 1.39 +/- 4.89 micrometers thicker than that of the left eyes with the mean value of 101.12 +/- 8.87 micrometers in the right eyes and 99.72 +/- 9.03 micrometers in the left eyes (P=0.002). In addition, the retinal nerve fiber layer showed no statistically significant difference between genders (P = 0.93).

Conclusions: In normal Cambodian eyes, the mean RNFL thickness is 100.42 +/- 8.61 micrometers, which significantly correlates with age but not with gender. The study also shows the interocular asymmetry of RNFL thickness in healthy eyes.

Ocular Oncology and Pathology

A Case of Painless Orbital Adenoid Cystic Carcinoma

*First Author: Angelica Aja **ALCOREZA***

Purpose: Adenoid Cystic Carcinoma (ACC) is a slowly progressive malignant epithelial tumor representing 1% of all orbital neoplasms, typically producing pain as the mass invades the nerve.

Methods: A 61-year-old male presents with a 2-year history of a painless progressively enlarging mass on the left upper eyelid. Visual acuity was no light perception. On examination, a non-tender, non-movable superotemporal upper lid mass caused inferomedial displacement of the globe and lagophthalmos. Contrast-enhanced CT scan revealed a large heterogeneously enhancing soft tissue mass in the left superotemporal orbit compressing and anteriorly displacing the globe with extension to the orbital apex and involvement of the optic nerve with no bony erosion. Incisional biopsy initially revealed pleomorphic adenoma, but was later finalized as Adenoid Cystic Carcinoma. A subtotal lid-sparing orbital exenteration was done with histopathologic assessment concurring initial finding of ACC. The tumor margins were positive for perineural and lymphovascular invasion.

Results: ACC tends to have irregular margins and erode adjacent bones. It is associated with local recurrence and distant spread. Pulmonary nodules were evident on metastatic work-up however bony structures of the orbit were unremarkable. In 80% of ACC, pain is a prominent manifestation due to its propensity for perineural invasion. However, even if a classic finding of ACC was seen in this patient, the mass remained painless throughout the course of the disease.

Conclusions: A high index of suspicion is necessary since tumors with variable presentation such as ACC are highly aggressive with poor overall outcomes.

A Rare Case of Retinal Glial Hamartoma Masquerading as Adult-Onset Retinoblastoma

*First Author: Swetank **SINHA***
*Co-Author(s): Rohan **CHAWLA***

Purpose: To illustrate a rare case of retinal glial hamartoma masquerading as a malignant intraocular tumour.

Methods: A 28-year-old Indian female presented with a chief complaint of diminution of vision in her right eye for the past 3 months. Upon preliminary evaluation, visual acuity and intraocular pressure in the right eye were 3/60 (Snellen's chart) and 10 mm Hg, respectively, with the presence of posterior synechiae and iris bombe. Indirect ophthalmoscopy showed hazy media with exudative RD (Retinal Detachment) with a mass lesion. Ultrasonography demonstrated a membrane attached to the disc suggestive of an exudative RD, with the mass lesion not being clearly visualised. MRI (Magnetic resonance Imaging) demonstrated a well-circumscribed chorioretinal lesion which was hyperintense on T1 weighted images and iso- to hyperintense on T2 weighted images with homogenous intense enhancement on post-contrast T1 images- suggestive of choroidal hemangioma. On OptosR retinal imaging, however, a whitish fungating mass resembling a retinoblastoma was seen growing into the vitreous cavity. Diagnostic confirmation was done using pars-plana vitrectomy with biopsy from the mass using a 25G vitrectomy cutter with intravitreal topotecan injection.

Results: Histopathology report revealed cellular fragments in a fibrillary background, haemorrhage

and hyalinised blood vessels. Immunohistochemistry revealed cells positive for GFAP (glial fibrillary acidic protein), thus confirming the diagnosis as glial hamartoma.

Conclusions: This case illustrates that retinal glial hamartomas can present with clinical features suggestive of a malignant intraocular tumour. Careful evaluation with various imaging modalities and FNAC/ Biopsy can help arrive at the correct diagnosis before employment of unwarranted aggressive therapies.

A Rare Case of Unilateral Proptosed Eye: Intraorbital Meningioma

*First Author: Yeo Kim **SEE***
*Co-Author(s): Chan **HUI TZE**, Hock Keong **LEE**, Julieana **MUHAMMED***

Purpose: To report a rare case of a unilateral proptosed eye secondary to a supero-temporal orbital mass which was an intraorbital meningioma with intracranial extension.

Methods: A case report.

Results: A 52-year-old lady with underlying hypertension complained of left periorbital swelling and proptosis for a year. On examination, her vision was 6/15 OD and 6/18 OS. The left eye showed severe non-axial proptosis with a hertel exophthalmometer measuring 15mm OD and 21mm OS in 110mm. The optic nerve function test was normal in both eyes. The anterior and posterior segments were unremarkable. Magnetic resonance Imaging of the brain and orbit revealed a left superotemporal extraconal intraorbital enhancing lesion with suspected bony erosion and intracranial extension. The patient was co-managed with the neurosurgical team and underwent orbitotomy with transcranial surgery for maximal tumor clearance and debulking. Tumor histopathology showed Grade 1 meningioma. On follow-up one month post-operation, both eyes' vision was 6/9 with complete resolution of left eye proptosis.

Conclusions: Management of orbital meningiomas involves multidisciplinary collaboration that poses considerable surgical challenges. A surgical strategy aimed at safe maximal resection provides favorable outcomes with less morbidity as complete resection is often not possible due to the delicate structures involved. Periodic ophthalmic examination is important to detect tumor recurrence.

Acute and Chronic Visual Loss Mechanism in Bilateral Orbital Metastasis of Ewing's Sarcoma of the Bone

*First Author: Rino **NUGRAHAPUTRA***
*Co-Author(s): Neni **ANGGRAINI***

Purpose: Orbital metastasis of Ewing's sarcoma is a rare condition with only a few reported cases. Multiple mechanisms can contribute to both acute and chronic visual loss processes. We aimed to report a case of bilateral orbital metastasis of fibula Ewing's sarcoma.

Methods: A 16-year-old girl with decreased visual acuity since 1 month before leading to no light perception of both eyes 1 day before admission. The patient had undergone a tumor biopsy in the right fibula which started 3 months prior and was confirmed as Ewing's sarcoma. Ophthalmic examination showed non-axial proptosis and ophthalmoplegia with no light perception in both eyes. A bilateral hyperaemic optic disc with blurry edges was seen. An orbital CT scan revealed bilateral extraconal orbital masses causing orbital apex crowding, with multiple lytic lesions of cranial bones and suspicion of metastasis. Laboratory findings showed a high level of fibrinogen and D-dimer.

Results: Orbital metastasis is rare with manifestations including orbital mass, pain, chemosis, and ocular motility disturbance. Lesions involving the orbital apex will progress profound symptoms due to mass compression leading to multiple nerve palsies and visual deterioration. In contrast, the acute visual worsening might be due to a high thrombosis state, which in cancer cases is classically related to stasis and coagulation disorder, that can induce ischemic optic neuropathy.

Conclusions: A rare bilateral orbital metastasis of fibula Ewing's sarcoma can have multiple mechanisms of visual loss. In our case, the acute visual loss might be due to a high thrombosis, while progressive chronic visual deterioration is caused by orbital apex compression.

Adenosquamous Carcinoma: A Case Report

*First Author: Dyah **KURNIATRI***

Purpose: To present a case with adenosquamous carcinoma in the conjunctiva.

Methods: The case of a 68-year-old man with a rapidly growing tumor in the left conjunctiva.

Results: The diagnosis of Adenosquamous carcinoma was established based on medical history, slit lamp examination, multislice computed tomography, and pathology anatomy examination on the tumor after undergoing biopsy surgery. Adenosquamous carcinoma is a rare form of malignancy which consists of two types of cells: squamous cells (thin, flat cells that line certain organs) and gland-like cells.1 Visual acuity was 0.7 in the right eye and light perception in the left eye. The tumor in the left eye was a protruding tumor with 7x5 mm, bleeding, and rapid growth (Fig.1 and 2). The patient cannot see since the tumor covers the cornea. Anterior orbitotomy and biopsy were performed. After surgery, visual acuity became 0.8 and the histologically excised tissues exhibited a squamous epithelium layer consisting of a swollen fibrous stroma, hyperemic areas of bleeding containing a nest of proliferating epithelial cancer cells.

Conclusions: (1) The occurrence of adenosquamous carcinoma is more common in organs where adenocarcinomas arise constantly, including the stomach, intestines, and uterus. (2) Primary adenosquamous carcinoma can arise from the lacrimal gland, and there are a few reports of adenosquamous carcinoma arising in the conjunctiva. (3) Surgical excision is considered a key treatment option for adenosquamous carcinoma. (4) The extent of surgery is dependent on the location of the tumor. (5) The prognosis following surgical intervention is not always clear. (6) In the present case, the patient is unwilling to undergo orbital exenteration.

An Eyelid Embryonal Rhabdomyosarcoma Mimicking Squamous Papilloma

*First Author: Delfitri **LUTFI***

Purpose: Rhabdomyosarcoma is the most common childhood soft tissue sarcoma, accounting for approximately 5% of all childhood cancers. Ocular rhabdomyosarcoma mainly arises in orbit and rarely occurs in other structures.

Methods: A 3-year-old boy was referred to our oncology clinic with a reddish tumor of the left upper eyelid for the past four months. He underwent an excisional biopsy two months ago elsewhere, and the pathologic result was papilloma. The tumor grew again in the same place in two months. Examination showed a tender, fixed, multilobulated, reddish tumor from the upper eyelid with mechanical ptosis. We suspected this was a recurrent squamous papilloma and planned to perform tumor excision with cryotherapy for the patient. During two months of preparation for the surgery, the tumor rapidly grew more prominent and covered the left eyeball. We did an orbital CT scan, which showed a well-defined multilobulated soft tissue mass with suspicious anterior orbit extension. A complete excisional tumor biopsy was performed. We found the tumor limited to the upper eyelid area without orbital infiltration and sent the tumor for a histopathologic examination.

Results: Histopathologic examination showed diffuse, spindle-shaped cell proliferation suspicious for rhabdomyosarcoma. Immunohistochemistry staining for desmin was highly positive, confirming the embryonal rhabdomyosarcoma diagnosis. We referred the patient to a pediatric oncologist for adjuvant chemotherapy to eradicate tumors.

Conclusions: Pure eyelid rhabdomyosarcoma, as found in our case, is rare. Ophthalmologists must be suspicious about rhabdomyosarcoma in children with eyelid swelling or fast-growing mass and ecchymosis without a history of trauma.

Analysis of Clinico-Pathological Features and Management of Pleomorphic Adenoma

*First Author: Subhav **PERSHAD***
*Co-Author(s): Kaustubh **MULAY***

Purpose: To outline the clinico-pathological analysis and histopathology-guided treatment modalities of all cases of Pleomorphic adenoma of lacrimal gland presenting to the ocular oncology clinic at a tertiary care center.

Methods: A retrospective analysis of 47 patients (47 eyes) of biopsy-proven pleomorphic adenoma presenting to and operated by a single surgeon in South India.

Results: Mean age at presentation was 33.13 + 14.8 (range 6-75) with a female predominance (59.6%) noted. Unilateral involvement was noted in 97.9% of the cases, with left eye dominance in 53.2% overall. The most common presenting symptom was a mass (56.5%) in the upper-outer quadrant, which was commensurate in 93% of cases on clinical evaluation. A complete excision of the mass was possible in 89.4% of cases, with residual recurrence noted in 4.2%. A histo-pathological evaluation revealed a focal capsular breach in 3 specimens, and 2 histological samples showed metaplasia. Additional treatment in the form of chemotherapy and radiotherapy was needed in 4 cases each.

Conclusions: Pleomorphic adenoma is the most common benign epithelial neoplasm of the lacrimal gland and has an excellent prognosis with complete surgical excision with an intact capsule. Recurrence is associated with incomplete excision or piece-meal removal of the tumour and rarely may be associated with malignant transformation in cases associated with metaplasia.

Assessment of Histological and Immunohistochemical Features of Retinal Tissues Using a Novel Tissue Submission Procedure

*First Author: Tai-chi **LIN***
*Co-Author(s): Yu-bai **CHOU**, Teh-ying **CHOU**, Wen-jung lo **LO**, Lei-chi **WANG***

Purpose: To introduce a novel tissue submission procedure without additional equipment or storage facilities for assessing the histological and immunohistochemical features of retinal tissues.

Methods: In total, 150 specimens were collected from patients who underwent vitrectomy or macular surgery from January to December 2020. Ninety-eight specimens were submitted using the new procedure, and 58 specimens were submitted as flat-mount slides to compare specimen adequacy. The tissues submitted using the new procedure were subjected to paraffin-embedding and sectioning for hematoxylin & eosin staining. Additional immunohistochemical analysis was

performed to assess the cellular composition in retinal tissues with diverse etiologies.

Results: The new submission procedure had an adequacy ratio of 75.51%, which was comparable to that of the flat-mount method (p=0.1397). The new method could produce high-quality images of histological features of tissues and facilitate immunohistochemical analysis to demonstrate cell origins. More glial cells (p=0.000) and myofibroblasts (p=0.012) were detected in the epiretinal membranes (ERMs) than in the internal limiting membranes (ILMs). Subgroup analysis revealed that secondary ERMs contained more macrophage-like cells (p=0.001) and retinal pigment epithelial cells (p=0.000) than did idiopathic ERMs.

Conclusions: Our novel tissue submission procedure can be applied to routine clinical practice.
Our study provides additional histological and immunohistochemical evidence of cellular components in retinal tissues based on a large number of human tissue samples. Moreover, tissues submitted using the new method can be permanently preserved, enabling future investigation for potential prognostic or therapeutic targets.

Bilateral Cloudy Vitelliform Submaculopathy: Response to Systemic Chemotherapy

*First Author: Dayna **YONG***
*Co-Author(s): Graham **HOLDER**, Adrian **KOH**, Gopal **LINGAM**, George **THOMAS***

Purpose: We describe a case of bilateral cloudy vitelliform submaculopathy that responded to systemic treatment.

Methods: NA.

Results: A 74-year-old female presented with left blurring of vision. Visual acuity in the right eye (RE) was 6/7.5 and the left eye (LE) was 6/15. Fundus examination showed vitreous cells with deep ill-defined yellow-white spots at the LE macula; RE was normal. The left macula scan showed subfoveal hyper-reflective deposits between the outer nuclear layer and retinal pigment epithelium. She was initially treated for non-infective posterior uveitis with oral steroids, with waxing and waning appearance of new subretinal infiltrates. LE photopic electroretinograms were delayed and reduced; there was mild rod system involvement. After 5 months, LE developed new vitreous cells with vitreous clumps. A vitreous biopsy was done - the pauci-cellular sample was negative for large lymphoid and B cells. Neuroimaging, Positron Emission Tomography scan, and lumbar puncture were negative for neoplasia. Eighteen months in, RE developed similar findings. Six months later, she had left facial droop, and a frontal lobe lesion was found on neuroimaging - confirmed to be large B cell lymphoma. Chemotherapy and low-dose radiotherapy were commenced to the brain and orbit. There was resolution of all infiltrates with recent visual acuity of 6/6 bilaterally.

Conclusions: Recurrent cloudy vitelliform submaculopathy has been described as an initial presentation of primary vitreoretinal lymphoma. There is uncertainty as to whether it is a neoplastic or para-neoplastic phenomenon. We demonstrate that complete resolution of subretinal infiltrates was achieved with systemic chemotherapy for lymphoma.

Case Report: Surgical Management of a Complicated Case of a Large Iris Cyst

*First Author: Rachel **NGE***
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Purpose: To report the surgical management of a large iris cyst in a young female patient and the long-term management of the complications associated with it.

Methods: An 18-year-old Indonesian lady presented with a one-month history of left eye pain, blurring of vision, and headache. The left anterior segment examination revealed a large, pigmented, non-translucent iris lesion extending to the corneal endothelium from 3-8 o'clock. The overlying inferotemporal cornea was hazy with bedewing. The pupil was distorted by the iris lesion. The intraocular pressure (IOP) was 44mmHg. Gonioscopy showed heavily pigmented angles that were closed with peripheral anterior synechiae. She also had nevus of Ota over the left side of her face.

Results: An excision biopsy was done to rule out malignancy. Viscoelastic was used to dissect a plane between the iris cyst wall adhering to the cornea and an anterior vitrectomy cutter was used to surgically remove the lesion. Endodiarthermy was used to cauterize the base of the cyst. A surgical peripheral iridectomy was performed. The histopathology report showed benign melanocytic cells. A diagnosis of primary iris pigment epithelial cyst was made. Despite starting the patient on maximum topical and systemic medications, the IOP remained poorly controlled. Furthermore, the cornea's haziness worsened due to further decompensation. A month later, the patient underwent trabeculectomy, and was counselled for the possibility of penetrating keratoplasty in the future.

Conclusions: Iris cysts are rare and can be associated with long-term complications. They require long-term treatment and follow-up to manage the associated complications.

Cerebral Metastasis From Orbital Malignant Melanoma: A Case Report

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Purpose: Choroidal and ciliary body melanomas are the most common primary intraocular malignancies in adults. The incidence varies by age, ethnicity, and latitude.

Methods: A 47-year-old male presented with protruding on the LE since 9 months ago. Initially, there are black spots on the white eyes that are getting bigger. On examination a massive mass sized 4 x 5 x 4 cm, blackish red in color with clinical signs of malignancy. MRI examination revealed multiloculated heterogen solid mass, impressive malignant mass, suspected malignant melanoma, and cerebral metastasis. The patients was diagnosed with LE Orbital Malignant Melanoma + Cerebral Metastasis, T4N0M1. The patient underwent orbital exenteration. Based on the results of histopathological examination and immunohistochemical staining, the diagnosis of malignant melanoma was supported. The patient was also planned for chemotherapy. Then the patient experienced a decrease in consciousness and eventually died due to cerebral herniation.

Results: Cerebral metastasis from ocular malignant melanoma is very rare and usually observed with parallel occurrences of the liver. Confirmation of the diagnosis of metastatic melanoma is based on histopathological examination of intraoperatively collected tumour material. Long-term survival is very rare. The average survival time from the detection of metastases is about 6 months.

Conclusions: Early detection carries a good prognosis and surgical excision is often curative, but long-term survival for patients with metastatic disease is poor. When metastatic disease is clinically present during the pretreatment evaluation, treatment of the primary intraocular tumor will depend on patient and physician preference.

Clinical Outcomes and Prognosis Factors for Recurrence of Residual Masses After Treatment in Orbital Lymphoma: A Retrospective Study

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Purpose: To evaluate the characteristics of a residual mass (RM) after treatment in primary orbital lymphoma (OL) and assess the prognostic factors for local recurrence (LR) or systemic relapse (SR).

Methods: A retrospective study included a total of 100 patients with OL. Patient data were collected from March 2010 through December 2022. Response to treatment was assessed at 12 weeks and 24 weeks after 1st line treatment and last contact. Characteristics of RM and risk factors associated with relapse were evaluated.

Results: The mean age was 57.09 years, and 61% (61 of 100) of patients were male. The majority of lymphoma subtypes were extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (EMZL, n=85), followed by diffuse large B-cell lymphoma (DLBCL, n=12) and mantle cell lymphoma (MCL, n=3). At 12 weeks after 1st line treatment, 73% (73 of 100) patients showed RMs. RM was associated with tumor size ($P < 0.001$) and locations, including the posterior orbit, extraocular muscle, lacrimal system, and optic nerve (each $P < 0.05$). LR during follow-up was associated with Ann Arbor stages III and IV, and AJCC pT3 and pT4 stages (each $P < 0.05$) in patients with RM. SR was associated with histopathologic subtypes, including DLBCL and MCL ($P = 0.030$ and $P = 0.008$, respectively).

Conclusions: Large OLs involving posterior orbit or extraocular muscles could be associated with RM after treatment. RMs in patients with advanced stages and histopathologic subtypes including DLBCL and MCL should be treated more aggressively and followed up carefully for LR or SR.

Clinicopathological Presentations of Eyelid Malignancies in COVID vs. Pre-COVID Era

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Purpose: The study aimed to evaluate the clinicopathological presentations and severity of eyelid malignancies in COVID-era, comparing the results with patients who presented in the pre-COVID era and evaluating the reasons for delayed presentation in patients with advanced eyelid malignancy in COVID-era.

Methods: Comparative, retrospective cum prospective observational study. Data was collected retrospectively on demographic details, duration of disease, tumor staging, histopathology, and treatment modalities of confirmed cases of eyelid malignancies from March 2017 to March 2020 (defined as pre-COVID era group -Group II). We compared this data with inpatients admitted during the COVID-era from March 2020 to September 2022 (defined as COVID-era group-Group I). Patients with advanced eyelid malignancy during COVID-era were further subjected to a questionnaire to evaluate the reasons for delayed presentation.

Results: A total of 115 patients were studied (Group I-40 patients and group II-75 patients). There was a statistically significant difference in the duration of disease (p-value-<0.01) and tumor T stage (p-value -0.03) between the two groups. There were no statistically significant differences in demographic details, histopathology, or ocular morbidity between

the groups. The most frequently reported reasons that led to delays in presentation and treatment in COVID-era patients were fear of acquiring COVID and its associated fatality, inaccessible hospital care facilities due to lockdown, and lack of medical support.

Conclusions: Advanced stages of malignancy and delays in treatment were found in the COVID-era group; fear of COVID-related fatalities and inaccessible medical services due to lockdown were found to be the primary reasons for this delay.

Comparison of the Rate of Complications in Primary and Secondary Enucleation in Children With Retinoblastoma

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Purpose: To evaluate the complications arising after primary and secondary enucleation in children treated for retinoblastoma.

Methods: A 5-year retrospective exposure assessment study was done from January 1, 2016 to December 31, 2020, by viewing records of the children who underwent primary or secondary enucleation in our setup for any post-op complications.

Results: We assessed 133 enucleated eyes of 133 children using non-probability purposive sampling. Among them, 79 patients had unilateral and 54 had bilateral retinoblastoma. All eyes were group-E on the International Classification of Retinoblastoma (ICRB). The mean age at enucleation was 31.05±19.17 months. After enucleation, complications were observed in 28 eyes (21.05%), the commonest being implant exposure seen in 09 eyes (6.8%), followed by discharging sockets in 07 patients (5.3%). The mean age at presentation with complication was 37.42±20.37 months which was statistically insignificant among the primary and secondary enucleation groups (P-value =0.51). The rate of complications after primary and secondary enucleation was found to be insignificant statistically (p value=0.13). The odds of developing complications in patients treated with chemotherapy was 2.1 (95% CI:0.8-5.4). The majority of the complications were noted in periods later than 06 months after enucleation (n=12 21%).

Conclusions: Ocular complications can occur commonly after enucleation in eyes treated for retinoblastoma and chemotherapy plays an additive role in this regard. Regular follow-up and timely management of complications is needed to improve the quality of life of children surviving the primary malignancy.

Conjunctival Myxoma – A Rare Encounter

*First Author: Tian Loon **LEE***

Purpose: To present clinical and histological images of a biopsy-proven conjunctival myxoma.

Methods: This is a case report of a young Burmese lady who presented with a slowly enlarging mass in her left eye. Clinical examination showed a yellowish, well-circumscribed mass under the conjunctiva. An excision biopsy was carried out, and histology showed a conjunctival myxoma.

Results: In a review of 2455 conjunctival lesions submitted to the pathology lab, only 4 patients (0.002%) were found to have conjunctival myxoma. In another clinical review of 1643 conjunctival lesions, myxoma was found in only 1 case (<0.001%). Myxomas have also been found to be part of Carney complex, a rare genetic disorder.

Conclusions: In summary, a conjunctival myxoma is a very rare lesion and presents as a well-circumscribed, yellowish sub-conjunctival mass.

Conjunctival Tumors: Conundrum for the Ophthalmologist

*First Author: Poonam **SHRESTHA***

Purpose: Conjunctival tumors are the second most common presentation of ophthalmic tumors in Nepal, the commonest form being malignant. This case series shows different types of common conjunctival tumors and their histopathological diagnosis.

Methods: Here, we present four different cases of conjunctival tumors. Three patients were male and one was a female of above 50 years. They all presented with a similar history of painless and gradually increasing mass in the interpalpebral area. The cases were managed surgically with mass excision, cryotherapy and conjunctival autograft and histopathology examination was sent. All cases were followed up for one year.

Results: The histopathology report revealed conjunctival intraepithelial neoplasia grade II, inflamed compound nevus, conjunctival carcinoma in situ and conjunctival intraepithelial neoplasia grade 3. There were no signs of recurrence in all four cases.

Conclusions: Correct and timely diagnosis can save patients from serious complications and avoid unnecessary investigations and surgical procedures, particularly in cases of tumors which can be safely observed.

Corneoscleral Plaque Brachytherapy Using 'BARC I-125 Ocu-Prosta Seeds' in Management of Iridociliary Melanoma

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Purpose: To illustrate the outcome of phacoemulsification cataract surgery in a case of iridociliary melanoma managed by episcleral plaque brachytherapy using BARC I-125 Ocu-Prosta seeds with amniotic membrane buffer technique.

Methods: We report a rare case of a 48-year-old female with complaints of diminution of vision in the right eye without any associated glaucoma. Detailed ophthalmic examination, Magnetic Resonance Imaging (MRI) and biopsy confirmed it to be iridociliary melanoma with mature white cataract. Amniotic membrane-protected BARC I-125 episcleral plaque brachytherapy was performed with the prescription dose of 80.00 Gy using four seeds under local anaesthesia. This was followed by phacoemulsification cataract surgery of mature white cataract 10 months post corneoscleral plaque brachytherapy.

Results: The biopsy report was suggestive of iridociliary melanoma, and according to the AJCC cancer staging manual, the tumor was classified as T2a N0 M0 Gx. MRI orbit done 6 months after treatment revealed a reduction in tumor size with a healthy ocular surface. No corneal complications and secondary glaucoma were seen over a 6-month follow-up. Following phacoemulsification cataract surgery, the best corrected visual acuity improved to 20/40 from perception of light 10 months after brachytherapy. There was a further reduction in the size of iridociliary melanoma on MRI scans done post-phacoemulsification surgery.

Conclusions: This case highlights the successful use of cost-effective I-125 Ocu-Prosta seeds corneoscleral plaque brachytherapy along with amniotic membrane in the management of Iridociliary melanoma. Phacoemulsification post plaque brachytherapy in mature white cataracts can have good visual outcomes. Care should be taken to protect the corneal endothelium during surgery.

Current Management of Thyroid-Associated Orbitopathy

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Purpose: Thyroid-associated orbitopathy (TAO) is the main extrathyroidal manifestation that can affect a person's quality of life. The European Group on Graves Orbitopathy (EUGOGO) in 2021 presented the latest TAO therapy guidelines for every clinical condition which has a therapeutic sensitivity level of up to 80%. We evaluate cases of TAO who received therapy according to EUGOGO 2021 treatment guidelines.

Methods: Three patients with a diagnosis of TAO who were undergoing treatment were evaluated. All cases were female, with a mean age of 32 years old, passive smokers, and still undergoing hyperthyroid treatment. One case had a clinical activity score (CAS) of three, and another case had a CAS of four at the initial visit. Two cases are moderate to severe, and one is mild severity. All cases receive the same treatment and have finished first-line therapy. They got intravenous methylprednisolone 500 mg every week for six weeks, selenium selenite 200µg, vitamin D3 1000 IU, multivitamin B, and artificial tears.

Results: After six weeks of treatment, one case had zero CAS and another case had one of CAS.

Conclusions: Clinical improvement was seen in all cases. The current study shows good outcomes towards the latest treatment guidelines.

Diagnostic Methods for Primary Vitreoretinal Lymphoma: A Systematic Review

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Purpose: To provide a comprehensive overview of diagnostic modalities and their associated sensitivity in diagnosing primary vitreoretinal lymphoma (PVRL).

Methods: A systematic literature search was conducted on Ovid MEDLINE, EMBASE and the Cochrane Library for studies published between January 2000 and June 2023. Studies reporting on the various diagnostic tools used to diagnose patients with PVRL were included. The aggregated sensitivity of each diagnostic modality was reported and compared using the chi-squared ($\chi 2$) test.

Results: A total of 662 eyes from 29 retrospective studies were diagnosed with PVRL and were included. An interleukin-10/interleukin-6 (IL-10/IL-6) ratio greater than 1 had the highest sensitivity (89.39%, n=278/311 eyes, n=16 studies) for PVRL, where the sensitivity was not significantly different between vitreous samples (88.89%, n=232/261 eyes, n=13 studies) compared to aqueous samples (83.33%, n=20/24, n=2 studies, p=0.42). Flow cytometry of vitreous samples showed a high sensitivity (88.00%, n=66/75, n=6 studies) with PVRL. However, the requirement of a large sample of viable cells for definitive diagnosis may limit its actual yield. Monoclonal immunoglobulin heavy chain rearrangements on polymerase chain reaction gave a positive result in 354/416 eyes (85.10%, n=20 studies) with PVRL, while MYD88-L265P mutation analysis performed poorly, yielding a positive result in 63/90 eyes (70.00%, n=8 studies) with PVRL.

Conclusions: An IL-10/IL-6 ratio greater or equal to 1 may provide the highest diagnostic yield in identifying patients with PVRL. Future studies should employ multiple diagnostic tools to further establish nuanced guidelines when determining the optimal PVRL diagnostic tool in diverse patient populations.

Empiric Treatment With Intravitreal Methotrexate for Highly Suspected Primary Intraocular Lymphoma in an Adult Filipino Male

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Purpose: Primary intraocular lymphoma (PIOL) is a rare and highly aggressive tumor that tends to mimic findings of uveitis, leading to a delay in its diagnosis. The purpose of this report is to detail the case of a patient presenting with unilateral blurring of vision clinically treated as PIOL and to present the diagnostic dilemma and therapeutic challenges in patients without biopsy-proven PIOL.

Methods: A 61-year-old Filipino male presented with unilateral blurring of vision and prominent subretinal lesions with the characteristic "leopard-skin" appearance. Anterior and posterior segment findings were suggestive of unilateral panuveitis with high suspicion for PIOL. Immediate systemic work-up and diagnostic vitrectomy were performed yielding unremarkable results for infection and malignancy. Due to high clinical suspicion for PIOL, local chemotherapy with intravitreal Methotrexate was initiated.

Results: Clinical improvement of ocular lesions was observed. However, initiation of systemic chemotherapy cannot be instituted immediately due to the lack of a biopsy-proven diagnosis of lymphoma. An intranasal mass eventually developed after four months. A tissue biopsy confirmed the diagnosis of extranodal natural killer/T-cell lymphoma. Chemoradiotherapy was initiated but the patient eventually expired during the course of treatment.

Conclusions: Diagnosis of PIOL remains challenging due to high false negative rates of diagnostic vitrectomy and the unavailability of adjunctive examinations in the Philippines resulting in the delay in initiation of treatment. Current therapeutic approaches are centered on the local control of the ocular lesions and the prevention of progression and extraocular spread. Despite the poor prognosis of this disease, prompt diagnosis and treatment may potentially improve the overall survival rate.

Epibulbar Neurofibromas: Highlights From Our Surgical Experience

*First Author: Preethi **JEYABAL***

Purpose: To describe three cases of patients with epibulbar neurofibroma who underwent surgical debulking at our centre.

Methods: Three patients between 15 and 20 years of age with a diagnosis of Neurofibromatosis-I presented with right temporal epibulbar lesions. One patient had previous debulking of neurofibroma from the same location twice. Two of the three patients reported intermittent episodes of redness and swelling around the lesion and one reported diplopia. Two patients had lid retraction and non-axial proptosis due to orbital components of the lesion. All patients underwent debulking of the lesion under general anaesthesia. Intraoperatively, the lesions were found encapsulating the extraocular muscles in all patients. The muscles were slung and meticulous dissection was carried out to release the lesion from the recti. One patient's inferior rectus muscle was partially severed during dissection and had to be sutured back to the sclera.

Results: Histopathology showed neurofibromas in all patients confirmed by lesion-specific staining (S100 and CD34). None of the patients had a recurrence of the lesion at a mean follow-up of 6 years (range: 2 months-14 years). None of the patients had diplopia post-operatively.

Conclusions: Epibulbar neurofibromas are rare but should be the default diagnosis in patients with Neurofibromatosis-I presenting with epibulbar lesions. Surgical management of these patients is challenging, and the surgical aim is often debulking rather than complete excision. The epibulbar lesions are closely related to the extraocular muscles and this needs to be considered in surgical planning and technique.

Good Outcomes of Deep Cavernous Hemangioma Excision Using Gentle Maneuver in Lateral Orbitotomy

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Purpose: Cavernous hemangioma is the most common benign orbital tumor, with 70% of the symptoms being painless proptosis. Management choices of cavernous hemangioma were observation in asymptomatic cases and surgical excision in symptomatic patients. In this case, we report good outcomes of cavernous hemangioma excision using lateral orbitotomy.

Methods: Case report of the outcome from cavernous hemangioma excision using lateral orbitotomy.

Results: A 27-year-old woman complained of proptosis of the right eye 3 weeks before admission accompanied by blurred vision. Visual acuity (VA) of the right eye was 0,4. Computed Tomography scan examination showed a well-defined oval isodense mass with a regular margin in the right intraconal area obliterating the right optic nerve. The patient then underwent lateral orbitotomy using a gentle maneuver of the right eye with debulking of the mass. The mass was excised in toto and the histopathology examination showed the proliferation of endothelial cells that form the structure of medium to large blood vessels with the lumen filled with erythrocytes consistent with cavernous hemangioma. VA of the right eye was improved to 0,63 and the proptosis subsided.

Conclusions: Surgical excision is the definitive treatment for symptomatic cavernous hemangioma. In this case, lateral orbitotomy with gentle maneuver is proven to be an effective technique to remove deep-seated lesions in the intraconal spaces and gives good postoperative outcomes.

Granuloma in a Pterygium

*First Author: Samhitha **R***

Purpose: To present an interesting case of a pyogenic granuloma in a grade 3 pterygium.

Methods: A 70-year-old male presented with growth in his right eye since 2 years with increasing swelling in the growth since 2 months. Examination revealed a red polypoid fleshy nodule 1*1 cm within the grade 3 nasal pterygium. The lesion was painless and did not bleed on touch. Pterygium excision with the nodule was done, and a conjunctival autograft was placed. HPE done.

Results: HPE showed stratified squamous epithelium with conjunctival epithelium with areas of ulceration and inflammatory exudate. Subepithelial stroma showed a lesion with features of lobular capillary hemangioma along with degenerated collagen fibres and vascularity. A 3-month follow-up shows no recurrence.

Conclusions: Pyogenic granuloma is common post-pterygium excision or at the site of injury. This is an interesting case of granuloma within the pterygium. The lesion did not bleed on touch as it was encased in the subepithelial stroma. A possible etiology could be overexpression of VEGF in the endothelial cells of blood vessels in the vascularised subepithelial stroma. Immunohistochemistry for VEGF and CD 34 can further confirm angiogenesis.

Interferon Alpha 2b or Mitomycin-C As Adjuvant Therapy of Pigmented Conjunctival Malignancy: A Literature Review

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Purpose: To compare the efficacy and safety between Mitomycin C (MMC) and Interferon alpha-2b (IFN-α2b) eye drops as adjuvant therapy for conjunctival melanoma.

Methods: Literature searching was conducted using PubMed, ScienceDirect, and Google Scholar. All studies that met the inclusion and exclusion criteria were categorized based on the level of evidence. The data reported were patient demographics, staging of disease, type of treatments, and outcomes of this review including local control rate, side effects, and recurrence and metastases.

Results: Twelve articles were included in this review. Topical adjuvant chemotherapy with MMC and IFN α-2b showed favourable complete remission rate. Local control (complete remission) of IFN α-2b group is 46%, while in the MMC group is 57%. The most side effects of the MMC group were severe corneal-conjunctival irritation and corneal defect, while the IFN α-2b group showed mild side effect. The recurrence rate of IFN α-2b group and MMC group both is 35%. Metastases case of IFN α-2b group is 3.8%, while none of the cases from the MMC group metastases.

Conclusions: Topical adjuvant chemotherapy with MMC and IFN α-2b showed favourable local control rates even though the recurrency rate was also relatively high. Both medications showed promising results to reduce residual tumor size after wide excision surgery, preserving eye so reduce the chance of exenteration in various stages. It is important to consider adjuvant therapy following wide excision surgery as the first-line treatment.

Management Consideration of Choroidal Melanoma: Case Report

*First Author: Erna **YULIDA***
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Purpose: Choroidal melanoma is the most common primary intraocular malignancy in adults worldwide, which is estimated at 0.2–0.6 per million in Asia. The management is still controversial between surgical and nonsurgical therapies. The choice of therapy is determined by the operator based on clinical and patient preferences. The purpose of this case report is to describe management considerations of choroidal melanoma.

Methods: Diagnosis is made based on history taking, complete ophthalmology examination, ocular sonography and imaging examination.

Results: A 53-year-old man came to the emergency room complaining of severe pain in his right eye since a week ago. On the right eye, visual acuity was no light perception. There was inflammation in the anterior segment. The intraocular pressure was elevated, and the posterior segment was hard to evaluate. Ocular sonography found a collar-button-shaped appearance. We diagnosed him with choroidal melanoma, secondary glaucoma and keratopathy exposure. He underwent an enucleation procedure followed by a frozen section examination. Histopathological examination showed Malignant Melanoma, with tumor-free optic nerve.

Conclusions: Choroidal melanoma is a complex malignancy that requires a multidisciplinary approach to therapy and management. Choices for choroidal melanoma are determined by tumor size and the spreading. Enucleation was chosen as the main therapy because the tumor was still intraocular.

Management of a Unilateral Advanced Retinoblastoma

*First Author: Allyson Rose **FACUNDO***

Purpose: The estimated number of new retinoblastoma cases diagnosed globally is 7202-8102 each year. The outcome is favorable in developed countries, where mortality is <5%. In Asia, mortality is 20-60%.

Methods: A two-year-old girl diagnosed with unilateral Group E retinoblastoma, presented with eyelid swelling. Signs began at birth, when a gradually enlarging, whitish opacity on the left eye was noted. Notable left eye examination includes visual acuity of no light perception, restricted myopathy, upper lid edema with pseudoptosis, chemosis, hazy cornea, deep anterior chamber, rubeosis iridis at 6-8 o'clock positions, and whitish retrolental mass. The right eye examination was normal. B-scan and cranio-orbital MRI revealed a dense, irregularly fungating mass (1.4cm) with multiple calcifications in the left vitreous cavity; no brain involvement. The patient was co-managed with a pediatric oncologist, administered neoadjuvant chemotherapy (vincristine-etoposide-carboplatin) and adjuvant chemotherapy post-enucleation.

Results: The findings are consistent with known facts of retinoblastoma. Leukocoria and strabismus are the most common manifestations; advanced cases present with lid edema and orbital signs. Hazy cornea and rubeosis iridis suggest anterior chamber infiltration and possibly neovascular glaucoma – high-risk features that require adjuvant chemotherapy post-enucleation to decrease distant metastasis from 16% to 4%. Although the outcome of the use of neoadjuvant chemotherapy is inferior compared to upfront enucleation, neoadjuvant chemotherapy debulks the tumor and bides time to facilitate enucleation in patients with unilateral, advanced retinoblastoma, especially in resource-limited settings.

Conclusions: High-risk features require adjuvant chemotherapy to decrease the risk of distant metastasis and improve the survival of a patient with retinoblastoma.

Medial Canthal Tumor Excision With Glabellar Flap

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Purpose: Basal cell carcinoma (BCC) is a malignant epidermal carcinoma and most common on eyelid malignancy. Surgical resection remains the therapeutic gold standard. Fine aesthetic reconstruction is a persisting challenge for all ophthalmologists.

Methods: A 73-year-old male patient presented to the general hospital with an eyelid lesion that had been evolving for one year. The inspection found atypical ulceration and sized 12x16 mm on the left medial canthal, at the expense of the upper and lower eyelids. Management surgery was resection of the tumor with a glabellar flap and biopsy. The examination after biopsy found infiltrative basal cell carcinoma.

Results: Basal cell carcinoma accounts for over 90% of malignant eyelid neoplasms. Surgical treatment with an exhaustive control of the excision margins should be preferred. Eyelid reconstruction is one of the most challenging aspects of reconstructive surgery. Forehead flaps are classically used in reconstruction when the loss of substance cannot be closed by direct suture or local autoplasty. It starts with an inverted "Y" in the center of the forehead, which begins from the loss of substance, goes up the glabella, describes an inverted Y, and then descends to the root of the eyebrow opposite the loss of substance. The flap's size must be chosen to allow a tension-free coverage of the defect.

Conclusions: The glabellar flap technique can be readily used for relatively large medial canthal defects involving eyelid defects according to the size and shape of the defect. It is also aesthetically pleasing because it is consistent with the topographic curve.

Melon in the Eye: A Case Report of Ciliary Body Melanoma

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Purpose: To report a case of ciliary body melanoma.

Methods: Case Report.

Results: A healthy 48-year-old lady presented with painless progressive reduced vision in her right eye (OD) for 2 months associated with nasal scotoma. Ocular examination revealed visual acuity OD was 6/36, left (OS) was 6/9 without relative afferent pupillary defect. Sentinel vessel was present at the temporal region of OD conjunctiva with no anterior chamber activity. Noted OD temporal half red reflex was obscured during retro-illumination by a large hyperpigmented dome-shaped mass which was visible behind the lens in the anterior vitreous space. This mass was seen arising anterior to the equator temporally spanning 4-clock hours. Its surface appears smooth and hyperpigmented without drusen or orange nodules. There was exudative retinal detachment inferiorly extending from the base of the mass. OS examination was unremarkable. OD ultrasonography showed a homogenous hyperechoic dome-shaped mass supero-temporally measuring 12.4mm in thickness behind the lens. There was no evidence of extra-scleral extension from the contrast-enhanced computed tomography scan. Her serum lactate dehydrogenase was elevated and is scheduled for liver ultrasonography. She underwent enucleation, and a histopathology test revealed epitheloid-type ciliary body melanoma with no extra-scleral extension or optic nerve involvement.

Conclusions: Prompt diagnosis of uveal melanoma is pivotal for early intervention to avoid dire repercussions although it is rare in Malaysian populations.

Metastatic Adenocarcinoma Presenting as Orbital Apex Syndrome: Application of Immunohistochemistry in Diagnostic Ophthalmic Pathology

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Purpose: To discuss the etiopathology, review the diagnostic criteria, and determine the value of clinical pathology in Orbital Apex Syndrome (OAS). Prompt recognition of the etiology of OAS is crucial to the management. In instances where routine diagnostic tests do not yield the cause, clinical pathology may aid in the identification of the etiology. With timely treatment, visual function can be restored, and serious morbidity and mortality can be prevented.

Methods: This is a case report.

Results: This is a case of a 52-year-old male patient with a subacute history of ophthalmoplegia and vision loss secondary to optic neuropathy. OAS was the primary consideration. Laboratory work-up eventually ruled out infectious, inflammatory, and ischemic etiologies. During the course of the disease, a new onset supraorbital mass lesion was observed. Surgical pathology of the newly appreciable mass yielded a diagnosis of Metastatic Carcinoma. An essential ancillary examination for identifying carcinomas of unknown primary sites is immunohistochemistry (IHC). CK7 and CK20 expression profiles later established a diagnosis of Adenocarcinoma.

Conclusions: OAS is an uncommon condition that is attributable to a variety of causes. Diagnosis of the disease mainly includes clinical, laboratory and imaging modalities. Our case warranted a biopsy of the lesion and IHC staining that effectively identified the primary origin of the malignancy. Early recognition is critical in these cases, as the condition may pose a threat to the patient's vision and health.

Multidisciplinary Surgical Approach in Isolated Orbital Neurofibroma: A Case Report

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Purpose: Isolated neurofibroma is a benign peripheral nervous system tumor classified as a space-occupying orbital lesion. It contributes to various disorders, especially in the patient's visual function. The most common location of isolated neurofibroma is in the extraconal superior quadrant. Collaboration with a neurosurgeon is required if it extends to the orbital apex. We aim to report successful total tumor resection management by craniotomy with an orbito-zygoma approach.

Methods: A 26-year-old man with isolated neurofibroma underwent orbito-zygoma craniotomy. The patient was presented with left eye UCVA 6/30 with progressively proptosis, inferolateral globe displacement, ocular motility disturbance, and diplopia to restricted gaze. Furthermore, there is no palpable mass, and the left eye revealed conjunctival hyperemia and corneal leucoma due to longstanding lagophthalmos. Contrast orbital MRI showed multiple well-demarcated, spindle-shaped, encapsulated masses on the apex orbital that extend to the intraconal space, left optic canal, and left cavernous sinus. Histopathologic and immunohistochemistry results support isolated neurofibroma. Two weeks postoperatively, proptosis reduced, and the ocular motility improved.

Results: Tumor removal in orbital apex locations requires multidisciplinary collaboration. Orbito-zygoma craniotomy is well considered, primarily if the tumor extends posteriorly to the intracanalicular and cavernous sinus. It usually provides excellent tumor access and visualization. The isolated type gives a good prognosis after total tumor resection, with radiologic evaluation planned in 6 months.

Conclusions: Total tumor removal procedure in collaboration with a neurosurgeon by craniotomy with orbito-zygoma approach is the treatment of choice in isolated orbital neurofibroma cases.

Orbital Castleman Disease - A Rare Case

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Purpose: Castleman disease (CD) is a rare group of lymphoproliferative disorders with characteristic histopathological appearances. The CD treatment is still in the research and development stage. We aim to report and discuss a rare case of CD so that appropriate treatment can begin promptly.

Methods: A 60-year-old man visits the hospital with the major complaint of a conjunctiva mass on the right eye (RE), which is hyperemic, painless, and gradually progressive.

Results: During an ophthalmology examination of RE conjunctiva, a hyperemic and immobile mass measuring 13x5mm in the inferotemporal direction was discovered, with a restricted RE movement in the temporal. In an Orbita CT Scan, a soft tissue mass in the lateral area of the dextra orbital to the inferior lid was identified, as well as a soft tissue mass in the dextra parietal region. An incision biopsy found neoplastic lymphoid cells with the size of 1-3 times the mature lymphocytes, some hyperchromatic pleomorphic cells and immunohistochemistry (IHC) staining on plasma cells revealed Unicentric Castleman Disease, mixed

plasma cell variant, and hyaline vascular. Later on, the patient had metastases on multiple lymph nodules in the bilateral colli region. Furthermore, the patient was diagnosed with Multicentric Castleman Disease (MCD). There is no definitive standard MCD therapy regimen. Combination chemotherapy is more effective than surgery. Chemotherapy was used to treat the patient.

Conclusions: In this case, IHC is the gold standard for CD diagnosis. Early detection and therapy are required to increase cancer survival rates in CD patients.

Post-traumatic Squamous Cell Carcinoma of the Conjunctiva: A Diagnostic Dilemma

First Author: Oscar Jr ***ACOPIADO***
Co-Author(s): Ruben ***LIM BON SIONG***

Purpose: Conjunctival squamous cell carcinoma is the most common malignancy of the ocular surface. It typically presents as a slow-growing limbal mass in the interpalpebral region and is seen in elderly males with a high rate of UV exposure. We aim to present an unusual case of conjunctival squamous cell carcinoma after a history of anterior segment trauma.

Methods: Case report.

Results: This is a case of a 60-year-old male with a white, cheesy-looking conjunctival mass that presented 1 year after a history of trauma. Initial impression was an infectious etiology and the patient was treated with topical antibiotics and removal of the mass. However, recurrence of the mass at multiple areas was noted, which eventually necessitated an excision biopsy that revealed squamous cell carcinoma. The patient was treated with topical chemotherapy with 5-fluorouracil that led to a complete regression of the masses. The patient was seen 1 week, 1 month, and 6 months post-treatment, with no recurrences.

Conclusions: This is the first local report of a conjunctival malignancy following a single episode of trauma. Despite the unusual history, neoplastic lesions should always be considered in any recurrent conjunctival mass.

Publication Trends of Research on Conjunctival Melanoma During 1997–2022: A 25-Year Bibliometric Study

First Author: Wei ***XU***
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Purpose: Conjunctival melanoma (CM) is a life-threatening ocular tumor with a high rate of local recurrence and metastasis. Our objective is to analyze research trends in the CM field and compare contributions from different countries, institutions, and authors.

Methods: We extracted all CM-related publications published from 1997 to 2022 from the Web of Science database and applied Microsoft Excel and VOSviewer to review publication data, analyze publication trends, and visualize relevant data.

Results: A total of 708 publications were identified. The United States contributed the most publications (280) and citations (8,781 times) with the highest H-index value (47). The OPRS, BJO, AJO, and Cornea were the most productive journals concerning CM, and Shields CL, Shields JA, Jager MJ as well as Finger PT had published the most papers in the field. Keywords were classified into three clusters: clinical research, management-related research, and genetic research. The keywords “primary acquired melanosis”, “metastasis” and “BRAF mutations” most frequently emerged. According to the average appearing year (AAY), targeted therapy (AAY of 2019.0) and nivolumab (AAY of 2018.7) were identified as the main focuses of the field in the near future.

Conclusions: In the past 25 years, the United States, Germany, England, and the Netherlands held the leading position in CM research. A group of scholars made important contributions to CM research and will continue to guide cutting-edge research. Treatments that have been shown to be effective for advanced cutaneous melanoma, such as targeted therapy and immunotherapy, are potential focuses for future CM research.

Sclerotherapy in Orbital Dermoid Cysts: A Promising Minimally Invasive Approach

First Author: Ankita ***AISHWARYA***
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Purpose: Surgical excision has been the treatment of choice for orbital dermoid cysts but can be associated with complications and aesthetic concerns. We aim to study the efficacy and safety of sclerotherapy, a minimally invasive approach, in managing dermoid cysts.

Methods: Retrospective interventional study of 36 patients from 2019 to 2022 treated with Intralesional sclerotherapy with Sodium Tetradecyl Sulfate (STDS) 3% or neoadjuvant sclerotherapy with STDS 3% followed by surgical excision.

Results: The mean age of presentation was 19.5 years. The cysts were located medial angular in 21 cases, lateral angular in 8 cases, inferiorly in 5 cases, and lateral orbito-temporal in 2 cases. Among 36 patients, 34 underwent Intralesional sclerotherapy with STDS 3% while 2 received neoadjuvant sclerotherapy with STDS followed by surgical excision. Out of 34 patients who received intralesional STDS, 26 (77%) achieved complete resolution of the cyst after one cycle of treatment while 8 required two additional cycles to achieve complete resolution. Neoadjuvant sclerotherapy with STDS reduced the cyst size by a mean of 5.6mm facilitating complete excision during the surgery. At a mean follow-up of 14.6 months, all patients demonstrated complete cyst resolution was

noted. No complications related to sclerotherapy were noted.

Conclusions: Sclerotherapy represents a promising and effective minimally invasive approach in the management of orbital dermoid cysts.

Solitary Fibrous Tumor of the Orbit -No More Rare – Case Series of 14 Cases Form India Over 5 Years Period

*First Author: Joyeeta **DAS***

Purpose: Solitary fibrous tumor (SFT) is a mesenchymal tumor rarely found in orbit. The purpose of the study is to analyze clinical and radiological features, management and prognosis of orbital SFT (OSFT).

Methods: Retrospective interventional study of OSFT cases treated in a tertiary care eye hospital in India over 5 years (April 2016-2022).

Results: Fourteen cases of OSFT comprised 5.46% [14/248] of total orbital tumors treated over 5 years. Median age 37.5 years (range 8 -78) with more males (M: F=4:3); Proptosis was the major clinical symptom in 9 (64.28%), followed by palpable mass in 4 and limited eye motility in 1 (7.14%). Masses are most prevalent in posterior orbit 9 (64.5%) and supero-nasal quadrant 6 (42.86%). Cavernous hemangioma was the most common MRI mimic (42.8%), pleomorphic adenoma (21.4%), and lymphoma (3.3%). Excision (n=12,85.7%) and incision biopsy confirmed SFT with positive CD34, STAT-6. Adjuvant radiotherapy (RT) in 6. 28.7% (4) of all (n=14) and 3 (37.5%) non-RT cases recurred. Redo surgery and RT in recurrent cases are 100% tumor-free at 18 months.

Conclusions: OFST is a rare benign tumor of diverse presentation and favorable results after meticulous diagnosis, complete surgical excision and adjuvant radiotherapy. STAT 6 positivity confirms OSFT diagnosis.

Squamous Cell Carcinoma In Situ of the Cornea Without Involvement of Limbus and Conjunctiva

*First Author: Jikyu **YUN***
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Purpose: To report a case of squamous cell carcinoma in situ isolated to the cornea.

Methods: Observational case report.

Results: A 67-year-old male patient presented with visual disturbance in the left eye due to corneal opacity. Upon initial examination, the patient had a visual acuity of 0.5. The lesion was isolated to the cornea of the left eye and showed subepithelial opacity without involvement of the limbus and conjunctiva. The patient was initially observed for keratitis, but was lost to follow-up for 1 year and 3 months. Subsequently, the patient returned for reevaluation by a cornea specialist. The extent of opacity had increased, becoming thicker and forming a white gelatinous mass at the 8 o'clock position. The limbus and conjunctiva were still intact. A left scrape biopsy was performed, and histopathological examination revealed Squamous cell carcinoma in situ with positive Ki67 staining. While removing the residual mass in the cornea, a conjunctival tissue sample, including the limbus, was collected for histopathological examination. The results of the conjunctival tissue examination, including the limbus, were negative. One week after the removal of the remnant mass, the visual acuity in the left eye improved to 0.8, and there has been no recurrence observed up to 3 months after the last surgery.

Conclusions: Squamous cell carcinoma isolated to the cornea without involvement of the conjunctiva and limbus is rare and can be misdiagnosed as simple corneal opacity or keratitis during clinical examination. It is a condition that should be considered in patients with unresponsive keratitis or corneal opacity.

Successful Management of Conjunctival Intraepithelial Neoplasia (Cin) With Pterygium Surgery Using the "No Touch" Technique With Single Application of 5-Fluorouracyl: A Case Series

*First Author: Monica **CICILIA***
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Purpose: To report a case series of alternative management of CIN with pterygium using a single application of 5-fluorouracyl (5-FU) intraoperatively.

Methods: Case 1: A 60-year-old man with a pinkish, leucoplakic, rounded-shaped tumor extending over the limbus between the 7 and 10 o'clock positions Case 2: A 58-year-old woman with a grayish, gelatinous tumor extending over the limbus between the 9 and 6 o'clock positions Case 3: A 42-year-old woman with a pinkish, gelatinous, round-shaped tumor over the fibrovascular tissue crossing the limbus by 2 mm at the 8 and 9 o'clock positions The diagnosis of pterygium with type I CIN in all cases was established using the conjunctival-corneal biopsy. In the second and third patients, an anterior OCT examination was performed, with the results showing a transition zone between normal and abnormal epithelium in the conjunctiva that showed hyperreflective epithelium with an abrupt transition from normal to abnormal epithelium.

Results: In all cases, the ''no touch'' technique was used to avoid direct manipulation of tumors and prevent cell seeding. Recurrence rates after surgical excision ranged from 15–52%. This technique is simpler, more comfortable, and has fewer adverse effects. For all patients, we did single applications of sponge soaked in 50mg/mL of 5-FU intraoperatively for 3 minutes between sclera and conjunctiva, which gave a good prognosis without recurrence until now.

Conclusions: Cases of CIN with pterygium are very rare. A single application of 5-FU presented a good prognosis with low recurrence rates.

Takayasu Arthritis: The Culprit to My Sudden Loss of Vision

First Author: Wan Dalila ***WAN HAZMY***
Co-Author(s): Che Mahiran ***CHE DAUD****, Sangitha* ***MANIAM****, Chandramalar* ***SANTHIRATHELAGAN***

Purpose: To report a unique presentation of Right superior Branch Retinal Artery Occlusion (BRAO) secondary to Takayasu arthritis.

Methods: A case report.

Results: Mr T, a 32-year-old Indian male with underlying treated Hodgkin's lymphoma presented with a sudden onset of right inferior visual field loss for 1 day. Examination revealed a positive relative afferent pupillary defect of the right eye (RE). His RE visual acuity (VA) was 3/60 and his left eye (LE) VA was 6/9. The light brightness of RE was 50%. RE optic disc showed a hyperemic with blurred margin superiorly. The retina was pale over the superior half of the macula respecting the midline with a visible embolus over the superior arterial branch (Hollenhorst plaque). Bjerrrum showed an inferior half-visual field defect with central scotoma in the RE. The optical coherence tomography macula of the RE showed thickened retinal with intraretinal fluid. His total cholesterol and LDL were raised. Chest radiography showed calcified lymph nodes. Echocardiogram was normal. Ultrasound carotid doppler showed echogenic thrombus within the right CCA, causing near 100% occlusion with absent doppler flow of right ICA and ECA. Computed Tomography Angiography showed complete occlusion of the right intra- and extracranial ICA) and collateral perfusion to the right ACA and MCA, likely via right PCOM and ACOM with calcified superior anterior mediastinal lesion, in keeping with a treated lymphoma changes. The findings led to a high suspicion of Takayasu arthritis.

Conclusions: Takayasu arthritis with dyslipidemia can cause right superior BRAO. Despite it being a rare ocular involvement, this causative factor should not be missed.

The Cutler-Beard Flap Technique as an Upper Eyelid Reconstruction Management in Sebaceous Gland Carcinoma

First Author: Primadiya ***UTAMI***
Co-Author(s): Shanti ***BOESOIRIE****, Rinaldi* ***DAHLAN****, R* ***KARTIWA***

Purpose: Sebaceous gland carcinoma is a highly malignant and potentially lethal tumor. Surgical excision of the tumor is the mainstay therapy, followed by eyelid reconstruction to maintain good anatomical, functional, and cosmetic restoration. The purpose of this case report is to discuss a Sebaceous Gland Carcinoma case and the Cutler-Beard Flap procedure as the management option for upper eyelid defect reconstruction.

Methods: A case report.

Results: A 72-year-old man presents with a 4-month-old growing lesion on the left upper eyelid. Ophthalmological examination revealed a painless irregular mass sized 1,1x1 cm with a well-defined border and no tenderness. The patient was diagnosed with a superior palpebral mass on the left eye suspected as Sebaceous Gland Carcinoma. The patient underwent a wide local excision, histopathological examination, and upper eyelid reconstruction using the Cutler-Beard flap technique. Histopathological examination revealed a moderately-differentiated Sebaceous Gland Carcinoma. The second reconstructive surgery was planned for 4 weeks later in order to separate the eyelids.

Conclusions: Wide excision of the mass is the main treatment for Sebaceous Gland Carcinoma on the eyelids. A full-thickness palpebral defect after the procedure requires reconstruction to restore eyelid function and produce good cosmetics. The Cutler-Beard Flap technique is a reconstructive option used in conditions of superior lid defect after extensive excision of a mass with a defect size of more than 50% in cases of Sebaceous Gland Carcinoma.

The Diagnostic Puzzle of Orbital Lymphangioma Disguised as Orbital Cellulitis

First Author: Cindy ***HARTONO***
Co-Author(s): Pratiwi ***MACHMUD****, Halimah* ***PAGARRA****, Ika* ***PUSPITA***

Purpose: To highlight the importance of imaging modalities selection in diagnosing proptosis in children.

Methods: Case report.

Results: A 1-year-old boy presented with right eye proptosis, swelling, and ptosis 5 months before admission. The physical examination showed globe displacement to inferotemporal with a bluish mass in the superior eyelid and a mass in the right cheek suspected of a lipoma of the buccal. Orbital CT-Scan showed the orbital and periorbital cellulitis with abscess formation in the right retrobulbar. He was treated with an intravenous combination of cephalosporin and aminoglycoside antibiotics and steroid for 7 days continued with an oral combination of penicillin and clavulanic acid antibiotics and steroid for 14 days, but there was no treatment response. Orbital Magnetic Resonance Imaging (MRI) was performed and it showed multiple cysts with fluid-fluid a level that suggested a lymphangioma. Doppler ultrasound showed a cystic lesion of the right periorbital with no flow malformations. We performed anterior orbitotomy, and the lymphangioma was

partially resected with a chocolate-colored fluid. The histopathology of the tumor biopsy showed a cystic lymphangioma. Instead of intralesional bleomycin injection, conservative treatment was suggested by the Pediatric Surgery department due to the consideration that the cyst has already been resected.

Conclusions: Orbital lymphangioma can mimic orbital cellulitis or other orbital inflammations. It should be considered in any case of proptosis in childhood. MRI is distinctly superior to CT scan when evaluating orbital soft tissue, particularly in this case. Partial resection can be considered as a treatment choice to debulk the mass.

The Role of Fnac in the Diagnosis of Orbital and Adnexa Tumours

*First Author: Maryanne **ROMERO***
*Co-Author(s): Gangadhara **SUNDAR***

Purpose: To describe the presentation, management and pathology of 3 patients with orbital tumors who underwent fine-needle aspiration cytology (FNAC) as part of the workup for their orbital mass.

Methods: We describe in detail 3 patients with orbital tumors who had FNAC performed in a clinic. All cases had a cytotechnologist present to process the aspirates and comment on the yield of samples obtained. A preliminary diagnosis was given right after analysis, with the final diagnosis by a trained pathologist given a few days later.

Results: All 3 patients had varying presentations - 1 patient presented with gradual non-axial proptosis, the other had an obvious temporal mass, and the last had right periorbital swelling. All 3 patients had a mass in the extraconal space in the anterior half of the orbit, with uneventful FNAC performed after reviewing radiology images. Final histopathology revealed neoplastic causes - 1 had metastatic hepatocellular carcinoma, the other metastatic periampullary carcinoma, and the last malignant melanoma. There was 100% concordance between cytology and histopathology.

Conclusions: Tumors of widely varying pathology can arise in the orbit, and prompt tissue diagnosis can help direct further management, especially in cases where imaging alone still poses a diagnostic dilemma. When the tumor can be accessed anteriorly, FNAC can aid in diagnosis in a minimally invasive manner, and be done quickly in a clinic without anesthesia. Importantly, when the yield was adequate, cell block cytology proved to be as good as histology in determining diagnosis.

The Role of Steroid in Management of Orbital Recurrence of Extranodal Non-Hodgkin Lymphoma: A Case Report

*First Author: Lady **SUKMAWIDOWATI***
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Purpose: To report a case of orbital recurrence of extranodal non-Hodgkin lymphoma, and the role of corticosteroid administration.

Methods: A 70-year-old male presented with acute proptosis, eyelid swelling, restricted eye movement, and conjunctival chemosis in his left eye. He had been treated for sinonasal lymphoma with four cycles of cyclophsphamide-etoposide-prednisolone-vincristine (CEOP) regimen five years earlier. He also underwent orchidectomy for the occurrence of the mass on his left testis which was confirmed pathologically as diffuse large b-cell lymphoma (DLBCL) one year earlier. The best corrected visual acuity was 20/40 in the right eye and 20/70 in the left eye, with normal intraocular pressure and normal optic disc appearance on both eyes. Orbital recurrence of lymphoma with orbital cellulitis was suspected. Multislice Computerized Tomography (MSCT) scan of the orbit suggested a malignant mass on the superior frontal area of the orbital cavity. Intravenous methylprednisolone was administered with a dose of 250 milligrams every six hours, along with topical steroid, and intravenous and topical antibiotics. Corticosteroid tapering off via oral route was given after the patient completed 12 injections of methylprednisolone intravenously.

Results: At two months follow-up, proptosis and ocular inflammatory signs were resolved, the restriction of eye movement was improved, and visual acuity was preserved. Abdomen MSCT scan revealed periaortic lymph node enlargement. The patient was admitted for another cycle of chemotherapy.

Conclusions: Corticosteroids produce temporary responses in patients with non-Hodgkin lymphoma. Therefore, it can be considered to reduce the risk of ocular and optic nerve damage before definite systemic chemotherapy is administered.

Unexpected Etiology of an Acute Proptosis Case in Children

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Purpose: To report a case of acute eye protrusion in a 1-year-old child.

Methods: A 1-year-old girl was attended to by a pediatrician. She had a slight protrusion accompanied by hematoma of the left eyelid since 5 days prior to the hospital visit. The patient was treated with medicine from primary health care for a cough and cold. The early symptom was slight edema in the inferior palpebra, which then extended to the superior

and appeared to develop a hematoma subsequently. Physical examination showed axial protrusion with tightness and ptosis of the superior palpebra and inferior hematoma. The patient didn't show pain in palpation and had good vital signs. A soft mass tumor was palpable in the inferior and superolateral of the left eyelid, eye movement was restricted in all directions. The conjunctiva was chemotic, the cornea was clear, and pupillary and fundus reflect were also normal. Leukocoria was not found in this case. CT-Scan examination revealed a solid space-occupying lesion posteroinferior left eyeball, maxillary, and ethmoidal sinusitis bilateral. Laboratory examination showed that leukocytes and lymphocytes were highly increased.

Results: The patient was treated with Cefotaxime IV 3 x 300mg, artificial tears, and eye ointment for 5 days. The patient's clinical condition showed no improvement, and she was then referred to a tertiary hospital for further management.

Conclusions: Orbital masses can have a wide variety of etiologies and require careful examination and history-taking. Orbital cellulitis is often challenging. Neoplasm should also be considered as a possible etiology in proptosis cases.

Unveiling the Success of Bleomycin Injection in Orbital Veno-Lymphatic Malformation Treatment

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Purpose: To report a case of successful orbital veno-lymphatic malformation (VLM) treatment with bleomycin injection.

Methods: An 18-year-old female came with acute bulging in her left eye accompanied by pain, redness, and blurred vision since one month. She had a history of asymmetrical eyelid position with recurrent mild swelling on her left eye since 4 years old but it regressed on its own. Clinical examination of the left eye revealed a non-axial proptosis to superonasal with restriction of the ocular movement to all directions, severe chemosis, and palpebral ecchymosis. Visual acuity of the left eye was 6/45 with correction. Doppler ultrasound, orbital MRI, and DSA procedure confirmed veno-lymphatic malformation of the left orbit, putting pressure on the optic nerve. A pre-operative oral steroid regimen was given for two weeks to reduce inflammation. USG-guided sclerotherapy by intralesional bleomycin injection was performed using 15 Units of bleomycin.

Results: Improvements in visual acuity and reduction in proptosis were noticed within two weeks post-injection, and further improvement was evident after six months. At 6 months of follow-up, the corrected visual acuity of the left eye had attained 6/18, with normal ocular movements and absence of proptosis. There were minimal lesion channels noticeable in the bulbar conjunctiva, and no palpebral ecchymosis was observed.

Conclusions: Bleomycin intralesional injection is effective and safe for non-resectable orbital veno-lymphatic malformation, with no serious side effects and excellent response.

Ocular Trauma

A Rare Case Report of Traumatic Phacocele

*First Author: Nisha **AHUJA***
*Co-Author(s): Rashi **KOCHAR***

Purpose: To present a case of a patient of traumatic phacocele with scleral rupture due to blunt trauma from goat horn and its management.

Methods: A 67-year-old woman visited our facility and complained of right eye pain, redness, and sudden loss of vision. There was a history of blunt trauma to the right eye by goat horn 25 days before. Visual acuity of light perception was present in the right eye. On slit lamp examination, the right eye revealed a clearly defined mass in subconjunctival space close to the limbus with scleral rupture. The anterior chamber was irregular in depth, with vitreous stands in the anterior chamber. Clinically, there was aphakia. The patient was diagnosed with right eye traumatic phacocele and scheduled for surgical excision of the crystalline lens with scleral wound repair.

Results: The dislocated crystalline lens was removed, and the 7mm scleral rupture was repaired with a 10-0 nylon suture, maintaining the globe integrity.

Conclusions: For the best visual result, the lens should be removed, and repair the scleral defect as soon as feasible, followed by visual rehabilitation.

A Step-by-Step Surgical Demonstration for the External Approach to the Removal of Metallic Intraocular Foreign Bodies

*First Author: Suan **HWANG***
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Purpose: In Taiwan, traffic accidents, especially those involving motorcyclists, remained the predominant external cause of eye injuries requiring hospitalization. While the third most common cause was "accidents caused by cutting or piercing objects". Herein, we demonstrate a step-by-step surgical procedure in managing a case with corneal penetrating injury, traumatic cataract, endophthalmitis, and IOFB.

Methods: A surgical technique demonstration with a case.

Results: A 25-year-old male presented with irritation in his left eye for 2 days after riding a motorcycle. A

penetrating corneal wound, hypopyon, and traumatic cataract were noted. The surgical procedure started with the primary repair of the corneal wound. Next, peritomy was done, and the extraocular muscles were Identified. The computed tomography (CT) of the orbit showed that the IOFB incarcerated posterior to the inferior pars plana region. Thus, an external approach for the removal of the IOFB was decided to be a preferable option to minimize intraocular manipulation. A sclerotomy was done at the muscle insertion site of the inferior rectus muscle. Under the assistance of an external magnet, a fortune cookie-shaped metal was pulled out atraumatically. After the water-tight closure of the sclerotomy, the inferior segmental scleral buckle was sutured. The traumatic cataract was completely removed with irrigation and aspiration. Due to severe retinal vasculitis and vitreous inflammation, the endophthalmitis was treated with complete 23G pars plana vitrectomy and intravitreal injection of antibiotics. The improvement of visual acuity was significant, with 20/100 on the post-operative day 10th.

Conclusions: The external approach for the removal of magnetic metallic IOFB remains a viable treatment option in select cases.

Analysis of Traumatic Wound Dehiscence Following Keratoplasty During COVID-19: Factors Affecting Visual Outcomes

*First Author: Prerana **SHETTY***
*Co-Author(s): Pratik **GOGRI**, Divya **TARA***

Purpose: To determine the visual outcomes and identify factors affecting the visual outcomes in patients with traumatic wound dehiscence after keratoplasty at a tertiary eye care center in South India during the COVID-19 pandemic.

Methods: In this retrospective study, we analyzed cases of traumatic wound dehiscence following keratoplasty. We examined patient demographics including age and gender, as well as variables such as mode of injury, the site of wound dehiscence, and time elapsed between keratoplasty and trauma. Comprehensive ocular evaluations, including slit-lamp biomicroscopy and B-scan ultrasonography, were conducted to assess the posterior segment. Visual outcomes were determined by measuring best-corrected visual acuity (BCVA) during the final follow-up.

Results: Among 20 patients, 13 were males (65%) and 7 were females (35%). Our findings demonstrated improvements in visual outcomes, including BCVA and uncorrected visual acuity (UCVA), over a follow-up period ranging from 1 week to 5 years. No significant changes were observed in terms of the duration between keratoplasty and surgery, wound dehiscence sites, or the size of the dehiscence. However, a statistically significant correlation (P = 0.005) was found between the duration from trauma to surgery and the outcomes.

Conclusions: In this retrospective study, we assessed visual outcomes and influencing factors in patients with traumatic wound dehiscence after keratoplasty. While factors such as wound dehiscence sites and keratoplasty-surgery interval showed no significant impact, the crucial link between trauma-surgery duration and outcomes was established. This emphasizes the importance of timely interventions, thereby enhancing patient care in such cases.

Bird Beak-Related Ocular Injuries in Southern India: Factors and Visual Implications

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Purpose: To evaluate the visual outcomes and identify prognostic factors in patients with ocular bird beak injuries treated at a tertiary eye care center in South India.

Methods: We conducted a comprehensive analysis of patients with bird beak injuries, considering factors such as age, gender, mode of injury, and size of laceration. The affected eyes underwent detailed examinations using slit-lamp biomicroscopy, and B-scan ultrasonography was performed to assess the status of the posterior segment. Postoperatively, the best-corrected visual acuity (BCVA) was measured at the last follow-up visit.

Results: Our findings demonstrated significant improvements in visual outcomes, including BCVA and uncorrected visual acuity (UCVA), over a follow-up period ranging from 1 week to 3 years ($p < 0.05$). No significant changes were observed in endophthalmitis, intraocular pressure (IOP), lens status, or retinal abnormalities during the study duration.

Conclusions: This retrospective study highlights the potential for favorable long-term visual improvement in patients with ocular injuries caused by bird beaks and emphasizes the importance of timely intervention. Delayed surgical treatment and the requirement for multiple surgeries within the first week were found to negatively impact visual acuity. Hence, it is crucial to raise public awareness, particularly in rural areas, to prevent these potentially devastating injuries and ensure early intervention for optimal visual recovery.

Corneal Remodeling in a Case of Post-traumatic Corneal Ectasia

*First Author: Aafreen **BARI***
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Purpose: To study the corneal remodeling in a case of sterile post-traumatic keratitis.

Methods: The case of post-traumatic sterile keratitis was diagnosed by excluding other possible aetiologies. The case was advised on topical steroids and followed up closely. Slit lamp examination with clinical photograph and Anterior Segment Optical Coherence Tomography (AS-OCT) was done on all follow-ups to study the corneal remodeling.

Results: ASOCT helps to study the sequential partial resolution of post-traumatic focal corneal ectasia. The process starts with epithelial remodeling followed by changes in anterior corneal stromal layers. Scar formation which appears as hyper-reflective band on AS-OCT and corneal thinning can be titrated with the frequency of topical steroids. The posterior corneal remodeling and scar formation occur last, and the resolution of posterior corneal ectasia may not be complete.

Conclusions: AS-OCT is a useful tool to study corneal remodeling and scar formation in cases of corneal ectasia. It may act as a useful guide in the titration of the frequency of topical steroids.

Cosmetic and Visual Outcome Following High Voltage Severe Electric Facial and Ocular Burn – A Case Report

First Author: Vinita ***RAMNANI***
Co-Author(s): Sakshi ***RAMNANI****, Sunil* ***RATHOR***

Purpose: To manage high voltage electric burn of face and eye for better functional and cosmetic results in a young patient.

Methods: A 19-year-old male had an accidental high-voltage electric burn following a collision with a transformer in a village while catching a cricket ball. Presented with full-thickness burn involving the upper half of face, both eyes, 3rd-degree deep burn on the left leg, left 3rd, 4th, and 5th toes, counting finger vision in the right eye, and no light perception in the left eye with extensive burns. The primary aim was to cover facial and nasal bone exposure and to save vision. Developed cataract in the right eye and loss of the left eye by burns, charring, and adhesion in the left eye. A total of 6 procedures in a span of one year, 3 surgical reconstructive procedures by a plastic surgeon, right eye cataract surgery, YAG capsulotomy, left eye fornix reconstruction, and artificial eye were performed. It was a challenging case to manage for functional and aesthetic outcomes.

Results: Debridement of facial wounds and amputation of left 3rd, 4th, 5th toe, Radial forearm free flap surgery to cover the facial defects, Hair bearing temporoparietal facial flap surgery was performed by the plastic surgeon. The excellent surgical results noted for visual and aesthetic recovery in our patient are in accordance with similar result reports from literature.

Conclusions: Electrical burns of the face, eyes, and scalp are not only life-threatening but also affect overall aesthetics. We safely managed a unique, difficult case of electric burn jointly by the plastic and ophthalmology department with better cosmetic and functional outcomes.

Epithelial Ingrowth After Traumatic Lamellar Laceration of Cornea

First Author: Amanjot ***KAUR***

Purpose: To observe the management and outcomes in cases of Epithelial Ingrowth after traumatic lamellar laceration.

Methods: We retrospectively reviewed the electronic medical records of 4 patients presenting with Epithelial Ingrowth (EI) following traumatic lamellar corneal laceration, from January 2018 to December 2020. All patients' demographic data, clinical history, visual acuity, and spherical equivalent were recorded in detail. Diagnosis of EI was established either by observing communicating track from conjunctival/ corneal epithelium on anterior segment optical coherence tomography. On the basis of symptoms and presentations, patients were treated at the clinician's discretion. Patients were followed up for a minimum of 12 months from the first presentation, to observe for any recurrence or increase in size/ density of ingrowth.

Results: The age for presentation varied from 13-28 (mean- 18.5) years and all patients were men. Trauma was present in all patients and the time period between trauma and first presentation varied from 12-72 (mean- 38) months. The best-corrected visual acuity (BCVA) at presentation was >20/200 in all patients, with mean spherical equivalent (SE) being +/-2.8 dioptres. At clinical presentation, epithelial cell nests of various sizes were seen below the lamellar laceration flap at different locations. AS-OCT was done in 3 out of 4 cases and a communicating tract was seen in 2 cases. In one case, AS-OCT was not done. Out of 4 cases, 2 (50%) were managed surgically and 2 (50%) were managed conservatively.

Conclusions: Asymptomatic cases need to be observed. Epithelial debridement from both surfaces forms the surgical treatment of choice.

From Luxation to Redemption: A Story of Successful Globe Reposition in Traumatic Globe Luxation After Trauma

First Author: Kelvin ***MANDELA***
Co-Author(s): Mardijas ***EFENDI****, Andrini* ***ARIESTI***

Purpose: Traumatic globe luxation is a rare ophthalmic emergency condition where the eyeball is displaced from its socket due to blunt force trauma. Assessment of the injury and the decision was made to perform a globe reposition surgery.

Methods: We present a case report of a 22-year-old female patient with a complaint of right eye protrusion after being hit by a screwdriver, accompanied by pain

and slightly blurred vision. Anterior and posterior segment examinations were relatively normal. CT scan revealed displacement of the right eyeball from its orbit, with no abnormalities in the extraocular muscles, optic nerve, or periorbital tissues. The patient underwent surgical repositioning of the eyeball using special maneuvers with a Desmarres retractor followed by tarsorrhaphy. Spasms of the orbicularis oculi muscle were the cause of this case. Postoperatively, the position and movement of the eyeball returned to normal. Visual acuity improved with refractive correction.

Results: Traumatic globe luxation presents a significant challenge in both clinical management and understanding its underlying mechanism. The complex interplay of factors such as the force and angle of impact also anatomical variations of the patient. After careful assessment of the injury and preoperative imaging, the decision was made to perform a globe reposition surgery to manipulate the globe back into its anatomical position. An exploration of the ocular structures was conducted to assess for any potential damage. No additional ocular abnormalities were identified during this process.

Conclusions: Prompt surgical intervention, including repositioning of the eyeball and tarsorrhaphy, is critical in managing traumatic globe luxation and preserving visual function.

Iris Diaphragm Intra-ocular Lens Implantation in Traumatic Aniridia: A Retrospective Analysis

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Purpose: To evaluate the role of Iris diaphragm intra-ocular lens implantation in traumatic aniridia cases.

Methods: This hospital-based retrospective study included 13 eyes of patients with post-traumatic aniridia and aphakia at a tertiary eye care institute in India. Primary repair with the extraction of the cataractous lens was done elsewhere. All the patients having insufficient capsular support for IOL implantation and normal intraocular pressure (IOP) (< 21 mmHg) underwent pars plana vitrectomy and scleral fixation of a coloured iris diaphragm intraocular lens using 311 aniridia lens II and they were followed up for a period of 4-9 months post first presentation.

Results: The majority of the patients were in the age group of 30 years and above. 69% of the patients were males. Visual acuity at presentation ranged from HMCF to Perception of light positive and projection of rays accurate in all 4 quadrants. Post-operative visual acuity ranged from 20/20 to counting fingers at 2 meters at the last follow-up.

Conclusions: The scleral fixation of brown iris diaphragm IOL seems to be a good option for the management of traumatic aniridia and aphakia. Although secondary glaucoma and reduced visibility of peripheral fundus are still a concern, our experience with the colored diaphragm lens has been rewarding in terms of visual and aesthetic rehabilitation.

Non Perforant Ocular Trauma Et Cause Bee Sting; a Rare Case

*First Author: Arya **SYUHADA***
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Purpose: Although rare, ocular bee stings can result in significant complications, particularly when the sting is not removed quickly. More than 70% of conjunctival hyperemia with conjunctival edema due to components of bee venom, and in 60% of cases, there was a visible corneal stromal inflammation around the bee sting site and impact on vision. Phospholipase A and melittin represent 75% of the venom components. This case highlights the impact of bee stings on the eye and its management to determine prognosis.

Methods: The patient came in complaining of a nagging right eye after being stung by a bee 12 hours ago. Visual acuity was recorded using Snellen's chart, and the anterior segment was examined with a slit lamp Inami and fluorescein after instilling topical anaesthetising drop tetracaine hydrochloride 0.5%

Results: In the right eye, the visual acuity was 1/300, spasm and edema in the palpebra, conjunctival injection, pericornea and chemosis in the conjunctiva, and a stinger in the paracentral at 2 o'clock. The fluorescein test revealed an epithelial defect. The patient was diagnosed with right eye non-perforant ocular trauma et cause bee sting with complication of stringer in the cornea. The patient underwent corneal extraction bee sting and hecting with one suture nylon 1.0 and get some medication. The visual acuity was better at three-week follow-up.

Conclusions: Proper management of bee sting cases in the eye is crucial for determining the prognosis.

Ocular Fish-Hook Injuries: Largest Case Series in India

*First Author: Sowjanya **VUYYURU***
*Co-Author(s): Sushank **BHALERAO**, Pratik **GOGRI**, Uma **THIGALE***

Purpose: Fishing is a popular leisure activity in many parts of the world. Ocular fishing injuries though uncommon may cause potentially devastating ocular trauma and safe removal of the hook can be challenging. We herein report a case series of 21 cases of penetrating injury to the cornea by fish hook and its successful surgical management. Various techniques for fish hook removal and terminologies associated with various parts of the fish hook will also be elaborated.

Methods: It was a retrospective study conducted at tertiary eye care centers in South India. Our hospitals cater to the states of Telangana, Andhra Pradesh, and Odisha. All the medical records of patients who attended the emergency department from 2003 to 2023 were evaluated, and all the patients with fish hook injuries were included in the study. This is the longest and largest study in India.

Results: Twenty-one cases of ocular fish-hook injuries were presented to the emergency room between 2003 and 2023. Patients were between the ages of 9 and 59 years (mean, 29.4 years), and 90.4% (19 out of 21) were males. Follow-up evaluations were performed 1 month to 6 years after injury (mean 13.6 months). Out of 21 cases, 3 cases (14.3%) had blunt trauma, and 18 cases (85.7%) had penetrating injury.

Conclusions: The hook can be successfully removed with minimal trauma to ocular structures by understanding the structure of the fish hook and by employing the appropriate method of extraction.

Outcomes of Vitreoretinal Surgeries in Closed-Globe Injuries Related Traumatic Retinal Detachment

*First Author: Chung-hao **HSIAO***
*Co-Author(s): Chia-jen **CHANG***

Purpose: To determine the clinical characteristics, surgical outcomes, and prognostic factors surrounding traumatic retinal detachment (RD) following closed-globe injuries (CGI).

Methods: Patients treated with vitreoretinal surgeries due to RD following CGI from 2014 to 2020 were retrospectively reviewed. Data included demographics, mechanism of injury, preoperative evaluation, and surgical intervention. Outcome measurements included primary anatomic success, best-corrected visual acuity (VA), and prognostic factors.

Results: 64 patients (67 eyes), comprising 15 females and 49 males, were included. The mean age was 52.84 ± 15.27 years (range 15–86 years). The most common causes of CGI were work-related injury (22.4%) and traffic accidents (23.9%). Pars plana vitrectomy (PPV) was performed in 44 (65.7%) of the eyes, pneumatic retinopexy in 13 (19.4%), scleral buckle (SB) in 8 (11.9%) and combined PPV/SB in 2 (3%). Primary anatomic success was 80.6% (54/67). The median preoperative VA was logarithm of Minimum Angle of Resolution (logMAR) 0.7 (IQR, 0.3–1.6), and the median final VA was logMAR 0.5 (IQR, 0.1–1.1) (P = 0.077). In the multivariable analysis of the logistic regression models, the poor prognostic factor was proliferative vitreoretinopathy (PVR) (P = 0.009) for primary anatomic success. Meanwhile, poorly presenting VA (counting fingers or worse) and giant tear were associated with poor visual outcomes.

Conclusions: RD following CGI is prevalent due to work-related injuries and traffic accidents. After surgery, the anatomic success was favorable, although the visual outcomes varied. Poor prognostic factors included PVR and worse presenting VA, thus highlighting the importance of careful initial evaluation.

Prognostic Factors for Visual Outcome After Surgical Repair of Limbal Corneal Laceration at a Tertiary Eye Care Center in South India

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Purpose: To determine the factors affecting the visual outcome after surgical repair of limbal corneal lacerations at a tertiary eye care center in South India.

Methods: A retrospective analysis of patients diagnosed with limbal tears between 2011 and 2021 was conducted. Demographic information such as age, gender, cause of injury, and size of the laceration was recorded. A comprehensive ocular examination was performed, including gentle B scan evaluation whenever not contraindicated for detailed posterior segment evaluation. Only those cases with a minimum followup of one year were included. Postoperative bestcorrected visual acuity, intraocular pressure (IOP), cornea clarity, and integrity of the wound at the last followup were noted.

Results: Out of the 20 patients, 15 (75%) were males and 5 (25%) were females. The mean age was 42.6 ± 22.4 years. All 20 patients had a penetrating injury, with four (20%) injured by a stick, two (10%) by an iron rod, three (15%) due to road traffic accident (RTA), three (15%) by glass, and eight (40%) with other nonspecific objects [two (10%) with needle, two (10%) with elastic rope, two (10%) with bangle, and two (10%) with metal]. The average time between the injury and the surgery was 48 hours (2 days). Four (20%) patients underwent a second surgery within a week of repair.

Conclusions: Preoperative visual acuity (VA), mode of injury, and size of wound affect the final visual outcome after surgical repair of limbal corneal laceration. Preoperative VA and mode of injury were statistically significant even in the multivariate analysis.

Subgaleal Hematoma With Orbital Extension Following Blunt Head Trauma in a Filipino Pediatric Patient: Case Report

*First Author: Melissa Roselle **NALUPTA***

Purpose: This paper presents the history and management of a case of subgaleal hemorrhage with orbital extension in a 12-year-old Filipino female seen in a tertiary government hospital in the Philippines.

Methods: This is a case report of a 12-year-old Filipino female with a 4-day history of blunt trauma wherein the occipital part of her head was allegedly hit by a

wooden swing. She immediately noted a headache in the occipital region. No blurring of vision, eyelid swelling or proptosis were noted. A day after the accident, there was a persistent headache described as heavy pain, which prompted her to consult our institution for evaluation and management. During her admission, she noted swelling of the left periorbital region, which progressively worsened and was accompanied by blurring of vision. This prompted a consult with the ophthalmology service. Diagnosis of subgaleal hemorrhage with intraorbital extension was established based on the CT scan findings and physical exam of the patient.

Results: The patient underwent emergency lateral canthotomy and cantholysis followed by an emergency evacuation of intraorbital hematoma due to progressive proptosis as well as the presence of keratopathy and elevated intraocular pressure.

Conclusions: Most cases of subgaleal hemorrhage resolve spontaneously over the course of several weeks. Vision-threatening complications of massive post-traumatic SGH with orbital extensions include clinical evidence of raised IOP including chemosis, proptosis, ophthalmoplegia, and exposure keratopathy. Visual impairment is usually temporary if prompt orbital decompression is ensued. Hence, clinical eye and prompt diagnosis should be made in such cases. Otherwise, suboptimal treatment including missed diagnosis may lead to permanent blindness.

Swift Sight Saver: Timely Lateral Canthotomy and Cantholysis for Retrobulbar Hemorrhage Resolution

*First Author: Randy **SARAYAR***
*Co-Author(s): Hisar **DANIEL***

Purpose: Retrobulbar hemorrhage is a sight-threatening situation that can cause orbital compartment syndrome, requiring immediate decompression. Irreversible visual loss can occur within 2 hours of onset. Clinical diagnosis is possible; hence, investigation should not delay the therapy. This case highlights the treatment of retrobulbar hemorrhage with a timely orbital decompression procedure.

Methods: A 27-year-old male came to the emergency room 30 minutes after a motorcycle accident. The right eye was painful, slightly proptotic, with palpebral edema, and slight ptosis. The visual analog scale (VAS) of pain is 5. Visual acuity on peek acuity was 6/18, and intraocular pressure (IOP) was 42 mmHg. No RAPD was observed, but the optic disc was slightly hyperemic. A non-contrast orbital CT scan revealed an iso-hyperdense lesion in the right intraconal retrobulbar orbit, causing proptosis suspected with hematoma. Lateral canthotomy and cantholysis were performed under local anesthesia approximately 3 hours after the accident. A drain using sterile latex glove cuttings was installed and fixated with polypropylene sutures, and the incision was left unstitched.

Results: Immediate IOP was reduced to 17 mmHg, and VAS of 2 was achieved after the procedure. Visual acuity using peek acuity on bedsite improved to 6/6. Three days after the accident, when no subsequent hemorrhage was suspected, the drain was removed, and canthopexy-canthoplasty was done to close the lateral canthus incision.

Conclusions: Retrobulbar hemorrhage demands urgent diagnosis and prompt orbital decompression. Ophthalmologists must recognize its criticality, as swift intervention ensures visual preservation and prevents severe complications, safeguarding patients' sight.

The Prompt and Appropriate Treatment in Penetrating Ocular Trauma by Fishing Hook: Case Report

*First Author: Nusiriska **PRISARIA***

Purpose: To present a case of an individual after being given prompt and appropriate treatment in penetrating ocular trauma.

Methods: A case report of a 29-year-old male after being given prompt and appropriate treatment in penetrating ocular trauma.

Results: A 29-year-old male presented to the emergency department with a red left eye, sore and watery, and his vision blurred after being hit by a fishing hook 3 hours before. Examination revealed the left eye visual acuity was 6/30, ciliary injection, fishing hook penetrated and tore the inferior cornea and iris, there were entry and exit wounds of fishing hook on the cornea, iridorhexis, unequal depth on the anterior chamber of the eye, and the pupil was not round. Funduscopic examination of the left eye found flat on the retina, intraocular pressure was within the normal range, and B-ultrasound showed no abnormalities. The ocular Trauma Score of this condition was 76. The patient underwent surgery for fishing hook extraction, corneal suture, and anterior chamber of eye reformation on the same day. A week after the surgery, the patient showed clinical improvement, such as reduced left eye redness, and no sore and watery left eye anymore.

Conclusions: The penetrating ocular trauma can lead to vision loss or blindness if not treated promptly and appropriately. Early treatment and referral to ophthalmology would improve the visual outcome of a patient with ocular trauma. The treatment of penetrating ocular trauma by fishing hook must be very thorough and careful, especially when doing fish hook extraction, to not aggravate the trauma.

Unhooking the Danger: Fish-Hook Injuries to the Eyelid

*First Author: Ker Hsin **NG***
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Purpose: To report five cases of fish-hook penetrating eyelid injuries.

Methods: Case series and literature review.

Results: A secondary care hospital in Malaysia witnessed a series of five fish-hook penetrating eyelid injuries over the course of two years. Four of the patients were children aged between 3 and 10 years old. The fifth case was a 16-year-old teenager. All five patients endured penetrating injuries of the upper eyelids, with no impairment of their visual acuities. Examinations revealed two children with a double hook injury to the eyelid, whereas the other three cases had a single round bent hook that pierced through the upper eyelid. In two out of the five cases, the embedded fish hooks were removed using the back-out method, whereas the advance-and-cut technique was utilized in the other two cases. The eyelid-splitting method was employed in one patient. A thorough literature review on a variety of fish-hook removal methods was conducted. The advance-and-cut technique for removing fish hooks was the most employed method and exhibited the highest success rate. The back-out technique was the second most described strategy.

Conclusions: Ocular penetrating fish-hook injuries represent a rare, yet potentially devastating ocular trauma. No single technique surpasses the other. Proper evaluation of the penetrating sites, depth, and types of fish hooks is essential to determine the best removal methods with excellent long-term prognosis.

Unmasking the Mimic: Senile Scleral Plaque Masquerading as Intraorbital Foreign Body

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Purpose: To report a case of senile scleral plaque as a differential diagnosis of intraorbital foreign body.

Methods: Case report.

Results: A 65-year-old gentleman presented with a sudden onset of left eye pain and blurring of vision while he was hammering a nail to the wall. His visual acuity was 6/24 on the right eye and 6/60 on the left eye. On examination of his left eye, there was a conjunctival laceration at 8 o'clock near the limbus. His left pupil was irregular with a sphincter tear and iridodialysis at 7:30 o'clock. His left lens was dislocated posteriorly. We proceeded with orbital Computed Tomography, which revealed hyperdense opacity in the left eye temporal region. He was diagnosed with left eye penetrating ocular injury with retained intraorbital foreign body and dislocated lens, hence underwent an emergency operation. Intraoperatively, there was a partial thickness scleral laceration wound at 8 o'clock, which was sutured with Nylon 8/0. There was the presence of unilateral left eye senile scleral plaque temporally just anterior to lateral rectus insertion with no evidence of intraorbital foreign body. Senile scleral plaque is clinically diagnosed intraoperatively after discussion with a radiologist and careful exploration to exclude the intraorbital foreign body. Phacofragmentation and pars plana vitrectomy were done for his posteriorly dislocated lens. Post-operatively, left eye visual acuity improved to 6/18 and was planned for secondary intraocular lens implantation later.

Conclusions: Senile scleral plaque can manifest unilaterally or bilaterally. Familiarity with computed tomography findings of senile scleral plaque especially in unilateral cases may help in differentiation from intraorbital foreign body.

Visual Outcomes in Bilateral Cataract Following Electrical Injury: A Case Report

*First Author: Diah **IBRAHIM***
*Co-Author(s): Andi Akhmad **FAISAL**, Muhammad Abrar **ISMAIL***

Purpose: There have only been a few reports of survivors following high electric voltage. Here we present bilateral cataracts with different visual outcomes.

Methods: We report a bilateral cataract case with different visual outcomes.

Results: A 21-year-old male patient complained of gradual deterioration of vision after 8 months of electric injury due to a high-tension wire hit on his left scalp. Necrotomy and multiple burr hole surgery in frontotemporoparietal sinistra were performed by a plastic surgeon for large scalp defects after electrical burn injury. The best-corrected visual acuity (BCVA) of the right eye was 20/80, and the left was Light Perception (LP) with projection. Ophthalmic examination showed an anterior subcapsular cortex cataract on the right eye and an intumescent cataract with positive RAPD on the left eye. A phacoemulsification procedure with aspheric hydrophilic IOL implantation in the bag was performed, and the following eye was treated by a similar procedure 1 week later. At the last follow-up visit, the BCVA of the right eye was 20/20, and the left was 20/40-2. OCT optic nerve head from left eye showed RNFL thinning in the nasal. Humphrey test confirmed the result with temporal visual field defect.

Conclusions: The outcome varied in both eyes, an eye with satisfactory visual acuity and the following eye with RNFL thinning limiting the outcome. The case report concludes that the majority of eyes respond

well to surgery, but final visual acuity depends on ocular damage caused by electrical current. The degree of lenticular changes and damage of the posterior segment affected the visual outcome.

What Bit Me?

*First Author: Siti Najibah Zaidah **MOHD YAZID***
*Co-Author(s): Che Mahiran **CHE DAUD**, Fazliana **ISMAIL***

Purpose: To report a case of extensive cellulitis secondary to a bee sting involving the face, orbit, neck, and anterior chest.

Methods: Case report.

Results: A 47-year-old male with underlying diabetes mellitus, hypertension, and end-stage renal failure presented with an alleged bee sting over his left cheek 2 weeks ago. Initially, he did not seek medical attention until 1 week later when he developed swelling over left lower eyelid. The swelling extended to the left cheek 4 days later and subsequently involving neck and anterior chest. On examination, noted swelling over left cheek extending to the left periorbital area, submandibular region, and nape of the neck with overlying skin erythematous, extending to mid-chest. Noted wound over the left zygoma measuring 2cm (vertical) x 2cm (horizontal) with minimal pus. Ocular examination of the left eye revealed visual acuity of 6/24 with negative relative afferent papillary defect (RAPD) and intact optic nerve function test, and full extraocular muscle movements. The left eyelid was swollen with erythematous skin and was tender. Left eye intraocular pressure highest at 27mmHg. Computed tomography (CT) of the brain, orbit, neck, and chest was done. Findings were diffuse cellulitis changes involving subcutaneous tissue of the head and neck, anterior and posterior chest wall with cervical lymphadenopathy. Orbital CT revealed a left eye conjunctival abscess with periorbital cellulitis. The patient showed improvements after he was treated accordingly by multidisciplinary team, involving parenteral antibiotics; topical antibiotics, steroid and anti-glaucoma; wound care, and optimization of underlying medical illness.

Conclusions: Bee stings can produce different reactions, ranging from temporary pain to severe reactions. Early treatment can help prevent life-threatening complications.

"Advance and Cut" Method of Fish-Hook Removal in Ocular Trauma

*First Author: Chaw **WIN***
*Co-Author(s): Joshua **GEORGE***

Purpose: Removing a barbed fish-hook in ocular trauma is difficult and often traumatic because of the barb (s). Many techniques have been described. We demonstrate here the "Advance and Cut" method of barbed fish-hook removal in ocular injuries and explain, when and where, the application of this technique would be appropriate.

Methods: A 20-year-old man suffered a barbed fishing hook injury to his right upper eyelid. Under local infiltration anesthesia, the exposed hook shank was grasped and manipulated to push out the subcutaneous barbed end by penetrating through the superficial intact skin. A sterile wire cutter was then used to transect the exposed barbed end, after which the barbless hook was pulled out along its tract of entry.

Results: Using this technique, the barbed fish-hook was removed with minimal trauma to adjacent tissue. With tetanus toxoid prophylaxis, local and systemic antibiotics, the entry and exit wounds healed well without any infection or disfiguring scar. No suturing was needed.

Conclusions: Knowledge of the various techniques to remove a barbed fish-hook is essential, and the appropriate technique needs to be used, depending on the nature of the eye injury. The "Advance and Cut" method is recommended for extraocular lid and eye-brow injuries and in situations where it is possible to advance an intra-ocular fish-hook tip, out through a surgically created limbal section. Rust, tetanus, bacterial and fungal contamination of the fish-hook need to be addressed. During fly fishing, it is recommended that both bystanders and anglers use protective polycarbonate wraparound lenses for eye safety.

Ophthalmic Epidemiology and Prevention of Blindness

A Unique Immunization Card

*First Author: Hiranmoyee **DAS***

Purpose: To introduce a unique immunization card which facilitates diagnosis, decreases the disease and treatment burden & increases the survival rate of retinoblastoma.

Methods: As early diagnosis is the key to the management of retinoblastoma, a unique immunization card is followed in a charitable multi-specialty hospital located in the underdeveloped part of Northeast India. An extra column for the eye examination is created in the routine immunization card. The first contact health provider sensitized to examine the alignment of the eyeball & pupillary reflex in a child. During each visit to the immunization clinic (6 weeks, 6-9 months, 1 year, 2 years & <5 years) eye examination is made mandatory. If any abnormality is identified, appropriate referrals are to be made.

Results: The lack of knowledge by first contact health providers has been shown to be a significant

barrier, thus highlighting the importance of targeting primary healthcare providers in early diagnosis of retinoblastoma.

Conclusions: Every child is brought to the health care system at least 5 times before the age of 2 years for routine immunization. We should not miss this golden opportunity for early detection of retinoblastoma.

Acute Binge Alcohol Induced Toxic Endotheliitis

*First Author: Rakhi **DCRUZ***
*Co-Author(s): Aravind **ROY***

Purpose: To report a case series of toxic endotheliitis post-binge alcohol consumption. To outline the differentiating features from other chemical and viral endotheliitis. To discuss the mechanism behind alcohol endotheliitis.

Methods: We herein report a case series of binge alcohol-induced endotheliitis presented to us. All patients underwent comprehensive ophthalmological evaluation, including slit lamp microscopy, IOP, fundus evaluation and specular microscopy and slit lamp photography. A few patients were kept inpatient in intensive medical care units to differentiate them from other entities and for close monitoring. Specular microscopy revealed reduced endothelial count with polymorphism and polymegathism.

Results: All patients were treated with frequent lubricants, antibiotics for epithelial defects, and frequent steroid under close monitoring. All cases showed dramatic improvement with frequent topical steroid application. We hypothesize the cause of corneal edema as transient suppression of corneal endothelial cell metabolism rather than apoptosis, with later regain of functions following alcohol cessation and control of further inflammatory insults with intensive steroids.

Conclusions: Bilateral unexplained cause of decreased vision in young males with signs of endothelial dysfunction, with dramatic improvement with steroids, and a positive history of alcohol binge points towards the diagnosis of alcohol binge toxic endotheliitis. Often the history of alcohol binge is not forthcoming and a high index of suspicion and lack of exposure to other toxic insults or trauma alerts the clinician to alcohol-induced endotheliitis. Nevertheless, chances of recurrence of corneal edema and permanent endothelial cell damage have a high probability in the future if alcohol consumption is continued.

An Independent Rise in the Prevalence of Astigmatism During and After COVID-19 Pandemic

*First Author: Ka Wai **KAM***
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Purpose: To report the prevalence of astigmatism in Hong Kong from 2015 to 2022 and evaluate the association between astigmatism and the COVID-19 pandemic.

Methods: Children and their parents were recruited from a population-based cross-sectional study in Hong Kong since 2015. Information on risk factors was collected via a standardized questionnaire. Cycloplegic autorefraction was performed on all children. Myopia was defined by a spherical equivalent of ≤-0.5 dioptre whereas astigmatism was defined by a cylinder of ≥1.0 dioptre. Logistic regression was conducted to assess the associations between astigmatism, myopia, risk factors, and the COVID-19 pandemic.

Results: A total of 20,942 children (11073 boys [52.87%] and 9869 girls [47.13%], age: 7.31 ± 0.90), were analyzed. The prevalence of refractive astigmatism rose from 23.4% in pre-COVID-19 period (2015-2019), to 24.6% during COVID-19 (2020), and 30.3% after COVID-19 ($p<0.001$). The mean refractive cylindrical value also increased from -0.70D in 2015-2019, to -0.71D in 2020, -0.81D in 2021, and -0.82D in 2022 ($p<0.001$). Similarly, the prevalence and severity of corneal astigmatism increased during and after COVID-19 ($p<0.001$, and $p=0.009$). The pandemic was associated with a higher prevalence of RA (odds ratio [OR], 1.31; 95% CI, 1.19-1.44; $p< 0.001$) and CA (OR, 1.32; 95% CI, 1.21-1.45, $p< 0.001$), considering the effect of age, sex, spherical value, and familial income.

Conclusions: Our study confirmed a delayed but independent rise in both the prevalence and severity of refractive and corneal astigmatism during and after the COVID-19 pandemic, among schoolchildren in Hong Kong.

Analyzing Interpretation Quality of Diabetic Retinopathy Screening Using Portable Fundus Camera by General Practitioner in Rural Area in Bali

*First Author: Cokorda **PRABASARI***
*Co-Author(s): Suryanadi **NI MADE**, Ni Made Ari **SURYATHI***

Purpose: The high prevalence of diabetic retinopathy in Indonesia has become a major public health problem, where an effective screening program is needed. This report aims to analyze 7 cases of suspected diabetic retinopathy that were screened by general practitioners using portable fundus cameras.

Methods: Seven patients in the age range of 53 to 69 years, had a history of Type 2 Diabetes Mellitus which

was diagnosed within 8 months to 15 years. All patients underwent diabetic retinopathy screening, where nondilated fundus examination was done by a general practitioner using portable fundus cameras, and then confirmed by the ophthalmologist using a 78-diopter lens. Eleven eyes of 7 patients were suspected of having diabetic retinopathy by the general practitioner, but only 7 eyes of 4 patients were confirmed of having diabetic retinopathy by the ophthalmologist, and one patient was given a referral to the next healthcare facility. It was found that 45.5% of images were poor quality, 45.5% were good quality, 9% were excellent quality, and 90.9% of photographs included the optic nerve and macula.

Results: Interpretation of diabetic retinopathy suspected by general practitioners resulting in a higher number than confirmed diabetic retinopathy by ophthalmologists, It could be caused by over-diagnosis, unreadable images due to unclear refractive media or small pupil, single-field view, and lack of ability to analyze images.

Conclusions: Diabetic retinopathy screening should be done more often in primary healthcare facilities in rural areas in Bali, with future suggestions of more training for general practitioners, and administering mydriatic to increase screening quality.

COVID-19 Susceptibility, Severity, and Mortality in Visually Impaired Individuals: A Nationwide Study

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*Co-Author(s): Inboem **CHANG**, Su Hwan **KIM**, Young Kook **KIM***

Purpose: To determine the potential associations between visual impairment (VI) and susceptibility to SARS-CoV-2 infection and adverse COVID-19 outcomes.

Methods: The entire South Korean population aged over 20 years who had tested positive for SARS-CoV-2 between October 2020 and December 2021, as recorded in the K-COV-N (Korea Disease Control and Prevention Agency-COVID-19-National Health Insurance Service [NHIS]) cohort was included. A control group was randomly matched with three SARS-CoV-2-negative individuals of the same age and sex. A patient was defined as having severe VI if their corrected visual acuity was lower than 6/60 in the better eye or VI category 1-3 according to the National Disability Registration System. Using 1:30 case-control propensity score matching, we investigated the primary outcome (SARS-CoV-2 test positivity) in the entire cohort and secondary outcomes (severe COVID-19 illness; admission to intensive care unit, application of invasive ventilation, or COVID-19-related death) among SARS-CoV-2-positive cases.

Results: A total of 559,461 SARS-CoV-2-positive patients and 1,678,085 controls were included. After adjusting for confounding variables, the aOR for positivity of SARS-CoV-2 testing in severely visually impaired patients was 1.09 (95% CI 0.99-1.20). Among those who had tested positive for SARS-CoV-2, individuals with severe VI were more likely to experience severe illness from COVID-19 than those without severe VI (aOR 3.05, 95% CI 2.59-3.58). COVID-19-related death was also higher in patients with severe VI (aOR 1.39, 95% CI 1.13-1.71).

Conclusions: This study underscores the heightened vulnerability of visually impaired individuals to COVID-19 infection as well as to devastating clinical outcomes.

Determination of Microbial Profile and In-Vitro Evaluation of Disinfection Methods for Goldmann Applanation Tonometer Tips

*First Author: Eleonore **IGUBAN***

Purpose: To identify micro-organisms present in used Goldmann applanation tonometer tips through in-vitro assessment, and evaluate the effectivity of various disinfection agents against common microbial pathogens.

Methods: This was a two-part single-blind in-vitro experimental study. Three tonometers were swabbed for microbial samples at the end of a clinical day for three days a week, every two weeks, for three months. For the second part of the study, disposable tonometer tips were inoculated with Staphylococcus aureus, Streptococcus sp, Pseudomonas aeruginosa, Escherichia coli, and Candida albicans. These were then subjected to cleaning with cotton wipes soaked with sterile water and with various disinfectants which included: propanol benzalkonium chloride (Cutasept), mecetronium ethylsulfate (Sterilium), 70% ethyl alcohol, 70% isopropyl alcohol, 3% hydrogen peroxide, and 0.01% hypochlorous acid. Once air dried, the tonometer tips were tested for residual micro-organisms.

Results: Eighty-one (81) samples were taken from 3 tonometer tips. Thirty-two (39.51%) samples showed growth of bacterial species. Propanol benzalkonium chloride (Cutasept) inhibited microbial growth in all bacterial species tested, but was unable to inhibit growth against Candida albicans. 70% ethyl alcohol showed greater effectivity against bacterial organisms compared to 70% isopropyl alcohol.

Conclusions: Residual microorganisms can be present in Goldmann applanation tonometer prisms. Coagulase-negative Staphylococcus showed significant growth and pathogenicity. Adjuvant disinfection of Goldmann tonometer tips with cleaning disinfectant wipes in-between patients may be utilized in conjunction with periodic 10% sodium hypochlorite solution soaking as recommended by the manufacturer. Propan-2-ol Benzalkonium chloride (Cutasept) showed the widest range of disinfection against the microorganisms tested.

Eales' Disease in North-East India: Investigating Prevalence and Pattern of Presentation

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Purpose: To investigate the epidemiology of Eales' disease in North-East India, including its prevalence, incidence, and patterns of occurrence. By examining the distribution and characteristics of Eales' disease cases in this region, the study aims to provide valuable insights into the burden of the disease and potential risk factors.

Methods: It was a retrospective institutional study of 100 consecutive cases of Eales' disease evaluated in the duration of 1 year with one-year follow-up. The recorded data included age, sex, BCVA at presentation, extent of involvement, and treatment outcome. Physical examination included Random blood sugar level, Mantoux, and Chest X-ray while ocular investigations done were USG B-scan, FFA, and OCT.

Results: In our study, Eales' accounted for 1 in every 65 cases. 93 male patients and 7 female patients were included and their ages ranged from 15 to 55 years. BCVA recorded was >6/12 in 56%, between 6/18 and 6/60 in 29 eyes, and <6/60 in 40 eyes. The Mantoux test was positive in all the patients. The majority of the non-proliferative cases were managed using oral steroids, while proliferative cases were treated with steroids and/or LASER or surgically.

Conclusions: Eales' has significant prevalence in North-East India and our results indicate that the majority of patients experience stable vision with appropriate treatment. But Eales is still a diagnosis of exclusion, and therefore it is advisable to perform a complete laboratory work-up in each case.

Early Detection Effect and Economic Consequences of Fundus Screening Attendance in Newly Diagnosed Type 2 Diabetes: A Nationwide Population-Based Propensity Score-Matched Cohort Study

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Purpose: To investigate the association between diabetic retinopathy (DR) screening attendance frequency and the future development of DR, DR-related treatment, and medical expenses in newly diagnosed type 2 diabetes mellitus (T2DM) patients.

Methods: A longitudinal, population-based study was conducted using Taiwan's National Health Insurance Research Database (NHIRD) from 2004 to 2020. Newly diagnosed T2DM patients were divided into three groups based on their DR screening frequency: group 1, low-frequency screening (less than once every two years); group 2, standard-frequency screening (once every 1-2 years); and group 3, high-frequency screening (more than once per year). Propensity score matching (PSM) was employed to minimize confounders and ensure comparable groups.

Results: A total of 336,686 patients were included in the 17-year cohort. After PSM, 35,739 patients from each group were included for outcome analysis. Low-frequency screening was associated with the highest rates of DR development (group 1:2:3, 20.9%: 17.2%: 17.3%; P<0.001), highest DR treatment expenses (group 1:2:3, 105,318± 145,697.30 NTD: 84,146 ± 99,029.65 NTD: 99,273 ± 132,935.08 NTD; P=0.002), and the highest number of DR-related hospitalizations (group 1:2:3, 398±1.1 times: 237±0.7 times: 272±0.8 times; P<0.001). High-frequency screening detected more patients requiring treatment but at a significantly lower cost compared to low-frequency screening. Standard-frequency screening resulted in satisfying DR diagnosis rates and intervals, with the lowest DR treatment cost and DR-related hospitalizations.

Conclusions: Infrequent screening was associated with delayed diagnosis and elevated treatment costs, while a fundus screening interval of 1-2 years proved optimal in terms of detection and medical expenditures.

Epidemiological Insights Into Eye Diseases Among Children Under 5 Years in the Western Region of Azerbaijan

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Purpose: Elucidating the prevalence and epidemiological patterns of eye diseases among children under 5 years in the western region of Azerbaijan.

Methods: A group of 1,000 children under 5 years residing in the western region was involved in the study to analyze the prevalence and structural aspects of eye diseases. Among those examined were children between 0-4 years, comprising 51.7% boys and 48.3% girls. Routine eye examinations were administered to all participants.

Results: The investigation revealed an incidence of 58.2±1.6 (55.1-61.3) eye diseases per 100 individuals within the 0-5 age group. The most prevalent pathologies encompassed low vision (12.6±1.0%), conjunctivitis (10.4±1.0%), hypermetropia (10.2±1.0%), and astigmatism (7.0±0.8%). Examination revealed that 12.6±1.0% of children between 0-5 years had visual acuity below 6/18 (0.3) in their low-sighted eye. Additionally, the proportion of children with visual acuity of <0.05; 0.05-0.1, and 0.1-0.3 was 0.04±0.2; 3.8±0.6, and 8.4±0.9%, respectively. 60 Prevalent pathologies included nasolacrimal duct issues (5.0±0.7%), near-sightedness (myopia) (2.4±0.5%), and anisometropia (2.2±0.5%) per 100 examined

participants. Rarer conditions comprised amblyopia (1.0±0.3%), glaucoma (0.2±0.1%), retinopathy (0.5±0.2%), and other ailments (2.4±0.5%). The prevalence of eye diseases stood at 48.8±1.7 and 107.5 per 100 children for premature and normal births, respectively. Notably, premature infants carried a 2.2-fold higher risk of eye diseases.

Conclusions: The prevalence of eye diseases among children aged 0-5 demonstrates varying levels and age-dependent dynamics influenced by nosological forms. The overarching trend is upward.

Epidemiology of Ophthalmic Emergency Care in a Tertiary Referral Medical Center

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Purpose: Patients visited the emergency department (ED) for eye-related reasons and received ophthalmology consultations at our center between 2010 and 2019. The main outcome measures were the epidemiology of the ophthalmic emergency care. Secondly, we further aimed at the frequency and risk factors for lost follow-up after discharge from ED.

Methods: The research database, the largest multi-institutional de-identified electronic medical records (EMR) collection in our country, was used. Included patients were identified and evaluated based on our coding systems.

Results: From January 1, 2010, to December 31, 2019, a total of 50,490 people received ophthalmology consultation at the ED of our medical center. Although the total consultations decreased over a decade, the proportion of likely emergent diagnoses gradually increased. Lost follow-up rates declined annually (67.72% in 2010 to 57.99% in 2019), with the 20-29 age group having the highest rate, while older patients (60+ years) were more compliant. Around 38.4% (16,349) completed follow-up within a week post-ED discharge. In multivariable analysis, youth ($P < 0.001$), evening/midnight shifts ($P < 0.001$), no prior ophthalmology visits ($P < 0.001$), an undetermined or not likely emergent primary diagnosis ($P < 0.001$), and shorter ED stays ($P < 0.001$) were significantly associated with lost follow-up.

Conclusions: In the current study, we had comprehensive knowledge of the epidemiology of ED with ocular diseases in the last ten years. We also identified numerous factors associated with lost follow-up after discharge from ED that could potentially be utilized in the future for enhancement rate of follow-up.

Eye Care Intervention Among Marginalized Population (Tea Garden Workers) in Sylhet, Bangladesh

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Purpose: The Lancet Global Commission on Global Eye Health: Vision Beyond 2020 emphasized on development and implementation of services that reach marginalized populations i.e.; women, poor communities, Indigenous people, and ethnic minorities. The main purpose of this initiative was to reach eye care services to one of those marginalized communities (Tea Garden Workers).

Methods: This was a mixed-method study conducted in Malnichhera and Lakkatura tea gardens in Sylhet where house-to-house screening was carried out by eight properly trained data collectors. This is one of the first eye care intervention programs conducted for the tea garden laborers and their families in Bangladesh. In-depth interviews and key-informant interviews were conducted with the screened patients and the stakeholders. A team of ophthalmologists and supporting staff provided medicine and spectacles and also referred patients for cataract surgery.

Results: Through house-to-house screening, 5,507 inhabitants were screened. Among them, 2462 (45%) were male, and 3045 (55%) were female. Among the adult participants (3851), 116 patients were found blind due to age-related cataracts, and 172 patients received cataract surgery. Among them, 67% were female and 33% were male. Qualitative analysis showed that lack of awareness, social taboos, and financial constraints are the main barriers to their eye health-seeking behavior.

Conclusions: Globally there is a huge unmet need for eye care services among marginalized populations. It is very crucial to implement intervention to reach the unreach and “Leave No One Behind” by the year 2030.

Knowledge of the Employee of Sugar Factory X for Personal Protective Equipment (PPE) and Work-Related Eye Diseases

*First Author: Aryani **PUTRI***
*Co-Author(s): Alfa **SYLVESTRIS***

Purpose: To evaluate knowledge about occupational diseases and the use of PPE in the eye.

Methods: Providing counseling to sugar factory X in Malang Regency’s employees, and assessing knowledge before and after counseling through questionnaires.

Results: It was found that 23 respondents were male employees, with the most age being 53 years. The results of the questionnaire for usage of PPE and work-related eye disease obtained an average score before

counseling was 52 and after counseling was 75 with the Paired T-Test sig.0.041 (<0.05).

Conclusions: Counseling on work-related eye diseases and the use of PPE has been carried out for employees of the X Sugar Factory in Malang Regency, which has resulted in increased employee knowledge.

Longitudinal Analysis of Eye Health Disparities Due to Uncorrected Refractive Errors and Presbyopia Using Country-Level Data From the Global Burden of Disease Study 2019

*First Author: Koichi **ONO***

Purpose: The purpose of this study is to evaluate changes in disparities in eye health resulting from refractive disorders and near vision disorders, utilizing longitudinal country-level data from the Global Burden of Disease Study 2019 spanning the years 1990 to 2019.

Methods: We collected data on disability-adjusted life years (DALYs) and population statistics from the Global Health Data Exchange website. To analyze the geographical distribution of DALYs in relation to economic status throughout the study period, we utilized Gini coefficients (G) as indicators of inequality, ranging from 0 (complete equality) to 1 (complete inequality).

Results: The DALYs per capita attributed to these disorders showed an increase, regardless of economic status. The Gini coefficient (G) increased from 0.181 to 0.186 (p for trend: <0.001) for refractive errors and from 0.361 to 0.384 (p for trend: <0.001) for presbyopia over the three-decade period on a global scale. Notably, a reduction in inequality was observed for each disorder among high-income countries (G: from 0.119 to 0.112 [p for trend: <0.001] for refractive errors and from 0.145 to 0.117 [p for trend: <0.001] for presbyopia, respectively). Meanwhile, an increasing inequality was noted among middle- and low-income countries.

Conclusions: Our study highlights the escalating inequality in eye health due to optical disorders among middle- and low-income countries over the past three decades. It is imperative for global eye health experts to diligently monitor the distribution of eye diseases and ensure the provision of appropriate, effective, standardized, and high-quality eye care for all individuals.

National Trachoma Elimination Project: Trachoma Trichiasis (TT) Only Survey India 2021–2023

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Purpose: To assess the prevalence of trichiasis in the previously trachoma endemic states in India by identifying TT cases "unknown to the health system" and to assess the effectiveness of the implementation of Trachoma Surveillance & SAFE strategy in each district.

Methods: The survey was planned for 200 districts covering randomly selected 600,000 population of 15 years and above age group for TT in the previously trachoma endemic states and UTs in India including Punjab, Haryana, Rajasthan, Gujarat, Delhi, Himachal Pradesh, UP, Uttarakhand, Chandigarh and Car Nicobar Island.

Results: The prevalence of TT unknown to the health system was 0.26/1000 in the 163 districts covered to date. Prevalence was higher among females 0.36/1000 compared to males 0.15/1000. The prevalence of TT cases showed a positive correlation with age. The prevalence was highest in 70 years and above, with 5.8%. TT was least prevalent in the 15-25 years age group, with only 0.005% years. Among the TT cases, 58.7% of cases were offered surgery of which only 14.8% underwent surgery for trachomatous trichiasis. After completion of these surveys.

Conclusions: According to our survey trachoma has been eliminated as a public health problem in India based on the WHO definition of prevalence of TT "unknown to the health system" less than 2/1000 population above 15 years of age. Healthcare infrastructure and SAFE strategies are effectively being maintained in the surveyed districts to keep active cases of trachoma to a minimum.

Quality Improvement in Cataract Surgery – An Intensive Training Approach

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Purpose: Quality of cataract surgical outcomes is an integral part of the World Health Organisation Effective Cataract Surgical Coverage (eCSC) indicator. We have supported the development of cataract surgical services in collaboration with partner hospitals and organizations in low- and middle-income countries for over thirty years. To improve surgical outcomes and elevate eCSC, we developed and piloted an intensive cataract quality improvement (CQI) training program with partner hospitals.

Methods: An intensive CQI course was developed and piloted with partner hospitals in Bangladesh, Ethiopia,

and Kenya. The action learning course was delivered remotely due to COVID pandemic travel restrictions. Three live online learning sessions were delivered interspersed by action periods where hospitals tested improvement ideas. The live sessions were delivered by our faculty and experts from leading regional eye hospitals.

Results: The CQI intensive pilot ran for 18 months between 2020-2021. Asynchronous e-learning was developed for the final learning session to improve access to learning and increase the efficiency of the live sessions. All three participating hospitals were able to implement activities leading to improved quality of services by the end of the pilot.

Conclusions: The quality improvement pilot demonstrated that it was possible to work with partners remotely to improve cataract surgical outcomes. Further development of e-learning resources will enable asynchronous learning and increase the efficiency of live sessions, allowing for richer discussions. This model can be adapted to scale up quality improvement training in eye health - ultimately leading to an increase in eCSC and better treatment outcomes for patients.

Role of Community Outreach in Assessment of Prevalence of Amblyopia

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Purpose: To study the prevalence, determine the magnitude, and cause of amblyopia among children aged 6 months to 16 years in Eastern India.

Methods: Among a total of 39,651 children between 6 months and 16 years of age, doortodoor screening was conducted by trained workers. For children above 5 years of age who failed to read the 6/9 line, camps were conducted in the nearby schools. Children below 5 years of age were directly referred to the tertiary eye care institute. After visual acuity assessment at the institute, cycloplegic refraction and complete ophthalmic examination were done to rule out other causes of diminution of vision. Axial length measurement and corneal topography were performed in children with high refractive errors.

Results: Of the total 39,651 children screened, 469 were diagnosed with amblyopia in the camp and 223 were diagnosed at the institute. The prevalence of amblyopia was 1.75%. Amblyopia was more common among males (52.50%) than females. Maximum number of patients were found in the age group of 11–16 (63.58%). Refractive amblyopia was found to be the most common cause of amblyopia (45.29%). In children below 5 years, deprivation amblyopia and strabismic amblyopia were more common.

Conclusions: Awareness of amblyopia among parents is essential for early detection and treatment of the disease, which will, in turn, reduce the burden of childhood visual impairment.

Situation Analysis of Cataract Blindness and Cataract Surgical Rate Targets in Indonesia

*First Author: Titok **HARIYANTO***

Purpose: Cataracts are the main cause of blindness in Indonesia and the prevalence for people aged over 50 years in Indonesia for the 2013-2017 period was 1.9%. Currently, data on blindness and cataract rates in Indonesia are still lacking. So, this study aims to determine the achievement target of the Cataract Surgical Rate (CSR) in each province.

Methods: The calculation of blindness, cataract blindness, and CSR targets are processed on a worksheet in Microsoft Excel format. The calculation of total blindness per province is the percentage of blindness times the total population aged 50+ years in each of these provinces. Then, the calculation of the total cataract blindness rate per province is the percentage of cataract blindness times the total blindness in each province.

Results: The highest cataract blind rate was in West Java Province, with 268,933 cases (25.77%). The second was East Java Province, with 232,658 cases (22.29%). And the third was Central Java Province, with 109,392 cases (10, 48%). The highest CSR targets are West Java Province with 267,099 per year, East Java Province with 126,939 per year, and Central Java Province with 105,135 per year.

Conclusions: The highest rates of blindness due to cataracts are in the provinces of West Java, East Java and Central Java. The method and flow in calculating CSR targets are very helpful for ophthalmologists in calculating the burden of blindness due to cataracts as well as CSR achievement targets so that they can be used in program evaluation and advocacy steps.

The Clinical Profile of Eye Diseases in the Social Healthcare Service of Ksatria Airlangga Floating Hospital in Frontier Southernmost Regions of Indonesia

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Purpose: To describe the clinical profile of eye disease among patients in the social healthcare service of Ksatria Airlangga Floating Hospital during its voyage to the frontier southernmost regions of Indonesia, Rote and Sabu islands.

Methods: This cross-sectional study was set during the social healthcare service of Ksatria Airlangga Floating to the Rote and Sabu islands in July 2023. This project

involved 245 patients with eye problems. The patient underwent eye examinations, including visual acuity examination, anterior segment evaluation with slit lamp biomicroscopy, tonometry, and funduscopy. Cataract was graded based on the degree of maturity, while pterygium was graded according to the extent of corneal involvement. All data were recorded in the medical records and calculated using IBM SPSS Statistic 25.

Results: Most of the patients were female (53.1%). The mean age was 54.23 ± 15.62 (2 - 86) years. More than half (51.42%) had visual acuity more than or equal to 6/60. Meanwhile, the rest had worse than 3/60 (40.4%) and between 5/60 and 3/60 (8.1%). This study obtained seventeen eye disease diagnoses. The top three diseases were cataracts (39.2%), pterygium (22.4%), and refractive error (17.6%). Senile mature cataract was present in most of the patients (67%), and the majority of pterygium patients were grade III pterygium (27.3%).

Conclusions: Cataracts, pterygium, and refractive error were the most common eye diseases during the Ksatria Airlangga Floating Hospital voyage in Sabu and Rote islands. Educational effort and access improvement in diagnostic and therapeutic health centers seem vital to overcoming eye health problems in Indonesia.

The Eye and Tick-borne Diseases – A Study From South India

First Author: Rakhi ***DCRUZ***

Purpose: Globally, ticks are important arthropod vectors for the transmission of numerous infectious agents and are responsible for causing human and animal diseases. As ocular complaints usually force the patient to seek medical advice, it is important to be aware of the ophthalmic & systemic manifestations of tick-borne diseases, which will be detailed in this paper.

Methods: We conducted a prospective analysis of all the cases presented to us with tick bites during the monsoon season in South India. Detailed ocular evaluation including slit lamp, IOP and fundus evaluation was done & followed up at frequent intervals to monitor the systemic manifestation. Liaison with a local physician was created to refer and follow up with all included patients.

Results: A total of 23 eyes of 23 patients who presented tick bites in and around their eyes from June to August 2022 were included in the study. All the removed ticks were sent for microbiological analysis and species identification. The course of the disease, ocular complications, incidence of systemic manifestations, visual outcome, and investigations are discussed. Serological investigations were sent as per physician orders and frequent follow-ups and documentation were done. A total of 11 patients developed systemic manifestations which were treated immediately as per physician consultation and hence major morbidity was avoided. Seven eyes developed retinal manifestations which were managed successfully.

Conclusions: Awareness regarding the ocular & systemic manifestations of tick-borne diseases, and the need for careful ocular examination and, frequent follow-ups during the latent period, and prompt referral to a physician on suspicion of systemic disease is crucial.

The Impact of First Eye Cataract Surgery on Quality of Life

First Author: Mayasari ***KUNTORINI***

Purpose: To assess the quality of life of patients with bilateral senile cataracts after the first eye surgery compared to people with normal vision.

Methods: This was a cross-sectional study on 75 patients who had their first eye cataract surgery and 75 people with normal vision at National Eye Center Cicendo Eye Hospital, conducted from March to June 2020. The quality of life assessment was conducted by the interview method using the National Eye Institute Visual Function Questionnaire-25. The non-inferiority test with a margin of 20% was carried out.

Results: The mean age of the research subjects was 63.49 years, with the proportion of gender not different between men and women. Presenting visual acuity of binoculars after the first cataract surgery was 0.26 LogMAR and normal vision was 0.07 LogMAR. With a margin of 20%, patients' quality of life after the first cataract surgery was not inferior to the normal vision subjects (d = -2.45% (95% CI -6.3% to 1.4%).).

Conclusions: Patient's quality of life after the first cataract surgery was not inferior to those with normal vision in this study.

The Ocular Complications Among Pediatric Patients With Acute Lymphoblastic Leukemia: 10 Years Retrospective Study

First Author: Yung Jen ***LAI***

Purpose: To analyze ocular complications such as steroid-induced glaucoma, cytomegalovirus (CMV) retinitis and fungal chorioretinitis among pediatric patients with acute lymphoblastic leukemia (ALL).

Methods: We performed a retrospective study by chart review to select pediatric patients with ALL who had ever received consultation of ophthalmologists during the period from January 2013 to December 2022. The ocular manifestations, complications, and patients' condition were recorded and analyzed.

Results: We identified 114 patients who had received consultation of ophthalmologists for any reason, and there were 51 girls and 63 boys. The mean age of the study was 6.86± 4.38 years old (5.28 months~17.37 years old), and there were 87 patients receiving intraocular pressure measurement because of steroid

use during chemotherapy, 75 patients receiving fundus exam for CMV retinitis survey or fungemia. Among them, 36.78% (32/87) patients had intraocular pressure elevation, and the mean IOP was 25.08±2.7 mmHg. There was one patient diagnosed with unilateral CMV retinitis, and three patients were diagnosed with fungal chorioretinitis.

Conclusions: This retrospective study was a 10-year experience for ocular complications survey among pediatric patients with ALL. The most common complication was steroid-induced glaucoma, and we also need to pay attention to intraocular infections such as CMV retinitis or fungal chorioretinitis because children usually cannot describe their discomfort well.

The Relationship Between Knowledge, Attitudes, and Behaviors Towards Refractive Errors in Children in Urban Area

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Purpose: Refractive errors are common vision problems, particularly among children in urban areas. These conditions can significantly impact a child's quality of life and educational outcomes. Understanding the interplay between knowledge, attitudes, and behaviors concerning refractive errors is crucial for developing effective preventive strategies. The objective of this study was to explore the correlation between children's knowledge of refractive errors, their attitudes and conduct within urban areas.

Methods: This analytical observational study was conducted involving 25 fifth-grade students from an urban elementary school. These participants were selected randomly to ensure representation across various demographic factors. We administered a structured questionnaire to assess their knowledge of refractive errors, attitudes toward vision care, and behaviors related to preventive measures, such as regular eye check-ups and outdoor activities. Statistical analyses, including correlation tests, were employed to investigate relationships among these variables.

Results: This study revealed a significant correlation between children's knowledge of refractive errors and their attitudes and behaviors regarding preventive measures. Specifically, those with a higher level of knowledge tended to exhibit more positive attitudes and engaged in healthier behaviors related to eye care.

Conclusions: These findings suggest that improving children's knowledge about refractive errors can positively influence their attitudes and behaviors, which could serve as a basis for tailored public health interventions targeting urban child populations.

The Role of Volunteers at the Community Level, in Cataract Case Finding Program in Soreang, Bandung District, West Java Province, Indonesia

*First Author: Bambang **SETIOHADJI***

Purpose: This program was to help increase CSR and reduce cataract blindness starting from the community level in various areas in West Java Province, as we knew that Cataract Back Log is still a problem. This program was in September 2023.

Methods: We trained 20- 30 persons in Soreang, Bandung District, in collaboration with the local government and an NGO which initiated the training and an ophthalmologist as a trainer. The NGO provided accommodation, transportation, and materials for the training. It assisted volunteers in a cataract case finding program. They were trained how to detect cataracts by simple methods and make a register of cataract patients that they found. It will record in conjunction with the cataract registry system in Bandung District and Wes Java Province.

Results: The volunteers after the training could organize many activities in their place to do case finding in cataracts and should record and fill in the cataract registry system.

Conclusions: After the training, the volunteer could work as a partner of the government in cataract case finding to achieve an increase in CSR and reduce cataract blindness.

Visual Fields Defects as a Possible Cause of Trauma or Falls in the Patients Blaming Trauma for Their Visual Loss

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Purpose: To investigate the possibility of visual field defects as a cause of trauma or falls in glaucoma patients who blamed trauma for their visual loss.

Methods: Study Design: A hospital-based cross-sectional observational study. Duration: From January 2006 to December 2010. After taking a detailed history of the patients (who correlated their visual problems secondary to trauma/falls), a thorough ocular examination was conducted followed by visual field analysis and ocular coherence tomography of both eyes. All clinical findings and diagnoses were noted on a proforma and data analysis was done using the statistical software SPSS 17.0

Results: Out of 384 patients enrolled in the study, the most common type of ocular trauma was blunt close type observed in 229 (59.6%) patients, while 81 (21.1%) patients had non-ocular trauma. Glaucoma was diagnosed in 324 (84.37%) traumatized and 143 (37.23%) non-traumatized fellow eyes, while 53 (13.8%)

non-traumatized eyes were labeled as glaucoma suspects. Glaucoma hemifield test was found outside normal limits in 101 (26.3%) non-traumatized eyes.

Conclusions: Detection of advanced glaucoma in traumatized eyes and visual field defects in a significant number of fellow eyes suggests the possibility of existing visual field defects as a likely cause of injuries or falls in glaucoma patients. This emphasizes the need for developing prevention programs and enhancement of quality of life in glaucoma patients as ignorance of visual field defects can lead to injuries/falls.

Orbital and Oculoplastic Surgery

"A Cyst You Cannot Miss" Hidrocystoma: A Case Report

*First Author: Michael **MADLANSACAY***
*Co-Author(s): Miriam Louella **FERMIN**, Sharah Mae **KAW-DE CASTRO***

Purpose: To present a case of a 28-year-old female diagnosed with a benign orbital hidrocystoma in the right eye.

Methods: This a case report of a hidrocystoma which presented as a painless, slow-growing mass at the temporal side of the right eye. Lateral orbitotomy with canthotomy and canthoplasty with excision biopsy were done.

Results: The best corrected visual acuity of both eyes was 20/20. The right lateral upper and lower lids were everted due to a temporally located 2.5 x 2.0 x 1.5cm globular, soft, painless, fleshy mass. The conjunctiva of the right eye was slightly hyperemic with a few punctate epithelial erosions at the peripheral inferior cornea. Cranial MRI of the brain and orbits showed a 2.1 x 2.2 x 2.4cm well-defined ovoid extraconal cystic mass arising from the right lacrimal fossa. The histopathological report revealed a hidrocystoma with focal hemorrhage and chronic inflammation. Resolution of swollen lids, chemosis, and limitation on the lateral gaze of the right eye were noted post-operatively.

Conclusions: Hidrocystoma is a rare cystic mass that is infrequently seen in the orbital area. Surgical intervention with histopathology plays an important role in the proper diagnosis and management of this lesion. Every orbital lesion with unusual size and location should be evaluated thoroughly to rule out malignant potential and to assess the mass effect in it. Prompt treatment is essential in the prognosis of the disease and in preventing detrimental complications that may lead to sight-threatening conditions.

A Case Report of Orbital Metastasis of Lung Adenocarcinoma Masquerading as Carcinoma Ex Pleomorphic Adenoma

*First Author: Wonkyung **CHO***

Purpose: To report a rare case of orbital metastasis of lung adenocarcinoma which was masquerading as lacrimal gland pleomorphic adenocarcinoma.

Methods: A 63-year-old male patient was referred to our clinic for consistent right upper eyelid swelling with fullness for 3 months. MRI revealed heterogeneous signal intensity orbital mass at the right lacrimal fossa. He had had a history of excision of lacrimal gland pleomorphic adenoma of the right eye 40 years ago and it recurred 14 years later. He underwent lateral orbitotomy for complete excision for it. Otherwise, he had hypertension and primary lung adenocarcinoma (Stage T4N0M0-IIIA), for which he underwent video-assisted thoracoscopic surgery for right lung lobectomy 1 year and 8 months ago. Afterwards, he had received chemotherapy for 2 months. No brain metastasis was detected upon his initial lung cancer diagnosis based on MRI findings. CT shows a heterogeneous elongated mass with irregular bony destruction at the right superotemporal orbit.

Results: Initial attempts were made to differentiate between lung metastasis and carcinoma ex pleomorphic adenoma through an endoscope-assisted incisional biopsy, which proved inconclusive. Subsequently, a Kronlein operation was performed to debulk the orbital mass with an additional biopsy. Immunohistochemical analysis conclusively identified the tumor as metastatic lung cancer. The patient was subsequently referred to the internal medicine department for further management involving chemotherapy and radiation therapy.

Conclusions: This case highlights a unique instance of orbital metastasis from lung adenocarcinoma, initially mimicking lacrimal gland pleomorphic adenocarcinoma. Accurate diagnosis required incisional biopsy and immunohistochemical analysis. This emphasizes the importance of considering metastasis in patients with previous malignancies.

A Case Series of Septic Orbital Cellulitis Secondary to Community-Acquired Methicillin Resistant Staphylococcus Aureus Among Adults

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Purpose: To describe clinical features, risk factors, diagnostics, management, and outcomes of bacteriologically confirmed Community-Acquired Methicillin-Resistant Staphylococcus Aureus Orbital Cellulitis (CA-MRSA OC) with accompanying sepsis seen at a tertiary hospital in Metro Manila, Philippines.

Methods: This is a retrospective case series of patients admitted and referred to the Orbit and Oculoplastics Clinic from January to May 2023.

Results: Three cases of bacteriologically confirmed MRSA OC were identified at a tertiary government institution in Metro Manila (3 Filipino males). The mean age was 33.33 (range: 21-48 years) with 2 immunocompromised (Type 2 Diabetes Mellitus, uncontrolled) adults. All three patients initially presented with a nasal lesion, decreased visual acuity, periorbital swelling, ptosis, proptosis, chemosis, EOM limitation, leukocytosis, and bacteremia. Paranasal sinus disease was also present in all cases (100%). 1 case was complicated with dilation of the superior ophthalmic vein (33.3%), another with bilateral orbital involvement (33.3%), and another case with septic shock (33.3%). 2 (66.6%) cases had a history of recent antibiotic therapy prior to admission. After blood workup including culture studies were taken, empirical systemic anti-infectives were initiated which included Clindamycin, Ceftriaxone, and Ampicillin-Sulbactam. Vancomycin was introduced into the therapeutic plan after positive documentation of MRSA. The average admission length was 13.6 days (range: 13-15 days). All cases were discharged clinically improved with resolution of complications, regained visual acuity, and preserved extraocular movements.

Conclusions: CA MRSA OC was observed to progress rapidly in varying patient profiles. Good clinical outcomes were achieved through timely clinical recognition, directed workup, proper referral, and guided antibiotic therapy.

A Case of Bilateral Nasolacrimal Duct Obstruction With Sarcoidosis of the Nose and Paranasal Sinuses

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*Co-Author(s): Hiroko **HOSOKAWA**, Arisa **MITANI**, Atsushhi **SHIRAISHI***

Purpose: About 10% of sarcoidosis patients present with nasopharyngeal mucosal lesions, usually accompanied by lacrimal duct disease. Nasolacrimal duct obstruction (NLDO) associated with nasal sarcoidosis has been reported, and 50% of cases recur even after dacryocystorhinostomy. In this report, we report a case in which bilateral external dacryocystorhinostomy (EX-DCR) was performed after treatment of nasal sarcoidosis and had a good outcome.

Methods: A 52-year-old man with recurrent bilateral NLDO underwent lacrimal duct intubation on the right side and EX-DCR on the left side five years ago. Preoperative CT and endonasal endoscopic examination revealed marked swelling of the bilateral nasal and paranasal mucosa. At first, we performed functional endoscopic sinus surgery (ESS). Histopathological examination showed non-caseating epithelioid granuloma resulting in sarcoidosis of the nose and paranasal sinuses. After treatment for nasal and paranasal mucosa with topical steroids after ESS, we performed bilateral EX-DCR. There were no histopathological findings of sarcoidosis in the lacrimal sac mucosa samples at the time of DCR.

Results: We adjusted systemic steroid dosage during the postoperative course by observing the mucosal swelling and nodular lesions. The patency of DCR anastomosis had been kept all the time after EX-DCR.

Conclusions: These findings suggest that CT and endonasal endoscopic examination, nasal and paranasal sinus mucosal biopsy are effective for the diagnosis of bilateral NLDO associated with sarcoidosis of the nose and paranasal sinuses. And careful follow-up and systemic steroid administration are necessary for successful treatment.

A Rare Case of Sino Orbito Cerebral Mucormycosis in an Immunocompetent Infant

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Purpose: To discuss the clinical course, treatment, and prognosis of a one-year-old immunocompetent male child diagnosed and treated for sino orbito cerebral mucormycosis.

Methods: A one-year-old male child presented with frozen globe and ab-axial proptosis. The systemic workup including the immunological profile was normal. The mass was radiologically and histopathologically proven to be mucormycosis. Initially, he underwent debridement of the sinuses and was given three injections of retrobulbar amphotericin B, along with systemic anti-fungal therapy. The response to treatment was poor as the systemic condition worsened; MRI at this stage showed involvement of the extradural cavernous sinus, and the mass increased in size, extending up to the right maxillary region, cheek, upper jaw, and palate on the right side. He had to undergo total orbital exenteration under high-risk consent.

Results: The child started improving after exenteration. He remained stable till 1 month post-surgery, after which he was lost to follow-up.

Conclusions: Orbital Mucormycosis has been rarely reported in immunocompetent infants. The high rate of morbidity and mortality associated with it makes it necessary to be diagnosed at the earliest and to be treated aggressively. Exenteration does help in improving the condition and may be life saving. However, it does increase morbidity and requires a long course of rehabilitation.

A Reverse Algorithm for Müller Muscle Conjunctival Resection Surgery for Blepharoptosis Management

*First Author: Dr Isha **AGARWALLA***
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Purpose: To evaluate the surgical outcomes of Müller Muscle conjunctival resection (MMCR) surgery performed with a reverse formula.

Methods: A total of 24 eyes of 14 patients with mild ptosis (≤2 mm) and levator function ≥8 mm and no 2.5% phenylephrine response were enrolled in this study. Müller muscle conjunctival resection was performed between March 2022 and December 2022. The amount of excision was based on the amount of ptosis. With 1mm ptosis, 5 mm resection was done, with 2mm ptosis, 10 mm resection was done. Margin reflex distance and Schirmer test measurements were performed preoperatively and on the first, third, and sixth months postoperatively.

Results: The mean increase in the margin-reflex distance 1 was statistically significant at the first, third, and sixth months postoperatively when compared to preoperative values ($p<0.05$, Wilcoxon signed ranks test). Postoperative symmetry was achieved in 22 eyes (93.1%). Compared to the preoperative values, changes in Schirmer-1 test results were not statistically significant at each visit after the procedure ($p>0.05$, Wilcoxon signed ranks test). None of the patients had keratopathy or any symptoms of dry eye.

Conclusions: Müller muscle conjunctival resection is an alternative procedure to the external approach in patients with mild ptosis and good levator function. The reverse algorithm used does not use a phenylephrine test to predict the outcome but relies on the mechanism that MMCR in mild ptosis with good LPS activity elevates the lid by resection of Mullers, levator, conjunctiva, and tarsus, thereby causing its shortening and scaring, hence the lift occurs.

A Simple yet Effective Bick's Procedure for Correcting the Involutional Entropion: A Case Report

*First Author: Mutia Arnisa **PUTRI***
*Co-Author(s): Elza **ISKANDAR***

Purpose: To report a case of an involutional entropion patient who underwent correction surgery by Bick's procedure.

Methods: A 77-year-old male came with complaints of his lower right lashes turning inwards and causing foreign body sensation, redness, tearing, and eye discharge. A history of recurrent redness in the patient's right eye was found. Anterior segment examination revealed entropion in the lower right eyelid with corneal abrasion. We performed specifical opththalmologic examinations like pinch-test, snap-back test, and the results were positive. The patient had undergone surgery to correct the entropion using Bick's procedure. Bick's procedure is a lid-shortening modality of correcting the orbital tarsal disparity. This procedure involves a full-thickness triangular excision of eyelid tissue at the lateral canthus. The amount of resection depends on the degree of eyelid laxity, and reconstruction is achieved by reattaching the tarsal plate to the cut end of the lateral canthal tendon, and the lower eyelid entropion could be corrected.

Results: After the procedure was done, we got a satisfactory post-operative result depicting entropion, foreign body sensations, redness, and tearing were resolved. We also added the anchor-suture for 2 weeks to prevent notching in the eyelid suture. With good results of the procedure, the patient felt comfortable and his quality of life improved.

Conclusions: Bick's procedure is the recommended procedure to correct the involutional entropion. It's simple yet effective to perform by general ophthalmologists and achieve significantly better anatomical and functional outcomes. The most important after-procedure result was improving the patient's quality of life.

Adenoid Cystic Carcinoma of the Lacrimal Gland in a 9-Year-Old Female

*First Author: Reesha Rona **DATUKON***

Purpose: To present a rare case of adenoid cystic carcinoma of the lacrimal gland in a pediatric case.

Methods: A 9-year-old female presented in our clinic with proptosis and inferonasal deviation of the right eye. Her symptoms started as a small, soft, non-tender mass below her right eyebrow one year prior to consult which gradually increased in size and was associated with pain and blurring of vision over a course of 6 months. On examination of the right eye, visual acuity was counting fingers at 3 feet. A 3x3.5cm firm, fixed, nodular mass on the lateral upper eyelid was noted with inferonasal deviation of the globe. There was also a limitation in abduction and elevation of the right eye. The right eye also presented with exposure keratopathy and funduscopy revealed a grade 2 optic nerve swelling.

Results: An incision biopsy was initially done and was consistent with adenoid cystic carcinoma. The patient subsequently underwent orbital exenteration. The patient is co-managed with pediatric oncology, radiology-oncology, and plastic surgery services for the continuity and holistic management of her rare case.

Conclusions: A thorough investigation is needed to establish the diagnosis of these tumors. Albeit rare in pediatric patients, it should not be overlooked since it has a poor overall prognosis. Early recognition and management may give a better chance of survival

for the patient despite having a high rate of distant metastasis.

Age-Related Changes of the Periocular Morphology: A Two- and Three-Dimensional Anthropometry Study in Caucasians

*First Author: Jinhua **LIU***
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Purpose: To determine age- and sex-related changes in periocular morphology in Caucasians using a standardized protocol.

Methods: Healthy Caucasian volunteers aged 18–35 and 60–90 years old were recruited from the Department of Ophthalmology, Faculty of Medicine and University Hospital, Cologne, between October 2018 and May 2020. Volunteers with facial asymmetry, facial deformities, a history of facial trauma, facial surgery, Botox injection, eyelid ptosis, strabismus, or nystagmus, were excluded. Standardized three-dimensional facial photos of 68 young volunteers and 73 old volunteers were taken in this clinical practice. Position changes of endocanthion, pupil center, and exocanthion were analyzed in different age and gender groups, including palpebral fissure width (PFW): distance between endocanthions (En-En), pupil centers (Pu–Pu), exocanthions (Ex-Ex), endocanthion and nasion (En-Na), pupil center and nasion (Pu-Na), exocanthion and nasion (Ex-Na), endocanthion and pupil center (Pu-En), exocanthion and pupil center (Pu-Ex), and palpebral fissure inclination (PFI); angle of endocanthions to nasion (En-Na-En), pupils to nasion (Pu-Na-Pu), exocanthions to nasion (Ex-Na-Ex); endocanthion inclination (EnI), and exocanthion inclination (ExI).

Results: PFW, En-En, Ex-Na, Pu-Ex, PFI, ExI, and Ex-Na-Ex were signifcantly different between the young and old groups ($p \leq 0.004$). There were sex-related differences in PFW, Ex-Ex, En-Na, Pu-Na, Ex-Na, Pu-En, PFI, and EnI between both groups ($p \leq 0.041$).

Conclusions: The position change of the pupil is minimal relative to age. It is preferred to establish the reference plane to describe periocular changes. The endocanthion tends to move temporally and inferiorly, while the exocanthion tends to shift nasally and inferiorly with age.

Ankyloblepharon is a Rare But Devastating Complication Following Phototherapy in Neonatal Jaundice

*First Author: Rifat **AKTER***

Purpose: Phototherapy is a common treatment for neonatal jaundice, a condition that affects up to 60% of all newborns. The therapy involves exposing the baby's skin to blue light, which helps break down bilirubin, a yellow pigment that causes jaundice. While phototherapy is generally safe and effective, it can lead to a rare but serious complication called ankyloblepharon.

Methods: Clinical feature: Complete partial or interrupted adhesions of the upper and lower eyelids. Reduced eyelid excursion. Shortening of palpebral fissure. Large fluid cyst due to accumulation of lacrimal tear in case of total ankyloblepharon. Pseudo exotropia due to lateral ankyloblepharon. Pseudo esotropia due to medial ankyloblepharon.

Results: A significant central ankyloblepharon may interfere with vision and cause amblyopia in congenital variety. A medial or lateral ankyloblepharon may restrict the visual fields. A medial ankyloblepharon may obstruct the punctum. Management of ankyloblepharon is mainly surgical. Surgery is indicated to minimize any risk of occlusion amblyopia, for improvement of the visual field, or for cosmetic reasons. The surgical management of ankyloblepharon depends on the type and extent of the lid margin adhesion. Ankylobepharon may be treated with the separation using blunt scissors, with the use of a muscle hook, or forcibly. In our case, eyelid adhesions were broken by the use of blunt scissors.

Conclusions: Raising awareness about Ankyloblepheron is crucial in preventing its occurrence. By educating parents, caregivers, and healthcare providers about the risks and warning signs of the complication, we can ensure that neonates receive the best possible care.

Approach It the Smarter Way- TRAMB Injection for Apical Orbital Mucormycosis

*First Author: Sruthi **R S***

Purpose: Here we present a patient with rapidly progressing apical rhino-orbital mucormycosis who found his way to complete recovery of vision and orbital function from florid orbital mucormycosis with localized orbital debridement and Transcutaneous Retrobulbar Amphotericin B Injections.

Methods: A 34-year-old male presented with right eye mild ptosis, ocular motility restriction, mid-dilated pupil, and optic disc edema. His vision was counting fingers 1 meter with total ptosis and almost complete EOM paralysis. Past history of delta variant of the SARS-CoV-2 virus infection and 3 days ICU admission, treated with Inj Remdesivir, IV steroids, oxygen supplementation, diagnosed as suspected mucormycosis. Diabetic on Insulin since diagnosed with COVID-19. Sinus debridement was done elsewhere, and he was referred to us for orbital exenteration in view of the rapidly deteriorating ocular status and apical disease with a threat to cerebral involvement. He was on Inj Amphotericin B and Tab Posaconazole. Imaging revealed an area of necrosis in the posterior orbit. He underwent multiple localized orbital debridements and TRAMB injections along with Oral and IV antifungals.

Results: The patient regained a visual acuity of 20/20 with full ocular motility and resolution of ptosis. He lives and has complete vision with orbital function without any cerebral involvement over a follow-up of 36 months following the onset of rhino-orbital mucormycosis.

Conclusions: This case highlights the importance of interpretation of imaging, identifying necrotic areas, and how localized debridement with TRAMB instead of exenteration dramatically saved the vision and eye of the patient who may have otherwise undergone the conventional path of orbital exenteration.

Assessment of Lower Eyelid Retraction Improvement and Marginal Reflex Distance 2 Changes in Orbital Fat Decompression for Thyroid Eye Disease

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Purpose: We investigated the changes in Marginal Reflex Distance 2 (MRD-2) during orbital fat decompression as a potential treatment for lower eyelid retraction.

Methods: We conducted a study with 39 patients presenting lower eyelid retraction due to thyroid eye disease, comprising a total of 78 eyes. The surgical approach involved a transconjunctival technique to release the lower eyelid retractors and perform fat decompression between the medial and inferior rectus muscles and between the lateral and inferior rectus muscles. Pre- and post-operative MRD-2 measurements were taken using Image J software. We compared the average values of fat removal and MRD-2 improvement and evaluated the MRD-2 improvement per 1.0cc of fat removal. Additionally, we assessed the correlation between the amount of fat removal and MRD-2 improvement using Pearson's correlation coefficient.

Results: Our findings revealed a mean improvement of 0.45 ± 0.28 mm in MRD-2 per 1.0cc of orbital fat removal. Pearson's correlation coefficient indicated a positive correlation of 0.63 between the amount of fat removal and MRD-2 improvement.

Conclusions: Orbital fat decompression demonstrated promising results in improving MRD-2 values. This procedure proves to be effective in correcting lower eyelid retraction caused by thyroid eye disease. These findings contribute to the potential of orbital fat decompression as a viable treatment option for patients with lower eyelid retraction due to thyroid eye disease.

Blowout Fracture of the Orbital Floor With Delayed Entrapment Manifestation

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Purpose: Blowout fracture with entrapment of the eye is a condition often occurring due to trauma in the periorbital area. Entrapment of the eye occurs when soft tissues such as muscles or fat become trapped within the bone fissure, causing disturbances in eye movement.

Methods: A 35-year-old male was referred from the Ear, Nose, and Throat (ENT) Department, with previous medical records indicating a history of a traffic accident six months ago. This accident resulted in a blowout fracture dan maxillary fracture of the right eye, for which the patient underwent plate and screw fixation. The patient developed diplopia, limited eye movement, and severe headaches, prompting the current assessment. Visual acuity was normal, but there was restricted eye movement in the superior, superotemporal, and superonasal directions. The individual also exhibited enophthalmos, a condition where the eye was positioned deeper within the eye socket than usual.

Results: The patient underwent orbital floor reconstruction surgery on the right eye, which involved collaboration with the ENT specialist. The procedure included the release of trapped tissues, the performance of a forced duction test with resulting negative restriction followed by the placement of an orbital mesh in the fractured area that is not visibly apparent.

Conclusions: The patients had satisfying results with no diplopia complaints and no limited eye movements after orbital floor reconstruction and release of trapped tissues. Surgical intervention may be necessary to restore eye function and minimize the risk of complications.

Bruton's Tyrosine Kinase in a Mouse Model of Graves' Orbitopathy and Its Inhibitor's Impact on Inflammation of Disease

*First Author: Jongjin **JUNG***
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Purpose: Bruton's tyrosine kinase (BTK) inhibitors have anti-inflammatory properties. The purpose of this study was to investigate the therapeutic effect of ibrutinib, an orally bioavailable BTK inhibitor, in a Graves' orbitopathy (GO) mouse model.

Methods: Genetic immunization was performed by intramuscular injection of the recombinant plasmid, pCMV6-hTSHR cDNA on female 8-week-old BALB/c mice. Levels of serum T3, T4, and TRAb were assessed by ELISA. The pathologic changes of orbital tissues were examined by immunohistochemistry (IHC)

staining using TRAb and several inflammatory markers. After confirming the successful genetic immunization, ibrutinib (10mg/kg/day) was administered intragastrically every day for 2 weeks in GO model mice. mRNA and protein expression of BTK, ITK, IL-1β, and IL-6 in orbital tissues were evaluated by real-time PCR and western blot before and after treatment.

Results: A total of 20 mice were sacrificed to validate the successful genetic immunization. Significant elevation of serum T3, T4, and TRAb was noted in the GO mouse group. IHC showed higher expression of TRAb, IL-1β, IL-6, TGFβ1, IFN-γ, BTK, and IL-2-inducible T-cell kinase (ITK) in GO mouse model. A significant improvement in orbital inflammation was found in ibrutinib-treated mice. The mRNA and protein expression levels of BTK, ITK, IL-1β, and IL-6 in orbital tissue from ibrutinib-treated GO mice decreased compared to the control group.

Conclusions: BTK expression is enhanced in the GO mouse model. Ibrutinib, a BTK inhibitor suppresses inflammatory cytokine production. These results indicated the potential role of BTK in GO inflammatory pathogenesis and the possibility of a novel therapeutic target of GO.

Can a Pure Antam® Gold be a Weight Loading at Upper Eyelid with Paralytic Ectropion? A Case Report

*First Author: Oliffa **ATTHAHIROH***
*Co-Author(s): Riani **ERNA***

Purpose: To report a case using pure gold without holes as a weight loading at the upper eyelid with paralytic ectropion.

Methods: A 69-year-old female with lagophthalmos and a history of medial canthal tightening surgery for ectropion paralysis, there was a history of stroke one year ago. The patient was diagnosed with paralytic ectropion in the right eye with facial palsy on the right side. Management of the patient was using 1 gram pure antam® gold without holes for weight loading surgery with tying three points technique (medial, centre, and lateral) on the upper eyelid which functions to attach the gold to the tarsal of the eyelid. The patient was evaluated by a simple examination using a ruler to measure the lagophthalmos before and after the implantation antam® gold. The patient was followed up after the surgery, an antibiotic and NSAID were given after the surgery for five days.

Results: Lagophthalmos on the patient before medial canthal tightening was 8mm then reduced but stood still 5 mm with the presence of the bells phenomenon. One month follow up after the surgery, there was an improvement that lagophthalmos became 1 mm. There were not any complications such as extruded gold, infection or inflammation on the site of implantation, allergic reaction and cicatricle on the eyelid.

Conclusions: Pure gold without holes can be a weight loading at the upper eyelid with the tying three points technique.

Cavernous Sinus Thrombosis: A Case Report

*First Author: Kristine Milvi **DEL PRADO***
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Purpose: To present a case of a 44-year-old patient diagnosed with Cavernous Sinus Thrombosis.

Methods: This is a case report of cavernous sinus thrombosis who presented with a pimple-like lesion on the columella which rapidly progressed to bilateral periorbital swelling associated with blurring of vision, diplopia, and fever. The patient was admitted and treated with IV antibiotics: Piperacillin-Tazobactam 4.5g every 6 hours, Azithromycin 500mg, and Clindamycin 600mg every 6 hours. However, the patient was not able to recover and eventually succumbed.

Results: The patient was awake, intubated, and in cardiorespiratory distress. External eye examination revealed clear cornea, hyperemic and chemotic conjunctiva swollen and hyperemic lids with matting of the eyelashes associated with yellowish discharge, pupils 2-3 mm equally, briskly reactive to light, limited EOM movement in all gazes and intact red-orange reflex. Significant test results are elevated white blood cell count, CRP, and liver enzymes. A cranial CT scan showed bilateral proptosis with dilation and tortuosity of both superior ophthalmic veins consistent with CST.

Conclusions: There are no specific guidelines for the treatment of CST. Third-generation Cephalosporin, Nafcillin, and Metronidazole was the preferred empiric antibiotic treatment according to Caranfa et al in 2021. Early recognition and prompt management in achieving favorable outcomes in CST patients is warranted.

Challenges in the Management of Congenital Ptosis in School Age Patient: When Is the Best Time for Surgery?

*First Author: Anggun **LAYUCK***
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Purpose: The objective of this case report is to highlight the management of congenital ptosis and knowing the best time for surgery.

Methods: A case report of a young boy in early August 2023.

Results: An 11-year-old boy came with a chief complaint of blurred vision in the right eye (OD), which had been worsening in the past 6 months and dropping of the upper eyelid since birth. Visual acuity was 20/200 pinhole 20/50; measurement of palpebral examination found that the margin reflex distance-1 was 1 mm, fissure palpebra vertical was 6 mm, and levator action was 5 mm. Usually, in congenital

ptosis, repair may be delayed until the child is more cooperative, between 4-6 years of age. Although not all patients with congenital ptosis need surgical intervention, the patient needs to be closely monitored for conditions of deprivation amblyopia, chin-up posture, astigmatism, and ocular torticollis. Due to the severity of ptosis and the amblyopia that occurs in this patient, surgical intervention was applied immediately. The choice of operation depends on the levator function. In severe unilateral ptosis, the surgeon is presented with a difficult choice between large levator resection or brow suspension procedure. A maximal resection of the levator with suturing Whitnall's Ligament to the tarsus was the best choice to perform. After 3 weeks post-operative, the upper eyelid in the right eye yielded a better anatomical position and also made improvements to the quality of life.

Conclusions: Surgical intervention is highly indicated to prevent amblyopia and should be performed as soon as possible when amblyopia already occurs.

Changes of Meibomian Gland Function After Lower Eyelid Epiblepharon Surgery

*First Author: Seongmi **KIM***
*Co-Author(s): Hyun Sun **JEON**, Namju **KIM**, Da Eun **YOON***

Purpose: This study aims to investigate changes in meibomian gland function after eyelid correction surgery in patients with lower eyelid epiblepharon.

Methods: We retrospectively analyzed the medical records of 111 patients (222 eyes) who underwent upper eyelid correction surgery from May 2022 to April 2023 for lower eyelid epiblepharon. Age, gender, pre- and postoperative corneal astigmatism values were collected. Meibomian gland function, assessed using Lipiview II, including meibomian gland dropout rate and tear lipid layer thickness, as well as blink rate, were compared before and after surgery.

Results: The mean age at the time of surgery was 9.34 years (age range, 2-21 years), with 49 females among the 111 patients. Corneal astigmatism decreased significantly from 1.90±1.56 diopters preoperatively to 1.24±1.49 diopters postoperatively (paired t-test, p=0.000). The blink rate decreased significantly from 8.04±5.00 blinks per minute preoperatively to 6.83±4.88 blinks per minute postoperatively (paired t-test, p=0.016). Meibomian gland dropout rate (preoperative 0.31±0.36, postoperative 0.32±0.64) and tear lipid layer thickness (preoperative 66.48±27.32 nm, postoperative 66.82±24.74 nm) were well-maintained without significant changes after surgery (paired t-test, p=0.708, p=0.893, respectively).

Conclusions: Lower eyelid epiblepharon correction surgery resulted in significant reductions in corneal astigmatism and blink rate, while maintaining meibomian gland structure and tear lipid layer thickness. The surgery effectively reduced blink rate and corneal astigmatism, and meibomian gland function was not compromised after surgery. Therefore, lower eyelid correction surgery can be performed without concerns about compromised meibomian gland function when making surgical decisions.

Choroidal Melanoma Masquerading as Orbital Cellulitis: A Case Report

*First Author: Yi-hsuan **WEI***

Purpose: To present an adult case of choroidal melanoma masquerading as orbital cellulitis and the treatment course.

Methods: Case report.

Results: A 94-year-old demented man developed rapidly progressive conjunctival injection, orbital swelling, and orbital pain in the left eye for 3 days. He could not cooperate to open eyes for any assessment in our emergency department. Orbital cellulitis was the first impression due to clinical manifestations of eyelid swelling, proptosis, and hemorrhagic chemosis. B-mode sonography and CT scans were performed, which showed left exophthalmos and periorbital soft tissue swelling. In addition, a dense mass was observed within the left eyeball, raising suspicion of an intraocular tumor. Subsequent MRI confirmed the presence of a 2-cm-sized lobulated intraocular mass with a dark T2 signal and a high T1 signal in the left eye. Based on these findings, enucleation was performed, and the pathological examination confirmed a mixed cell melanoma.

Conclusions: Sterile orbital inflammation rarely occurs in conjunction with choroidal melanoma. In this case, imaging and histopathology did not reveal any extrascleral extension. The likely cause of the orbital inflammation was the release of inflammatory mediators and cytokines. Orbital MRI is the primary diagnostic tool, and confirmation of extrascleral tumor extension can only be obtained through histopathology. Although orbital cellulitis related to melanoma is a rare condition, for those without evident risk factors for infection, it is essential to investigate and consider sterile orbital cellulitis with orbital imaging.

Clinical Characteristics and Prognosis of Adult Orbital Cellulitis in a South Taiwanese Medical Center

*First Author: I Hsien **CHEN***
*Co-Author(s): Yu Kuang **CHEN***

Purpose: Adult orbital cellulitis (OC) is a rare ophthalmic condition. Comprehensive studies of OC remain limited. We aimed to identify the risk factors associated with unfavorable outcomes by evaluating the clinical characteristics and prognosis of OC.

Methods: In this retrospective study, we analyzed 28 cases, between January 2011 to April 2023, presented

with OC in a tertiary medical center. The diagnosis was based on clinical features, ophthalmic examination, and orbital computed tomography. Patients were categorized into 4 groups: patients (1) secondary to preseptal cellulitis, (2) secondary to rhinosinusitis, (3) secondary to exogenous endophthalmitis, and (4) secondary to ocular implant-related infections. For each group, age, gender, systemic diseases, culture reports, and changes between pre-therapeutic and post-therapeutic logarithms of the minimum resolution angle scored by the visual acuity (LogMAR VA) and hospitalization days were collected and analyzed.

Results: LogMAR VA changes showed improvement in group 1 (+0.25), group 2 (+0.27), and group 4 (+0.10) compared to group 3 (-0.38); the hospitalization days showed shorter in group 1 (6.23 days), group 2 (9.33), and group 4 (8.83), compared to group 3 (19.83). Patients cultured with Pseudomonas aeruginosa showed decreased logMAR VA changes (-0.21) and longer hospitalization days (17.25) compared to other species. Hypertension and heart disease had negative effects on logMAR VA improvement (-0.27 and -0.57 respectively).

Conclusions: OC secondary to preseptal cellulitis and rhinosinusitis generally has good outcomes, whereas exogenous endophthalmitis is the contrary. Pseudomonas aeruginosa, hypertension and heart disease are risks to poor VA. These results may provide supplementary information for OC evaluation.

Clinical Characteristics and Treatment Outcomes of Canaliculitis at a Metropolitan Hospital in Taiwan

*First Author: Chen **HUNG-CHIH***

Purpose: This study aims to investigate the clinical features and treatment outcomes of canaliculitis among patients treated at Show Chwan Memorial Hospital in Changhua, Taiwan.

Methods: A retrospective analysis was conducted on patients diagnosed with canaliculitis at the hospital between 2010 and 2021. The study examined epidemiological data, symptoms, clinical findings, isolated microorganisms, treatment approaches, and outcomes.

Results: A total of 48 canaliculitis cases were identified, with a gender distribution of 32 females and 16 males, and an average age of 63.5 years. Common initial symptoms included eye discharge (87.5%), redness (83.3%), and tearing (79.2%). Positive bacterial cultures were found in 30 patients (62.5%), predominantly isolating Streptococcus (16.7%) and Staphylococcus (14.6%). Canaliculotomy and curettage were performed on 46 patients (95.8%), leading to complete resolution of canaliculitis. Recurrent infections occurred in three patients. Notably, 7 patients (14.6%) had a history of plug insertion for dry eye, all of whom were female. The mean interval from plug insertion to canaliculitis diagnosis was 5.3 years.

Conclusions: Gram-positive bacteria, particularly Streptococcus and Staphylococcus, were commonly identified in canaliculitis cases. Additionally, canaliculitis associated with previous plug insertion for dry eye should be considered in differential diagnoses.

Clinical Characteristics and Treatment Outcomes of Morbihan Disease of the Eyelids: A Single-Center Retrospective Study

*First Author: Yeonga **CHOI***
*Co-Author(s): Ho-seok **SA**, Min Kyu **YANG***

Purpose: This study evaluated the clinical characteristics and treatment outcomes of Morbihan disease (MD) of the eyelids, a rare condition characterized by chronic erythematous edema of the face, including the eyelids.

Methods: We retrospectively analyzed records of consecutive patients diagnosed with MD from March 2011 to December 2022. We evaluated clinical presentation, involvement patterns, histopathology, and treatment results. Nonsurgical treatments were grouped as no treatment, oral steroid, intralesional steroid injection, and combination. Intralesional patients were further categorized into low-dose (<20mg) and high-dose (≥20mg) subgroups. Treatment outcomes were classified as complete response (CR), partial response (PR), or no response.

Results: The study involved 67 patients (mean age 54.3 ± 11.9 years), with 44 (65.7%) being male. Among the 57 patients undergoing nonsurgical treatments, significant treatment response disparities emerged between oral steroids (n=13), intralesional steroid injections (n=16), and the combination group (n=28) ($p < 0.001$). Intralesional steroid injection (50.0%) and combination (89.3%) groups demonstrated superior responses (CR or PR) compared to the oral steroid group (46.2%) ($p<0.05$ for each). The high-dose (≥20mg) injection group exhibited a slightly better response than the low-dose (<20mg) group ($p= 0.06$). During follow-up, 23 of 57 patients (40.3%) underwent debulking surgery with blepharoplasty, and 21 of 23 (91.3%) sustained satisfactory outcomes. Common histopathological findings included lymphocytic infiltration, dermal edema, and lymphangiectasia.

Conclusions: Intralesional steroid injections proved more effective than oral steroids for managing the MD of the eyelids, particularly at doses exceeding 20mg. Additionally, less than half of the patients required eyelid surgery for debulking, which effectively provided persistent control of eyelid edema.

Clinical Use of High-Pixel Channel-Less Dacryoendoscope

*First Author: Akemi **IWASAKI***
*Co-Author(s): Yoichi **MANABE***

Purpose: To report on the actual clinical use of a high-pixel channel less dacryoendoscope and how the lacrimal duct can be seen.

Methods: A high pixel channel less dacryoendoscope (RUIDO Fiberscope EZ Tb.®; FiberTech Co.) was used for ELDR (endoluminal lacrimal duct recanalization) and postoperative lacrimal duct endoscopy.

Results: Saline water could be passed into the lacrimal duct through the 18-gauge catheter (sheath). The adapter and the sheath of the dacryoendoscope could be easily moved back and forth with one hand, even when inserted into the lacrimal duct. By moving the sheath forward from the tip of the dacryoendoscope, SEP (sheath-guided endoscopic probing) and membranotomy could be performed. Because the sheath could be moved freely, a sufficient focal distance could be secured between the mucosa of the lacrimal duct, and the mucosa, tissue, and blood vessels of the lacrimal duct lumen could also be confirmed. The sheath could be removed by holding the sheath and turning the adapter, allowing tube insertion methods such as LJEI (Lidocaine Jelly Expanded Intubation) and SGI (sheath-guided intubation).

Conclusions: The high-resolution channel-less dacryoendoscope is not only cleaner, but also easier to perform ELDR and produces clearer images for clinical use.

Clinicoradiologic Differences between Orbital Schwannoma and Cavernous Venous Malformation: A Retrospective Comparative Case Series

*First Author: Ulysses Joseph **YAP***
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Purpose: To compare clinical features, magnetic resonance imaging (MRI) characteristics, and surgical outcomes of orbital schwannoma and cavernous venous malformation (CVM).

Methods: A retrospective chart review included 16 biopsy-proven orbital schwannoma patients and 27 biopsy-proven CVM patients. Associations between clinical features, MRI features, surgery type, and treatment outcomes were evaluated.

Results: In both schwannoma (n=16, mean age: 42.9±16 years, 50% females) and CVM groups (n=27, mean age: 50.4±8.5years, 59.3% females), gradual proptosis was the most common symptom (75%,48.1%, respectively) with mean measurements of 2.5±2.8mm and 1.5±1.6mm, respectively. Schwannoma and CVM were commonly located superomedially (50%,33.3%, respectively) and intraconally (62.5%,59%, respectively), with mean sizes of 21.0±9.7mm and 18.4±5.7mm, respectively. No significant differences were found in these characteristics between both groups (all p>0.05). On T1-weighted-MR-imaging (T1WI), schwannomas appeared iso-, hypo-, or hyper-intense (66.6%,20%,13.3%, respectively), while all CVM lesions appeared iso-intense (p=0.007). On T2WI, 86.7% of schwannomas showed heterogeneous parenchyma, whereas 61.5% of CVM lesions appeared homogenous (p=0.002). In Gadolinium-contrast MRI, 81.2% of schwannomas exhibited wide early enhancement, while 92.3% of CVM lesions displayed nodular early and diffuse late enhancement (p<0.001). Entire surgical removal without violating the capsule was performed in most patients [schwannoma:81.3% (13/16); CVM:100% (27/27)], and bony marginotomy was required in 3 schwannoma and 2 CVM patients. Three schwannoma patients underwent subtotal resection for apical (n=1) or intramuscular lesions (n=2), with no observed recurrence during an 8.4±3.8-month follow-up.

Conclusions: MRI aids in pre-operatively diagnosing orbital schwannoma and CVM, given their overlapping clinical features. Complete removal without bony marginotomy is effective in most cases of both pathologies. Subtotal resection of anatomically-challenging schwannomas didn't lead to recurrence, suggesting that complete removal shouldn't be prioritized at the risk of vision loss.

Comparative Analysis of Fusion Image Area Before and After Fracture Reduction Surgery Involving Inferior Oblique Muscle Detachment for Combined Orbital Floor and Medial Wall Fractures

*First Author: Ryo **KIKUCHI***
*Co-Author(s): Tomoyuki **KASHIMA***

Purpose: Combined orbital floor and medial wall fractures often come with a disrupted inferomedial strut, leading to diplopia and enophthalmos. Conventional methods require separate surgical fields for the medial wall and floor, often posing challenges during reconstruction. In our institution, we connect an incision from the lower eyelid conjunctiva to the lacrimal caruncle. After this approach, the inferior oblique muscle is detached along with the periosteum, allowing for reconstruction of the medial and floor fracture using a single plate. We investigated the changes in fusion image area (FIA) and exophthalmos before and after the operation.

Methods: We conducted a retrospective study on 12 patients (7 males, 5 females) who underwent orbital fracture reduction surgery at our institution from March to October 2022. We performed paired T-tests for FIA and exophthalmos pre-operation, one week post-operation, and three months post-operation.

Results: The FIAs at pre-operation, one week post-operation, and three months post-operation were 37±14°, 25±19°, and 42±4.3°, respectively. The comparative study showed p=0.063 between pre-operation and one-week post-operation, and p=0.23 between pre-operation and three months post-operation, indicating no significant difference. On the other hand, the exophthalmos was 14±2.4 mm pre-operation and 16±2.2 mm three months post-operation, showing a significant difference with p<0.001.

Conclusions: While no significant difference was observed one week after the surgery in our method, there was a transient decrease in FIA. However, three months post-operation, the FIA increased to pre-operation levels. Additionally, favorable exophthalmos was achieved. Our reconstruction method, using a single surgical field and one plate, proves to be a highly effective approach.

Comparison of Titanium, Medpor and Silicone Biomaterials to Improve the Treatment of Blowout Fractures: A Systematic Review

*First Author: Wildan **SANTOSO***
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Purpose: Orbital Floor Fractures (OFF) are a common type of facial fracture, representing approximately 15% of all facial fractures and 40% of orbital trauma. Alloplastic materials are used for the management of OFF, which aims to fix normal anatomy and resolve clinical symptoms through a surgical approach. The aim of this study is to compare the efficacy of titanium, Medpor, and silicone materials in the management of OFF.

Methods: A systematic search was conducted through PubMed, the Cochrane Library, and Scopus to obtain relevant papers to be reviewed. Inclusion criteria were patients with orbital inferior/floor fractures that were surgically corrected with titanium, Medpor, or silicone/silastic materials with a follow-up period of at least three months. Preoperative and postoperative signs and symptoms were assessed, including primary outcomes (enophthalmos, diplopia) and secondary outcomes (extrusion of materials, infection, etc).

Results: Nine articles, some of which observed more than one material, were acquired in the data extraction. Two studies were RCT, while the rest was cohort. Enophthalmos improvement was found in all three materials, but the most favorable outcome was from titanium (90.90-100%). Diplopia improvement occurred in the use of all materials as well, where Medpor showed the best improvement (80-100%). Complications were found in the use of titanium and silicone, but were not found in Medpor material.

Conclusions: Titanium, Medpor, and silicone have satisfying clinical outcomes for OFF management. However, in our study, Medpor was overall superior because it showed no post-operative complications.

Congenital Ectropion: A Life Challenging Case

*First Author: Eka **RAHMADINI HS***

Purpose: To report a case of congenital ectropion which was treated by permanent tarsorrhaphy at the lateral palpebra. Ectropion is an outward turning of the eyelid margin. Congenital ectropion is a very rare case and may be seen in association with other congenital diseases. This patient also had Down syndrome.

Methods: A case report of a 15-month-old girl with congenital ectropion on the superior and inferior palpebra of both eyes. This patient was managed with surgical treatment by permanent tarsorrhaphy at the lateral third of the palpebra. The operation was performed under general anesthesia. It ensured the sutures to exit and enter within the grey line of the eyelid margin to avoid suture-induced irritation postoperatively.

Results: The horizontal palpebra fissure became smaller after the surgical treatment, and the margin of the palpebra became less ectropion. We planned to manage the ectropion by lengthening the anterior lamella by a skin graft, but decided to delay and observe the development of the facial bone of the patient until 5 years old.

Conclusions: Patients with ectropion may experience symptoms due to ocular exposure, inadequate closure, and lubrication. But, the uniqueness of a disease in children is that they cannot describe the inconvenience they feel. Hence the symptom becomes chronic and can cause damage to the ocular surface. The treatment aims to protect the ocular surface from exposure.

Core-Needle Biopsy of Orbital Tumors: 17-Year Experience

*First Author: Andrei **YAROVOI***
*Co-Author(s): Svetlana **KLEYANKINA***

Purpose: To present our experience of core needle biopsy (CNB) of orbital tumors.

Methods: Since 2006, 103 orbital lesions of 98 patients (aged from 2 to 85 years) were biopsied using 20- and 18-gauge semi-automated needles. Some of the procedures were done under US-guidance. In 7 cases of deep orbital tumors CNB was fulfilled within orbitotomy. The routine histopathological and cytological examination and immunohistochemical analysis of the tissue cores were fulfilled.

Results: Specimens diagnostically sufficient for histological analysis were obtained in all biopsies. The histopathological diagnosis was established in 97% of specimens: 72 lesions were malignant (40 - lymphoma, 10 - rhabdomyosarcoma, 13 - carcinoma metastasis, 2

- lacrimal gland carcinomas, 5 melanoma, 1 malignant schwannoma, 1 glioblastoma). Cytology was fulfilled in 82 cases. CNB diagnosis was confirmed by excisional or incisional biopsy in 55% of patients. Four biopsies were diagnostically unsuccessful: 3 (lymphoma, neurofibroma, angiofibroma) showed undetermined identification, and one gave false-negative identification (lacrimal gland adenocarcinoma was misdiagnosed as fibrous tissue). Sensitivity, specificity, and accuracy for differentiating malignant from benign lesions were 92%, 100%, and 99%, respectively. Mild retrobulbar hematoma as a complication of CNB occurred in 4 patients and regressed spontaneously.

Conclusions: CNB of orbital mass lesions is a safe procedure that provides a sufficient amount of tissue material for histological, cytological, and immunohistochemical analysis and can be an alternative to FNAB and diagnostic orbitotomy.

Cutler Beard Procedure as a Solution for Upper Eyelid Defect Secondary to Malignant Tumors

*First Author: Rizka Yunanda **YUNANDA***
*Co-Author(s): Riani **ERNA***

Purpose: To Describe Cutler Beard Procedure as A Solution for Large Upper Eyelid Defect Secondary to Malignant Tumors.

Methods: We report four similar case series of patients with upper eyelid mass that covered more than 70% of the upper eyelid resulting in a defect due to the wide excision procedure. The Vries Coupe was performed after the excision of the mass and after having clear surgical margins, the defect was reconstructed with the Cutler Beard procedure. It began by marking the skin 4 mm below the inferior eyelid margin, extending to the size of the defect, then dividing the flap layer by layer. The eyelid is placed under the bridge of the lower eyelid and then sutured to the upper eyelid defect. The postoperative period of each case was uneventful. Five weeks postoperatively, all patients underwent flap removal using the Cutler Beard procedure stage II. Functional, and cosmetic outcomes and postoperative complications were evaluated.

Results: No upper eyelid retraction, eyelid margin entropion, or graft retraction five months after separation. The procedure resulted in good aesthetic quality and acceptable sequelae at the donor site. The patients were satisfied with the aesthetic result.

Conclusions: The goals of eyelid reconstruction include restoring eyelid structures and functions and achieving a cosmetically acceptable appearance with minimal surgical morbidity, which presents a great challenge for surgeons. The Cutler-Beard procedure involves a two-stage eyelid-sharing technique for repairing full-thickness upper eyelid defects involving up to 50% of the eyelid. It is an effective procedure with satisfactory long-term results.

Effects of Hyaluronic Acid/Collagen Resorbable Gel Use in Endoscopic Dacryocystorhinostomy

*First Author: Hyungyu **LEE***
*Co-Author(s): Se Hyun **BAEK**, Lee **HWA***

Purpose: The purpose of this study was to investigate whether the use of hyaluronic acid/collagen resorbable gel (Regenwel®) has an inhibitory effect on rhinostomy obstruction during Endo DCR.

Methods: A total of 298 patients diagnosed with unilateral primary acquired nasolacrimal duct obstruction from May 2017 to June 2021 who underwent Endo DCR were enrolled. The patients were divided into the Regenwel group (152 patients) and the Control group (146 patients) that did not use Regenwel during surgery, and the medical records were compared and analyzed retrospectively.

Results: Regarding anatomical success as the primary outcome, the Regenwel group had a higher success rate than the Control group (96.7% vs. 86.3%, p=0.012), and the functional success result confirmed that the Regenwel group had a higher success rate than the Control group (94.1% vs. 84.3%, p=0.024). Among secondary outcomes, granulation formation occurred less frequently in the Regenwel group than in the Control group (9.2% vs. 32.2%, p <0.001), and there was no statistically significant difference in postoperative bleeding between the two groups (0% vs. 1.4%, p=0.478). The Regenwel group had fewer infections after surgery than the Control group (5.3% vs. 8.9%, p=0.012) and required less frequent revision surgery (2.0% vs. 15.8%, p <0.001).

Conclusions: Regenwel® is a resorbable gel containing hyaluronic acid and collagen that is used during Endo DCR and is thought to contribute to the improvement of surgical success rate by preventing complications such as rhinostomy obstruction and bleeding.

Efficacy and Systemic Effects of Deep Orbital Triamcinolone Injection for Thyroid Eye Disease

*First Author: Miwa **AIKAWA***
*Co-Author(s): Ryo **KIKUCHI**, Masashi **MIMURA**, Yuji **YAMANA**, Yuki **KAMIYA***

Purpose: This study evaluates the efficacy of orbital triamcinolone injections in mitigating symptoms of thyroid eye disease (TED) and explores their local and systemic effects.

Methods: A prospective study was conducted on TED-diagnosed patients who underwent bilateral orbital triamcinolone injections between January 2021 and March 2023. Eligibility criteria included a Clinical Activity Score (CAS) of ≥2, extraocular muscle inflammation, and upper eyelid retraction. Intraorbital injection of triamcinolone acetonide (40 mg) was performed. Parameters such as CAS score, margin–

reflex distances (MRD1 and MRD2), intraocular pressure (IOP), blood indices, exophthalmometry, and MRI indices were assessed. Data were collected pre-injection, at 2 and 4 weeks post-injection, and analyzed via the Wilcoxon signed-rank test.

Results: The analysis involved 56 eyes from 28 patients (mean age: 38.7 ± 11.1 years). After 4 weeks, the initial CAS score significantly decreased from 4.22 ± 1.29 to 2.20 ± 1.10 ($P < 0.001$). MRD1 improved from 4.25 ± 1.67 mm to 3.53 ± 1.55 mm ($P < 0.001$), with MRD2 unchanged. Exophthalmos and IOP remained stable. Extraocular muscle volume decreased at 4 weeks (superior rectus: 30.9%, inferior rectus: 36.2%, medial rectus: 21.1%, lateral rectus: 26.9%, inferior oblique: 23.3%) (all $P < 0.001$). Systemic effects included altered blood indices, notably thyroid panel indices, and cortisol levels.

Conclusions: Orbital triamcinolone injections effectively alleviate TED symptoms and reduce extraocular muscle volume. This study highlights the promising therapeutic role of orbital steroid injection for TED.

Efficacy of Lacrimal Gland Botulinum Toxin Injection in Intractable Epiphora – A Prospective Case Study in a Tertiary Eye Care Centre

*First Author: Isha **NIRGUDKAR***

Purpose: To assess the clinical outcomes of lacrimal gland botulinum toxin injection in patients of inoperable epiphora or patients who deny surgery for epiphora. To assess patient response and satisfaction with botulinum toxin injections in epiphora. To check for complications, post-botulinum toxin injections.

Methods: The study was conducted on OPD patients in a Tertiary Eye Care Centre that included patients presenting with complaints of epiphora to the OPD, who met the inclusion and exclusion criteria. The study duration was 2 years and was a prospective, observational study. Botulinum toxin injection (Clostridium botulinum type A neurotoxin complex) was given in the palpebral lobe of the lacrimal gland. It was performed under topical anesthesia with proparacaine 0.5%. A total of 40 eyes have been studied to analyze the clinical outcomes of botulinum toxin injections by comparing parameters pre-injection and post-injection 1 month and 3 months.

Results: The overall mean age group of this study was 59.7 ± 12.2. Bipunctal stenosis had a common cause with a share of 32.5%, followed by common canalicular block, functional epiphora each 25%, Post DCR common canalicular block, partial NLDO and bicanalicular stenosis each 5% and malposition of lower lid (2.5%). There was a significant reduction in pre-injection Schirmer I scores and Munk scores and post-injection scores at 1 month and 3 months with P-values 0.000 and 0.000, respectively.

Conclusions: The intraglandular injection of botulinum toxin in the palpebral lobe of the lacrimal gland is a safe, effective, reliable, well tolerated and minimally invasive procedure for patients with intractable epiphora.

Efficiency of Lateral Wall Decompression for Thyroid Eye Disease: Enhancing Final Decompression Results Through Modified Steps

*First Author: Honglei **LIU***

Purpose: The purpose of this study was to evaluate the efficiency of lateral wall decompression using modified steps for the treatment of Thyroid Eye Disease (TED). Previous reports have demonstrated up to 6 mm reduction in proptosis following lateral decompression. With the implementation of our modified steps, we were able to achieve more than a 10 mm reduction in proptosis.

Methods: In comparison to previous lateral wall decompression surgeries, we introduced several modifications. These included extending the bony windows to reach the superior orbital fissure, or at least removing the enlarged portion of the greater wing of the sphenoid bone. We created additional space for the swollen lacrimal gland, removed all thickened lateral periosteum, and selectively removed fat located within the intracoronal space.

Results: By employing these modified steps, we observed a reduction in proptosis of more than 10 mm in TED patients, surpassing the findings of previous reports. Potential complications associated with this procedure include cerebrospinal fluid (CSF) leakage resulting from dural tear, pupil dilation, bleeding in the apex region, and numbness in the temporal region.

Conclusions: Compared to alternative approaches for decompression, our modified lateral decompression technique offers a safer and more efficient method. It is associated with a lower incidence of new onset diplopia and achieves a maximal reduction in proptosis.

Evaluate the Effect of Single-Triangle Technique With a Frontalis Sling Using Silicone Rod to Repair Ptosis

*First Author: Ngan Ha **NGUYEN***
*Co-Author(s): Cuong **HOANG**, Lanh **PHUONG***

Purpose: To evaluate the effect of the single-triangle technique with a frontalis sling using a silicone rod to repair moderate and severe ptosis.

Methods: Patients with ptosis indicated for frontalis sling were treated at National Eye Hospital from 7/2021 to 9/2022. Patients were performed with the single-triangle technique with a frontalis sling using a silicone rod. The surgical results were evaluated after 2 weeks, 1 month, and 3 months.

Results: The mean age of the patients was 18.2±16.2 years. Among 38 eyes, the majority of patients had severe ptosis (76.3%) and there was no case of mild ptosis. 2 weeks after surgery, MRD1 increased to 3.67±0.48 mm. MRD1 continued to increase at 1 month after surgery and unchanged at 3 months follow-up.

Conclusions: The single-triangle technique with a frontalis sling is an effective method both in terms of function and aesthetics for moderate and severe ptosis.

Extensive Orbital Osseous Metaplasia

*First Author: Kavitha **SARAVANAMUTHU***

Purpose: To report a rare case of extensive orbital osseous metaplasia.

Methods: A case report.

Results: A 72-year-old gentleman presented with worsening of right eye proptosis for 2 months. It was associated with constant unbearable pain and redness. It started with the right upper eyelid swelling for 3 years which gradually increased in size. The right eye vision progressively deteriorated to no perception of light for 1 year. The right eye showed severe non-axial proptosis with a displaced ruptured globe inferomedially. The mass measured 95mm horizontal x 90mm height x 30mm width with protrusion anteriorly and caused the displacement of the eyebrow superiorly. The mass effect pushed the right upper tarsus inferiorly which was covered by a thick layer of keratinization with severe exposure. The surface of the mass was lobulated and hard in consistency. Left eye visual acuity showed 6/9 with normal anterior and posterior segment ocular examination computed tomography of the orbit revealed a heterogenous mass with calcification occupying intra and extraconal space with displacement of the indented orbit inferomedially. The apical calcification is in continuation of the roof of the orbit. Right eye orbital mass incisional biopsy was performed and revealed osseous metaplasia. Hence, the patient underwent lid-sparing modified exenteration.

Conclusions: A rare occurrence of large orbital osseous metaplasia can be extremely debilitating especially when the proptosis increases in proportion to the displacement of the eyeball. Prompt and meticulous plans of management play a vital role in handling such cases.

Eyelid Reconstruction on Bilateral Symblepharon With Complete Ankyloblepharon as a Residual Signs of SJS-TEN: A Case Series

*First Author: Muhammad Ilham **MALDA***
*Co-Author(s): Senyum **INDRAKILA***

Purpose: This report presents a case series of bilateral symblepharon with complete ankyloblepharon on patients with a previous history of SJS-TEN.

Methods: We present two patients with bilateral symblepharon with complete ankyloblepharon who had a previous history of SJS-TEN due to oral drug consumption. The patients developed ocular manifestations following the resolution of the acute phase of SJS TEN. We performed symblepharectomy on the patients. The main outcome measures were the resolving of eyelid adhesion.

Results: The procedure was successfully performed with a satisfactory outcome, measured by the resolution of eyelid adhesion. We also found an improvement in the visual acuity of each patient.

Conclusions: This report presents two patients complaining of visual disturbances due to skin necrolysis after oral drug consumption. Both patients underwent symblepharectomy and the outcome was satisfactory.

Fat Removal Orbital Decompression Outcomes in Thyroid Eye Disease Management: A Case Series

*First Author: Mardijas **EFENDI***
*Co-Author(s): Harsya **ANSHARI**, Hendriati **JEFRIANTO**, Novian **SAPUTRA***

Purpose: To evaluate the outcome of Fat Removal Orbital Decompression (FROD) in patients diagnosed with Thyroid Eye Disease (TED) with significant proptosis. Inferotemporal and superomedial orbital fat will be removed with a total of 3 ml. We focused on the reduction in proptosis and discomfort of the patients.

Methods: Two patients diagnosed with significant proptosis underwent FROD. Case 1, a 27-year-old female presented with bilateral proptosis and discomfort in both eyes. Visual acuity (VA) was normal, lagophthalmos was seen in both eyes, and diplopia was found. Exophthalmometry showed 22 mm in the right eye and 21 mm in the left eye. The patient had been diagnosed with hyperthyroid for almost 2 years and given a high dose of oral steroid, but no improvement was observed. Case 2, a 47-year-old female presented with bilateral proptosis and double vision since 10 months before the visit. The patient had been diagnosed with hyperthyroid for 2 years. Visual acuity was normal, and lagophthalmos was not found in either eye. Exophthalmometry showed 21 mm in both eyes.

Results: Both patients underwent FROD in the right eye. Following FROD, they showed satisfying results with reduced proptosis and eye discomfort with no complications. Double vision and proptosis were reduced by 2 mm in each eye. Patients with enlargement of the orbital components may benefit from fat decompression. The degree of proptosis can be reasonably decreased after undergoing FROD.

Conclusions: FROD causes volume reduction with subsequent proptosis reduction. FROD, with its results, may be an effective, reliable, and safe procedure in patients with proptosis.

Filler Induced Localized Posterior Ciliary Artery Occlusion Following Subcutaneous PLLA Injection

*First Author: Wei-ping **HSIA***
*Co-Author(s): Chia Chi **LEE**, Chiao-ying **LIANG***

Purpose: To report the nature course of a case of filler-induced posterior ciliary artery occlusion following subcutaneous Poly-L-lactic acid injection.

Methods: A case report.

Results: A 52-year-old female who received LASIK 10 years ago presented with sudden onset of left eye visual impairment with diplopia after receiving subcutaneous Poly-L-lactic acid injection to the forehead and glabella areas. Diplopia subsided in 5 minutes but persisted. The left eye's blurred vision was noted for one day, and she came to our hospital. Her best corrected visual acuity of the right eye was 6/6, and the left eye was 6/5. No limitation of eye movement, relative afferent pupillary defect, or anterior segment inflammation was noted. A fundus examination of the left eye revealed disc edema with intact retinal vessels without retinal whitening or cherry red spots. Fundus examination of the fellow eye revealed no abnormality. 30-2 Humphrey visual field test disclosed an enlarged blind spot of the left eye. Magnetic resonance angiography did not reveal any additional information. FAG and ICG showed ischemia of choriocapillaris at the peripapillary area in the left eye. Localized posterior ciliary artery occlusion of the left eye was impressed. After receiving 7 times hyperbaric oxygen therapy with topical brimonidine eyedrops, her BCVA was 6/6, and fundus examination showed no progression to retinal artery occlusion. SD-OCT revealed improvement of disc edema of the left eye.

Conclusions: Localized posterior ciliary artery occlusion associated without profound vision impairment rather than generalized posterior ciliary artery occlusion associated with CRAO can occur after subcutaneous PLLA injections.

Fronto-Ethmoidal Mucoceles of Orbit: A Ten Years Review in a Tertiary Eye Hospital of Bangladesh

*First Author: Mukti **MITRA***
*Co-Author(s): Md.Alauddin **AL AZAD**, Narayon **BHOWMIK**, Syeed **KADIR***

Purpose: To evaluate the clinical features and surgical preferences of patients with fronto-ethmoidal mucoceles of orbit.

Methods: Fifty-five cases of fronto-ethmoidal mucoceles of orbit over a period of ten years in the Department of Ophthalmology of tertiary care hospital were reviewed retrospectively with regard to their clinical features, radiodiagnostic techniques and surgical policies. CT scanning was very useful in determining the extent of the lesion and the possibility of intracranial complications. The transorbital fronto-ethmoid approach was successfully used in all cases with a very good outcome.

Results: Fifty-five patients with a mean age of 28.9 ± 18.2 years were reviewed in the study. Nine were younger and 46 were older than 20 years. Fifty-one patients had unilateral, and four had bilateral involvement. Different clinical features, such as Proptosis with horizontal dystopia, was the most common presenting features (41, 74.5 %) followed by Restricted ocular movements, dull forehead pain and palpable lesion in the superior and medial part of the orbit. Patients were followed for a mean of 6.6 ± 4.2 years. Recurrence was seen in three patients (One child of bilateral involvement).

Conclusions: Fronto-ethmoidal mucoceles are benign and curable lesions, early recognition and management of which is of paramount importance because they can cause local, orbital, or intracranial complications cosmetically unacceptable. Enophthalmos is the most common postoperative sequel of long-standing cases.

Horizontal Shortening Orbicularis Oculi Muscle Technique on Rejuvenation of Secondary Lower Blepharoplasty

*First Author: Huong **DUONG***

Purpose: To evaluate the outcome of surgical treatment secondary lower blepharoplasty using horizontal shortening orbicularis muscle technique.

Methods: Case reports. A series of patients presenting with horizontal shortening orbicularis oculi muscle undergoing lower eyelid revision from May 2022 to December 2022. Demographic data, operative data, complication rates, and satisfaction rates were noted.

Results: The results achieved using this technique have been good to excellent. Lower eyelid skin was pulled straight to help improve wrinkles and prevent ectropion. All patients had a high degree of satisfaction.

Conclusions: Good technique for rejuvenation of lower eyelid blepharoplasty revision.

Horner's Syndrome-Related Ptosis Surgery: Unveiling a Successful case

*First Author: Vishnu **RAO***
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Purpose: This case report highlights the occurrence of Horner's syndrome as a potential complication following surgical resection for neck schwannomas. It was attributed to inadvertent disruption of sympathetic nerve fibres during tumour resection.

Methods: A case report.

Results: A 36-year-old Chinese male with underlying hypercholesterolemia presented with ptosis over his right eye following surgical resection of schwannoma located in the right neck region. On examination, there is a horizontal scar over the right paratracheal region. No anisocoria noted. Other ocular examinations were unremarkable. He underwent right upper lid posterior approach ptosis correction under local anaesthesia with complete recovery of ptosis.

Conclusions: Horner's syndrome can arise as a postoperative complication following neck schwannoma surgery due to its proximity to sympathetic nerve pathways. Surgeons must be vigilant to minimize nerve damage during tumour resection. Patients should be educated about potential neurological sequelae. This case underscores the importance of interdisciplinary collaboration between otolaryngologists, neurosurgeons, and ophthalmologists to ensure accurate diagnosis, appropriate management, and optimal patient outcomes. Further studies are warranted to explore strategies for preventing and managing Horner syndrome in the context of neck tumour surgeries.

Invasive Rhino-Orbital-Cerebral Aspergillosis With Internal Carotid Artery Invasion: The Line Between Death and Survival

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*Co-Author(s): Younshen **BEE**, Tzuyu **HOU**, Kuansheng **WU***

Purpose: To report and compare 2 cases of invasive rhino-orbital-cerebral aspergillosis with internal carotid artery invasion in diabetic patients, and discuss the key to survival.

Methods: The medical records of the two cases were reviewed and compared. Their image studies, surgical findings, and pathologic and culture reports were viewed alongside. The opinions of combined specialists (otorhinolaryngologist, neurosurgeons, infection) were taken into account. Related literature was reviewed.

Results: We report 2 cases of invasive rhino-orbital-cerebral aspergillosis with internal carotid artery invasion in two diabetic patients, both presented with orbital apex syndrome. One survived healthy and mobile after a combined rhino-orbital and skull base debridement, and ruptured internal carotid artery ligation with an otorhinolaryngologist and a neurosurgeon, while the other patient passed away following endonasal sinus debridement and a protracted course of a stroke, renal failure, septicemia and coma. Difficulty in evaluating the extent of intracranial or vascular invasion by image preoperatively was an obstacle for surgical planning, thus the combined surgeons suggest consultation of an otorhinolaryngologist and neurosurgeons before surgical debridement in any case of suspected fungal infection-related orbital apex syndrome. Also, infection specialists advocate our timely consultation for the accurate use of antimicrobials.

Conclusions: Despite the similar extent of fungal invasion into the orbit, skull base, and internal carotid artery in the 2 patients, the time of diagnosis, the extent of debridement, the antifungal agent used, and the outcome were very different. We believe, that in this rare but fatal disease, reviewing case by case should be carried out, and would finally benefit the next patient stepping into our clinic.

Langerhans Cell Histiocytosis of Bilateral Eyelid: A Rare Case Report

*First Author: Nur Hanis **YUSRI***
*Co-Author(s): Norlaila **TALIB***

Purpose: To highlight the unusual presentation of Langerhans cell histiocytosis masquerading as bilateral eyelid chalazion.

Methods: This is a case report of a 2-year-old boy with bilateral upper and lower eyelid swelling due to Langerhans cell histiocytosis.

Results: A 2-year-old boy with no known medical illness presented with painless bilateral upper eyelid swelling of 4 months duration. Despite conservative treatment for chalazion, the lesions worsened and ruptured, resulting in upper lid defects. Incisional biopsy of both upper and lower lids confirmed the diagnosis of Langerhans cell histiocytosis.

Conclusions: Langerhans cell histiocytosis of the eyelid should be included in the differential diagnoses of eyelid lesions. An eyelid biopsy is imperative in patients with apparent chalazion who fail to respond to standard therapy.

Lateral Tarsal Strip Procedure in Paralytic Ectropion

*First Author: Riffat **RASHID***
*Co-Author(s): Farzana **AFZAL**, Syeed **KADIR**, Farhana Afrin **NIPA**, Sadia **SULTANA***

Purpose: To evaluate the surgical outcome of lateral tarsal strip procedure in paralytic ectropion.

Methods: This prospective study of 26 patients was carried out in the Department of Oculoplasty, from January 2019 to December 2021. Patients with old facial nerve palsy with lower lid paralytic ectropion undergone lateral tarsal strip surgery were included in this study. Senile and cicatricial ectropion were excluded from the study. The main features assessed were the surgical outcome, postoperative cosmetic appearance, complications and recurrence at the end of the follow-up period. All patients were evaluated within two weeks, and the average follow-up period was 12 months.

Results: Total number of patients were 26. Males were 19 (73%) and females 7 (27%). The mean age was 57.80 years with age ranges from 24 to 72 years. Right eyes were operated 15 (57.70%) and left eyes 11 (42.30%). The success rate of surgical correction was 93%. 24 eyelids had an excellent cosmetic appearance after surgery. Mild complications included post-operative lid oedema in 7 eyelids, which were resolved within one week. Only 2 patients had mild persistence of ectropion at 6 months follow-up.

Conclusions: The lateral tarsal strip is a simple, safe and effective technique to correct paralytic ectropion. It is important to overcorrect and fixation of the lateral tarsal strip above the canthal angle to reduce recurrence and get the best anatomical and functional outcome.

Long-term Conservative Management of Large Orbital Cavernous Hemangioma Resulting in Visual Impairment: A Case Study With Ten-Year Follow-up

*First Author: Chen **HUNG-CHIH***
*Co-Author(s): Wan **YI***

Purpose: This study presents a case of prolonged conservative management of a large orbital cavernous hemangioma, emphasizing the potential consequences of such an approach on visual function.

Methods: We report a case study involving a Chinese man with a large orbital cavernous hemangioma who opted for conservative management against surgical excision based on personal religious beliefs. The case was monitored over a ten-year period.

Results: In 2011, a 74-year-old man presented with blurred vision in his left eye, revealing a cavernous hemangioma through imaging. Despite surgical recommendations, he chose conservative treatment. By 2017, the tumor size increased, resulting in proptosis, yet he continued conservative management. In 2022, the tumor further enlarged, leading to optic nerve displacement, exophthalmos, and eventual vision loss in the left eye.

Conclusions: While orbital cavernous hemangioma is usually benign, prolonged conservative management can have detrimental effects on visual function, as demonstrated in this case. This emphasizes the importance of timely intervention and appropriate treatment decisions to prevent visual impairment or blindness associated with large orbital cavernous hemangioma.

Management of Blepharophimosis, Ptosis, Epicanthus Inversus Syndrome (BPES) – A Rare Case

*First Author: Dina **DWIMARTA***
*Co-Author(s): Riani **ERNA***

Purpose: To report the management of a patient with blepharophimosis, ptosis, epicanthus inversus syndrome (BPES).

Methods: A 7-year-old boy visited the ophthalmologist complaining about both upper eyelids drooping getting worse since a year ago. There was a history of eyelid malformation presented since birth. Anamnesis, physical examination, and ophthalmology examination were obtained. Repair of ptosis and epiblepharon were done with standard procedures.

Results: Early ophthalmology examination showed visual acuity of 6/60 ph 6/15 with positive crowding in the right eye and 6/60 ph 6/12 with positive crowding in the left eye. The cilia of both lower eyelid margins were directing towards the corneas with no visible lid crease on both eyelids. The bilateral levator function was 3 mm, with interpupillary distance of 56 mm and intercanthal distance of 32 mm. Ptosis was corrected with single-step frontalis sling using autogenous fascia lata followed by epiblepharon repair using the Hotz procedure. There was a visible improvement after the surgery.

Conclusions: Management of ptosis in BPES was based on the levator function. Post-surgery follow-up indicated a successful repair shown by a good contour and symmetrical eyelids. There were no significant signs of inflammation and infection.

Management of Devastating Endogenous Panophthalmitis With Lateral Canthotomy and Cantholysis

*First Author: Sang Earn **WOO***
*Co-Author(s): Ho-kyung **CHOUNG***

Purpose: To report a case of devastating endogenous panophthalmitis that was successfully managed and achieved globe salvage with lateral canthotomy and inferior cantholysis.

Methods: The medical records of a patient who received orbital decompression by lateral canthotomy and cantholysis for refractory orbital cellulitis complicating endogenous endophthalmitis were retrospectively reviewed. The main outcome measure was the clinical improvement after lateral canthotomy and inferior cantholysis.

Results: A 74-year-old female had decreased visual acuity, periorbital edema, and pain in her left eye for several days. Initial ocular examination and B-scan ultrasonography were consistent with endophthalmitis and orbital cellulitis which led to a vitreous tap and intravitreal antibiotics injection and systemic antibiotherapy. Blood culture confirmed Klebsiella pneumoniae as the causative organism. Endophthalmitis failed to improve and progressed to orbital cellulitis despite aggressive systemic and local antibiotic treatment. Lateral canthotomy and inferior cantholysis were performed to release orbital pressure, enable blood flow and adequate delivery of systemic antibiotics. All cases showed clinical improvement after a few days and avoided evisceration or enucleation. The final visual acuity was no light perception.

Conclusions: For patients with refractory panophthalmitis, lateral canthotomy and inferior cantholysis may be a simple yet viable treatment option, releasing tissue pressure, enabling adequate delivery of systemic antibiotics and ultimately salvaging the eye.

Metastasis of Renal Cell Carcinoma to Skull and Orbit With Compressive Optic Neuropathy and Secondary High Intraocular Pressure

*First Author: Nurhayati **AZMAN***
*Co-Author(s): Wan Haslina **HALIM**, Othman **OTHMALIZA**, Meng Hsien **YONG***

Purpose: To report a case of renal cell carcinoma metastasis to the skull and orbit with compressive optic neuropathy and secondary high intraocular pressure (IOP).

Methods: Case report.

Results: A 69-year-old Chinese hypertensive smoker, presented with right eye painless progressive proptosis and blurring of vision. Over four months, he has enlarging, painless right temporal scalp swelling. There was no diplopia, headache, trauma history, or thyroid disorder symptoms. Within three months, he lost two kilograms but denied losing his appetite. The best corrected visual acuity in the right eye (OD) was 6/18, the left eye (OS) 6/12, pinhole 6/9. There was a right grade 3 relative afferent pupillary defect with a 50% reduction of light brightness and red saturation. Right extraocular muscle movement was limited in all gazes. The left eye was normal. He had diplopia upon elevation and dextroversion. Exophthalmometry measurements showed 20 mm OD and 14 mm OS. Anterior segment examination showed bilateral immature cataracts. Right IOP was 29 mmHg, and left was 20 mmHg, with no changes in IOP upon upgaze. There was spontaneous venous pulsation in the right eye. Otherwise, both fundi are normal. Magnetic resonance imaging of the brain and orbit reported a locally aggressive right sphenoid wing tumor with right temporalis muscle infiltration and encasement of intracanalicular segment of the right optic nerve. Right fronto-pterional craniotomy, tumor excision and orbital wall reconstruction done. Histopathological examination revealed metastatic renal cell carcinoma (RCC). Computed tomography of abdomen and pelvis arranged, disclosing right renal mass suggestive RCC.

Conclusions: Metastatic RCC may manifest as non-axial proptosis even when no apparent clinical signs or symptoms of a primary tumor.

Microphthalmos With an Orbital Cyst

*First Author: Naz **JEHANGIR***
*Co-Author(s): Sofia **IQBAL**, Saphra **SOHAIL***

Purpose: A single case: To present a case of bilateral microphthalmos with a unilateral intraorbital cyst with calcification on B scan and CT scan.

Methods: A single case.

Results: One should be very careful in evaluating orbital/intraocular masses in children where examination may be difficult and imaging may not give the exact diagnosis. In this case most of the ophthalmologists that had seen the child were suspecting retinoblastoma. A very careful history, a detailed examination, and a suspicion for both benign and malignant tumors are very important.

Conclusions: Microphthalmos with an intraorbital cyst is not a very rare condition and anything with calcification on scans does not necessarily point to a retinoblastoma. Careful history and examination are essential to exclude malignant causes.

Ocular Complications Following Functional Endoscopic Sinus Surgery: Two Case Reports

*First Author: Lin **HUNG-YU***
*Co-Author(s): Chen **HUNG-CHIH***

Purpose: This presentation portrays ocular complications post-functional endoscopic sinus surgery (FESS) through two distinct case studies: one exhibiting exotropia in the left eye, and the other experiencing ischemic optic neuropathy and exotropia in the right eye.

Methods: Two case studies are presented to exemplify ocular complications resulting from functional endoscopic sinus surgery.

Results: Patient A, an 84-year-old male with bilateral chronic sinusitis, developed binocular horizontal diplopia post-bilateral FESS. Examinations revealed

left medial rectus muscle injury-induced exotropia and restricted medial gaze. Patient B, a 43-year-old male with bilateral chronic sinusitis, encountered no light perception of the right eye, exotropia, and ischemic optic neuropathy post-bilateral FESS. Imaging indicated potential muscle entrapment.

Conclusions: Functional endoscopic sinus surgery, despite its efficacy in sinus restoration, poses inherent risks to ocular structures due to their proximity. Iatrogenic ocular complications, exemplified by the cases of ischemic optic neuropathy and medial rectus injury, are not uncommon after FESS. Vigilance during procedures is crucial to minimize such complications and enhance patient outcomes.

Ocular Involvement in Xeroderma Pigmentosum- A Rare Case

*First Author: Mistur **SARI***
*Co-Author(s): Riani **ERNA***

Purpose: To report and discuss a rare case of Ocular involvement in Xeroderma pigmentosum for regular monitoring, early diagnosis, and proper treatment.

Methods: A 10-year-old girl has complained of a mass in the left eye for 3 years.

Results: The patient was difficult to be examined, so she was offered to undergo an examination under anaesthesia. The ophthalmology examination of the protruding mass on the left eye with a size of 3x3,5x2,5 cm, mass limit is not clear, immobile, nodular, and ocular alignment non-axial proptosis. An incision biopsy found Keratinizing Squamous Cell Carcinoma in the left orbit and adnexa, and there were no malignant cells in the optic nerve. Then the patient from the Otorhinolaryngology Department was diagnosed with nodular basal carcinoma in the nasalis region. Furthermore, the patient was diagnosed with neuro-oculo-syndrome oculi sinistra et causa xeroderma pigmentosum. The surgical procedure performed on the patient was an exenteration procedure on the left eye. There is no definitive standard Xeroderma pigmentosum therapy regimen. Combination chemotherapy is more effective than surgery. Chemotherapy was used to treat the patient.

Conclusions: In this case, xeroderma pigmentosum is at a higher risk for malignant neoplasms of the skin compared to the general population. The treatment of xeroderma pigmentosum depends on early diagnosis, starting with immediate and strict prevention of sun exposure and other ultraviolet sources. Early detection and therapy are required to increase cancer survival rates in xeroderma pigmentosum patients.

Ocular Motility Disorders in Vietnamese Patients With Mild Thyroid Eye Disease

*First Author: Giang **BUI***
*Co-Author(s): Son **BUI**, Tung **MAI**, Pham **NGOC DONG***

Purpose: Evaluate the characteristics of ocular motility disorders and extraocular muscle involvement in Vietnamese patients with mild thyroid eye disease to help make an accurate diagnosis of thyroid eye disease.

Methods: A cross-sectional study that included 70 eyes of 35 patients with mild thyroid eye disease. Patients were divided into 2 groups: active (CAS ≥ 3) and inactive (CAS < 3). All patients were evaluated for diplopia, measured oculomotor amplitude in all directions to determine restrictive extraocular myopathy, and computed tomography scans were performed to evaluate the enlargement of the extraocular muscles.

Results: There were 12 active eyes (17.1%) and 58 inactive eyes (82.9%). Diplopia is a common symptom in 60% of which was mainly in intermittent diplopia (42.9%), and vertical diplopia (48.6%). Restrictive extraocular myopathy occurs in 82.9% of patients with restrictive in one or more directions with upward (69%) and upward-outward (77.6%) directions being the most common, and inward direction being the least common. Orbital computed tomography showed that the rates of enlargement of the inferior rectus muscle, medial rectus muscle, superior rectus muscle and lateral rectus muscle were 85.7%, 71.4%, 51.4% and 18.6%, respectively. The active group had a higher rate of diplopia and eye movement limitation than the inactive disease group ($p < 0.01$).

Conclusions: Ocular motility disorders that commonly occur in mild-stage thyroid eye disease include diplopia and restrictive extraocular myopathy. Patients often have more than one extraocular muscle involvement.

Open Transcranial Orbitotomy Approach to Orbital Arterio-Venous Fistula

*First Author: Michael **YOON***

Purpose: This case describes the presentation and treatment of a patient with an orbital arterio-venous malformation causing elevated intraocular pressure, pain, and proptosis. Endovascular access was not recommended since the malformation branched off the orbital portion of the ophthalmic artery, risking occlusion and blindness with endovascular thrombosis.

Methods: Case report.

Results: A 73-year-old man presented with 6 weeks of progressive right proptosis and elevated intraocular pressure (27 mmHg). He had mildly limited extraocular motility, edema of the eyelids, chemosis, and 8 mm proptosis. The posterior segment examination was normal. Imaging revealed a dilated superior ophthalmic vein with flow through it. Digital subtraction

angiography showed an ophthalmic artery to superior ophthalmic vein retro-orbital arterio-venous fistula and distal ophthalmic branches feeding a venous retro-orbital varix. Endovascular access to treat the fistula was deemed risky, as thrombosis could propagate to the central retinal artery; additionally, coils in the orbit would not improve proptosis. An orbito-zygomatic craniotomy was performed. The orbital roof was removed and blunt dissection was performed until the dilated superior ophthalmic vein was seen. First distal venous control was achieved with a double silk ligature. Then proximal control was achieved in a similar fashion. The vein was removed and submitted to pathology. Following surgery, intraocular pressure normalized, and medication was not needed. Vision remained normal while the ptosis and extraocular motility limitation resolved over months.

Conclusions: This case demonstrates a rare orbital arterio-venous fistula that was not amenable to endovascular treatment. Open transcranial-orbitotomy can safely ligate the fistula, minimizing the risk to vision.

Optic Nerve Schwannoma: A Dilemma in Diagnosis and Treatment

*First Author: Nurhayati **AZMAN***
*Co-Author(s): Wan Haslina **HALIM**, Othman **OTHMALIZA**, Meng Hsien **YONG***

Purpose: To report a case of right optic nerve schwannoma.

Methods: Case report.

Results: A 41-year-old Malay lady presented with right eye redness and proptosis for two weeks. She denied reduced vision, eye pain, diplopia, trauma history, and any thyroid disorder symptoms. Right best corrected visual acuity was 6/12 and left 6/9. Right eye positive relative afferent pupillary defect (RAPD). Optic nerve function test and extraocular muscle movement were normal. Exophthalmometry measurement showed the right was 21 mm and the left 17 mm. Bilateral eye examinations were unremarkable except for right eye proptosis. The thyroid function test was normal. Magnetic resonance imaging (MRI) of the brain and orbit revealed a solid cystic lesion at the right lateral intraconal space compressing the optic nerve with encroachment of the distal right optic foramen suggesting optic nerve glioma. There was no widening of the right optic foramen. Nine months later, the right eye reduced vision to 6/60 with significant proptosis. Light brightness in the right eye was 80% with RAPD. Repeated MRI showed an enlarging solid cystic lesion at the right lateral intraconal space with extension to orbital apex, suggesting optic nerve sheath meningioma evidenced by compression onto the optic nerve. No tram-track sign is visualized. Right eye orbitotomy and removal of tumor done. Histopathological examination revealed optic nerve schwannoma. Two months post-operation, vision improved to 6/12, with no limited eye movement and no diplopia at central gaze.

Conclusions: Optic nerve schwannomas are very uncommon lesions in the adult population. Proper diagnosis and management are important to preserve the vision.

Orbital Floor Fracture Repair Using a Resorbable Implant - A Case Report

*First Author: Jose Leandro Manuel **AMORADO***

Purpose: Currently, there is ongoing debate regarding which patients would benefit the most from orbital floor fracture reconstruction, as well as the appropriate timing of surgical intervention. This case report aims to help in the decision-making and management of patients with orbital floor fractures.

Methods: This is a case report of L.C., a 58-year-old male who sought consult after sustaining a fall and his left eye hit the floor. A computed tomography (CT) scan showed a fracture of the left orbital floor with herniation of the orbital fat pad through the defect into the left maxillary sinus.

Results: The patient underwent mesh repair of the orbital floor fracture, left under general anesthesia. A bioresorbable polycaprolactone mesh was placed over the defect. There were no intraoperative complications. On subsequent follow-ups, there was a gradual improvement in his visual acuity and restriction of ocular movements. Two months post-operation, the patient did not complain of any visual disturbances, diplopia, pain in eye movement or paresthesia.

Conclusions: There is still no consensus regarding the indication and timing of repair for orbital floor fracture. Different types of implants are also available, and there is no evidence that one material is superior to another. Furthermore, recent technological advances such as 3-dimensional printing and intraoperative navigational imaging have improved pre-operative efficiency and can minimize postoperative complications. Increasing the available data on outcomes of patients who underwent orbital floor fracture repair can aid in forming an evidence-based guideline for the reconstruction of this kind of fractures.

Orbital Foreign Bodies

*First Author: Sofia **IQBAL***

Purpose: To review clinical features, presentation, diagnosis and management of 4 cases of orbital foreign bodies that were presented to us.

Methods: Non-comparative interventional case series. All of these patients were diagnosed with orbital foreign bodies. These patients were evaluated with a detailed history, examination, and investigations including imaging for retained intra orbital foreign bodies, and were managed surgically.

Results: Orbital foreign bodies are not uncommon and, in some cases, patients may not clearly recall a history of orbital trauma. Wooden foreign bodies and other organic foreign bodies can be missed easily with routine radiography. A very high suspicion of orbital foreign bodies is warranted in such cases and proper imaging aids in the diagnosis and further management of such cases. Case 1: No clear history of inferior orbital trauma but a wooden foreign body seen in inferior orbit. Case 2: Transorbital knife. Case 3: Iatrogenic (surgical) inferior orbital foreign body. Case 4: Assault with an eviscerated globe with retained plastic foreign body in superior orbit.

Conclusions: (1) There are many types of intra-orbital foreign bodies and wooden ones can be easily missed during routine radiography. Therefore, detailed history, proper examination, and appropriate investigations are very important in these cases. (2) The suspicion for an intra-orbital foreign body should be high in cases of trauma, especially when the patient is symptomatic.

Orbital Low-grade Spindle Cell Tumor in a Filipino Patient: A Case Report

First Author: James Lloyd ***OSTREA***
Co-Author(s): Marian Grace ***ANA-MAGADIA***

Purpose: This report aims to present an index case of an unusual type of orbital tumor in a Filipino patient.

Methods: Case report.

Results: A 53-year-old female was admitted to our institution due to a 2-year history of proptosis and downward displacement of the left eye. She denies any prior history of trauma and has no known comorbidities. Routine physical examination of other organ systems was unremarkable. Blood investigations were within normal limits as well. Visual acuity in the left eye was 20/40, pupils were bilaterally reactive, and fundus examination was unremarkable. There was a limitation in upgaze. Normal findings were noted on the fellow eye. Orbital MRI showed an extraconal mass (5.1 x 3.8 x 3.0cm AP x W x CC) in the upper quadrant of the left orbit, which enhances brightly on post-contrast images. The mass is pushing the globe inferolateraly distorting the globe and causing left proptosis. The rest of the orbital content appears normal with no foci of bone destruction or circumscribed bony expansion. She underwent an excision biopsy through anterior orbitotomy using a sub-brow approach. Grossly, a solid, soft, friable, mass measuring 5x3x3 cm (LxWxH) was extracted from the superior orbital compartment, piece by piece. Histopathology confirmed a low-grade spindle cell tumor. The patient had no postoperative complications after 1 month.

Conclusions: A rare type of orbital tumor was excised in a Filipino patient through anterior orbitotomy. This is the first reported case of such an orbital tumor in the country.

Orbital Myiasis in Basosquamous Carcinoma Patient

First Author: Niluh ***WARDHANI***

Purpose: To describe a case of orbital myiasis caused by chrysomya bezziana in a patient with basosquamous carcinoma.

Methods: Case report of a 72-year-old woman, presented with a complaint of bleeding wounds on the left eye. On examination, the left orbit was severely necrotized and attached live larvae. Since 5 years ago, the patient has had a bleeding wound hole on the left side of her face that involves the eye. She had a history of eyelid surgery in the same eye due to a skin lesion 10 years before.

Results: During surgery, she presented with multiple, highly mobile larvae in the orbital cavity. The larvae were removed mechanically. The larvae were identified as chrysomya bezziana.

Conclusions: Orbital myiasis progresses rapidly and is highly destructive. Cancer around the eye left untreated is a factor predisposing to orbital myiasis. Removal of all larvae and debridement can prevent deep larvae penetration.

Orbital Subperiosteal Abscess Secondary to Osteomyelitis in a Patient with Chronic Sinusitis

First Author: Steffani Krista ***CHUA***
Co-Author(s): Hendrik ***ONSON****, Yvette Marie* ***SANTIAGO***

Purpose: To report a case of orbital subperiosteal abscess in a diabetic elderly patient.

Methods: This is a case report.

Results: A 65-year-old diabetic female sought consultation for a two-month history of poor vision in both eyes and a palpable mass on the left brow area. The patient previously underwent functional endoscopic sinus surgery and was treated for postoperative systemic infection and several complications, including sinusitis, mastoiditis, trigeminal neuralgia, bacterial meningitis, and otitis media. On presentation, best-corrected visual acuity was noted to be no light perception on the right eye and 20/400 on the left eye. She had a relative afferent pupillary defect on the right eye, ophthalmoplegia on both eyes, and inferior displacement and proptosis of the left globe. Magnetic resonance imaging showed a subperiosteal abscess on the left superior orbital rim with intraorbital extension. The patient underwent surgery and the culture from the drained abscess yielded Pseudomonas aeruginosa and Enterobacter cloacae. Pathologic examination of the orbital bone sample revealed osteomyelitis.

Conclusions: Osteomyelitis of the orbital bone leading to subperiosteal abscess is a complex, multifactorial disease requiring rapid diagnosis and treatment.

Complete resolution of the infection must be achieved to decrease the morbidity and mortality of the patient.

Perceptions and Influences of Asian Eyelid Beauty Among Individuals of Asian Descent: A Comparative Analysis between the United States and Southeast Asia

*First Author: Cat **BURKAT, MD FACS***
*Co-Author(s): Sonam **DOLMA**, Catherine Q **MACARAIG MD**, Stephanie **YOUNG**, Vanessa **MANSURALI***

Purpose: Cultural norms, societal pressures, families, and changing technology have significant influences on "beauty". Asians living in America may experience a different social milieu. This studied changing trends in eyelid appearance, focusing on influences of social media/phone apps that alter facial features, in Asians residing/raised in the United States vs Asians in Asia, to see whether environmental factors influenced beauty perceptions.

Methods: Survey > 200 individuals of Asian descent living/raised in the US, plus Asians living in southeast Asia (age 16-48 years). 20 questions evaluated eyelid shapes, crease heights, sulcus fullness, tarsal show, epicanthal presence/softening, and desire for cosmetic eyelid surgery at a younger age. Questions explored cultural upbringing, childhood parental influence, exposure to Western media, social media, and use of smartphone applications in altering beauty self-perception.

Results: 200 surveys (50:50 from individuals of Asian descent in US vs Singapore, Malaysia, Vietnam, Philippines, Thailand) showed no statistically significant difference in the way Asians inside vs outside US perceive beauty standards with respect to eyes. US-residing Asian descents are influenced by eyelids seen on social media, while Asians in Asian countries were more influenced by TV/movies. 55% would not consider cosmetic surgery to alter eyelid, preferring makeup techniques, tape, glues. Vast majority routinely used phone apps to enhance their eyelid.

Conclusions: Blepharoplasty remains the most popular cosmetic surgery in Asia, and at a younger age (mainly 18-35); and third most popular amongst Asian-Americans. With increased global exchange, there is a growing cultural hybridization of beauty standards from various sources, leading to a more complex perception of beauty among Asians worldwide.

Posterior Approach Ptosis Surgery – Novel Techniques for Better Cosmesis and Enhanced Recovery Time!

*First Author: Annesha **SARKAR***

Purpose: (1) To determine whether posterior approach ptosis surgery gives a comparable functional outcome to that of anterior approach ptosis surgery in mild to moderate ptosis. (2) To determine whether posterior approach ptosis surgery gives a better cosmetic outcome than that of the anterior approach ptosis surgery in mild to moderate ptosis.

Methods: It is a retrospective, cross-sectional study. A total of 47 eyes with blepharoptosis were studied. Among them, 22 eyes underwent anterior approach ptosis surgery and 25 eyes underwent posterior approach surgery (Mullers muscle conjunctival resection in mild grades and Posterior approach white line advancement in moderate grades) . All patients were followed up for a period of 6 months. Outcomes of surgery were measured in terms of marginal reflex distance (MRD), tarsal platform show, eyebrow fat span and eyelid contour grading.

Results: Posterior approach ptosis surgery had comparable functional outcome (MRD) (P-value > 0.05) to that of anterior approach surgery in both mild and moderate grades of ptosis, better cosmetic outcome (P- value < 0.05) to that of anterior approach surgery in mild grade ptosis cases and comparable cosmetic outcome (P-value > 0.05) in moderate grade ptosis cases.

Conclusions: Posterior approach ptosis surgeries are novel techniques for ptosis correction, which gives good functional and cosmetic outcomes in mild to moderate ptosis with less operating time and enhanced post-operative recovery.

Primary Orbital Implant Following Enucleation Surgery in Congenital Staphyloma Posterior: A Rare Case Report

*First Author: Lissa **PERMATASARI***
*Co-Author(s): Ratna **DOEMILAH**, Luki **INDRIASWATI***

Purpose: To present a rare case report with congenital staphyloma posterior and how to manage it.

Methods: We present a case with a 7-month-old girl with a lump beneath her right eye since birth. The lump was getting bigger with age and pushed the globe upward. Visual acuity was difficult to evaluate. We found scleral thinning and ectasia in the inferior area of the globe, attached to the periosteum, filled the entire orbital cavity. Her orbital CT scan showed an enlargement of the globe with an irregular border that extends to the anteroposterior of the orbit. We decided to perform enucleation and insert a 14 mm in size silicone ball orbital implant. We sent the tumor to a pathological anatomy and histological examination revealed posterior staphyloma. After 2 months, an ocular prosthesis was placed.

Results: Posterior staphyloma is defined as the ectasia of a limited portion of the scleral wall with a radius shorter than the radius of the curvature of the surrounding area. There is no effective treatment available and the pathogenesis is still controversial. A primary orbital implant following enucleated surgery was done in this patient and gave satisfactory

results. The primary orbital implant provides volume replacement, and acts as a stimulus in orbital growth, thus resulting in a better cosmetic outcome.

Conclusions: Congenital posterior staphyloma was characterized by greater thinning of the sclera and a higher prevalence of chorioretinal atrophy compared to other eye parts. Orbital implants have been proven as contributory factors in orbital growth stimulation post-enucleation.

Reconstruction of Large Medial Canthal, Upper, and Lower Eyelid Defects After Residual Eyelid Sebaceous Gland Carcinoma Frozen Section-Guided Wide Excision: Lesson We Learned

*First Author: Andreas **ANUGRAH***
*Co-Author(s): Neni **ANGGRAINI**, Yunia **IRAWATI**, Irmandha **KUSUMAWARDHANI, MD***

Purpose: Reconstruction of large medial canthal defects is very challenging. This paper aims to present experience in the reconstruction of large medial canthal, upper, and lower eyelid defects after frozen section-guided wide excision in a patient with residual eyelid sebaceous gland carcinoma.

Methods: The study was based on a clinical case report. A 68-year-old woman with a chief complaint of a recurrent small lump on her upper eyelid to the medial canthal of her left eye, which reappeared several months after she had undergone two previous excisional surgeries in two different hospitals. She had been diagnosed with residual sebaceous gland carcinoma and underwent frozen section-guided wide excision to ensure free-tumor margin. Right after the wide excision, reconstruction of eyelid defects was performed.

Results: Reconstruction of the medial canthal, upper, and lower eyelid defects by using glabellar flap and lip mucosal graft was straightly performed in one-step surgery after the wide excision was done. The specimen was sent for histopathologic examination and fortunately, there were no perineural or lymphovascular invasions. Following the surgical treatment, the local evolution was favorable with a good recovery.

Conclusions: Eyelid sebaceous gland carcinoma is an aggressive slow-growing tumor that often affects the elders and may be residual if does not get proper management. Reconstruction of the medial canthal, upper, and lower eyelid defects by using appropriate glabellar flap and lip mucosal graft was effective and showed favorable clinical outcomes.

Retrospective Study on the Epidemiology of Orbital Fractures Using the Novel Practical Classification of Orbital and Orbitofacial Fractures Diagnosed by Computed Tomography in a Tertiary Hospital

*First Author: Melissa Roselle **NALUPTA***

Purpose: The study aimed to characterize cases of orbital fractures diagnosed by computed tomography (CT) using the Novel Practical Classification of Orbital and Orbitofacial fractures.

Methods: A total of 113 Cranial CT scans with orbital cuts from January 2020 to January 2023 were reviewed and assessed. In profiling patients, description statistics and relative percentage were used while for the correlation between the mechanism of injury with the type of fracture procured and identifying types of fractures that need surgical intervention the chi-square test of independence was used.

Results: Most of the fractures for both simple and complex orbitofacial fractures were adults and caused by motor vehicle accidents. Complex fractures also have a higher percentage of severe cases of fractures leading to a higher percentage of advised fracture repair. Based on the Chi-square Test of Independence P-value < 0.05, there is a significant difference between the type of fractures and the mechanism of injury, which implies that there is a relationship between the mechanism of injury and the type of fracture. As for the relationship between the type of fracture and management method, no relationship was found for simple fractures since most of the samples were only for observation. For complex fractures, a relationship was determined which could be due to the relatively higher number of repair or operation cases.

Conclusions: The use of this classification system was found to be helpful in creating an orbital fracture registry, and assessing the relationships between type of fracture and surgical intervention.

STAT6 Immunoreactivity and Its Role in Recurrent Orbital Spindle Cell Neoplasm. A Report of 3 Cases and Review of Literature

*First Author: Alex **SUA***

Purpose: To report the clinical, radiologic and histopathologic features of recurrent spindle cell neoplasm (SCN), specifically orbital solitary fibrous tumor (SFT) and STAT6 in its diagnosis.

Methods: This is a retrospective study of the clinical, imaging, and histopathological presentation of SFT in SCN.

Results: All cases were male, aged 15 -46 years old, presenting with gradual proptosis, orbital mass, and blurring of vision. Imaging showed a well-circumscribed orbital tumor with homogenous contrast enhancement. Microscopic evaluation of the excised tumor disclosed

a non-encapsulated tumor composed of round to spindle-shaped cells arranged in a storiform manner surrounded by prominent branching and anastomosing "staghorn" capillaries. Immunohistochemical stains showed strong positivity for CD34 and were diagnosed as spindle cell neoplasms. Recurrences were observed in all patients with tumors recurring in the same location despite excision of the tumor. All recurrent cases showed similar morphologic features composed of spindle-shaped cells with hyper and hypocellular areas set in a highly vascular background. STAT6, a new fusion gene marker for SFT in SCN was used to identify these tumors positively.

Conclusions: Spindle cell neoplasms such as SFT are considered benign but may behave aggressively with local recurrences. Necrosis and proliferative index should be carefully evaluated, especially in recurrent tumors for malignant transformation. SFT shares similar morphologic features with other mesenchymal tumors and is CD34 sensitive. STAT-6 nuclear expression a fusion gene specific for SFT is crucial for its diagnosis. STAT6, being an altered gene, may also have its role in the aggressive behavior and recurrence of SFT. Further studies are recommended.

Satisfying Result of Double Z-Plasty as Management of Cicatricial Ectropion

*First Author: Tommy **WIBOWO***

Purpose: Z-Plasty is one of the techniques to release traction in cicatricial ectropion using triangular flaps. In the case of limited tissue Z-Plasty can be modified to achieve equal results with conventional Z-Plasty. This case report presents a case of cicatricial ectropion undergone ectropion repair using Z-Plasty modification.

Methods: To present a case report.

Results: A 55-year-old male came with a chief complaint of left eye epiphora. The patient had a history of a motorcycle accident three weeks prior and had undergone surgery by a general surgeon to suture the left lower eyelid laceration. Ophthalmologic examination revealed a scar in the left lower eyelid from a prior surgical procedure, outward rotation of the left lower eyelid, ruptured lacrimal canaliculi, and inferior eyelid margin. The patient was diagnosed with cicatricial ectropion, ruptured margin, and canaliculi of the left inferior eyelid. The patient then underwent wound exploration, margin and canaliculi repair, punctoplasty, silicone tube, and ectropion repair using the double Z-plasty technique instead of conventional Z-Plasty because of tissue limitation. Double Z-Plasty successfully removes the traction that causing cicatricial ectropion. Within three weeks after the surgery, no cicatricial ectropion was found, and epiphora subsided, along with intact and patent lacrimal duct.

Conclusions: Z-plasty is one of the techniques that can be used to release traction in cicatricial ectropion. When there is limited tissue to create flaps, double Z-Plasty could be an alternative as it can be done with less tissue needed for the flaps. And double Z-Plasty gives equal tractional release and satisfying final outcome as conventional Z-Plasty.

Scoring System for the Decision on Surgical or Conservative Treatment of Orbital Floor Blowout Fractures

*First Author: Juraj **TIMKOVIC***
*Co-Author(s): Petr **HANDLOS**, Katerina **JANUROVA**, Jan **STEMBIREK**, Jiri **STRANSKY***

Purpose: The aim of this study was to evaluate the role of orthoptics in determining the appropriate treatment for patients with orbital floor blowout fracture (OFBF) and, based on the findings, to propose a scoring system to aid in decision-making.

Methods: In this retrospective analysis, a total of 69 patients with OFBF were included, 35 of which underwent conservative treatment and 34 underwent surgical treatment. The retrospective assessment focused on the role of orthoptics in determining the appropriate treatment procedure. The essential factors influencing the decision-making process were identified and a pilot scoring system was designed using Logistic regression.

Results: According to the defined criteria, surgical treatment was unsuccessful in 2 cases (6%), whereas only one case (3%) treated conservatively showed unsatisfactory outcomes. The proposed scoring system includes measurements of the defect size and various parameters obtained from the orthoptic examination, with the measurement of eyebulb elevation on the Lancaster screen being the most significant.

Conclusions: This study highlights the advantageous role of orthoptic examination in determining the appropriate treatment approach for patients with orbital floor blowout fractures. Moreover, it also aids in diagnosing ocular motility disorder, with or without binocular diplopia, in such patients. The proposed pilot scoring system, upon validation through prospective studies, has the potential to serve as a valuable supplementary decision-making tool.

Should Age Come in the Way of Good Vision and Quality of Life?

*First Author: Maryanne **ROMERO***
*Co-Author(s): Gangadhara **SUNDAR***

Purpose: To review the demographics of patients undergoing oculoplastic surgery in a single centre over 3 years.

Methods: This was a retrospective study where surgical data of all patients undergoing oculoplastic surgery was retrieved over 3 years (2017-2018, 2022). Data retrieved included age, gender, type of surgery, intra and post-operative complications, and surgical outcome at post-op month 1 of follow-up. Surgical

procedures were further divided into 3 different classes - lid, lacrimal and orbital surgeries.

Results: A total of 1310 surgeries were performed by the oculoplastic team over 3 years. The median age was 66, with 66% of patients older than 65 years. Amongst the patients aged 65 and older, the most common surgery performed were lid and brow ptosis surgeries (29%), followed by lacrimal surgery (12%), and lastly 8% were orbit cases (including orbital fractures). 2 (0.15%) patients were admitted to surgical high dependency ward after surgery due to concerns of an acute cardiac event. None of the patients required re-operation at post-op month 1, but 7% had minor surgical complications, including persistence of symptoms and poor wound-healing.

Conclusions: The majority of oculoplastic surgeries were performed in patients older than 65 years. Surgeries that were especially prevalent in this age group include ptosis correction and dacryocystorhinostomies. The typical indications for these surgeries included epiphora, dacryocystitis, narrowed visual fields and brow-ache. Presumably these have a significant impact on patients' quality of life (QOL) and vision. Given that a small minority experienced complications, elderly patients should not be discouraged from pursuing surgery as a means to better vision and QOL.

Subconjunctival Fat Prolapse- a Retrospective Case Study in Indian Eyes

*First Author: Bijnya **PANDA***

Purpose: The herniation of orbital fat into the subconjunctival space characterizes subconjunctival fat prolapse, predominantly seen in elderly individuals. It can be mistaken for other ocular conditions, such as chalazion or orbital tumors. This retrospective case study highlights the clinical features and management of subconjunctival fat prolapse through the presentation of four unique cases wherein they were managed surgically by a novel technique of conjunctival suture fixation.

Methods: Ten patients with subconjunctival fat prolapse were surgically managed with a novel technique of conjunctival suture fixation after fat excision and repositioning. Their clinical presentations, diagnostic modalities, management strategies, complications, and recurrence rates were analyzed.

Results: All patients presented with a soft, yellowish, mobile lump in the supero-temporal quadrant of the eye. The average age at presentation was 65.8 years. 50 % had a bilateral presentation. The most common indication for surgical treatment was cosmetic concern (70%). There were no cases of intraoperative complications. Sub-conjunctival hemorrhage was the most common postoperative complication. None had recurrence at one year of follow-up.

Conclusions: Recognizing the distinct clinical features of Subconjunctival fat prolapse is paramount to providing appropriate management and avoiding unnecessary interventions. While observation is often sufficient for asymptomatic cases, surgical intervention can be employed for symptomatic or cosmetically concerned patients.

The Association between Tear Matrix Metalloproteinase-9 and Clinical Features of Thyroid Eye Disease

*First Author: Joo Eun **HA***
*Co-Author(s): Ho-kyung **CHOUNG**, Namju **KIM**, Min Joung **LEE***

Purpose: To investigate the relationship between the tear matrix metalloproteinase-9 (MMP-9) concentration, and demographic and clinical features of patients with thyroid eye disease (TED).

Methods: We reviewed the medical records of 30 patients with TED. The tear-film MMP-9 was measured using point-of-care immunoassay (InflammaDry test) and the results were interpreted based on the 5-scale grading system (grade 0-4). Patients were classified into MMP-9 negative and positive groups with a cut-off grade for a positive result being grade 2. A variety of demographic, clinical, and imaging features of TED were compared between the two groups. Tear break-up time, the degree of corneal erosion, and ocular surface disease index (OSDI) were also recorded and analyzed.

Results: The percentages of males and smokers were significantly higher in the MMP-9 positive group (p=0.019, p=0.003, respectively). There was no difference in age, duration of TED, TSI, BUT, and OSDI. The percentages of active TED were significantly higher in the MMP-9 positive group (p=0.04). Among the components of CAS, conjunctival injection was significantly associated with MMP-9 positivity (p=0.017). The lacrimal gland enlargement was also associated with MMP-9 positivity.

Conclusions: In this study, tear MMP-9 was associated with the activity of TED. Tear MMP-9 was also associated with male gender, smoking, conjunctival injection, and lacrimal gland enlargement. These results implied the measurement of tear MMP-9 may help evaluate the inflammatory activity in patients with TED. Further study with large sample sizes is needed to verify the usefulness of tear MMP-9 as a biomarker of TED activity.

The Infected Dacryops: A Potential Route to the Orbital Cellulitis

*First Author: Chih-heng **HUNG***

Purpose: To characterize the infected dacryops in 25 eyes of 22 patients.

Methods: A retrospective case series study.

Results: The average age of 22 patients was 46.9 years, and fifteen cases (68.2%) were female. The main lacrimal gland ductal cysts presenting unilaterally were noted in 18 cases (81.8%), and bilaterally noted in 3 cases (13.6%), respectively, and one Krause's dacryops mimicking dacryocystitis-related nasolacrimal duct obstruction was reported in one case. According to the severity, classification is defined as follows. Type 1 (congestive and cystic lesion): 9 cases were treated with topical antibiotics and steroids. Type 2 (dacryoliths): 1 case presented with a reddish lesion with multiple dacryoliths, resolving with meticulous incision and curettage. Type 3 (Focal cellulitis): 8 cases presented with a reddish lesion with focal cellulitis and pus formation. Type 4 (Orbital cellulitis): 4 cases presented with orbital cellulitis accompanied by decreased vision and eye motion limitation, relieving symptoms with systemic antibiotics. Computed tomography revealed a cystic lesion with enhancement of the wall. The surgical histopathology demonstrated the dacryops formation manifested as the cystic lesion covered by pseudostratified columnar epithelium admixed with some goblets cells and squamoid cells with mixed acute and chronic inflammation cells infiltration, edema, congestion, and fibrotic change in the cystic wall.

Conclusions: Dacryops is a rarely reported lesion, accounting for 2%-9% of lacrimal gland diseases in previous literature. However, infected dacryops complicating with severe orbital cellulitis and focal cellulitis were noted in twelve cases (55%) in this case series. Early recognition and treatment may avert a serious infection.

The Role of Thyroid Peroxidase Antibody in the New-onset or Reactivation of Thyroid Eye Disease Following COVID-19 Vaccination

*First Author: Chih-heng **HUNG***

Purpose: We investigated the temporal association of thyroid eye disease (TED) after COVID-19 vaccination using the Naranjo score sheet, and detected the risk factors for developing the TED after COVID-19 vaccination.

Methods: A comparative study.

Results: We surveyed 12 cases presenting with subjectively temporal association of TED after COVID-19 vaccination (group 1) and another 12 cases presenting without subjectively temporal association of TED after COVID-19 vaccination (group 2) for comparison. Naranjo score showed 7.58 ± 1.31 in group 1, while it showed 1.00 ± 0.0 in group 2 ($P < 0.001$). The possible vaccines resulting in group 1 were listed as follows: Moderna (6 cases), AstraZeneca (3 cases), Pfizer-BioNTech (2 cases) and Medigen (1 case). The average duration before the eye symptoms was 17 days (ranging from 7 days to 42 days) in group 1. The average clinical activity score was 2.4/7 (ranging from 1/7 to 5/7). The Severity of TED was mild in 9 cases (75%), moderate-to-severe in 2 cases (16.7%) and very severe in 1 case (8.3%), respectively. Four cases (33.3%) showed reactivation of Graves' disease (GD) and eight cases (66.7%) revealed new-onset of GD. Among the thyrotropin receptor antibody, the thyroid peroxidase antibody, and the thyroglobulin antibody (TgAb), the presence of TPOAb was strongly associated with the complication of COVID-19 vaccination ($P < 0.001$).

Conclusions: The Naranjo score sheet could be a useful tool for assessing suspected associations between the COVID-19 vaccination and TED. Physicians should remind patients to seek treatment if symptoms and signs of TED occur or recur following COVID-19 vaccination.

Use of Tissue Adhesives in Rescue of Intra-operative Lacrimal Gland Tumor Rupture

*First Author: Chia Chi **LEE***
*Co-Author(s): Wei-ping **HSIA**, Li-chen **WEI***

Purpose: To report a case of lacrimal adenoid cystic carcinoma with intra-operative capsule rupture and the use of tissue adhesives to prevent tumor seeding.

Methods: A case report of a patient with a newly diagnosed lacrimal gland tumor treated by lateral orbitotomy for tumor removal. Intra-operative capsule rupture was managed with tissue adhesives to cover the rupture site, and further complete tumor removal could proceed.

Results: A 43-year-old male patient presented with left upper periorbital swelling for 1 year with mass enlargement and tenderness. Orbital CT revealed a 3.9 cm well-defined enhanced mass with multifocal low-density components at the superior lateral aspect of the left orbital cavity, lacrimal gland tumor was considered. We arranged the lateral orbitotomy with the removal of the lateral orbital rim for lacrimal gland tumor removal. During the dissection of the tumor with surrounding orbital tissue, a small capsule rupture occurred. We used 2-octyl cyanoacrylate tissue adhesives (Tissue AidTM) to close the rupture site. We thoroughly dried the ruptured site and then applied liquid tissue adhesives on the surface of the ruptured capsule. We waited for about 30 seconds to allow the adhesive to dry and repeated the same step for the second time adhesive use. The ruptured site was secured, and further procedure could proceed with complete tumor removal. The final pathologic diagnosis revealed adenoid cystic carcinoma.

Conclusions: The use of tissue adhesive may play a role in the prevention of tumor seeding if intra-operative tumor ruptures and the assistance of complete tumor removal.

Will It Succeed If Glabellar Pedicle Skin Flap After Wide Excision of Basal Cell Carcinoma Patient, Pit and Fall?

First Author: Linda ***WULANDARI***
Co-Author(s): Riani ***ERNA***

Purpose: BCC is a malignant epidermal carcinoma, the most common eyelid malignancy of over 90% of malignant eyelid neoplasms. BCC occurs in lightly pigmented individuals at sites of sun exposure. The diagnosis can be suspected clinically and confirmed histologically following an incisional biopsy. The treatment to prevent damage to neighboring tissues. Complete surgical excision with margin control is one of the selected treatments.

Methods: An 80-year-old man presented with the complaint of a lump with a darker color appearing in the corner of the left eye since five years ago. The patient often has outdoor activities and is exposed to sunlight and he denies having a history of systemic diseases. Visual acuity was 6/60 ph 6/30 with a normal IOP, slit lamp, posterior segment examination, and laboratory test. CT Scan examination found soft tissue mass in superficial left orbital cavity medial to the left frontoethmoid, no intracranial extension was seen. The patient was diagnosed with BCC and treated with wide excision and reconstruction using the Glabellar Pedicle Skin Flap method. One week postoperatively, the skin flap gave good results.

Results: BCC is diagnosed based on anamnesis and ophthalmological examination. A history of outdoor activities, exposure to sunlight, and the patient's being more than 50 years old are suspected as triggers for BCC. Surgical therapy with Glabellar Pedicle Skin Flap was chosen for this patient because it is readily available, easy to perform, and has a low rejection rate.

Conclusions: Glabellar Pedicle Skin Flap is a surgery that provides a good prognosis in BCC.

Pediatric Ophthalmology and Strabismus

A Challenging Diagnosis of Inferior Rectus Hypoplasia and the Role of Augmented Modified Hummelsheim Procedure

First Author: Florentina ***PRISCILIA***
Co-Author(s): Anna ***BANI****, Burhana* ***MAWARASTI***

Purpose: This study aims to show the growing diagnostic approach to the case and the appropriate management.

Methods: A 25-year-old female came with esotropia and hypertropia of the right eye (RE) with a head tilt and slight face turn to the right since early childhood. The esotropia measured 20 PD on the prism alternate cover test with 12 PD hypertropia in the primary position. There was incomitancy in infraduction, especially during abduction (-4). Fundus photography revealed an 11º incyclotorsion, while CT-scan imaging (coronal cut) revealed an atrophic rather thin inferior rectus measuring 2,8 mm in thickness. The patient was diagnosed with congenital inferior rectus palsy. However, during intraoperative exploration, in place of the muscle, there was a thin fibrovascular tissue with 2 small ciliary arteries, shifting the diagnosis to inferior rectus a/hypoplasia. The patient underwent a modified Hummelsheim procedure with scleral augmentation. Postoperatively infraduction improved to -2 and diminishing of abnormal head posture.

Results: Imaging is the near-definite means of diagnosing inferior rectus a/hypoplasia. It is challenging since clinical findings are similar to other more prevalent causes of inferior rectus underactions, especially palsy. In this case, after surgery, CT-scan cuts were revisited and on sagittal cut it was shown that the suspected muscle belly was positioned far retroglobe with a thin attachment to the anterior sclera. Imaging and intraoperative findings strengthened the diagnosis of hypoplasia of the inferior rectus. The choice of surgery with augmented scleral suture is a promising technique for this case.

Conclusions: A detailed examination is needed to have a definitive diagnosis of inferior rectus hypoplasia while the augmented modified Hummelsheim procedure gives a satisfactory outcome.

A Rare Case of Optic Nerve Sheath Meningioma in a Young Adolescent

First Author: Naeim ***AHMAD***
Co-Author(s): Wan Haslina ***WAN ABDUL HALIM***

Purpose: To report a paediatric case of unilateral optic nerve sheath meningioma.

Methods: Case report.

Results: A 13-year-old boy presented with gradual right proptosis for 6 months, with painless right blurry vision for 2 months. There was no eye redness or discharge. His right visual acuity was 6/12, associated with a positive relative afferent pupillary defect. Right proptosis was axial without ophthalmoplegia. He has posterior subcapsular cataract while other anterior segment findings were unremarkable with normal intraocular pressure. Right fundus examination revealed a swollen optic disc with otherwise normal fundus findings. Left eye findings were unremarkable. Systemically revealed a small solitary nodular mass on the scalp, right cheek, and fingers. There were multiple café au lait spots of varying sizes over the back, trunk, abdomens, and upper and lower limbs. Other neurological findings were normal. An urgent CT scan of the brain and orbit reported a lobulated intraconal perineural lesion at the right retrobulbar region encasing the right optic nerve, causing exophthalmos

abutting all extraocular muscles. Right optic nerve intensity is normal. Multiple lobulated lesions were also seen along several cranial nerves and bilateral internal auditory meatus. Features are consistent with neurofibromatosis type 2. The multidisciplinary consensus achieved was for conservative management in view of good right visual acuity bearing more risk than the benefit of an aggressive and invasive approach.

Conclusions: Optic nerve sheath meningioma accounts for one-third of primary optic nerve tumours and represents 1-2% of all meningioma. It rarely occurs in children and requires a conscientious multidisciplinary approach for the best long-term outcome.

Acute Lymphocytic Leukemia with Serous Retinal Detachment – a Rare Calamity

*First Author: Ghina **FEDORA***
*Co-Author(s): Siti **SORAYA**, Dian **YULIA***

Purpose: Acute lymphocytic leukemia (ALL) is a malignant proliferation and transformation of lymphoid progenitor cells in the bone marrow, blood, and extramedullary sites which occurs primarily in children. Serous retinal detachment (SRD) is a rare ocular complication of ALL. Hereby we report a case of ALL on relapse with SRD.

Methods: A case report.

Results: An 11-year-old girl diagnosed with ALL relapse and thrombocytopenia consulted with us from the pediatric ward. She complained of sudden blurry vision 3 days before without any history of trauma. She had previously spent a month in the hospital receiving a new regimen of chemotherapy. She complained of fever, diarrhea, and lower abdominal pain prior to being admitted. On the 14th day of hospitalization, bloody vaginal and anal discharges also occurred. Due to her systemic problems, we were only able to perform an indirect ophthalmoscopy bedside examination and were unable to undertake any ancillary tests. Visual acuity was hand movement on the right eye and 6/60 on the left eye. Multiple petechiae were seen on both of the eyelids. Fundus examinations revealed SRD in both eyes with macular involvement in the right eye while both anterior chambers were normal.

Conclusions: Ocular involvement occurred in up to 90% of patients with leukemia, and resulted from direct or indirect infiltration. However, SRD complication in leukemia is uncommon and could present as the initial sign of acute leukemia. A comprehensive ophthalmology examination of all acute leukemia patients needs to be performed, in order to detect early ocular complications.

Analysis of Reoperation Rates in Strabismus Surgery from Health Databases

*First Author: Su Mae **ANG***
*Co-Author(s): Martin **DURKIN**, Alexander **POGREBNIAK***

Purpose: Limited information has been published describing reoperation rates for various strabismus surgeries in relation to age at first surgery. We performed a retrospective, observational clinical study to analyze reoperation rates compared to type of strabismus, age at first surgery, and geographic location within South Carolina and to determine factors associated with repeat strabismus surgery.

Methods: We studied 25 years of data from the South Carolina Revenue and Fiscal Affairs Office (RFAO) for patients aged <18 years with admission for CPT codes 67311, 67312, 67314 or 67316 from 1/1/1996 to 12/31/2016. Patients were categorized by age, strabismus types and region, with rates of reoperation analyzed using logistic regression.

Results: A total of 9237 unique patients were identified; 1833 (19.8%) had repeat surgeries captured within the RFAO database, with follow-up time ranging from 4 to 25 years depending on the date of initial surgery. Increasing age was correlated with a decreasing reoperation rate. For all types of strabismus, reoperation was higher in the <2 years age group compared to ages 2 to <4 years (OR 0.66), ages 4 to <6 years (OR 0.48), 6 to <10 years (OR 0.34), 10 to <18 years (OR 0.24, all P<0.001). The strabismus type with the greatest number of index cases was other (n=3901, 42.2%), followed by pure exotropia (n=2496, 27.0%) and pure esotropia (n=1760, 19.0%).

Conclusions: Across all types of strabismic surgeries, patients operated on at a younger age require a higher rate of reoperation.

Beta Blocker in Infantile Capillary Hemangioma

*First Author: Yulinda **SOEMIATNO***
*Co-Author(s): Julie Dewi Barliana **WINARTO***

Purpose: To report a case of infantile capillary hemangioma treated with topical and systemic beta blocker.

Methods: A case report of a 1-month-old baby with rapidly growing hemangioma on the left upper tarsal conjunctiva and eyelid spreading to the left temporal region since 2 weeks of age. She was a twin born at 36 weeks weighing 2090 grams and otherwise well. Timolol maleate 0.5% drops were given along with compress over the lesion (resulting in no significant improvement), and the patient was taken to the pediatrician's consultation for a systemic course of propranolol. Propanolol was then given under pediatrician's monitoring with a dose of 1 mg/kg/day.

Results: After 2 months, the lesion markedly improved. The dose of propranolol was increased according to body weight and no adverse reaction was noted. After 1 year of treatment, the lesion further improved. Propanolol was continued for another year. There was a 3-year loss of follow-up due to the pandemic. At the age of 5, the patient returned with prominent vessels only on the upper tarsal conjunctiva with no lesion on the skin. The best corrected visual acuities were 1.0 on the right and left eyes with cycloplegic refraction of S+0.50 and +1.75/c-1.00x 150, respectively. Intraocular pressures were normal. Glasses were prescribed and timolol maleate 0.5% was instilled, 2 drops daily on the left eye. After a year of treatment, the prominence of the vessels had reduced.

Conclusions: Systemic beta blocker, in addition to topical therapy, gives a good outcome in infantile capillary hemangioma.

Bilateral Complete Cryptophthalmos Syndrome: Suspected Fraser Syndrome, A Rare Case Report

*First Author: Ika **PUSPITA***
*Co-Author(s): Cindy **HARTONO**, Marlyanti **RAHMAH***

Purpose: To report a case of bilateral complete cryptophthalmos suspected Fraser Syndrome.

Methods: Case Report.

Results: A 6-month-old baby was referred by the pediatric division due to the absence of eyelids in both eyes. The patient was the first child of a 24-year-old mother, without any family history of the same disorder. On physical examination, the eyes were completely covered by the skin, absent eyelashes and eyebrows, but there was an eyelid sulcus on the left eye. Orofacial cleft and ear malformation were also present. B-scan ultrasound examination revealed the possibility of an incomplete orbital structure on the right eye, while the left eye revealed a normal ocular structure with an axial length of approximately 18 mm. The MRI results showed abnormal structure in the right eye, and the possibility of complete structure in the left eye with ultrabrachycephalic. The patient underwent labioplasty and nasorraphy one week after the first visit, and was planned for palate and gum surgery at 11-month old by the plastic surgery division. We planned to do blepharoplasty after palatoplasty due to the need for an oral graft to repair the fornix or cover the cornea in case of corneal abnormality.

Conclusions: Fraser syndrome can be diagnosed based on established clinical criteria, with cryptophthalmos as the most common sign. This case showed complete cryptophthalmos along with some minor criteria of congenital malformations but still cannot be qualified as Fraser Syndrome. Genetic testing and thorough examination are needed to confirm the diagnosis.

Blindsided by Your Diet: The Unexpected Culprit of Optic Neuropathy - Vitamin A Deficiency

*First Author: Sin Ling **HUE***
*Co-Author(s): Deivanai **SUBBIAH***

Purpose: To report a case of optic neuropathy secondary to vitamin A deficiency in a child with poor dietary habits.

Methods: Case report.

Results: A 10-year-old boy presented with gradual onset bilateral eye blurring of vision, associated with headache for 3 months. His diet consists of exclusively nuggets, french fries and biscuits. On examination, his right eye (RE) vision was 6/9, left eye (LE) vision was 6/60. Anterior segment findings were unremarkable. Colour vision was reduced on the LE. Fundus examination revealed bilateral optic disc swelling (LE more than RE). Follicular hyperkeratosis was observed over the skin of his left knee. Bjerrum test revealed a bilateral constricted visual field. The patient was initially treated as having atypical optic neuritis with intravenous methylprednisolone for 5 days, followed by oral prednisolone for 9 days. After exhausting investigations and imaging, the only positive result was a severely low serum vitamin A level of 0.18µmol/L. Histopathology of the skin lesions revealed phrynoderma which was likely due to vitamin A deficiency. The patient was started on a vitamin A supplement. However, his visual symptoms did not improve.

Conclusions: In the era of fussy eaters and fast food, it is the duty of ophthalmologists to educate the general public on the possibility of permanent vision loss secondary to VAD. Proper history and early diagnosis will help to preserve vision in such cases.

Body Mass Index and Blood Sample Data in Orbital Pulley Degeneration Syndrome Including Sagging Eye Syndrome

*First Author: Kie **IIDA***
*Co-Author(s): Kyo **FUKAYA**, Toshiaki **GOSEKI**, Hiromi **ONOUCHI**, Takumi **AOKI**, Serina **KUGA***

Purpose: Sagging eye syndrome (SES) and high myopia esotropia are strabismuses caused by degeneration of the LR-SR band, an orbital pulley. In this study, we compared body mass index (BMI) and blood sample data between the group with strabismus caused by orbital pulley degeneration (OPDS; orbital pulley degeneration syndrome) and the other group with strabismus (non-OPDS).

Methods: We retrospectively reviewed the medical records of patients aged ≥50 years who underwent strabismus surgery at our hospital between July 2020 and March 2023. Preoperative BMI and blood sample data were compiled and analyzed. BMI was divided into four groups: skinny (BMI<18.5), slim standard

(18.5≤BMI<22), fat standard (22≤BMI<25), and obese (25≤BMI).

Results: A total of 204 patients (mean age 67.7±9.7 years) were included; 78 patients with OPDS (70.4±9.5 years) and 126 patients with no OPDS (66.0±9.6 years). BMI was significantly lower in patients with OPDS (OPDS 21.2 ± 3.3, non-OPDS 23.2 ± 3.0, P<0.001). The skinny, slim standard, fat standard, and obese groups had 14/5 (OPDS/non-OPDS), 30/31, 14/36, and 11/30 patients, respectively, indicating that OPDS was preoperatively more prevalent in skinny than in fat standard and obese groups (P<0.001), and fewer patients with OPDS were determined to be overweight. In the blood sample data, cholinesterase (ChE) levels were 294.6±44.5 and 339.9±52.7 in patients with and without OPDS, respectively (P=0.002), and triglyceride (TG) was OPDS 108.5±71.0 and non-OPDS 167.9±117.1 (P=0.02).

Conclusions: Orbital pulley degeneration syndrome, including SES, was more prevalent in skinny patients.

Change of Astigmatism After Frontalis Sling Surgery in Children With Congenital Ptosis

*First Author: Wan-ju **CHEN***

Purpose: Frontalis sling surgery is mostly performed to treat severe congenital ptosis with poor levator function. The purpose of the study is to investigate the change in astigmatism after the frontalis sling surgery to correct congenital ptosis.

Methods: Medical records were retrospectively reviewed. Data including age, gender, margin-reflex distance (MRD), axis, and power of astigmatism before and after the surgery were collected. The change of astigmatism or so-called surgically-induced astigmatism vector (SIA) was calculated. The Alpins method was used to show SIA.

Results: Twelve eyes of nine patients were included. Age was 6.11 ± 3.70 years old. The power of astigmatism before the operation ranged from 0 to -2.75D (1.625 ± 0.99). The power of astigmatism after the operation ranged from -0.5 to -2.75D (1.40 ± 0.81). There was no significant difference in the power of astigmatism before and after the surgery. Vector analysis of SIA showed 4 eyes were with-the-rule shift with a power of 0.90 ± 0.48 D, and 5 eyes were against-the-rule shift with a power of 1.21 ± 0.60 D. The change of astigmatism in both direction and power had no correlation to MRD. Single-angle polar plots of SIA displayed no trend of specific shift after frontalis sling surgery. The vector mean of SIA was 0.25D at the meridian of 84°.

Conclusions: Frontalis sling surgery is required for severe congenital ptosis to avoid amblyopia. The trend of astigmatism shift after the operation was not observed, suggesting the component of deprivation rather than meridional amblyopia can benefit from the surgery.

Characteristics of Spring-back Test Using High-speed Recording and Tracking Analysis to Determine Tension in Intermittent Exotropia

*First Author: Dong Hyun **KIM***
*Co-Author(s): Jae Ho **JUNG**, Seong-joon **KIM***

Purpose: To evaluate the characteristics of the spring-back test using high-speed recording and eye-tracking analysis in intermittent exotropia.

Methods: A total of 48 eyes of 24 patients with intermittent exotropia were included. Under general anesthesia, the eyeball was fully rotated toward the nasally and then released, and high-speed recording was taken at 240 frames per second using a smartphone. With the tracking program, the releasing position of the eyeball on the video was set to 100, and the final position was set to 0, the maximum speed, average speed, and recovery time of spring-back were analyzed.

Results: The mean maximal eyeball movement velocity was 47.55 ± 13.96 %/msec. The mean average eyeball movement velocity was 0.20 ± 0.13 %/msec. The mean time taken by the eyeball to recover 90% of the final position was 668.8 ± 390.2 msec. The dominant eye recovered its initial position statistically significantly faster than the fellow eye. (p=0.030).

Conclusions: We have developed a novel system to quantify the spring-back test of lateral rectus muscle in intermittent exotropia. Further studies are necessary to learn if these properties can improve the predictability of strabismus surgery.

Clinical Characteristics of Partially Accommodative Esotropia and Outcome of Treatment

*First Author: Ngoc **NGUYEN***
*Co-Author(s): Nguyen **VAN HUY***

Purpose: Evaluation of clinical characteristics of partially accommodative esotropia and outcome of treatment.

Methods: Cross-sectional descriptive study in 30 patients with partially accommodative esotropia seen from July 2020 to May 2022

Results: The average age of development of partially accommodative esotropia was 2,5 years, the average amount of hypermetropia was + 4,10D, amblyopia percentage was 86,7%. Visual acuity and binocular vision were improved with hyperopia correction and amblyopia treatment (only 32.9%, stable strabismus after wearing glasses. Residual strabismus surgery after refractive correction achieved good results with average strabismus when wearing glasses of 3.03 PD.

Conclusions: The majority of partially accommodation esotropia develops at an early age with high hyperopia and amblyopia. Early treatment with hyperopia correction, treatment of amblyopia, and surgery for non-accommodation esotropia improve visual function and binocular balance.

Clinical Course and Prognostic Factors of Acquired Cranial Nerve Palsy III, IV, VI in Surabaya

First Author: Rozalina ***LOEBIS***

Purpose: This study aimed to evaluate the clinical course and prognostic factors of acquired cranial nerve (CN) palsy grouped according to etiology.

Methods: This study involved a retrospective review of the medical records of 282 patients who were diagnosed with acquired paralytic strabismus from January 2017 to December 2022. Outcomes and time to recovery were investigated according to the affected cranial nerve (CN) palsies. The patients were classified into four groups based on etiology: idiopathic, traumatic, neoplastic, and vascular.

Results: Out of the 282 patients, 86 (30.5%) had CN3 palsy, 8 (2.9%) had CN4 palsy, and 86 (30.5%) had CN6 palsy. There were 102 patients (36.2%) who had combined cranial nerve palsy. The most common cause of CN3 palsy was trauma (36%). The most common cause of CN6 palsy was neoplasm (35%). Meanwhile, the most common cause of CN4 palsy was neoplasm (37.5%. And the most common cause of multiple CN Palsy was neoplasm (38.2%). In the vascular-related group, the most common etiology was hypertension (76%). The follow-up period was around 1-year follow-up and among the four etiologic groups, the idiopathic group showed the best prognosis because about 50% of the patients in this group recovered within three months. This was followed by the vascular, traumatic, and neoplastic groups.

Conclusions: The prognosis and natural history of paralytic strabismus vary depending on its cause. The idiopathic group had the best recovery rate and shortest recovery time, whereas the neoplastic group required the longest time to recover.

Clinical Outcomes of Retro-pupillary Iris Claw IOL in Pediatric Age Group

First Author: Deeksha ***RANI***
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Purpose: There are many surgical options to address aphakia in children with subluxated lenses and insufficient capsular support. The options include ACIOL, SFIOL, and Iris Claw IOLs. All the techniques have their own merits and demerits. Data are scarce on outcomes of retro pupillary iris-claw IOLs in the paediatric age group. We conducted a study to describe the clinical outcomes of retro pupillary iris-claw IOL fixation in children aged 5 to 15 years.

Methods: A single-centre ambispective cohort study was conducted between Jan 2019 and Dec 2021. 50 eyes of 28 patients undergoing retropupillary fixation of iris-claw were included. Data on BCVA, IOP, refractive error, minimum and maximum pupil size, ECC, and CMT were recorded preoperatively, at postoperative day 1, 1 month, 3 months and 6 months.

Results: The mean preoperative BCVA was 0.82 (0.23), which improved to 0.3 (0.21) at six months. The mean spherical equivalent and cylindrical error were plus 1.12 (1.91) D and 0.65 (1.30) D respectively. Mean endothelial cell loss over 6 months was 2.8%. Complications include IOL decentration, disenclavation, hyphema, and hypotony.

Conclusions: Retro pupillary fixated IOLs provide good visual outcomes and are a safe technique in children with subluxated lenses and unilateral or bilateral aphakia with insufficient capsular support. However, longer follow-ups are needed to ascertain the safety of these lenses as iris atrophy and pigment dispersion were not apparent at six months follow-ups.

Congenital Pseudopolycoria: A Rare Case

First Author: Afriska ***YAQIN***
Co-Author(s): Hidayat ***SUJUTI***

Purpose: Pseudopolycoria is characterized by a full-thickness iris defect that lacks a surrounding sphincter muscle. No literature mentions its prevalence because it is a rare case. Pseudopolycoria can be found in several diseases such as Axenfeld Rieger Syndrome (ARS), Seckel Syndrome, Posterior Polymorphous Dystrophy (PPD), Iridocorneal Endothelial (ICE) Syndrome or it may be an isolated finding case. The purpose of this case is to present a rare patient with pseudopolycoria.

Methods: The diagnosis was based on history taking, physical examination, and specific ophthalmology examination such as ocular ultrasonography, fundus examination, corneal topography, and visual field evaluation.

Results: An 18-year-old female was admitted to the outpatient clinic with bilateral blurred vision since 6 years old. The manifestations were pseudopolycoria and correctopia. There was a passive narrowing of the accessory pupil when the true pupil was dilated. Corneal topography found the zone of suspected keratoconus in the left eye. Perimetry revealed many depressed points in the total deviation plot and different from the pattern deviation plot, indicating a possible defect of refractive media. The visual acuity was 6/48 in both eyes and corrected to 6/15 for the right eye and 6/21 for the left eye after corrective devices for distance vision with a size -20.00 D and

-10.00 D. The patient's visual acuity persisted after three months.

Conclusions: The patient's symptoms didn't lead to ARS, PPD, Seckel Syndrome, or ICE Syndrome. This patient can be classified as having moderate visual impairment. Visual rehabilitation in this patient aims to maximize vision.

Considerations of Asymmetrical Bilateral Rectus Recession for Dissociated Horizontal Deviation and Exotropia

First Author: Dewa Ayu Anggi ***PARAMITHA***
Co-Author(s): Anna Puspitasari ***BANI***

Purpose: To present a case of asymmetrical bilateral rectus recession (BLR) on a patient with exotropia and dissociated strabismus complex.

Methods: A 26-year-old male with poor control of intermittent exotropia wished for surgery due to the frequent appearance of strabismus and disturbing asthenopia. The patient has worn prescription glasses (RE S-8.50=C-1.00x180º; LE S-5.50=C-2.25x5º) with presenting visual acuity of 6/7,5 BE. No anomalous head posture was found. With correction, a 15 prism diopters (PD) exotropia (XT) was observed at near and 20 PD XT at distance fixation. In addition to this, under prism undercover test showed an inconsistent 6-12 PD base-down dissociated vertical deviation (DVD) on RE and 10-20 PD base-in dissociated horizontal deviation (DHD) on LE. On Krimsky, the deviation could reach 40 PD XT.

Results: Considering the less frequent appearance of DVD compared to DHD in this case, the patient was planned to only undergo asymmetrical BLR of 5 mm on RE and 7 mm on LE, targeting the least measurement of DHD, anticipating that binocular single vision would control the dissociated deviation. DHD represents a less familiar manifestation of the dissociated strabismus complex with recession as the suggested treatment of choice with very little literature on the outcome. At 6 months follow-up, there was no asthenopia and a mild residual DHD of up to 10 PD base-in, which very rarely appears under eyeglasses postoperatively.

Conclusions: Asymmetrical BLR for DHD and XT has demonstrated a favorable outcome both in ocular alignment and patient satisfaction, taking into note the good visual acuity.

Emerging Challenges of Acute Bilateral Diabetic Cataract in Pediatric: Insight to Early Detection and Management - a Case Report

First Author: Clara ***VALENTINA***
Co-Author(s): I Wayan Gede ***JAYANEGARA****, I Made Agus* ***KUSUMADJAJA****, Made* ***SURASMIATI****, I Wayan Eka* ***SUTYAWAN***

Purpose: To report a rare case of acute bilateral cataract in pediatrics with Type 1 Diabetes Mellitus as an ocular complication despite good glycaemic controls and its management.

Methods: A 17-year-old male patient complained of blurry vision and glare in both eyes (BE) since 3 months in newly diagnosed T1DM (HbA1c 10% --> now 6.3%). Visual Acuity (VA) was 6/45PH6/21f2, with correction S-1.50 advancing to 6/18 in BE. Slitlamp examination of BE revealed lens opacity (P3), central position, 3mm in diameter, retinometri 0.32. Posterior segment evaluation and intraocular pressure (IOP) were within normal limits. Right eye (RE) underwent lensectomy and IOL insertion under GA.

Results: Postoperative RE with final VA of 6/18 PHNI and IOP of 43 mmHg. The patient was given anti-inflammation eyedrops, oral and topical anti-glaucoma, and received a controlled final IOP of 8mmgHg within 3 days and remained stable until now without antiglaucoma. The result was satisfying despite uncomplicated secondary glaucoma as a short-term complication that resolved with therapy. Evaluation and close postoperative monitoring are needed and play a significant role in visual outcomes.

Conclusions: Early detection for ocular complications in DM is needed. Ocular manifestation may present as an early sign of undiagnosed T1DM or as its complications. Comprehensive and holistic treatment, glycaemic control, and routine evaluation are essential and play a significant role in the success of metabolic cataract therapy and the progression of microvascular complications due to DM. Lensectomy + IOL implantation is still the mainstay therapy in pediatric cataracts. Awareness plays a vital role as it possibly causes decreased vision and or amblyopia, leading to blindness.

Evaluation of Superoxide Dismutase Levels in Congenital and Developmental Cataracts: Role of Oxidative Stress in Childhood Cataracts

First Author: Arnab ***PAL***
Co-Author(s): Tanaya ***PAUL***

Purpose: To evaluate superoxide dismutase (SOD) levels in aqueous humor of congenital and developmental cataracts.

Methods: Aqueous humor from 10 eyes with congenital or developmental cataracts collected during phacoemulsification was analyzed for SOD levels and compared with those in traumatic childhood cataracts and adult senile cataracts (10 cases each).

Results: SOD levels in congenital or developmental cataracts were found to be significantly higher ($p<0.05$) when compared to traumatic childhood cataracts; however, the difference in SOD levels between senile and congenital or developmental cataracts was not significant ($p>0.05$).

Conclusions: Oxidative stress presumably plays a significant role in the development of congenital or developmental cataracts.

Eye Movement Analysis During Convergence and Divergence in Intermittent Exotropia

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*Co-Author(s): Fumi **GOMI**, Hiroyuki **KANDA**, Akiko **KIMURA**, Akiko **MASUDA**, Youichi **OOKITA***

Purpose: To analyze convergent and divergent eye movements in subjects with and without intermittent exotropia (iXT) by the eye tracking system.

Methods: Twenty healthy volunteers (N group) and 20 iXT patients (iXT group) underwent eye movement assessment of convergence and divergence by eye tracker with the monitor at 60 cm in front of the face and the target at 30 cm. The subjects gazed alternately and repeated every 5 seconds. Time and each movement were compared between the two groups. The Adult Strabismus questionnaire (AS-20) was used to evaluate the functional and psychosocial aspects of strabismus in the iXT group.

Results: Time for convergence was significantly longer in the iXT than that in the N ($p = 0.030$). Characteristic eye movements: micro eye movement (notch) during divergence, static eye movement (static notch) just before convergence, and overreaching (overshoot) during divergence, were more frequently observed in the iXT than in the N ($p = 0.019$, $p = 0.013$, and $p = 0.047$ respectively). There were no correlations between the deviation angles and the frequency of these eye movements or the times required for convergence and divergence. The AS-20 results indicated that patients with a static notch tended to show worse scores on reading than those without it.

Conclusions: The characteristic eye movements during convergence and divergence in cases with iXT were more frequently detected, and they may cause asthenopia.

Factors Associated With Good Result After Surgery for Sensoric Strabismus

*First Author: Dewi **DHARMASTUTI***

Purpose: The purpose of this study is to evaluate factors associated with good surgical outcomes for sensoric strabismus.

Methods: A retrospective analysis of all operated cases of sensoric strabismus during a 3-year period (July 2020 – July 2023) was performed from patients' medical records. A successful outcome was defined as no deviation at the primary position with Hirschberg test 0 for a minimum 1 month after surgery.

Results: There were 57 patients with sensoric strabismus, but only 10 patients underwent surgery for cosmetic indication. The overall success rate was 80%, with sensoric esodeviation having a higher success rate (75%), compared to sensoric exodeviation (50%). The median age for esodeviation was 23.5 (17 – 24, IQR 6) and for exodeviation 21.5 (16 – 33, IQR 12). Overcorrection result on day 1 postoperative was more likely to be associated with orthophoria on 1 month postoperative (OR=2.5; 95% CI 0.86 – 7.31; p=0,09). Macular lesion as a cause for sensoric deficit was less likely to be associated with orthophoria 1 month postoperative (OR=0.125; 95% CI 0.005 – 3.23; p=0.21). Small angle deviation preoperative was also more likely to be associated with orthophoria on 1 month postoperative (OR=1.25; 95% CI 0.81 – 1.94; p=0.41).

Conclusions: In this study, overcorrection on day 1 postoperative and preoperative small angle deviation contributed to successful surgical outcomes for sensoric strabismus.

Four Horizontal Muscles Secondary Strabismus Surgery for Residual Esotropia With Large Angle in Adult With Graves' Disease: A Case Report

*First Author: Dea **CAESARITA***
*Co-Author(s): Liana **EKOWATI**, Arnila **SAUBIG***

Purpose: Large angle esotropia is mentioned that deviation of more than 60 prism diopter (PD). The management of large-angle esotropia is challenging. This case aimed to present the outcome of four horizontal muscles secondary strabismus surgery for residual esotropia with a large angle in an adult with Graves' disease.

Methods: A 23-year-old girl with large angle esotropia underwent strabismus surgery in both eyes 12 years ago at another hospital, and the patient had been suffering from Graves' disease since 5 years ago. Best corrected visual acuity in both eyes 6/12. Exophthalmos was not seen in both eyes. The patient presented 45° Hirschberg test esotropia in both eyes, with an alternating prism cover test that was more than 85 PD base out. Movement of the left eyeball was limited to the temporal side, and the forced duction test was no restriction. The Worth Four Dot Test (WFDT) result was diplopia. The patient underwent secondary surgery with bilateral medial rectus re-recession 5 mm and bilateral lateral rectus resection 7 mm. The total medial rectus recession in both eyes was 10 mm.

Results: This case underwent four horizontal muscles as secondary surgery. The outcome of the evaluation in 1 day and 1-week post-secondary surgery was orthophoria. Movement of the eyeball was still limited to the temporal side, and WFDT still diplopia. Some previous studies found that abduction deficits could be caused by thyroid-associated orbitopathy.

Conclusions: This study provided management of large angle esotropia. A selective approach can be used for large-angle esotropia, in which bilateral medial rectus

recessions are combined with the resection of one or both lateral rectus muscles.

Full Thickness Skin Graft Surgery for the Management of Cicatricial Ectropion Resulted Due to Thermal Burn: A Case Report of Two Cases

*First Author: Sabita **SHRESTHA***

Purpose: Cosmetic and functional outcome of grade IV cicatricial upper lid ectropion due to thermal injury (domestic injury).

Methods: A 42-year-old and a 46-year-old female presented to us with grade IV cicatricial ectropion that resulted from thermal burns, with a pressure cooker blast injury and a Kerosene Stove blast injury 4 years and 6 years before, respectively. In addition to ectropion, one case had corneal opacity, while the other had evident signs of exposure keratopathy. Besides ocular complaints, both patients had high cosmetic concerns. A reconstruction surgery was carried out in both cases, including skin contracture release, canthus release, orbicularis liberation and oversized full-thickness graft implant from the arm of the same person.

Results: The primary outcome of the study was the cosmetic acceptance of the patients, pre and post operative signs and symptoms. Both of the patients were quite satisfied with the cosmetic outcome of the surgery. In the case that had a mild form of exposure keratopathy, symptoms like watering and foreign body sensation waned off, and visual acuity also improved after Phaco Emulsification. The next case with corneal opacity with adherent Leucoma improved with symptoms like watering and foreign body sensation. Both of the cases were followed up for the next three months, where no recurrence was observed. The mode of presentation of the outcome was sequential photographs taken at different visits.

Conclusions: The case report showed a promising result in the case of cicatricial ectropion with tissue loss after sustaining thermal injury.

Group a Retinoblastoma: A Study of Two Cases

*First Author: Tsengelmaa **CHULUUNBAT***

Purpose: The purpose was to study the clinical features, treatment, and outcome of retinoblastoma (RB) in Mongolia.

Methods: This was a retrospective study of two patients with RB detected in the 2nd month of life and 28 months of age.

Results: The mean age at diagnosis of RB was 15 months (mean, 15 months; range, 2–28 months). There were two males with bilateral RB. Two patients were brought in with complaints of leukocoria and had an intraocular tumor at presentation. Based on the International Classification of Intraocular Retinoblastoma, the tumors were classified as Group A (n = 2) and Group D (n = 2). Macular involvement was noted in 2 (50%) eyes. The primary treatment included systemic chemotherapy without focal treatment in those patients, and the second treatment included systemic chemotherapy with green laser treatment. Of the two patients who received 6 times systemic chemotherapy with laser treatments, globe salvage was achieved in 4 (100%) eyes over a mean follow-up period of 7 months (mean, 3 months; range, 4–7 months).

Conclusions: Group A RB, if detected early, has a favorable outcome of ocular and life salvage.

Implantation Glaucoma Drainage Devices With Lumen Ligation in Child With Weill-Marchesani Syndrome: A Case Report

*First Author: Anne **UMBOH***
*Co-Author(s): Richardo **RUSLI**, Novanita **SATOLOM**, Franky **KASIH***

Purpose: To evaluate the efficacy of glaucoma drainage implant (GDD) with lumen ligation in a patient with Weill-marchesani syndrome.

Methods: A 13-year-old girl had bilateral narrow-angle glaucoma with elevated intraocular pressure of 42 mmHg in the right eye, 31 mmHg in the left eye, and unclear corneal since 4 years ago even with systemic and topical antiglaucoma drugs. The patient had nystagmus in both eyes. The patient presented with short stature, small hands and feet, stiff joints, and thickened skin. The patient was diagnosed with narrow-angle glaucoma with Weill-Marchesani syndrome. The patient was scheduled to receive pediatric-size GDD (VGI-GL52) with lumen ligation to control the intraocular pressure on the right eye.

Results: One day after surgery, the intraocular pressure of 11.3 mmHg. Five days after surgery, the patient came with intraocular pressure of 17.9 mmHg without intraocular drugs and the tube in 10 o'clock. There was subconjunctival bleeding found in the operated eye. The unclear corneal was decreased, but cannot be evaluated now. The patient was planned for surgery for GDD placement on the fellow eye.

Conclusions: Glaucoma drainage devices may be indicated in glaucoma associated with complex congenital anomalies or dysgenesis of the anterior segment. Implantation GDD with lumen ligation in Weill-Marchesani syndrome with the unclear corneal was effective in intraocular pressure reduction.

Incidence and Distribution of Ocular Disorders in the First Year of Life

*First Author: Brian **MOHNEY***
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Purpose: The purpose of this study was to report the incidence and distribution of ocular disease observed in a population-based cohort of infants diagnosed over a 10-year period.

Methods: The medical records of all infants (< 1 year of age) diagnosed with any ocular disorder while residing in Olmsted County, Minnesota, from January 1, 2005, through December 31, 2014, were retrospectively reviewed.

Results: A total of 4,223 infants were diagnosed with an ocular disorder, yielding an incidence of 20,242/100,000 births per year, or 1 in 4.9 live births (95% CI, 19,632-20,853). The median age at diagnosis was 3 months, and 2,179 (51.5%) were female. The most common diagnoses included conjunctivitis, in 2,175 (51.5%), nasolacrimal duct obstruction, in 1,432 (33.6%), and pseudostrabismus, in 173 (4.1%). Visual acuity was decreased in one or both eyes in 23 (0.5%) infants because of strabismus in 10 (43.5%) and cerebral visual impairment in 3 (13.0%). A majority of the infants (3,674 [86.9%]) were diagnosed and managed by a primary care provider, and 549 (13.0%) were evaluated and/or managed by an eye care provider.

Conclusions: Although ocular disorders occurred in 1 in 5 infants in this cohort, most conditions were evaluated and managed by primary care providers. Understanding the incidence and distribution of ocular diseases among infants is useful for planning clinical resources.

Juvenile Idiopathic Uveitis With Angle-Closure Neovascular Glaucoma: A Case Report

*First Author: Shang-yen **WU***
*Co-Author(s): Cheng-jen **CHIU**, Yuan-chieh **LEE***

Purpose: To describe a case of juvenile idiopathic uveitis with angle-closure neovascular glaucoma successfully treated with synechiolysis, phacoemulsification, peripheral iridectomy, and intravitreous triamcinolone and bevacizumab.

Methods: Case report.

Results: A 15-year-old boy presented with progressive painful visual loss in both eyes. The visual acuity was 20/50 in each eye. Biomicroscopic examination revealed 1+ anterior chamber cells and posterior synechia. Fundoscopy showed disc edema and tortuous retinal vessels. The visual acuity improved to 20/25 under oral and topical steroids. Unfortunately, he lost the follow-up for 3 months, and the visual acuity deteriorated to 20/120 in the right eye and finger counting in the left eye. 360-degree severe iris bombe with rubeosis in the left eye was noted. Several laser iridotomies and intravitreous injections of triamcinolone and bevacizumab were performed. However, iris bombe with irido-corneal touch, intraocular pressure up to 63 mmHg, and posterior subcapsular cataract were still noted. He then received synechiolysis and phacoemulsification with PCIOL implantation, but iris bombe and rubeosis recurred soon. Hence repeated synechiolysis, peripheral iridectomy, vitrectomy, endolaser, and intravitreous triamcinolone and bevacizumab were performed. There was no further iris bombe or IOP elevation in the left eye. Synechiolysis, phacoemulsification with PCIOL implantation, and peripheral iridectomy were then performed in the right eye. The visual acuity improved to 20/20 OD and 20/25 OS without further iris bombe nor IOP elevation in the following year.

Conclusions: Juvenile idiopathic uveitis leads to ocular complications. Angle-closure neovascular glaucoma may be dealt with synechiolysis, phacoemulsification, peripheral iridectomy and intravitreous triamcinolone and bevacizumab.

Large Recurrent Conjunctival Papilloma in Children Treated Successfully With Oral Cimetidine

*First Author: Delfitri **LUTFI***

Purpose: Conjunctival papilloma is a benign epithelial tumor with prominent intrinsic vascularity that displays characteristic “hairpin” vascular loops. Conjunctival papilloma often requires surgical excision and interventions including perilesional cryotherapy, intralesional or topical interferon-α injection, carbon dioxide (CO2) laser, topical mitomycin-C (MMC), and oral cimetidine as an adjunctive treatment. We present a case of successful treatment of oral cimetidine for a large recurrent conjunctival papilloma.

Methods: A 15-year-old boy had a year’s history of diffuse conjunctival papilloma over the right upper and lower palpebral conjunctiva. He was treated with two times surgical excision with cryotherapy previously, but the papilloma recurs. The last recurrence was large in size, so we decided to choose non-aggressive treatment to prevent surgical complications such as symblepharon and dry eye. We gave oral Cimetidine at a dosage 200 mg 4 times daily.

Results: Within 2 months, dramatic tumor regression was noted with complete resolution. Oral cimetidine was continued until 4 months. The patients had no local or systemic side effects from the oral cimetidine. After 1 year of follow-up examinations, there was still no recurrence of the conjunctival papilloma.

Conclusions: Cimetidine is a histamine 2 receptor antagonist that enhances the immune system. The role of cimetidine in treating squamous papilloma is

still controversial and may be helpful in some cases of virus-induced conjunctival papilloma.

Management of Congenital Aniridia With Subluxated Cataracts

First Author: Pg N H Fitri ***PG OTHMAN***
Co-Author(s): Helena ***HURAIRAH***

Purpose: To present a case of a 6-year-old girl with congenital aniridia with cataracts in both eyes. In addition, she also has autism spectrum disorder.

Methods: The patient presented with nystagmus and poor fixation. On examination, her visual acuity was 6/30 in both eyes without correction. Her refraction showed +6.00/-3.00 x 10 degrees and +7.00/-3.50 x 170 degrees. She had bilateral aniridia associated with mild cataracts in both eyes. There were zonular weaknesses noted in both eyes with subluxated lenses. Left exotropia and nystagmus were noted. The patient went for right eye phacoemulsification of the cataract and scleral fixation of the intraocular lens (IOL).

Results: The surgery was uneventful. Post-operatively, the patient was doing well, with no evidence of aniridia- associated keratopathy. Intraocular pressure was also normal. Moderate signs of ocular signs of inflammation were noted. The fundus appeared flat and normal. She was treated with topical corticosteroids and antibiotics. The patient is currently doing well and awaiting the next cataract operation for the left eye. We are awaiting an assessment of the child's visual improvement post-surgery.

Conclusions: Phacoemulsification and scleral fixation of IOL are among the management methods for aniridia with cataracts. Artificial Iris implantation can also be performed in these cases. These procedures have been shown to result in significant visual improvement.

Management of Isolated Traumatic Rupture of the Inferior Rectus Muscle

First Author: Hsin-ying ***LIN***

Purpose: Isolated inferior rectus (IR) muscle rupture following ocular blunt injury is a rare occurrence of diplopia. The management of ruptured ocular muscles poses significant challenges. In the case report, we present our techniques for locating the displaced proximal portion of the IR muscle and restoring its function in the patient who experienced isolated rupture of IR muscle without blowout fracture or eyeball rupture.

Methods: To report a case of traumatic isolated rupture of the inferior rectus muscle.

Results: A 61-year-old man with no prior health issues presented due to pain and blurred vision in his left eye after being injured by a branch while riding a motorcycle. Slit-lamp examination revealed lid and conjunctival lacerations, along with a ruptured inferior rectus muscle in the left eye. Orbital CT scan showed air bubbles and infiltration around the bottom of the left eye. The left eye had significant hypertropia in the primary gaze with limited downward movement. A day later, the patient underwent surgery to repair the ruptured inferior rectus muscle and lid laceration of the left eye. The surgery involved suturing the proximal part of the ruptured muscle to its distal portion. Post-surgery, the patient experienced mild hypertropia and double vision, which gradually improved. After two months, the patient achieved orthophoria in the primary gaze.

Conclusions: Using precise surgical microscopy, we located the torn muscle stump in the Tenon's capsule. Suturing both ends of the ruptured IR muscle effectively restored function and enhanced the patient's quality of life.

Orbital Cellulitis and Intracranial Abscess in an Infant: Successful Multidisciplinary Care

First Author: Nazli ***GUL***
Co-Author(s): Fahd Zafar ***KHAN****, Maryum* ***KHILJI****, Shafiq* ***TANVEER****, Dilawar Ali* ***YAZDAN***

Purpose: We present a case of successfully managed orbital cellulitis complicated with intracranial abscesses in a 2-month-old male baby. The purpose of this study is to highlight the importance of prompt diagnosis and immediate medical and surgical intervention in preventing potential long-term disabilities and death in children with orbital cellulitis and its complications.

Methods: The study conducted at our hospital included a two-month-old male baby presenting with painful right upper eyelid swelling, fever, seizures, excessive crying, and irritability. Detailed history, clinical examination, neuro-imaging, and laboratory investigations were used to collect data. Collected data was analyzed to formulate a management plan.

Results: The results showed that the patient had a right preseptal abscess complicated with orbital cellulitis and an intracranial abscess. A multidisciplinary team managed the case, involving ophthalmology, neurosurgery, neurology, and infectious diseases. The preseptal abscess was drained, revealing mixed growth of microorganisms, predominantly Staphylococcus aureus. The patient received intravenous antibiotics and underwent bicoronal craniotomy for drainage of the brain abscess. With aggressive management, the patient improved significantly, and a post-operative CT scan confirmed the complete resolution of abscesses.

Conclusions: This case highlights the potential severity of orbital cellulitis and its complications, such as intracranial abscess. Prompt diagnosis, immediate initiation of empirical antibiotics, and timely surgical intervention were crucial in reversing the patient's condition. A high index of suspicion must be kept for the potential intracranial extension of orbital cellulitis. Specimen collection from abscesses for gram staining

and culture sensitivity is recommended, and early consideration of surgical management is beneficial in cases with intracranial abscess formation.

Outcomes Treatment of ROP with Intravitreal Bevacizumab for Retinopathy of Prematurity in GA 24-27 week

*First Author: Suzie **NEMMERS***
*Co-Author(s): Ahmed **ASSAF**, Elvioza **ELVIOZA**, Gabor Arthur **NEMETH**, George **NEMETH***

Purpose: This study presents outcomes of Bevacizumab on preemies with ROP type 1 A, and 1, including the relative effectiveness and necessity of ROP laser after Bevacizumab.

Methods: This study utilizes retrospective data recorded from 10 preemies in NICU of TAMC between July 2021 and August 2023 All patients had Type 1 and 1A ROP who were not cleared by pediatric anesthesiologist -NICU attending to be put under general anesthesia. The mean GA was 24.85 weeks and BW was 776 grams. An eye exam was conducted before and after the injection of Bevacizumab 0.025 cc at 1 mm from the limbus.

Results: A total of 20 eyes with Type 1 and 1 A ROP were treated with bevacizumab and ROP laser photocoagulation. 12 eyes received two bevacizumab (second injection administered one week after the first) and 2 eyes received one injection, required ROP laser therapy. 12 eyes required ROP laser therapy after 3 weeks from the last injection, 4 eyes required ROP laser one week after the first injection. 4 eyes received ROP laser at GA 50 weeks due to stalled stage 3, regressed plus disease. The procedures were successful, and none of the treated eyes progressed to retinal detachment or macula traction. ROP laser was necessary despite Bevacizumab injection after a mean distribution of 2.5 weeks for non-responsive and 4.5 weeks, including stalled stage 3.

Conclusions: All outcomes of intravitreal Bevacizumab eventually required ROP laser at a range of 2-3 weeks with a mean of 2.5 weeks for non-responsive and 4.5 weeks for responsive but stalled stage 3.

Perceptual Learning With Hand–Eye Coordination as an Effective Tool for Managing Amblyopia

*First Author: Shreya **SHAH***
*Co-Author(s): Mehul **SHAH***

Purpose: Amblyopia is a serious condition resulting in monocular impairment of vision. Although traditional treatment improves vision, we attempted to explore the results of perceptual learning in this study.

Methods: This prospective cohort study included all patients with amblyopia who were subjected to perceptual learning. The presenting data on vision, stereopsis, and contrast sensitivity were documented in a pretested online format, and the pre- and posttreatment information was compared using descriptive, crosstabulation, and comparative methods on SPSS 22. The mean values were obtained, and $P < 0.05$ was considered statistically significant.

Results: The cohort consisted of 47 patients (23 females and 24 males) with a mean age of 14.11 ± 7.13. Significant improvement was detected in vision after the session, and the median follow-up period was 17 days. Significant improvements were observed in stereopsis.

Conclusions: Perceptual learning with hand–eye coordination is an effective method for managing amblyopia. This approach improves vision in all age groups.

Persistent Postoperative Paradoxical Diplopia and Reverse Prisms

*First Author: Christella **CAROLINE***
*Co-Author(s): Anna **BANI***

Purpose: Paradoxical diplopia occurs when the subjective angle of the visual cortex of diplopic images is not commensurate with the objective angle of strabismus, indicating anomalous retinal correspondence. We present a case of persisting paradoxical diplopia following a large exotropia surgery which was difficult to predict preoperatively, and the role of reverse prisms.

Methods: Case report. A male, 15-year-old, has noticed an outward squint since 10 years ago and wishes to have surgery. The patient did not show signs of binocular single vision (BSV). The uncorrected visual acuity of both eyes (BE) was 6/6. Prism alternate cover test (PACT) revealed a 60 PD XT at distance and 70 PD XT at near with full duction in all fields and +1 downshoot BE. A 15 PD A-pattern was also found, hence the diagnosis of large angle exotropia with A-pattern. He underwent 8 mm bilateral rectus recession with half-width infraplacement plus a 6-mm plication on the right medial rectus.

Results: At 1 and 6 months follow-up, a residual 20 PD XT was found but with a collapsed A-pattern, with persisting diplopia that was not bothersome. The Maddox test showed uncrossed diplopia with inconsistent sensory fusion at 12-35 PD base out. The patient was suggested to use a reverse prism, however, he felt more convenient without it.

Conclusions: Paradoxical diplopia is, fortunately, less disturbing than true diplopia. But it can be challenging to predict preoperatively, as in this case, since thick prisms obscure vision and BSV testing. Reverse prisms can be effective in persistent cases; however, usage is dependent on the patient's preference.

Prevalence of Visual Dysfunction and Ocular Motility Disorders in Developmentally Delayed Children

*First Author: Muhammad **CHAUDHARY***

Purpose: To evaluate the prevalence of reduced visual acuity (VA), refractive errors (RE), reduced contrast sensitivity, and strabismus in developmentally delayed (DD) children.

Methods: This descriptive cross-sectional study recruited 257 children of either gender, between the ages of 06-16 years, having an intelligence quotient (IQ) ≤ 80 by the Wechsler Intelligence Scale for Children (WISC) from the outpatient department. Detailed systemic and ophthalmic history was taken, and a thorough anterior and posterior segment examination was carried out. VA was assessed with age-matched VA charts. Cycloplegic refraction with 01% cyclopentolate was carried out. Contrast sensitivity was measured with hiding Heidi charts. Strabismus was assessed with Hirschberg and covers /uncover tests.

Results: The mean age of these children was 8.88 years with a standard deviation (SD) of ± 2.70. The prevalence of reduced VA, RE, strabismus, and reduced contrast sensitivity in these children were 43.58%, 52.92%, 52.14%, and 32.7%, respectively. Out of these 52.92 % RE, 56 (21.79%) were myopic, 66 (25.68%) were hyperopic, and 14 (05.45%) were astigmatic. The percentage of esotropia was 72 (28.02%), and exotropia was 62 (24.12%).

Conclusions: The results of our study in DD children have shown that a significant number of children have reduced VA, RE, strabismus, and reduced contrast sensitivity. Apart from the general management of DD children by a pediatrician, the ophthalmic management of these problems must be carried out by a pediatric ophthalmologist to improve their quality of life. Strengthening relations and teamwork are needed between child development, community pediatric service, pediatric ophthalmic care, and child specialist education services to help them.

Retropupillary Iris Claw Lens Implantation in Pediatric Patients of Marfan's Syndrome

*First Author: Drushya **REDDY***
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Purpose: To assess the visual outcome, corneal endothelial cell loss and complication rates after retropupillary iris claw lens implantation in pediatric patients with ectopia lentis secondary to Marfan's syndrome.

Methods: In this retrospective study, 34 eyes of 24 children with subluxation of the natural lens due to Marfan's syndrome with inadequate capsular support underwent lensectomy with primary or secondary retropupillary iris claw lens implantation from 2011 to 2023 at our institution. Preoperative and postoperative uncorrected visual acuity (UCVA), best-corrected visual acuity (BSCVA), intraocular pressure (IOP), endothelial cell count (ECC), and the occurrence of other complications were measured.

Results: The average patient age was 8.5 years (age range: 4-17 years), and the mean follow-up duration was 25.38 months (range: 2 to 117 months). LogMAR BSCVA significantly improved from 0.85±0.30 preoperatively to 0.38±0.20 postoperatively during the final follow-up visit ($P < 0.0001$). Postoperative intraocular pressure averaged 15.5 mmHg (range: 9–26 mmHg). The mean endothelial cell density decreased from 2907.35±387.07 cells/mm^2 preoperatively to 2612.02±435.90 cells/mm^2 post-surgery, indicating an average endothelial cell loss of 10.16% by the study's conclusion.

Conclusions: Retropupillary iris-claw implantation is an effective and safe procedure for pediatric patients with ectopia lentis secondary to Marfan's syndrome, offering improved visual outcomes with minimal postoperative endothelial cell loss.

Risk and Prognostic Factors for Glaucoma Associated With Peters Anomaly: A Retrospective Observational Study

*First Author: Yoshiaki **KIUCHI***
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Purpose: To investigate the risk factors for glaucoma secondary to Peters anomaly (PA) and glaucoma surgery outcomes.

Methods: This retrospective study included 31 eyes of 20 patients with PA who visited Hiroshima University Hospital between 2009 and 2021. PA was classified into three stages: Stage 1, with a posterior corneal defect only; Stage 2, a corneal defect with iridocorneal adhesion; and Stage 3, a corneal defect with lens abnormalities, including lenticulocorneal adhesion. The associations between glaucoma and anterior segment dysgenesis severity, visual prognosis, and glaucoma surgery outcomes were analyzed.

Results: Of the 31 eyes of 20 patients, 16 eyes of 10 patients developed glaucoma. Stage 1 PA had no glaucoma, 52% of Stage 2 had glaucoma, and 75% of Stage 3 had glaucoma. The prevalence of glaucoma increased with the stage. The final median visual acuity was 1.8 logMAR and 1.3 logMAR in the glaucoma and non-glaucoma groups, respectively. Visual prognoses were poorer in eyes with glaucoma than in those without glaucoma (P=0.0292). Of the 16 eyes with glaucoma, 11 underwent surgery. Eight of these 11 eyes achieved intraocular pressure (IOP) control, while three had postoperative complications and failed IOP control. Five of the nine eyes that underwent trabeculotomy (TLO) succeeded, and none had corneal

staphyloma. Three of the four eyes for which TLO was ineffective had corneal staphyloma (P=0.0331).

Conclusions: Patients with PA are more likely to develop glaucoma as anterior segment dysgenesis progresses, and the effect of TLO is limited if corneal staphyloma is present.

Secondary Glaucoma to Bilateral Sturge-Weber Syndrome Controlled With Trabeculectomy – An Unusual Management of a Rare Case

First Author: Dezca ***NINDITA***
Co-Author(s): Fidalia ***FIDALIA****, Prima* ***MAYA SARI***

Purpose: Sturge-Weber Syndrome (SWS) is a rare neuro-oculocutaneous disorder characterized by angiomas involving the face, eyes, and brain (leptomeninges). Clinical therapy for glaucoma in SWS is often ineffective and most patients require glaucoma surgery. Trabeculectomy is less favored due to the high number of post-operative complications, but considered applicable in most centers. We present a patient with rare bilateral SWS controlled with trabeculectomy with 5-Fluorouracil.

Methods: A case report is presented.

Results: A 5-year-old female who had been treated by a suburb ophthalmologist, presented to us with bilateral visual acuity 6/30, port wine stain in both palpebral, and bilateral melanosis bulbi in her sclera. Intraocular pressure (IOP) was performed 27, 9 mmHg on RE and 21,0 mmHg on LE on anti-glaucoma medication. The patient was consulted to the dermatology and paediatric department, and a diagnosis of SWS was established. Considering the patient's age, size of the sclera, and availability of a glaucoma drainage device, it was decided to do trabeculectomy 5-Fluorouracil. Two weeks postoperatively, IOP of RE was well controlled in 13,5 mmHg with no antiglaucoma medication.

Conclusions: Once SWS is clinically suspected, a complete investigation of the eye, skin, and brain should be performed. Medication is often insufficient for glaucoma secondary to SWS; surgical management, particularly glaucoma, drainage device is considered superior. However, in an unfavorable environment, trabeculectomy with 5-Fluorouracil may be preferred for it gives a satisfactory outcome.

Strabismus Surgery for Traumatic Ocular Misalignment: Twelve Cases in Five Years

First Author: Ni Made Ayu ***SURASMIATI***

Purpose: Trauma can cause an ocular misalignment due to damage of extraocular muscles, nerves and orbital tissue around the eye. Direct trauma causing extraocular muscle rupture needs immediate surgery. Meanwhile, indirect trauma resulting in traumatic sixth nerve palsy or other reversible ocular misalignment without orbital floor fracture can be observed for six months. This study describes the characteristics of patients undergoing single-step strabismus surgery for traumatic ocular misalignment, mechanism of injury, eye alignment, and amount of ocular deviation before and after strabismus surgery.

Methods: This was a case series based on the medical records of patients who underwent strabismus surgery secondary to the head or eye injury from 2017 until 2022.

Results: Twelve individuals with post-traumatic strabismus correction participated in this study. All subjects were male, with ages ranging from 18 to 51 years. Direct trauma was observed in 6 (50%) patients causing medial rectus muscle rupture in 4 patients and inferior rectus muscle rupture in 2 patients. Indirect trauma was observed in 6 (50%) patients caused by sixth nerve palsy in 4 patients The misalignment was exotropia, esotropia, and hypertropia with amounts of 5, 4, and 3 respectively. The deviation was between 30-90 prism dioptre (PD) and 7 (58%) patients had a deviation less than 65 PD. The strabismus surgery performed was muscle transposition with or without recession of the antagonist muscle.

Conclusions: Single-step surgery for traumatic ocular misalignment can provide good results in cases of deviation less than 65 PD.

Surgical Retrieval and Adjustment in a Traumatic Isolated Inferior Rectus Muscle Transection, Under Conscious Intravenous Sedation: A Case Report

First Author: Maria Kristina ***EDUARDO***

Purpose: To report a case of good functional and anatomical results after a single surgery on a completely transected inferior rectus muscle under conscious intravenous sedation.

Methods: We describe the approach we used for retrieval and adjustment of a completely transected inferior rectus muscle secondary to a fish hook injury in a 34-year-old male.

Results: A single surgery under conscious intravenous sedation provided successful retrieval and intraoperative adjustment of a transected inferior rectus muscle. Wound exploration of the proximal part of the inferior rectus muscle was performed by grasping the fibrous tissue attached to the tenons along the inferior rectus' anatomic position. Active force generation or a tug on the forceps after instructing the patient to look down was used to locate the inferior rectus muscle. The proximal inferior rectus muscle was reattached to its distal stump. Ocular alignment was adjusted intraoperatively using the alternate prism and cover test and resecting the stretched muscle accordingly. From preoperative vertical diplopia with 25 prism diopters (PD) hypertropia of the involved

eye, the postoperative alignment at 6 months was orthotropic with no noted diplopia on downgaze.

Conclusions: Conscious muscle surgery allows for the effective retrieval of a traumatically transected inferior rectus muscle. It also allows intraoperative adjustment of alignment decreasing the need for subsequent surgeries.

The Effect of Omega 3 Supplementation on the Histopathological Appearance of Neovascular Tuft in the Retina of Rats With Oxygen Induced Retinopathy

*First Author: Diki **APRIWAN***

Purpose: Retinopathy of prematurity (ROP) is a complex disease caused by deficit of retinal vascularization, particularly in premature infants. The oxygen-induced Retinopathy (OIR) method performed in rats can assess the pathogenesis and therapy of retinal neovascularization in ROP. Hyperoxia of the retina has an important role in the pathogenesis of ROP by increasing levels of Reactive Oxygen Species. To determine the effect of omega-3 supplementation on the retina of the OIR rat model by examining the histopathological appearance and number of neovascular tufts.

Methods: This research is an experimental study (Posttest Only design with Control Group) using 36 newborn Wistar rats divided into 2 groups. Group 1 received 75% oxygen exposure (ages 7-12 days) with omega-3 supplementation 600 mg/gram/hr (ages 7-20 days). Group 2 received only 75% oxygen exposure. Both groups were transferred to normal room air (age 13 days). The rats underwent enucleation at 21 days of age and histopathological preparations were with immunohistochemical staining with Griffonia simplicifolia lectin to assess neovascular tufts, by counting the number of vascular endothelial nuclei passing through the Internal Limiting Membrane towards the vitreous. The result was the average of neovascular tufts per 10-4 length of retinal cross-section.

Results: The mean neovascular tufts in the retina of OIR rats with omega-3 supplementation was lower at 15.65 ± 4.34, compared to the mean neovascular tufts in the retina of OIR rats without omega-3 supplementation at 41.4 ± 4.73 ($p < 0.05$).

Conclusions: Omega 3 affects the histopathological changes in the retina of rats with OIR.

The Effect of Prolonged Monocular Occlusion on the Nystagmus Waveform in Strabismic Amblyopia With Manifest Latent Nystagmus

*First Author: Janice **LAM***
*Co-Author(s): Vijay **TAILOR**, Maria **THEODOROU***

Purpose: Managing strabismic amblyopia in children with manifest latent nystagmus (MLN) can be difficult, as the intensity of nystagmus increases with occlusion, which equates to a reduction in visual acuity (VA). As a result, many do not offer active intervention. In our study, we assessed VA and eye movement recordings in children with MLN and strabismic amblyopia to determine the effect of monocular occlusion.

Methods: A prospective case series of 10 children (5-8 years) with strabismic amblyopia and MLN was conducted. Detailed history, full ophthalmic examination, and orthoptic assessment were performed. The non-amblyopic eye was occluded continuously for 6 hours. VA and eye movement recordings were assessed at baseline and at 2-hour intervals, using an EyeLink-1000 video-based eye tracker.

Results: 100% of the children were compliant with continuous occlusion. 80% had previous amblyopia treatment (conventional occlusion therapy/atropine penalization). After 6 hours of continuous occlusion, all demonstrated improvement in VA in the amblyopic eye (mean of 0.33 logMAR from baseline), and reduction in velocity and amplitude of nystagmus waveform (mean 9 degrees/second and 8 degrees respectively).

Conclusions: Evidence reported in literature on the management of MLN is limited. The fear of worsening the nystagmus (and VA) with occlusion may deprive these children of receiving appropriate treatment to optimize vision during the amblyogenic period. Our study shows that continuous occlusion of the non-amblyopic eye is beneficial in improving the VA and nystagmus parameters in the amblyopic eye and should be considered as a treatment option.

The Possible Effect of Haploinsufficient SLC25A in Inducing Congenital Ptosis and Intermittent Exotropia in a Girl With De Novo Terminal 4q Deletion

*First Author: Kai Ching Peter **LEUNG***
*Co-Author(s): Callie **KO***

Purpose: Terminal chromosome 4 long arm deletions (4q31.1 to 4qter) have a high degree of phenotypic heterogeneity. They are typically characterized by global developmental delay, microcephaly, cleft palate, low-set ears, flat nasal bridge, fifth finger anomalies, as well as genitourinary, gastrointestinal, and cardiac abnormalities. Ophthalmic manifestations are infrequently manifested in terminal 4q deletions. We report a case of de novo terminal 4q deletion in a child and describe previously unreported ophthalmic association of unilateral congenital ptosis and intermittent exotropia.

Methods: A child who exhibited signs of terminal 4q deletion was evaluated retrospectively. Genetic analysis with comparative genomic hybridization (CGH) and karyotyping were assessed.

Results: A de novo terminal 4q deletion at the region of 4q34.1-q35.2 on CGH (174,670,351-187,998,597) x1 and karyotyping (46,XX,del (4)(q34-q35) was identified in the proband which displayed distinct craniofacial features, global developmental delay, congenital heart disease, unilateral congenital ptosis and intermittent exotropia. To our knowledge, this is the first report demonstrating congenital ptosis and intermittent exotropia as a significant variant in terminal 4q deletions.

Conclusions: We hypothesize that some of the ophthalmic manifestations may be related to the deletion of a copy of the SLC25A4 (4q35.1) gene, which is key in the regulation of cellular oxidative phosphorylation in mitochondria. We further speculate that haploinsufficiency of SLC25A4, which may produce a subnormal transport ANT1, that could explain the rather rapid deterioration of strabismic control despite adequate therapy and impaired levator function as illustrated in our proband.

The Shift of Astigmatism After the Hotz Procedure in Children With Epiblepharon

First Author: Wan-ju ***CHEN***

Purpose: Epiblepharon can be associated with astigmatism and also result in corneal erosion. Hotz procedure is usually performed to relieve the symptom. Herein, we investigated the shift of astigmatism after the Hotz procedure for correcting epiblepharon.

Methods: Medical records of patients receiving the Hotz procedure for correcting epiblepharon were retrospectively reviewed. The change of astigmatism or so-called surgically-induced astigmatism vector (SIA) was calculated. The Alpins method was used to display the shift of astigmatism.

Results: There were 76 eyes of 39 cases. Age was 6.03 ± 2.74 years old. The power of astigmatism was -2.11 ± 1.36 D before surgery, and -1.76 ± 1.20 D postoperatively. The power of astigmatism decreased significantly after the Hotz procedure ($p < 0.001$). The vectoral change of astigmatism or SIA was 0.78 ± 0.64 D in power. SIA showed 15 eyes were with-the-rule shift with a power of 0.57 ± 0.38 D, and 43 eyes were against-the-rule shift with a power of 0.92 ± 0.69 D ($P < 0.05$). The vector mean of SIA was 0.40 D at the meridian of 169°, showing an against-the-rule shift after the Hotz procedure. Severe corneal erosion was documented in 7 eyes, having more against-the-rule shift postoperatively (vector mean: 0.98 D at the meridian of 170°).

Conclusions: The Hotz procedure can decrease some astigmatism related to epiblepharon. An Against-the-rule shift of astigmatism was observed after the Hotz procedure, suggesting it may be particularly beneficial to with-the-rule astigmatism. Drastic change of astigmatism after the Hotz procedure is correlated with the severity of corneal erosion before the surgery.

Twin Pregnancy: Is it a Risk Factor for ROP?

First Author: Angelica Aja ***ALCOREZA***

Purpose: Retinopathy of Prematurity (ROP) is one of the leading causes of avoidable blindness in children. As commonly identified risk factors for ROP, prematurity (≤32 weeks AOG), low birth weight (≤1500 grams), oxygen exposure, and an unstable clinical course are part of the screening guidelines. However, twin pregnancy as a possible risk factor for ROP still warrants further investigation. This is a case of Type 1 ROP in one newborn of a twin pregnancy.

Methods: One-month-old twin males born at 34 weeks AOG were referred for ROP screening. One never developed ROP. The other with a BW of 1.7kg had neonatal pneumonia at birth. Antibiotics and oxygen supplementation via nasal cannula were given but the clinical course was stable. Initial examination showed squinting to bright light and an unremarkable anterior segment. Indirect ophthalmoscopy of both eyes showed mildly dilated and tortuous vessels with retinal vascularization reaching anterior zone 2 nasally and an extraretinal fibrovascular proliferation (EFP) at anterior zone 2 at 4 (right eye) and 5 o'clock (left eye) temporally. Diagnosed with Type 1 ROP with pre-plus disease bilaterally, immediate laser indirect ophthalmoscopy (LIO) of the temporal avascular retina of both eyes was done under local anesthesia. The patient was then monitored closely for any disease progression.

Results: A significant decrease in the dilatation and tortuosity of the retinal vessels with resolution of the EFP was noted 8 days post-LIO.

Conclusions: ROP screening may be warranted in infants from twin pregnancies as they might be predisposed to developing treatment-requiring ROP.

Two Horizontal Muscle Surgery Under Peribulbar Anesthesia in 76 Years Old Patient With Monocular Exotropia: A Case Report

First Author: Arnila ***SAUBIG***

Purpose: One of the types of eye misalignment is exotropia, where one eye deviates outward. Exotropia causes can include muscle imbalance, neurological issues, and underlying health conditions. The management of exotropia is strabismus surgery that is usually performed under general anesthesia. However, in condition, general anesthesia can be challenging in high-risk patients. This case report describes the successful performance of strabismus surgery under a peribulbar block.

Methods: A 76-year-old man with exotropia underwent strabismus surgery in his left eye. The best corrected visual acuity in the right eye was 1.0 and the left eye was 0.6. The patient presented 15o Hirschberg test exotropia in the left eye, with alternating prism cover test was 30 PD base in. Worth Four Dot Test result was

diplopia. The patient has a history of hypertension and coronary artery disease with Percutaneous Coronary Intervention. The patient underwent surgery under the peribulbar block with slow injection local anesthesia in the inferolateral and medial canthus point. The surgery was performed with lateral rectus recession 7 mm and medial rectus resection 6 mm.

Results: This case underwent strabismus surgery under peribulbar anesthesia. There were no adverse effects or complications during surgery. The outcome of evaluation in 1 day, 1 week, and 4 weeks post-surgery was orthophoria and no diplopia. The patient had no presence of oculocardiac reflex and had no decreased visual acuity. No complications were observed up to 4 weeks postoperatively.

Conclusions: This case represents peribulbar block as a valid anesthesia alternative technique for strabismus surgery without clinically disrupting the respiratory mechanism and without determining any hemodinamic impact.

Visual Acuity in Toddlers and Preschoolers and Factors Associated With Their Reduced Visual Acuity

*First Author: Ulfah **RIMAYANTI***
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Purpose: The increased screen time among children has shifted the onset age of decreased visual acuity into the younger age. This study aims to examine the visual acuity among toddlers and preschoolers as well as factors associated with their visual acuity.

Methods: This is a cross-sectional study. The subjects were pupils of playgroup schools in Makassar, South Sulawesi, Indonesia. The visual acuity was examined using the Kay Picture Test Linear Crowded Book. Questionnaires were used to inquire into the related factors, including family history of using spectacles, parents' age, parental income, number of siblings, screen time, distance when watching TV, outdoor time duration, and vegetable/fruit consumption.

Results: Two hundred and forty-five children aged 2-5 years old were examined in this study. From those subjects, 125 children have decreased visual acuity. The mean visual acuity was 0.86±0.93 for the right eye and 0.87±0.93 for the left eye. Lower parental income (OR 2.75) and a smaller number of siblings (<2; OR 3.00) may be associated with decreased visual acuity, however, the P-values were not significant.

Conclusions: Decreased visual acuity was found in around half of the toddlers and preschoolers. Additional study with more subjects is needed to confirm the factors affecting visual acuity in toddlers and preschoolers.

Visual Impairment and Retinal Hemorrhage as the Initial Symptoms of Chronic Myeloid Leukemia

*First Author: Muhammad **ASRORUDDIN***
*Co-Author(s): Yosefa Rosari **VIOLETTA***

Purpose: Chronic myeloid leukemia (CML) is a myeloproliferative disorder that has been a leading cause of malignancy, with a mean survival rate below five years. Ocular lesions could be the initial manifestation of CML, though rarely found (5-10%). Here, we reported the case of a 16-year-old boy in Pontianak who suffered from CML with visual impairment and retinopathy as the initial symptoms of the disease.

Methods: A 16-year-old boy complained of suddenly blurred vision about one week before the examination and then performed thorough ophthalmological examination. His right eye visual acuity was 6/24 and 6/60 in the left eye. Funduscopic examination revealed bilateral retinal hemorrhage, and bleeding at the macular and perimacular area. The retinal veins were also bilaterally dilated and tortuous. No papilledema was evident. Then he was referred to a pediatrician and performed a complete blood examination, bone marrow punction, and genetic analysis.

Results: The results concluded a chronic myeloid leukemia. Three months after leukemic treatment, the patient's vision improved significantly. The BCVA was 6/6 in both eyes, the retinal hemorrhages disappeared, and the retinal veins were no longer tortuous.

Conclusions: Blurred vision and retinal hemorrhage could be the early signs of leukemia. Early detection and frequent follow-ups are highly crucial.

Refractive Surgery

A Comparative Study of Macular Thickness and Pseudophakic Cystoid Macular Edema Incidence After LenSx Femtosecond Laser-Assisted vs. Manual Capsulotomy and Phacofragmentation in Cataract Surgery

*First Author: Lin **HUNG-YU***
*Co-Author(s): Shih-chun **CHAO**, Lin **TSAI-WEI***

Purpose: To investigate macular thickness alterations and the occurrence of pseudophakic cystoid macular edema (PCME) following LenSx femtosecond laser-assisted capsulotomy and phacofragmentation compared to manual capsulotomy and phacofragmentation using optical coherence tomography (OCT).

Methods: A prospective, nonrandomized, comparative cohort study enrolled forty eyes per group. The LenSx group underwent femtosecond laser-assisted

procedures, while the control group received conventional phacoemulsification. Exclusions applied to specific macular diseases. Preoperative and postoperative macular thickness were assessed via OCT at one week, one month, and two months post-surgery. Data collection spanned from November 2022 to the present, with ongoing research efforts.

Results: Eight eyes were evaluated (six in the manual group, two in the Lensx group). Preoperative macular thickness was comparable between groups (p=0.643). Postoperatively, both groups experienced macular thickness changes, without statistical significance at any point (p=0.381, 0.857, 1.000). A trend of increased macular thickness at one month postoperatively was observed.

Conclusions: No significant differences in macular thickness or changes were found between LenSx femtosecond laser-assisted and manual capsulotomy and phacofragmentation in cataract surgery. Limited data (6 eyes in manual group, 2 eyes in the Lensx group) warrants caution in drawing conclusions. Ongoing research aims to provide a comprehensive understanding of these outcomes.

Can Dry Eye Cause Recurrence in a Myopic Post-LASIK Eye With Unexplained Hyperopic Shift After a Long Time Dryness – How to Manage? - Case Report

*First Author: Hafiz **GAHRAMANOV***
*Co-Author(s): Firuza **HASANOVA**, Gurban **ISMAYILOV**, Gabil **ZULFIYEV***

Purpose: To evaluate the role of intensive management of dryness in the elimination of refractive error with hyperopic shifting after laser correction.

Methods: In this study patient with unexplained refractive error with hyperopic shift 6 years after myopic post-LASIK was described. During examinations, visual acuity, Schirmer test, TBUT, and corneal topography were performed and intensive management of dry eye was done.

Results: A 26-year-old female underwent myopic LASIK in both eyes 6 years ago. Preop: BCVA OD – 1.0 (R=M -4.0D); BCVA OS – 1.0 (R=M -4.0D): after myopic LASIK: VisOD – 1.0; VisOS – 1.0. Postop 6 months, refraction and vision were stable. 4 months ago, the patient complained of poor vision, visual discomfort and serious dryness: BCVA OD – 1.0 (BNCVA-0.2: R=sph+1.5 cyl -0.75); BCVA OS – 1.0 (BNCVA-0.2: R=M sph+1.5 cyl-0.5); OU-Shirmer test: - 0 mm; TBUT-2sec. Corneal topography – no abnormalities. Management: Depores, Blugel A, fatty acids. 2 months ago: BCVA OD – 1.0 (BNCVA-0.6); BCVA OD – 1.0 (BNCVA-0.6). The refractive error remains the same. Long-term post-LASIK dryness may result in a serious epithelial defect of the cornea itself, which may cause unexplained refractive errors even with hyperopic shifting. This case shows that intense treatment of post-LASIK dryness brings good visual and refractive outcomes improving tear film condition.

Conclusions: Dry eye may cause unstable refraction with a hyperopic shift which may be intensely managed to achieve stability of refraction and to avoid surgical recurrence. The patient is still is under our control.

Challenge in the Management of Marfan Syndrome With Ectopic Lens and Scleromalacia

*First Author: Ghea **ANANTA***
*Co-Author(s): Nina **HANDAYANI**, Herwindo **PUTRANTO***

Purpose: To report the management of Marfan syndrome with ectopic lens and scleromalacia.

Methods: The management of this case is performed the periosteal graft for scleromalacia and lens extraction for ectopic lens.

Results: A 17-years-old boy, presented with blurred vision since elementary school. The patient had used spectacle since childhood, and there is no history of ocular trauma. On ocular examination, his visual acuity was light perception in the right eye and 1/60 in the left eye and could not be corrected. On dilated examination, there was a presence of lens luxation in the right eye, and lens subluxation in the left eye. We also found scleromalacia in both eyes and a shallow anterior chamber. From USG on both eyes, there was vitreous opacity on vitreous media. On general physical examination, the patient's height was 185 cm. Chest x-ray showed dextroscoliosis thoracalis. Hence, the diagnosis of lens dislocation to Marfan syndrome with ectopic lens and scleromalacia was made. The patient was managed with a periosteal graft and intra-capsular lens extraction (ICCE). The result of graft surgery was improved, and the necrosis is well covered by the graft. Secondary lens implantation was planned for the visual rehabilitation of this patient.

Conclusions: Periosteal graft can be a promising alternative tectonic therapy option for scleromalacia, especially when scleral donors are difficult to obtain. A tectonic graft has to be performed before the lens extraction.

Clinical Outcomes of Small Incision Lenticule Extraction (SmartSight) With Cross-Linking Technique

*First Author: Seungjin **LEE***

Purpose: To study the safety and clinical outcomes of refractive lenticule extraction with accelerated cross-linking.

Methods: Patients first underwent the SMILE procedure for correction of myopic refractive error. 0.25% riboflavin in saline was injected into the interface and allowed to diffuse for 30 seconds. Finally, the eye was exposed to UV-A radiation of 20 mW/cm (2)

for 30 seconds through the cap. 40 eyes of 20 patients with a mean age of 24.63 ± 3.28 years were treated. The mean spherical equivalent (SE) was -4.83 ± 2.36 D preoperatively and -0.16 ± 0.38 D postoperatively.

Results: The mean central corneal thickness (CCT) and keratometry changed from 531 ± 34.30 µm to 415 ± 31.97 µm and 43.20 ± 1.26 D to 40.2 ± 1.95 D, respectively. Mean uncorrected visual acuity (UCVA) was 20/25 or better in all eyes. No eyes lost lines of corrected distant visual acuity (CDVA). There were no complications like haze, keratitis, ectasia, or regression.

Conclusions: Refractive lenticule extraction with crosslinking may be a safe modality to prevent corneal ectasia in susceptible individuals.

Comparative Visual Outcome of Femtosecond Lasik and ReLEx SMILE in Myopic Anisometropic Amblyopia

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Purpose: To evaluate and compare the visual outcomes of ReLEx SMILE and Femtosecond Lasik procedures in adult anisometropic myopic amblyopic eyes.

Methods: Retrospective assessment was done in all eyes with myopic anisometropic amblyopia. Patients underwent detailed ophthalmological examinations including uncorrected (UDVA) and corrected (CDVA) distance visual acuity. Analysis of modulation transfer function (MTF) and SR (Strehl ratio) between ReLEx SMILE and Femtosecond Lasik (FS-LASIK) was done as a measure of contrast sensitivity. Patients completed follow-up examinations at 1 day, 3 day, 3 months, 6 months and 1 year after surgery.

Results: The mean age of the patient was 26.30 ± 4.24 years with 62% females. The CDVA of amblyopic eyes improved significantly from the mean preoperative level of 0.48 ± 0.18 to 0.59 ± 0.18 at 12 months. Regarding subjective symptoms, the number of patients complaining of eye dryness, blurred vision, foreign body sensation and eye soreness in the SMILE group was lower than the number in the FS-LASIK group.

Conclusions: Both ReLEx SMILE and LASIK procedures proved to be effective and promising alternative methods for improving visual outcomes in myopic anisometropic amblyopia patients who have failed with conventional approaches.

Comparison of Visual Quality in Patients Implanted With Mini Well Versus Well Fusion Intraocular Lenses

*First Author: Diego **CASTANERA***
*Co-Author(s): Cesar **GALA NUÑEZ***

Purpose: To evaluate binocular vision after intraocular lens implantation in two groups of patients. Group 1 implanted with Mini Well versus group 2 implanted with the new combined system Mini Well + Mini Well PROXA (Well Fusion) in patients operated by phacoemulsification surgery.

Methods: A prospective study of 12 patients (24 eyes) who underwent phacoemulsification surgery implanting Mini Well and Mini Well PROXA intraocular lenses was performed. 7 patients belonging to Group 1 were implanted with both Mini Well lenses and 5 patients belonging to Group 2 were implanted with a new system, a combination of Mini Well lenses and Mini Well PROXA (Well Fusion). The pre-and post-surgical visual quality of the patients was evaluated.

Results: Binocularly, the patients in Group 1 presented a mean visual acuity of 0.89±0.08 in long distance, 0.83±0.07 in intermediate distance and 0.67±0.21 in short distance. For Group 2 the results were 0.81±0.17 in long distance, 0.81±0.11 in intermediate distance, and 0.77±0.14 in short distance.

Conclusions: The patients in Group 1 presented better results in far vision and intermediate vision compared to the patients in Group 2. In contrast, the patients in Group 2 presented better results in near vision. Both Group 1 and Group 2 patients maintained good postoperative VA, so both systems could be considered suitable for phaco-refractive surgery.

Efficacy of Topical Timolol Eye Drops in Treatment of Myopic Regression After Small Incision Lenticule Extraction

*First Author: Jiawei **WU***
*Co-Author(s): Zheng **WANG**, Lu **XIONG**, Bo **ZHANG***

Purpose: Describe a case of high myopia who experienced twice slight myopic regression during follow-up after small incision lenticule extraction (SMILE), which can be eased by topical treatment of Timolol.

Methods: Case report.

Results: Six months after the high myopic SMILE procedure of both eyes, the patient's uncorrected distance visual acuity (UDVA) were 0.8, and both lost one line than preoperative corrected distance visual acuity (CDVA) by myopic shift, which is accompanied by thickening central corneal epithelium. After two months of treatment with topical Timolol eye drops, the UDVA improved two more lines with flattened corneal curvature and thinned epithelial thickness. After five months without treatment of Timolol,

his UDVA lost two lines again with thicker epithelial thickness. With another two months of treatment with Timolol, the epithelial thickness could be thinned month by month, and the UDVA improved two or more lines. In the whole follow-up period, it presented that the change in corneal and epithelial thickness remarkably fluctuated with the treatment of Timolol, but the posterior corneal curvature was stable.

Conclusions: Refractive regression after high myopic SMILE procedure can repeatedly occur in the mid- and long-term postoperation, which could be related to the thickening central corneal epithelial thickness. Timolol eye drops can help to improve visual acuity by thinning the epithelial compensated thickness to flatten corneal curvature.

Follow Up of Effective Optical Zone and High Order Aberrations in Patients Receiving Small-Incision Lenticule Extraction (SMILE)

*First Author: I-hung **LIN***
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Purpose: To investigate and compare changes in the effective optical zone (EOZ) and high-order aberrations (HOAs) before and after undergoing small-incision lenticule extraction (SMILE) surgery.

Methods: From patients receiving SMILE surgery at National Taiwan University Hospital (2021/10/13-2023/5/31), data from 67 participants (134 eyes) were retrospectively collected regarding (1) Pre-surgery programmed optical zone (POZ) settings using VM500, Zeiss. (2) Pre and post-surgery tangential curvature maps and HOAs from scheimpflug camera (pentacam AXL; oculus optikgeräte gmbh) during the 6 months follow up period. EOZ post-surgery at 1 week, 1 month, 3 months, and 6 months was calculated from tangential curvature difference maps. Paired t-tests compared pre-surgery POZ and post-surgery EOZ at these intervals and also evaluated HOA changes. HOA parameters covered RMS of total HOA, horizontal/vertical coma, total coma, total spherical aberration, and total trefoil.

Results: Pre-surgery POZ (6.555±0.202mm) was significantly larger than post-surgery EOZ at all observed intervals (1 week: 5.619±0.505mm, 1 month: 5.579±0.399mm, 3 months: 5.635±0.373mm, 6 months: 5.478±0.395mm; all $p < 0.001$). RMS of total HOAs pre-surgery (0.385±0.128μm) was consistently lower than post-surgery measures at all intervals (1 week: 0.640±0.217μm, 1 month: 0.707±0.242μm, 3 months: 0.709±0.260μm, 6 months: 0.737±0.200μm; all $p < 0.001$). Other HOA parameters, including horizontal coma, vertical coma, total coma, total spherical aberration and total trefoil, also increased significantly post-surgery.

Conclusions: Post-SMILE, EOZ consistently measured smaller than the initial POZ across 6 months. This disparity might contribute to the increased HOAs observed post-operation, which can result in nighttime glare and halo in some patients.

Influence of Experience and the Surgical Learning Curve on Outcomes of Implantable Collamer Lens (ICL) Surgery

*First Author: Rawan **ALSHABEEB***

Purpose: To investigate the effect of different levels of expertise on the long-term outcome of ICL surgery and to highlight the necessity of training for fellows on ICL implantation techniques to improve the outcome of the procedure.

Methods: Retrospective chart review of all patients (21-45 years old) who underwent ICL surgery for myopia, compound myopic astigmatism between January 2015 and December 2018. Patients who underwent ICL for hyperopia, keratoconus or post-keratoplasty were excluded. Pre-operative, operative, and post-operative data for each procedure were collected. Outcomes were compared based on whether the primary surgeon for the procedure was a fellow (group1) or an attending staff (group 2). The primary outcome measure was the development of cataracts or endothelial cell loss; The secondary outcome measure was visual acuity at each follow-up visit.

Results: A total of 182 eyes of 115 patients underwent ICL surgery for myopia. The mean (±SD) spherical equivalent for patients who were operated on by fellows vs. consultants was -9.74±3.51and -10.02±3.80. The median follow-up time (IQR) for patients operated by fellows and consultants was 31.50 (32) months and 28 (33) months. There was no statistically significant difference in the median percent change in ECC between the two groups (P=0.812). The median (IQR)percent decrease in ECC at the last follow-up from baseline for eyes operated by fellows was 3.97 (7) compared with 3.79 (4) for eyes operated by the consultants. Two (1%) patients had anterior subcapsular opacity related to ICL implantation. Two (1%) patients had anterior subcapsular opacity related to ICL implantation.

Conclusions: ICL implantation provided good refractive outcomes and stability in the long term. There was no significant difference in post-operative ECC loss, cataract development or complications with different levels of expertise.

Initial Retrospective Experience With SmartSight Lenticule Extraction for Indonesian of a New Femtosecond Laser System SCHWIND ATOS

*First Author: Sophia **PUJIASTUTI***

Purpose: To evaluate refractive and visual outcomes of SmartSight lenticule extraction for Indonesians with

an up-to-date femtosecond laser system by SCHWIND ATOS.

Methods: A total of 51 eyes with mean manifest refraction spherical equivalent (MRSE) -5.95 ± 1.92D, and mean astigmatism -1.13 ± 1.01D from 30 patients (28±8 years) were included to evaluate one-month outcome. For three months of outcome evaluation, 35 eyes with MRSE -5.58 ± 1.89D and mean astigmatism -0.89 ± 0.90D from 20 patients (29±8 years) were analyzed. All eyes treated for plano target.

Results: Sixty-three percent and 80% of eyes had cumulative uncorrected distance visual acuity (UDVA) 20/20 or better at one and three months after surgery. The percentage of eyes having postop UDVA the same or better than preop CDVA was 78% at one month and increased to 91% after three months. At one month, 24% of eyes gained one line, improving to 40% after three months, and no loss of 2 lines of CDVA. The predictability curve for both follow-ups gave a coefficient of determination value of 0.99. Ninety-two and 97% of eyes were within ±0.50D, also astigmatism was within 0.50D in 98% and 100% of eyes at one month and three months.

Conclusions: SmartSight procedure with SCHWIND ATOS can be used as an upgrade technique for correcting myopia-astigmatism and also holds a lot of promise. Further evaluation should be done to confirm these results.

Outcomes of Photorefractive Keratectomy in Myopia and Myopic Astigmatism- a 10 Year Big Data Analysis

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*Co-Author(s): Raghav Preetam **PERAKA**, Pravin **VADDAVALLI***

Purpose: To present the big data analysis of refractive outcomes of photorefractive keratectomy (PRK) done for myopia and myopic astigmatism and to compare the outcomes between mild, moderate, high, and very high myopia.

Methods: A retrospective review of consecutive cases of myopia and myopic astigmatism eyes undergoing PRK in our institute over the past 10 years was done. A total of 27105 eyes from 11964 patients who underwent PRK between January 2013 to December 2022 were included in the study. They were subdivided into four groups based on the magnitude of myopia correction: low (0-3D), moderate (3-6D), high (6-9D), and very high (>9D). Measured outcomes included pre and postoperative uncorrected distance visual acuity (UDVA), corrected distance visual acuity (CDVA), manifest refraction spherical equivalent, corneal haze, and other complications.

Results: 65% of eyes in the low myopia group, 58% in the moderate myopia group, 47% in the high myopia group, and 27 % in the very high myopia group achieved UDVA of 0 LogMAR at 1 month post-PRK. This improved to 84%, 83%, 70%, and 48% respectively at 6 months post-PRK and 89%, 85%, 72%, and 44% respectively at 12 months post-PRK. At the end of 12 months, 99.9%, 100%, 99.6%, and 99.3% in mild, moderate, high, and very high myopia groups, respectively, had UDVA of 0.3 LogMAR or better. At 12 months, the mean post-operative LogMAR UDVA was -0.02, -0.02, -0.04, and -0.12 respectively in low, moderate, high, and very high myopia groups.

Conclusions: This big data analysis shows that PRK provides excellent refractive outcomes and is safe even in cases of high myopia.

Posterior Corneal Surface Stability After Femtosecond Laser-Assisted In Situ Keratomileusis in Patients With Myopia and Myopic Astigmatism

*First Author: Adeline **LOW SHAN LYN***
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Purpose: To evaluate variation and stability of the posterior cornea surface parameters (posterior cornea curvature (PCC), posterior cornea astigmatism (PCA), and posterior cornea elevation (PCE)) after femtosecond-laser-assisted in-situ keratomileusis (LASIK) in patients with myopia and myopic astigmatism over a period of 6 months or longer.

Methods: This retrospective study comprised 284 right eyes. Patients aged 18 years or older with myopia up to -12.00D and/or astigmatism up to -6.00DC who underwent femtosecond-LASIK were recruited. Patients were divided into three subgroups: low myopia (-0.50D to -3.00D), moderate myopia (>-3.00 to ≤-6.00D), and high myopia (>-6.00D), according to their pre-LASIK spherical equivalent (SE). The variables included for analysis were the PCC (central 0-3.0mm, pericentral 3.0-6.0mm, and peripheral region 6.0-9.0mm), PCE, PCA, internal anterior chamber depth, intraocular pressure, and central cornea thickness at the pre- and post-LASIK stages.

Results: The central PCC remained unchanged across all three myopia subgroups at 1 month when compared to the pre-LASIK stage and remained stable at 6 months. The pericentral regions became flatter across all myopia subgroups at 1 month post-operation ($p<0.001$) and remained unchanged at 6 months. This trend was not seen in the peripheral cornea regions which remained unchanged 1 month and 6 months post-LASIK when compared to pre-LASIK mean readings. There were minimal changes in post-LASIK posterior cornea astigmatism throughout follow-up. There was no incidence of post-LASIK surgery ectasia in this study population.

Conclusions: Post-LASIK, the different cornea subregions behaved differently. Overall, the posterior

cornea surface remained stable post-LASIK across all myopia subgroups throughout follow up.

Refractive Outcomes Comparison in Limbal Relaxing Incision Based on Incision Depth in Managing Corneal Astigmatism During Cataract Surgery in Rural Area

*First Author: Frisma **BRILLIYANTO***

Purpose: Prevalence of clinically significant astigmatism of more than 1D can be found in 20 to 50% of the population who undergo cataract surgery. During phacoemulsification surgery, astigmatism could be corrected by toric intraocular lens (IOL) or incisional technique such as a limbal relaxing incision (LRI). LRI are safe and inexpensive procedures, thus resulting in satisfying outcomes with the surgeon's precise phacoemulsification incision and accurate LRI arc position, which is the most appropriate treatment choice for surgeons in rural areas that have problematic access to IOL supply.

Methods: A prospective cumulative interventional case study included 30 eyes of consecutive cataract corneal astigmatic patients with power 1.0D those undergoing LRI and phacoemulsification. Length, numbers, and arc position of LRI were calculated on the LRI Calc application to obtain the best results in minimal astigmatism residual. Uncorrected visual acuity, intraocular pressure, and keratometry cylinder were also analyzed before surgery, Day-1, Day-7, and 1-Month post-operation.

Results: Day-1 follow-up keratometry showed that corneal astigmatism still fluctuated, day-7 follow-up was even better, with significant improvement in visual acuity. 1-Month post-operation has reached target correction. Moreover, visual acuity and residual astigmatism were better at 600um incision depth.

Conclusions: When toric IOLs are not available or contraindicated, LRI could be a good option in correcting astigmatism with better refractive outcomes trend in 600um incision depth. LRI results better be evaluated on day-7 and 1-month post-LRI, which may be due to a more stable corneal surface.

Refractive Outcomes of Artiflex Toric Phakic Intraocular Lens Implantation

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Purpose: To evaluate the effectiveness, safety, accuracy of vision correction, and potential complications associated with the use of a toric phakic intraocular lens (PIOL) for the correction of myopic astigmatism over a 24-month period.

Methods: Several important parameters were documented before and after the implantation of an Artiflex toric phakic intraocular lens (PIOL), including uncorrected visual acuity (UCVA), best-corrected distance visual acuity (BCDVA), subjective and objective manifest refraction, endothelial cell count (ECC), intraocular pressure, biomicroscopy findings, and any complications encountered.

Results: Eleven patients, totaling twenty-two eyes, with preoperative myopia ranging from -8.5 D to -25.00 D and astigmatism ranging from -0.25 D to -10.00 D underwent the implantation of Artiflex toric PIOL for refractive correction. Postoperatively, all eyes achieved uncorrected visual acuity (UCVA) of at least logMAR 0.3, with 94% reaching at least logMAR 0.2, and 70% achieving at least logMAR 0. The best-corrected distance visual acuity (BCDVA) improved in 25% of eyes. The average postoperative refractive spherical equivalent was -0.5 D (ranging from -0.75 D to 1.00 D), with a mean astigmatism of -0.80 D (ranging from -2.50 D to 0.00 D). Endothelial cell count (ECC) decreased by an average of 5.31% (standard deviation 4.63%) at 24 months compared to the preoperative baseline. There were no significant differences in intraocular pressure (IOP) compared to the preoperative baseline.

Conclusions: The refractive outcomes of the Artiflex toric PIOL demonstrated favorable efficacy, even in patients with extremely high myopia. However, it is crucial to conduct long-term follow-up to prevent any potential decrease in endothelial cell count.

Repeatability and Agreement of PERAMIS Wavefront-Based Autorefraction With Dry, Cycloplegic Autorefraction and Subjective Refraction in Myopic Refractive Surgery Candidates

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Purpose: Prospective cross-sectional at a tertiary referral clinic. This study aimed to evaluate the repeatability of PERAMIS wavefront-based refractive measurement (WFR) and its agreement with dry autorefraction (DR), cycloplegic autorefraction (CR) and subjective refraction (SR) in myopic refractive surgery candidates.

Methods: One hundred eighty-nine eyes from 189 participants were evaluated. PERAMIS aberrometry (PERAMIS; SCHWIND eye-tech-solutions, Kleinostheim, Germany), dry and cycloplegic autorefraction, as well as subjective refraction were completed for all candidates. The repeatability of PERAMIS measurements was assessed, and the Bland-Altman plots were used to test the agreement between different methods.

Results: Repeatability of the PERAMIS aberrometer was very high in the measurement of all refractive elements (Sphere, cylinder, spherical equivalent (M), J0, and J45) (interclass correlation coefficient (ICC)>O.980 for all). A significant myopic shift was found with WFR compared

to CR (0.45 D) and SR (0.28 D) ($p<0.05$). For the M component, there was a significant difference between WFR and CR ($P<0.05$). J0 component measured with WFR was significantly different from SR and CR ($P<0.05$). For the J45 variable, all three refraction methods were comparable (all, $p>0.05$). In M more than -5.00 D, a myopic shift of 0.79 D (limit of agreement (LOA): -3.50 to 1.90) was found between WFR and CR.

Conclusions: WFR is more accurate in measuring lower degrees of refractive error. In measuring spherical error, WFR results are similar to the manifest autorefraction. WFR, CR, and SR techniques are comparable in predicting the cylindrical component, especially in oblique astigmatism.

Specular Microscopy Underestimates Corneal Endothelial Cell Count in Presence of Phakic Artisan Lens Implant?

*First Author: Balasubramaniam **ILANGO***

Purpose: The specular microscope is an optical reflection microscope where a slit of light is focussed on the corneal endothelial surface and specularly (mirror-like) reflected light rays are focussed onto the film plane for viewing on a real-time monitor. Errors can arise in the quantitative evaluation of corneal endothelium.

Methods: Corneal endothelial cell count was measured before implantation, during follow-up visits, and post-explantation.

Results: Retrospective analysis of the corneal endothelial cell count was done in all 50 patients who had undergone phakic artisan/artiflex lens (ICL) explantation. The ICL has remained in the eye for 15 to 23 years. 70% of the patients were females. The average age during implantation was 23, and during explantation was 48. Corneal endothelial cell count was measured using a “noncontact” specular microscope (Tomey). The average pre-operative cell count was 2500. Cell count immediately prior to explant ranged from 900 to 1900 with clear cornea. 40% of patients showed a dramatic increase in their corneal endothelial cell count post explant surgery as early as within 3 weeks.

Conclusions: In diabetes and chronic kidney disease patients, certain systemic medications such as amantadine, prescribed for movement disorders/ Parkinsonism have been implicated in causing the gradual loss of endothelial cells. Various conditions that interfere with the quality of endothelial imaging are a poor ocular surface, tear film, epithelial haze, stromal scarring, and alterations in the Descemet’s membrane It is important to consider all the factors in evaluating the corneal endothelial cell count in ICL patients.

Study of Tear Film Properties in Patients Undergoing Refractive Surgery in a Malaysian Military Hospital

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Purpose: To compare the tear film changes in femtosecond laser in situ keratomileusis (FS-LASIK) vs small incision lenticule extraction (SMILE) pre-operatively and 3 months postoperatively.

Methods: Thirty patients were included for bilateral SMILE and bilateral FS-LASIK and reviewed pre- and 3 months post-surgery. This study is a prospective, comparative, continuous, nonrandomized clinical study. The evaluation of tear film properties was performed at the pre-operative stage and 3 months postoperative stage, which included tear breakup time (TBUT), Schirmer I test, tear osmolarity measurements and vision-related quality of life questionnaire, the Ocular Surface Disease Index (OSDI).

Results: There was a significant difference in tear osmolarity post-operatively between FS-LASIK and SMILE, (303.4 (±23.9) vs 300.6 [±28.7]), with $P<0.05$. A significant result was also obtained for the FS-LASIK arm, in which the OSDI score at 3 months post-op was 28.9 ± 17.8 vs 25.4 ± 14.2, respectively, with $P<0.05$ and the Schirmer test result was 14.0 ± 1.8 vs 132. ± 1.6, respectively, with $P<0.05$. However, no significant change was observed in the SMILE arm for all parameters that had been examined, pre- and post-surgery. Moreover, there was no significant difference in the OSDI or tear film properties between SMILE and LASIK over time. All variables examined were statistically significant with moderate to high correlation.

Conclusions: SMILE has been shown to have a less pronounced impact on the ocular surface compared to LASIK. Subsequently, the incidence of dry eye disease and the impact on the visual outcome were reduced and quality of life after refractive surgery was improved.

Studying Outcomes Combined Treatment of Topography Guided Excimer Laser Advanced Surface Ablation (ASA) in Conjunction With Accelerated Cross-Linking (UVCXL) in Keratoconus

*First Author: Jayant **SARWATE***
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Purpose: To study outcomes of topography-guided excimer laser advanced surface ablation (ASA) in conjunction with accelerated cross-linking (UVCXL) in keratoconus using the contoura-based platform & Intacs XL crosslinking system using ‘our protocol’.

Methods: A retrospective case record review of 55 eyes was performed. Patients with keratoconus (stages 1-3) were included. Topo-guided advanced surface ablation was done with Wavelight Allegretto Eye Q excimer laser & it was followed by accelerated collagen cross-linking. Data compared was of visual acuity, spectacle acceptance, keratometry and higher-order aberrations. Pre & postop topographic cylinders were documented by Scheimpflug imaging (Galilei G2 & Pentacam Oculus, Germany).

Results: At a minimum follow-up of 6 months (with a maximum follow-up of 3 years), there was a significant improvement in UCVA ($P < 0.001$), BCVA ($P = 0.006$), decrease in Kmax ($P = 0.034$), Ksteep ($P < 0.041$). 1-2 Snellen's line improvement in UCVA and BCVA was seen in the majority of the cases, along with a significant reduction in total &/or higher-order aberrations. Ectasia was stabilized in all cases at the last follow-up and no complications were seen.

Conclusions: Combined treatment of ASA with UVCXL results in improved visual outcomes along with stabilization of keratoconus & is a very safe as well as effective option in keratoconus management. Therefore, such combined treatment should be considered in cases with early keratoconus where the apex of the cone is not extremely decentered.

Target Refraction Prediction of Intraocular Lens Calculation in Eyes With Previous Refractive Surgery

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Purpose: To assess the refractive outcome of three complex cases involving the calculation of intraocular lens (IOL) power, individuals who underwent both radial keratotomy (RK) and laser-assisted in situ keratomileusis (LASIK) were included in the study.

Methods: The IOL power calculation in this study incorporated multiple methods for different conditions. Specifically, for post-LASIK conditions, the calculation included IOL calculation formulas such as Shammas, Haigis-L, Barrett True K (without historical data), and Potvin-Hill Pentacam. For post-RK conditions, the calculation employed formulas such as Double K-modified Holladay 1 (based on Oculus Pentacam and AL scan) and Barrett True K.

Results: A total of three eyes of two patients, who had previously undergone radial keratotomy (RK) followed by LASIK more than 10 years ago, underwent phacoemulsification and intraocular lens (IOL) implantation. The average postoperative refractive spherical equivalent was -0.5 D (ranging from +0.5 D to -1.5 D), with a mean astigmatism of -1.0 D (ranging from -1.50 D to 0.00 D). All eyes achieved uncorrected visual acuity (UCVA) of logMAR 0.2. Among the different methods used to predict IOL power, Barrett True K (without historical data) and Haigis-L were found to be the most accurate.

Conclusions: The Barrett True K formula (without historical data) and the Haigis-L formula have proven to be reliable methods for accurately calculating the intraocular lens (IOL) power in patients who received both RK and LASIK.

The Prevalence Rate and Associated Risk Factors of Abnormal Values of Belin/Ambrósio Deviation (BAD), Corvis Biomechanical Index (CBI), and Tomographic and Biomechanical Index (TBI) Examined by Pentacam and Corvis in the Taiwanese Population

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Purpose: To evaluate the prevalence of abnormal BAD, CBI, and TBI values using Pentacam and Corvis in the normal Taiwanese population and identify associated risk factors.

Methods: For the normal population that came to National Taiwan University Hospital between 2020/1/20 and 2023/6/20 to assess their suitability for myopia laser refractive surgery, we retrospectively collected examination data of 179 individuals (358 eyes) regarding Belin/Ambrósio Deviation (BAD), Corvis Biomechanical Index (CBI), and Tomographic and Biomechanical Index (TBI) using Pentacam and Corvis devices. Parameters included Sex, Age, BCVA, refractive error, IOP, central corneal thickness (CCT), Maximum K (Kmax), Corvis's biomechanical corrected IOP (bIOP), and Schirmer test. Multivariate linear regression was conducted on these parameters with BAD, CBI, and TBI.

Results: BAD results: 77% normal, 23% abnormal. CBI: 30% normal, 70% abnormal. TBI: 64% normal, 36% abnormal. Regression revealed correlations between BAD & gender (higher in females), age (younger, higher BAD), myopia degree (increased degree, increased BAD), CCT (thinner, higher BAD), and Kmax (higher Kmax, higher BAD). The correlations were also found between CBI & Kmax (higher Kmax, higher CBI), and age (younger, higher CBI). TBI showed no significant correlations with the aforementioned parameters.

Conclusions: CBI's sensitivity in screening suitability for laser refractive surgery might be high, excluding 70% of candidates. Conversely, BAD and TBI are less sensitive. TBI, especially compared to BAD, is influenced less by age, gender, myopia degree, and CCT, positioning TBI as a potentially better suitability indicator for laser refractive surgery.

The Road Seldom Travelled: Bilateral Post LASIK Epithelial Ingrowth Management

*First Author: Hemlata **GUPTA***
*Co-Author(s): Mahipal **SACHDEV***

Purpose: Post-LASIK epithelial ingrowth (PLEI) is a potentially vision-threatening complication and its management can be very challenging in some cases. It can cause significant refractive error and even corneal melt in some cases. This is a case report of bilateral epithelial ingrowth which was managed using two different approaches.

Methods: In this case, the right eye of the patient was managed first with a flap lift, fibrin glue with BCL application followed by Nd yag laser for small recurrence. The left eye of the patient was managed solely with Nd Yag laser. Serial slit lamp photographs with ASOCT were done for both eyes at follow-up visits.

Results: Successful treatment of PLEI in both eyes with different approaches with a favourable outcome at 6 months follow-up.

Conclusions: A customized tailored approach is needed in each case of PLEI.

Retina (Medical)

A 14-Year-Old Female With Eales' Disease: Case Report

*First Author: Lisa Katrina **LIBERATO***

Purpose: Eales' disease is an idiopathic occlusive peripheral retinal vasculopathy characterized by recurrent vitreous hemorrhages commonly seen in young adult males. Several infectious and inflammatory conditions have similar ocular manifestations making the diagnosis of Eales' disease challenging. We present a case of a healthy Filipino female teen with sudden monocular eye pain and blurring of vision.

Methods: A comprehensive ophthalmic exam was performed, supplemented by B scan ultrasonography for the right eye where there is a poor view of the posterior segment due to hazy media. Widefield fundus photo, macular optical coherence tomography, and fluorescein angiography were also done. A complete laboratory workup was done, as well as a contrast-enhanced cranial magnetic resonance imaging with orbital cuts.

Results: On ophthalmic exam, the right eye had elevated intraocular pressure with a funduscopy finding of vitreous hemorrhage. The left eye, on the other hand, had multiple peripheral epiretinal and preretinal membranes with some telangiectasias. All laboratory studies done were unremarkable. Infectious and inflammatory entities were considered less likely and Eales' disease was deemed a more probable diagnosis.

Conclusions: Similar to other vaso-occlusive diseases, the management of Eales' disease is focused on the prevention of further ischemia and neovascularization. Panretinal photocoagulation was then done on the left eye to avoid further disease progression. The right eye was assessed to attain little benefit from surgical management and was, therefore, maintained on anti-glaucoma medications. After one month, visual acuity remained without light perception on the right eye and 20/20 on the left eye.

A Case Report of Syphilitic Posterior Squamous Chorioretinitis Misdiagnosed as Acute Retinal Necrosis

*First Author: Jing **FENG***
*Co-Author(s): Yong **TAO***

Purpose: To present a case of cute syphilitic posterior placoid chorioretinitis (ASPPC), which was misdiagnosed as acute retinal necrosis.

Methods: Clinical findings, fluorescein angiography, time domain optical coherence tomography features, and management of the patient are presented.

Results: A 65–year–old male presented as an otherwise healthy man with a half-year history of blurred vision in his right eye and a one-week history of blurred vision in his left eye. Clinical examination revealed signs of posterior uveitis. The clinical features and other imaging examination results were diagnosed as acute retinal necrosis in another hospital, and systemic and local antiviral treatment did not show significant improvement. Syphilis was confirmed with a positive serological test for syphilis. Moreover, the IgG titer against the aqueous humor was 12.68 s/c.o., resulting in a Goldmann-Witmer coefficient of 60.13, establishing ocular syphilis. Intraocular fluid examination was also confirmed by metagenomic Next Generation Sequencing. He was treated with a 2–week course of intravenous penicillin and his visual acuity recovered fully.

Conclusions: Infectious uveitis should be the primary exclusion criterion in the diagnosis and differential diagnosis of uveitis. The reason this case report was consistently misdiagnosed was that a blood test was missed. Physicians' awareness of the variety of clinical presentations of syphilis is important for prompt recognition and early management of this curable disease. Moreover, aqueous humor examination may become the gold standard for the diagnosis of ocular syphilis, as cerebrospinal fluid is for the diagnosis of neurosyphilis.

A Case of Enhanced S Cone Syndrome With Choroidal Neovascular Membrane

*First Author: Abha **GUPTA***
*Co-Author(s): Mohit **DOGRA***

Purpose: To report a case of Enhanced S cone syndrome (ESCS) presenting with Choroidal neovascular membrane (CNVM).

Methods: We report a case of a 10-year-old female presenting with the chief complaint of low vision of 20/60 in the right eye and 20/40 in the left eye from the last 4 years with no significant family history. Fundus examination showed a yellowish subretinal subfoveal lesion with perivascular retinal pigment epithelium (RPE) loss with featureless retina. On optical coherence tomography (OCT) right eye had a CNVM scar while the left eye had subfoveal fluid with active CNVM. The patient was advised genetic testing which came positive for clinical exome ESCS NR2E3 gene mutation. RPE changes, photoreceptor dysfunction, and choriocapillaris damage might have created weakness zones for choroidal vessels to grow, leading to neovascularization. Also, dysfunctional RPE and increased oxygen demand from S cones in ESCS produce vascular endothelial growth factor leading to angiogenesis.

Results: The patient was given 4 doses of monthly intravitreal Ranibizumab (0.5mg/0.05ml) injections in left eye. Almost 1 year post-injection vision remained stable and OCT did not show evidence of any active CNVM.

Conclusions: CNVM has been reported to occur in different inherited retinal degenerations, including ESCS. We conclude treatment with ranibizumab in CNVM complicated ESCS can be potentially vision-saving.

A Masquerader of Chronic Central Serous Chorioretinopathy: Best Disease

*First Author: Neiman Vincent **BARGAS***
*Co-Author(s): Cheryl **ARCINUE**, Michelle **LINGAO**, Adrian Joseph **TOLENTINO***

Purpose: To describe the clinical and multimodal imaging findings in a patient diagnosed with Best disease with a mutation in BEST1 and PNPLA6 gene.

Methods: Clinical examination and multimodal imaging findings, including color fundus photography, fundus autofluorescence, fluorescein angiography, spectral-domain optical coherence tomography of the nerve and macula, perimetry, and genetic testing were reviewed and analyzed.

Results: A 44-year-old female presented with a progressive blurring of vision in both eyes more at near. Previously managed as a case of central serous chorioretinopathy and was prescribed dorzolamide eye drops and oral calcium dobesilate and eventually advised for anti-vascular endothelial growth factor and photodynamic therapy. Her family history was unremarkable. Best corrected visual acuity revealed 20/40 and 20/70 in the right and left eye. The anterior segment was unremarkable. Fundus findings revealed central retinal pigment epithelial (RPE) depigmentation and atrophy with yellow-flecklike depositions at the level of RPE. OCT of the macula showed symmetrical neurosensory retinal detachment of both eyes. The patient underwent genetic testing and revealed 2 mutations (p.Ala195Val, p.Asn33Thrfs*31) in BEST 1 causing Best disease and mutation (p.Ala810Profs*3) in the PNPLA6 gene. Advised and counseled about the progression of disease and warranted familial variant testing.

Conclusions: As part of the differential diagnosis of serous retinal detachment, Best disease should be considered as it has the potential to masquerade as central serous chorioretinopathy in some cases. There is no medical or surgical management for Best disease as of now. Regular follow-up and a multispecialty multidisciplinary approach are needed for early detection of complications.

A Novel Quantitative Method for Analyzing the Structure of the Vortex Vein Ampulla Using Optical Coherence Tomography Montage Images

*First Author: Ryoh **FUNATSU***
*Co-Author(s): Mariko **HIROKAWA**, Taiji **SAKAMOTO**, Shozo **SONODA**, Ji **YUANTING***

Purpose: A vortex vein ampulla (VVA) is the main tissue responsible for the drainage of choroidal blood flow, and elucidation of its detailed structure is important for the study of choroidal hemodynamics. However, measuring VVA has been difficult because VVA is located at the equator and its position varies from person to person. The purpose of this study is to develop a method for assessing structural parameters of VVA.

Methods: Multiple optical coherence tomography (OCT) images were acquired from the VVA using Silverstone (Optos plc) under Optos image guidance, and a VVA composite image was created after luminal area extraction. After skeletonizing the luminal structure, the VVA main trunk vessels were extracted by removing non-contiguous regions from the trunk vessels. After defining the center of the VVA, extract quantitative information about the vessel volume, average vessel diameter, and number of main arteries in the defined area. A representative case of a patient with central serous chorioretinopathy (CSC) and a healthy eye are shown.

Results: The CSC and normal eyes had a vessel volume of 9.2 x 10^6 pixels and 4.7 x 10^6 pixels, a mean vessel diameter of 26.16 pixels and 22.88 pixels, and the number of vessels of 40 and 25, respectively.

Conclusions: This method suggests the possibility of a detailed quantification of the structure of the VVA. For future perspectives, an analysis of the characteristics of VVA in CSC eyes and its relation to clinical findings is warranted.

A Rare Case of Retinitis Pigmentosa Sine Pigmento in a 21-Year-Old Filipino Female Patient Initially Diagnosed as Idiopathic Intracranial Hypertension

First Author: Pauline Gabrielle ***LACSAMANA***
Co-Author(s): Marie Joan ***LOY****, Buenjim* ***MARIANO***

Purpose: Retinitis Pigmentosa is a prevalent inherited retinal dystrophy affecting millions worldwide. It is characterized by progressive photoreceptor degeneration which could lead to visual impairment and eventual blindness. Among its subtypes, retinitis pigmentosa sine pigmento stands out as a unique and rare variant. In RPSP, there is an absence of characteristic peripheral bony spicule pigmentation which poses a diagnostic challenge and delay in supportive therapy initiation.

Methods: This is a case of a 21-year-old female, initially diagnosed with Idiopathic Intracranial Hypertension, who presented with bilateral peripheral blurring of vision. Examination of both eyes revealed a visual acuity of 20/20, Ishihara score of 9/11, normal anterior segment findings, and optic disc elevation without swelling nor significant vessel changes.

Results: Perimetry revealed severe generalized depression with patchy areas of better retinal sensitivity paracentrally. Color photos displayed retinal mottling and lattice degeneration, while fluorescein angiography exhibited late disc staining, diffuse patchy hyper fluorescence in all quadrants, and perivascular leakage in the inferonasal periphery. Optical coherence tomography showed global macular ganglion cell thinning and inner plexiform layer thickening. An unremarkable MRI led to a diagnosis of RPSP.

Conclusions: Diagnosing RPSP is challenging due to the absence of overt pigment deposits in the retina, hence a high index of suspicion must be made based on history and presentation. Further tests such as electroretinography and genetic testing may confirm the diagnosis. While there is no definitive cure for retinitis pigmentosa, some studies suggest the benefit in taking high-dose vitamin A and lutein to reduce progression, along with serial monitoring of visual function.

A Tunnel & a Child: A Case of Retinitis Punctata Albescens

First Author: Hanisah ***ABDUL HAMID***

Purpose: To report a rare case of retinitis punctata albescens.

Methods: A 10-year-old girl presented to our center one year ago and was treated for left eye (OS) anterior uveitis. Despite her uveitis improving, her right eye (OD) vision started to deteriorate from 6/12 to 6/24, while OS remains 6/9. RAPD is positive, reducing light brightness and red desaturation on OD. Visual field defect is constricted in both eyes (OU). Blood investigations, MRI brain and orbit were done to rule out optic neuritis and the results were all normal. Further questioning revealed symptoms of night blindness and bumping into objects while walking. Over time, her vision and field defect also deteriorate further: OD light perception and OS tunnel vision. Fundus were re-examined and showed multiple hypopigmentation dots sparing the macula. Optical coherence tomography (OCT) showed loss of the inner segment/outer segment (IS/OS) junction in UO (sparing the fovea in OS). Fundus fluorescence angiogram (FFA) showed multiple hyperfluorescence stains corresponding to dot lesions. Rod-cone dystrophy is suspected, electroretinogram (ERG) and visual evoked potential (VEP) were done.

Results: ERG showed the absence of a and b waves in both dark and light adaptation. VEP on the OD is abnormal, but OS is normal. Based on clinical signs and symptoms with progressive worsening of nerve function and electrophysiology study findings. A possible diagnosis of retinitis punctata albescens was made.

Conclusions: Although retinitis punctata albescens is a rare disease, accounting for 1% of autosomal recessive rod-cone dystrophy, due to its progressive nature, it is a devastating disease that may lead to blindness.

Acute Maculopathy With Exudative Retinal Detachment in Presumptive Hand, Foot and Mouth Disease in a Young Adult

First Author: Erika Jean ***SALVAME***
Co-Author(s): Maria Giselle ***DY****, Paul* ***SIOPONGCO***

Purpose: To report a rare ophthalmic presentation of hand, foot and mouth disease and its long-term outcome.

Methods: Case report.

Results: A 19-year-old male presented with blurring of vision of the right eye (OD) for 1 week. One week prior, he had been diagnosed with hand, foot and mouth disease. His best corrected visual acuity (BCVA) in the right eye is 20/32 with central micropsia and scotoma, and the left eye (OS) BCVA was 20/20. Anterior segment examination was unremarkable. Fundus examination OD showed subfoveal blister-like elevation, reminiscent of central serous chorioretinopathy. The infrared reflectance photo showed focal hyper-reflective plaque. On macular optical coherence tomography (OCT), there was hyper-reflective thickening of the subfoveal retinal pigment epithelium (RPE) with posterior shadowing, overlying

hyper-reflective dots and adjacent mild neurosensory retinal detachment. Choroidal thickening was also noted. The patient was given systemic & peribulbar steroids. There was resolution of symptoms within 1 week of treatment. 1 month OCT showed residual RPE irregularities. A long-term 1-year follow-up showed minute hyper-reflective dots at the infrared reflectance photo and complete resolution of OCT findings.

Conclusions: Hand, foot and mouth disease has a rare ophthalmologic presentation of unilateral maculopathy and central serous chorioretinopathy (CSCR). This case shows a subtle variant of this disease, emphasizing the importance of its recognition as a differential for CSCR. It also shows possible treatment options and long-term outcomes, using infrared reflectance photography and macular OCT as viable monitoring tools.

Acute Retinal Necrosis: Do We Really Need PCR in Low-Resource Settings?

First Author: Prof.Dr. ***LAMICHHANE***

Purpose: Acute Retinal Necrosis (ARN) is an uncommon but serious vision-threatening condition. Most of the time, its diagnosis is confirmed by doing PCR of vitreous samples. Doing PCR is not always available in low-resource setting and patient is also not able to afford it. We have presented a case of ARN which is diagnosed entirely on the basis of clinical examination and managed successfully without doing any PCR.

Methods: Case presentation.

Results: Complete resolution of Necrotic patch and restoration of normal vision with conservative management.

Conclusions: ARN can be clinically diagnosed without PCR.

Adult-Onset Coats Disease With Large Subhyaloid Hemorrhage: A Case Report

First Author: Mohd Mustaqim ***ZULKIFLI MARTIN***

Purpose: To report a case of adult-onset Coats Disease in a 40-year-old gentleman with no significant risk factor.

Methods: Case report.

Results: A 40-year-old gentleman with underlying newly diagnosed mild hypertension not on treatment, presented with sudden onset of painless reduced vision over his right eye and central scotoma for two days. Patient denied any history of trauma or other symptoms. His right vision on presentation was counting finger and relative afferent pupillary defect (RAPD) was negative. The anterior segment of the right eye appeared to be normal. On fundus examination, large preretinal and subhyaloid hemorrhage was seen over the central macular region with multiple exudate lesions, vasculitis at the peripheral retina and abnormal vessels. Fluorescent Fundus Angiogram (FFA) showed telangiectatic vessels, area of capillary fallout (CFO), and leaking vessels with multiple vessel bulbs and microaneurysm. Examination over left eye unremarkable with vision 6/6. Focal laser pan-retinal photocoagulation was done and Intravitreal Ranibizumab injection was given twice. There was a slight improvement in right-eye vision, which was 1/60. A Serial of Optical Coherence Tomography (OCT) showed a positive progression of reducing macular thickness.

Conclusions: The adult-onset Coats Disease can be manifested with similar presentation to the primary Coat's Disease in childhood, but may also present with atypical features. However, it is a slower progression and is less severe compared to the latter. There are limited studies to determine the typical presentation, treatment, and visual prognosis of adult-onset Coats Disease.

An Enigma of Extensively Proliferative Retinopathy in a Teenage Patient

First Author: Ayushi ***SINHA***
Co-Author(s): Rohan ***CHAWLA***

Purpose: To present an unusual case of proliferative retinopathy in a late teen.

Methods: A 17-year-old male presented with a diminution of vision in both eyes following multiple episodes of low-grade fever and seizures. The patient also had frequent oral ulcers, multiple joint pains involving the feet and ankle and maculopapular rash over the neck, chest, upper back, face and ears. An inter-department workup of the patient was undertaken. An ophthalmic workup revealed tractional retinal detachment with vitreous haemorrhage in both eyes, which was managed surgically. The diagnostic dilemma, important differentials along with surgical management are to be discussed.

Results: The timely surgical intervention did help stabilise the retinal disease. Treatment with high-dose IV steroids followed by long-term oral steroids led to control of systemic features but exposed the patient to an onslaught of skin infections.

Conclusions: The case highlights the surgical and medical management of an unusual proliferative retinopathy presenting at an early age with a diagnostic dilemma.

An Isolated Cilioretinal Artery Occlusion in Young Adult: A Focus in the Initial Assessment

First Author: Ferdi ***KURNIAWAN***
Co-Author(s): Eka ***FALINTINAWATI***

Purpose: To report a case of isolated cilioretinal artery occlusion without known systemic predisposition and to explain the initial steps for assessment.

Methods: A 25-year-old male with no pre-morbidities presented with symptoms of sudden severe reduced visual acuity in his left eye (LE) without pain. The best-corrected visual acuity in the LE was 20/400. No ocular pathologic findings were noted from the anterior segment examination. Fundus examination of the LE was suggestive of cilioretinal artery occlusion (CAO) without signs of any central retinal artery occlusion (CRAO) or vein occlusion (CRVO). Further investigation with ocular coherence tomography (OCT) revealed the area of macular edema and retinal edema around the temporal side of the disc margin related to the ischemic focal of CAO.

Results: The patient was treated promptly with oral acetazolamide and topical nonsteroidal anti-inflammatory drugs (NSAID). Because of the limitation for other diagnostic evaluations, the patient then consulted a vitreoretinal and rheumatologist consultant for further examination. Unfortunately, the patient did not fulfill further steps for evaluation and was lost the follow-up.

Conclusions: Although no direct link could be established, this report aims to highlight the incidence and to consider this issue when evaluating any case of cilioretinal artery occlusion.

Asian Subgroup Analysis of a Phase III Study Comparing SB15 With Reference Aflibercept (Eylea®) in Neovascular Age-Related Macular Degeneration

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Purpose: SB15 is a proposed biosimilar to the reference aflibercept (AFL). Phase 3 study to compare efficacy and safety between SB15 and AFL in patients with neovascular age-related macular degeneration (nAMD) demonstrated comparable clinical outcomes up to Week 56 including the switching period. Here, we present a post-hoc analysis of the Asian subgroup.

Methods: Globally, 449 participants with treatment-naïve nAMD were randomized 1:1 to receive either SB15 or AFL every 4 weeks (q4w) for 3 injections, followed by treatment q8w. At Week 32, participants were re-randomized to either continue their treatment or switch from AFL to SB15 through Week 48. Comparability in best-corrected visual acuity (BCVA), anatomical outcomes and safety up to Week 56 were assessed in the Asian subgroup.

Results: Of the 103 Asian participants from South Korea (N=82) and Japan (N=21), 52 and 51 participants were randomized to SB15 and AFL at baseline, respectively. Then re-randomized at Week 32: 51 continuing SB15 (SB15/SB15), 24 continuing AFL (AFL/AFL), and 26 switching from AFL to SB15 (AFL/SB15). The efficacy was comparable as BCVA letter changes through Week 56 was SB15/SB15: 8.3 vs AFL/AFL: 7.0 vs AFL/SB15: 6.8. The safety profile was comparable as the incidence of ocular serious treatment-emergent adverse event was SB15: 1.9% vs AFL: 0% through Week 32, and after switching SB15/SB15: 3.9% vs AFL/AFL: 4.2% vs AFL/SB15: 0% through Week 56. No intraocular inflammation was observed.

Conclusions: The Asian subgroup analysis demonstrated similar efficacy and safety between SB15 and AFL including switching period, and the result was consistent with global data.

Assessment of Foveal Avascular Zone Area and Circularity Using Optical Coherence Tomography Angiography in Patients With and Without Diabetic Retinopathy

*First Author: Mega **ISFIATI***
*Co-Author(s): Gitalisa **ADRIONO**, Mario **HUTAPEA**, Retno Asti **WERDHANI***

Purpose: To describe differences in area and circularity of superficial capillary plexus (SCP) and deep capillary plexus (DCP) of fovea avascular zone (FAZ) using Optical Coherence Tomography Angiography (OCTA), among diabetic patients with and without diabetic retinopathy (DR).

Methods: A cross-sectional study was conducted on 90 eyes from 63 patients, including 18 eyes with no DR, 18 eyes with mild non-proliferative DR (NPDR), 18 eyes with moderate NPDR, 18 eyes with severe NPDR, and 18 eyes with proliferative DR (PDR). The area and circularity of SCP and DCP FAZ in 3×3 mm macular OCTA images were analyzed using ImageJ.

Results: In the superficial retina, FAZ area for patients with no DR, mild NPDR, moderate NPDR, severe NPDR, and PDR was 0.34 mm^2, 0.44 mm^2, 0.35 mm^2, 0.44 mm^2, and 0.40 mm^2, respectively. SCP FAZ area was significantly larger in mild NPDR compared to no DR (p=0.009). There were no differences in the SCP FAZ area among DR groups. In the deep retina, DCP FAZ circularity was significantly lower in moderate and severe NPDR compared to mild NPDR (p=0.003). There were no differences in DCP FAZ circularity between mild NPDR and no DR, as well as between NPDR groups and PDR.

Conclusions: OCTA can detect enlargement and irregularity of both SCP and DCP FAZ in DR. Enlargement of SCP FAZ area and reduction in DCP FAZ circularity occur even in the early stages of DR. However, these FAZ changes do not appear to increase as retinopathy progresses.

Association Between Central Vision and Panretinal Photosensitivity Measured by Full-Field Stimulus Threshold in Inherited Retinal Dystrophy Patients

*First Author: Qingge **GUO***
*Co-Author(s): Bo **LEI**, Ya **LI**, Changgeng **LIU**, Shuai **MING***

Purpose: To analyze the association between central vision and panretinal photosensitivity measured by full-field stimulus threshold (FST) in inherited retinal dystrophy (IRD) patients.

Methods: This retrospective study included thirty-nine IRD patients. All the participants underwent ophthalmology examinations, including the best corrected visual acuity (BCVA) in logMAR, swept-source optical coherence tomography (SS-OCT), and electroretinogram (ERG). In addition, FST was conducted with red, blue and white light stimuli. The subjects were divided into mild (≤-35dB), moderate (-35dB~-25dB) and severe (>25dB) groups according to the FST results. Analysis of variance (ANOVA) was used to evaluate the differences in age and BCVA among the groups. Subjects were further divided into two groups including rod-cone dystrophy (ROCD) and cone-rod dystrophy (CORD). The difference in FST between the two groups was analyzed by the Mann-Whitney Test.

Results: Only with red light stimulation, the mean age of the mild, moderate and severe groups had significant differences (18.8±10.8, 30.2±11.9, and 34.1±11.6. P<0.01). With blue and white light stimuli, BCVA presented a significant difference between the groups (Blue: P<0.01; White: P<0.05). Compared to ROCD patients, CORD exhibited better FST, especially with blue and white stimuli (Red: P<0.05; Blue: P<0.01; White: P<0.01), but worse BCVA (P<0.05).

Conclusions: In IRD, a decrease in red light-driven panretinal photosensitivity with aging could imply a progressive loss of cone function. Furthermore, the results that CORD patients showed better FST but worse BCVA than ROCD were in agreement with the fact that peripheral photoreceptors were better preserved. FST may be an additional function measurement for IRD patients.

Association Between Mean Platelet Volume and Retinal Vein Occlusion in Adult Patients

*First Author: Tariq **ALI***
*Co-Author(s): Shahreen **FERDOUS***

Purpose: To assess the association between mean platelet volume and retinal vein occlusion (RVO) in adult patients.

Methods: An observational cross-sectional study involving 30 cases of RVO and 30 cases of age and sex-matched control of 21-80 years old patients was conducted. Following a brief history, general & ocular examination was done, and blood samples were taken from the subjects to measure platelet count and indices using the Electrical Impedance Cell Counting method in SYSMEX Automated Haematology Analyser XN2000 (Sysmex, Japan).

Results: The mean age in the case was 51.1 (±11.9) years and that of the control was 54.5 (±12.7) years. The mean platelet count (MPC) was 2,948,66 (±87772)/mm^3 and 2,97,667 (±60250)/mm^3 respectively in cases and controls without any statistically significant difference between these two groups (P=0.886). The mean Mean Platelet Volume (MPV) was 11 (±1.5) fl and 9.8 (±1.3) fl in the cases and controls, respectively and the difference between them was statistically significant (P=0.002). There was a positive correlation between MPV and RVO (r=0.376; P=0.003) as well as logistic regression analysis demonstrated a 1.9 times higher likelihood of developing RVO for every femtolitre increase in MPV (OR=1.949; P=0.001). ROC curve analysis also demonstrated that MPV has good sensitivity and specificity (70% and 67% respectively for an MPV cut-off of 10.35 fl) for the prediction of RVO (P=0.004; AUC=0.717).

Conclusions: Our study suggested that not platelet count, but mean platelet volume was an independent risk factor for the development of RVO.

Association of Keratoconus, Cataract and Juvenile Retinitis Pigmentosa: The Blinding Trio

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Purpose: To report a case of the rare entity of bilateral keratoconus and retinitis pigmentosa with cataract.

Methods: Case report.

Results: A 34-year-old lady presented with poor vision since she was 11 years old, not corrected with any vision aid. Throughout her primary school years, she was able to walk and run actively during the daytime, but had difficulties to see at night. Further history reveals that the patient has two other siblings and one maternal cousin with the same condition, currently blinding vision. Her best-corrected visual acuity in both eyes is the perception of light. Examination revealed rotational nystagmus. Anterior segment of both eyes showed conical-shaped cornea with central corneal opacity. There is a presence of cataractous lenses; grade 2 posterior subcapsular cataract and grade 1 anterior subcapsular cataract. Fundus examination revealed pale optic discs with peripheral bony spicules and macular atrophy. Retinoscopy shows a scissoring reflex in both eyes. Subjective refraction of the right eye is +18.00/-8.00x80; unable to perform on the left eye. No genetic study or further investigation was performed due to a lack of such facilities in our center and the patient's financial concerns. The patient insisted on lens extraction despite the poor prognosis explained. Postoperatively, vision remained the same,

with no good potential vision. A secondary intraocular lens was not implanted. Reassurance was given to the patient, who was subsequently referred to a low-vision clinic for conservative visual rehabilitation.

Conclusions: The association of retinitis pigmentosa with keratoconus is a fairly rare finding, worth taking into consideration. Treatment entails low-vision rehabilitation services to improve their independence and overall well-being.

Avoiding Vitrectomy in Giant Retinal Tear

*First Author: Nv **ANNAPURNA***
*Co-Author(s): Tejaswini **VUKKADALA**, Nallamasa **GOUD***

Purpose: To report a case of giant retinal tear (GRT) which was treated with a barrage laser, thereby preventing retinal detachment.

Methods: A 65-year-old male patient had come to our retina clinic with complaints of a sudden decrease in vision in the left eye since 3 days. On examination, his left eye best corrected visual acuity (BCVA) was 6/12, the anterior segment was normal, PCIOL was present, fundus examination revealed minimal vitreous hemorrhage in the visual axis, on peripheral retina examination showed a GRT temporally from 1 clock hour to 6 clock hours, macula sparing. The patient was advised for barrage laser posterior to the tear.

Results: After the barrage laser, the patient's retina posteriorly is attached and his BCVA is 6/6.

Conclusions: Early detection of GRT and doing a laser retinopexy to avoid retinal detachment, will help the patient from undergoing vitrectomy and preventing complications related to the tamponade.

Bangladeshi Case Series of Bardet–Biedl Syndrome

*First Author: Fariah **OSMAN***
*Co-Author(s): Md Iftekher **IQBAL***

Purpose: We highlighted the importance of diagnosing it as early as possible so that comprehensive and multidisciplinary care can be offered to prevent avoidable morbidity and mortality, as there is no specific treatment for Bardet–Biedl Syndrome.

Methods: We reported two Bangladeshi patients (a 9-year-old girl and a 24-year-old male) who were presented with various major and minor features of Bardet–Biedl Syndrome. Both patients came to us with symptoms, including excessive weight gain, poor vision, and learning disabilities with polydactyly.

Results: Our case 1 presented four primary features (retinal degenerations, polydactyly, obesity, and learning deficits) and six secondary features (behavioral abnormality, delayed development, diabetes mellitus, diabetes insipidus, brachydactyly, and LVH), whereas case 2 presented five major criteria (truncal obesity, polydactyly, retinal dystrophy, learning disabilities, and hypogonadism) and six minor criteria (strabismus and cataracts, delay in speech, behavioral disorder, developmental delay, brachydactyly and syndactyly, and impaired glucose tolerance test).

Conclusions: In a developing country like Bangladesh, Bardet–Biedl Syndrome is diagnosed by clinical examination and traditional lab tests. The syndrome's genetic and molecular research will take longer to implement. Because renal impairment is the primary cause of mortality in Bardet–Biedl Syndrome patients, accurate diagnosis is crucial for preventing the progression of renal impairment. Bardet–Biedl Syndrome is managed in a supportive manner by a multidisciplinary team, and genetic counseling for families is essential.

Biallelic Mutations in TRPM1 in a Filipino Presenting With Retinitis Pigmentosa (RP)

*First Author: Hezekiah Mikhail Vicente **MALUBAY***
*Co-Author(s): Manuel Benjamin **IBANEZ***

Purpose: This report presents a case of a 33-year-old, Filipino male with two TRPM1 variants, and with clinical findings and ancillaries consistent with Retinitis Pigmentosa.

Methods: This study reports a gene well-established to be associated with Congenital Stationary Night Blindness, in a patient with a phenotype of RP instead. The novel association between this gene and RP will provide more understanding of the function of the TRPM1 gene and help expand the genotype of RP with similar features.

Results: A 33-year-old male was referred to the Ocular Genetics service for progressive loss of vision in both eyes and nyctalopia. The patient has no known comorbidities and is the only affected family member. The best corrected visual acuity of the patient was 20/30 for both eyes. Slitlamp biomicroscopy was unremarkable. Fundoscopy showed bony spicule-like pigmentary changes in the periphery. Ancillaries showed severely constricted visual fields on perimetry and peripheral degeneration on Ocular Coherence Tomography (OCT) of the macula. Full-field electroretinogram (ffERG) was isoelectric. An inherited retinal dystrophy panel was done which revealed the patient to be compound heterozygous for TRPM1 c.1099A>G (p.Thr367Ala) and c.1441A>T (p.Ile481Phe). Both variants were found to be on opposite sides of the chromosome.

Conclusions: This study reports a gene well-established to be associated with Congenital Stationary Night Blindness, in a patient with a phenotype of RP instead. The novel association between this gene and RP will provide more understanding of the function of the TRPM1 gene and help expand the genotype of RP with similar features.

Bilateral Coats-Like Vasoproliferative Retinal Tumor in a 12-Year-Old Filipino With Retinitis Pigmentosa Fundus in the Left Eye and Leukocoria in the Right Eye

*First Author: Darby **SANTIAGO***

Purpose: Vasoproliferative retinal tumors are relatively rare in the general population, and even rarer for Asians. This is the first reported case of a Filipino patient.

Methods: A 12-year-old Asian girl consulted in our clinic with a 6-year history of recurrent headaches, eye redness, and photophobia of the right eye. The right eye was blind with leukocoria. The fundus of the left eye showed a Coat-like yellow-pinkish peripheral mass with adjacent telangiectatic vessels and macular edema in the left eye. Ocular multimodal imaging, ERG and CT scan were done.

Results: Visual acuity was NLP OD and 20/55 OS. IOP OD 46; 12 OS. Anterior segment exam of the right showed rubeosis, ectropion uvea, +1 cells and flare, clear lens, and beginning peripheral band keratopathy. The retina abutting the posterior capsule showed some pigment clumps. Ultrasound showed an elongated homogenous fixed retrolental mass, and low amplitude homogenous dot echo with good aftermovement in the posterior vitreous. Left eye anterior segment findings were normal while the retina showed diffuse patches of atrophic RPE, few to several pigment clumps in the mid periphery, and a yellow mass in the peripheral inferonasal quadrant with adjacent telangiectatic vessels. Macular OCT showed cystoid spaces. Treatment for the left eye included anti-VEGF injection and focal laser, resulting in vision improvement to 20/48 after 1 week. Cryotherapy is the next treatment option.

Conclusions: This rare disease can be misdiagnosed and dismissed. Early detection, recognition, and customized treatment can lead to vision preservation if not improvement.

Bilateral Effect Following off Label Unilateral Intravitreal Brolucizumab Injection in Patient With Pseudophakic Cystoid Macular Edema

*First Author: Mounika **BOLISETTY***

Purpose: To report a bilateral reduction in pseudophakic cystoid macular edema (PCME) after unilateral intravitreal injection (IVI) of brolucizumab.

Methods: A 64-year-old female presented with a bilateral reduction in vision for one month after undergoing uneventful phacoemulsification cataract surgery in both eyes three months ago. Both eyes (OU) anterior segments showed good pseudophakia. Diagnosed with PCME was was started on topical 0.1% nepafenac eye drops. Followed by, dexamethasone implant (Ozurdex) and triamcinolone-acetonide (IVTA) after 6 months with no improvement in BCVA or OCT. 10 months later the patient was offered options of all available anti-VEGF agents and she freely chose brolucizumab. The patient was injected with intravitreal injection (IVI) brolucizumab only in OD, while OS was continued on topical NSAIDs.

Results: On switching to IVI brolucizumab in the right eye (OD), the patient showed significant improvement in the best-corrected visual acuity (BCVA) with a notable reduction in the intraretinal fluid (IRF) and central subfield thickness (CST) in both the eyes at one month. The Central Subfield Thickness decreased from 403µm to 344µm in OD and from 399µm to 288µm in OS, i.e., a quantitative reduction in macular edema of 14.64% in the injected eye and 27.82% in the uninjected eye.

Conclusions: Intravitreal brolucizumab injection is effective for the management of recalcitrant PCME with good visual and anatomical outcomes at one month. However, this molecule can also have therapeutic efficacy in the uninjected eye, possibly due to systemic escape. More research into the pharmacokinetic properties of this novel molecule is needed to validate our findings.

Changes in Retinal Sensitivity Following Intravitreal Triamcinolone Acetonide in Pseudophakic Eyes With Diabetic Macular Edema

*First Author: Sameer **CHAUDHARY***
*Co-Author(s): Naresh **KANNAN**, Piyush **KOHLI**, Kim **RAMASAMY**, Renu **RAJAN***

Purpose: To evaluate the response of retinal sensitivity (RS) to intravitreal triamcinolone acetonide (IVTA) in pseudophakic eyes with diabetic macular edema (DME), measured using microperimetry (MP), and its correlation with best corrected visual acuity (BCVA) and central subfoveal retinal thickness (CSRT).

Methods: Thirty-one treatment-naive eyes received 4mg in 0.1ml preservative-free IVTA. Patients with any medial opacity, clear lens, disease stage demanding pan-retinal photocoagulation, and history of steroid response, glaucoma, cataract surgery, or YAG capsulotomy within the last 6 months were excluded. BCVA, MP and OCT were done at baseline, 1 and 3 months follow up.

Results: The mean baseline RS of 9.72 ± 5.14 dB improved to 12.33 ± 5.66 dB at 3 months (p = 0.036). Mean BCVA showed an improvement from 0.62 ± 0.29 LogMAR equivalents at baseline to 0.42 ± 0.32 LogMAR equivalents at 3 months (p = 0.024). Mean CSRT was 526.75 ± 132.9 um at baseline and improved to 284.74 ± 140.8 um at 1 month. There was a rebound increase in mean CSRT to 418.58 ± 244.3 um at 3 months, although there was an overall reduction from baseline (p = 0.014). A significant correlation between RS and CSRT was observed at 1 and 3 months, whereas that

between RS and BCVA was present at baseline and 3 months.

Conclusions: In this study, IVTA resulted in significant improvement in RS. This improvement showed a significant correlation with BCVA and CSRT. Further long-term follow-up is warranted to evaluate long-term effects.

Characteristics of Multiple Evanescent White Dot Syndrome Comorbid With Choroidal Neovascularization

*First Author: Hai-yan **WANG***
*Co-Author(s): Lei **ZHANG***

Purpose: To report a case series of multiple evanescent white dot syndrome (MEWDS) combined with choroidal neovascularization (CNV), to analyze characteristics on imaging and to explore correlationship between both entities.

Methods: Patients diagnosed as MEWDS comorbid CNV in our clinic were enrolled in this study. All patients underwent multimodal ophthalmological imaging and were treated with intravitreal injections of anti-vascular endothelial growth factor (anti-VEGF) if CNV was active.

Results: The mean age was 33.78±11.54 years (20~59 years). MEWDS occurred after diagnosis of CNV in 5 eyes and both entities presented simultaneously in 4 eyes. Of all, 4 cases overlapped with punctate inner choroidopathy (PIC), PIC lesions were active when MEWDS attacked. At the onset of MEWDS, 5 patients with CNV showed pitchfork signs on OCT while 8 eyes presented choroidal hypertransmission. During MEWDS attacks, all CNV were active and intravitreal injection of anti-VEGF therapy was administered except one patient refused. BCVA (best-corrected visual acuity) improved after treatment of anti-VEGF.

Conclusions: The inflammatory features on imaging of CNV patients with or without PIC as well as the structural destruction of retinal pigment epithelium-Bruch's membrane-choriocapillaris complex may stimulate the onset of MEWDS meanwhile or afterwards.

Choroidal, Haller's and Sattler's Layer Thickness in Filipino Eyes With Emmetropia and Errors of Refraction Using Spectral Domain- Optical Coherence Tomography

*First Author: Erika Jean **SALVAME***
*Co-Author(s): Jubaida **AQUINO**, Jocelyn **SY**, Camille Elaine **ZABALA***

Purpose: To determine the mean thickness of the choroid and its segments, Haller's layer and Sattler's layer, among Filipinos with emmetropia and errors of refraction using spectral domain- optical coherence tomography (SD-OCT); and to determine its correlation to the gender, age error of refraction, and axial length.

Methods: This is a cross-sectional descriptive study in a tertiary referral eye center. The mean thickness of the choroid and its segments was measured using SD-OCT scans (SpectralisOCT2, Heidelberg Engineering, Germany) at the subfovea, parafovea and perifovea nasally, temporally, superiorly, and inferiorly. Correlation of mean thickness values with error of refraction (EOR), gender, age and axial length was done using Pearson correlation, student t-test and analysis of variance.

Results: There were a total of 119 participants in this study, with a mean age of 34 years and female predominance. The total subfoveal thickness is 324.29±69.398 µm, while Sattler's layer is 112.95±28.256 µm, and Hallers' layer is 213.08±51.157 µm. Choroidal thickness is thickest in the superior quadrant, followed by the inferior, then temporal, and is thinnest nasally. Overall, there is a significantly negative correlation between subfoveal thickness and age, and subfoveal thickness and axial length. Refraction was not noted to have a correlation with subfoveal thickness.

Conclusions: This study has provided mean thickness values of the choroid, including the Sattler's and Haller's layers, in the Filipino population with emmetropia and errors of refraction. This will aid in the early detection and diagnosis of chorioretinal pathologies. Nevertheless, ophthalmologists must also be aware of factors affecting choroidal thickness, which include age and axial length.

Clinical Complexity of Asymmetric Retinitis Pigmentosa: Unveiling Diagnostic Challenges

*First Author: Hafiz **SHATARI***
*Co-Author(s): Weni **HELVINDA***

Purpose: This case report aims to present a comprehensive analysis of a 26-year-old male patient with asymmetric retinitis pigmentosa (RP) and the consideration of Unilateral Retinitis Pigmentosa as a differential diagnosis.

Methods: A thorough clinical examination and assessment were conducted on the patient with a complaint of blurred vision in the left eye for a year, preceded by 20 years of progressive vision loss. No history of infection, inflammation, trauma, or familial retinal disorders was reported. Visual acuity was measured at 6/6 and 2/60 for the right and left eyes, respectively. Fundoscopy revealed waxy disc pallor, arteriolar attenuation, and extensive bone spicules in the left eye's inferior nasal and inferior temporal quadrants, extending to the macula. No abnormalities were observed in the right eye. Humphrey perimetry indicated visual field indices (VFI) of 95% for the right eye and 32% for the left eye. Electroretinography (ERG) was not conducted due to the unavailability of equipment. A recommended five-year follow-up was suggested for a conclusive diagnosis.

Results: The clinical findings strongly indicated Asymmetric Retinitis Pigmentosa, with a potential differential diagnosis of unilateral retinitis pigmentosa. The asymmetric nature of retinal changes underscores diagnostic challenges.

Conclusions: Asymmetric retinitis pigmentosa presents unique diagnostic complexities, demanding differentiation from unilateral retinitis pigmentosa. Comprehensive clinical evaluation and long-term follow-up are vital for accurate diagnosis and management.

Coats Disease Unveiled: A Series of Interesting Cases

*First Author: Sher Minn **TAN***

Purpose: To describe three cases of Coats' disease, detailing their clinical presentation, treatment modalities, and outcomes.

Methods: Case series.

Results: Coats disease is an idiopathic non-inherited eye condition characterized by retinal telangiectasia, aneurysms, and exudation. The incidence of Coats' disease is 0.09 per 100,000 population. It typically presents in children and has a higher incidence in males. Our series describes three cases of Coats' disease, one at stage 1, one at stage 2b, and one at stage 3 according to Shields' classification. All three patients had unilateral disease and only one was female. Two of the patients were adults (aged 24 and 38 years old) who experienced unilateral gradual painless blurring of vision while the third one was a pediatric patient who initially presented with exotropia. Their visual acuity (VA) at the first visit ranged from 3/60 to hand movement (HM). The two adult patients are undergoing panretinal photocoagulation treatment and the pediatric patient underwent squint surgery. Their visual outcome remains poor, ranging from 3/60 to counting fingers (CF). They are still under our follow-up care.

Conclusions: It is essential to remain vigilant in detecting eye abnormalities in patients with Coats disease, as the condition is asymptomatic and can lead to severe visual disturbances if left untreated.

Combined Central Retinal Vein and Artery Occlusion in a Patient With Cytomegalovirus Retinitis

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*Co-Author(s): Nattawat **SINAWAT**, Suthasinee **SINAWAT***

Purpose: To report a case of combined central retinal vein and artery occlusion (CCRVAO) in a human immunodeficiency virus (HIV)-infected patient who initially presented with cytomegalovirus retinitis (CMVR).

Methods: Medical chart, fundus photography, and fluorescein fundus angiography (FFA) were reviewed.

Results: A 30-year-old man with HIV presented with progressive visual loss in the left eye for one month. He also had oral B-cell lymphoma and was on while receiving chemotherapy at another hospital. His visual acuity (VA) was hand motion with good light projection (PJ). CMVR with frosted branch angiitis involved optic disc and threatened macula was found. After discussion, the patient would like to be treated with intravitreal ganciclovir injections. Because of no improvement after two intravitreal injections, we decided to admit this patient for intravenous treatment. Systemic workup revealed severe anemia (5.9-8.6 g/dL), leukopenia (2,250/uL), thrombocytosis (468,000/uL) and syphilis antibody. Cytomegalovirus (CMV) and Herpes simplex virus were detected in aqueous humor by polymerase chain reaction testing. Unfortunately, his VA was decreased to light perception with poor PJ in 3 days later. Fundus examination showed retinal whitening with a cherry red spot, generalized blot retina hemorrhage, and venous tortuosity. The absent dye filling in both the central retinal vein and artery was demonstrated on FFA.

Conclusions: This is the first case report of CCRVAO in CMVR. We hypothesized that the direct infiltration of CMV is the major cause of CCRVAO, however, anemia-induced endothelial injury and increased blood viscosity disturbing the fibrinolytic pathway were additional factors in our patient.

Comparison of Intravitreal Preservative-Free Triamcinolone Versus Posterior Sub-tenon Triamcinolone Acetonide Injection for Bevacizumab-Resistant Diabetic Macular Edema

*First Author: Seung Hee **JEON***
*Co-Author(s): Minhee **KIM**, Young Jung **ROH***

Purpose: This study aimed to compare the efficacy of intravitreal triamcinolone acetonide (IVTA) injection versus posterior subtenon's capsule triamcinolone acetonide (STTA) injection for the treatment of bevacizumab-resistant diabetic macular edema (DME).

Methods: A retrospective cohort study included 40 eyes of 40 patients with bevacizumab-resistant refractory DME that did not respond to at least three consecutive intravitreal bevacizumab injections (IVB). Bevacizumab-resistant DME was defined as a lack of a central macular thickness (CMT) reduction of less than 20% following IVB. Changes in mean CMT, best-corrected visual acuity (BCVA), and intraocular pressure (IOP) were evaluated at baseline, and at 1, 2, and 3 months after treatment.

Results: In the IVTA group, the mean CMT improved from 400.2 ± 144.42 µm at baseline to 261.4 ± 108.18 µm at 1 month post-treatment ($p < 0.001$*) and 288.35 ± 151.74 µm at 3 months post-treatment ($p = 0.01$*).

Similarly, in the STTA group, the mean CMT improved from 446.65 ± 120.74 µm at baseline to 349.9 ± 120.15 µm at 1 month post-treatment (p = 0.005*) and 382.9 ± 113.58 µm at 3 months post-treatment (p = 0.009*). When comparing the changes in CMT, BCVA and IOP between the IVTA and STTA groups at baseline and at 1, 2, and 3 months of treatment, no statistically significant difference was observed.

Conclusions: While IVTA is generally considered more effective than STTA in DME, our study demonstrated that IVTA and STTA exhibited statistically equivalent anatomical and functional effects in bevacizumab-resistant DME.

Complement Factor H Gene Polymorphism (rs1410996) Increased the Risk of Age-Related Macular Degeneration (AMD) Susceptibility: A Meta-analysis

*First Author: Dessy **KARTINI***
*Co-Author(s): Sagung Gede **INDRAWATI***

Purpose: To investigate the association between complement factor H gene polymorphism (rs1410996) and age-related macular degeneration in Asian and Caucasian populations.

Methods: Metaanalysis was performed by the standard protocol of Preferred Reporting Items for Systematic Review and Meta-Analysis.

Results: Genotype GA vs AA & GG (pH 0,128 fixed effect p 0,00 OR = 0,767 tau 0,021 I2 34.948) and GG vs GA & AA (pH 0,0 random effect p 0,048 OR 1,421 Tau 0,240 I2 82.873) had significant associations with the susceptibility of age-related Macular Degeneration. Complement activation has emerged as an important pathogenetic factor in AMD. As a key regulator of the complement system of innate immunity. The results were found for the association between rs1410996 and AMD susceptibility, a positive relationship between them was also identified in all of these observed models, with a more significant result for the Asian population.

Conclusions: rs1410996 was significantly associated with an increased risk of AMD in the Asian population.

Correlation Analysis of Ocular and Neurological Manifestations in 48 Chinese Children with Sialidosis Type I

*First Author: Huaxin **ZUO***
*Co-Author(s): Chunxia **PENG**, Wei **SHI***

Purpose: Correlation analysis of ocular and neurological manifestations in 48 Chinese children with sialidosis type I.

Methods: In November 2020, a 15-year-old patient with sialidosis type I was diagnosed through genetic examination at the Department of Ophthalmology and Neurology, Beijing Children's Hospital. 47 additional confirmed cases of sialidosis type I diagnosed by genetic testing were selected from the China National Knowledge Infrastructure and The National Library of Medicine of the United States (PubMed). Search keywords were "sialidosis", "cherry red spot", and "Chinese". A total of 43 cases with available fundus examinations were divided into two groups: CS group and non-CS group based on the presence or absence of "cherry red-spot" (CS) on fundus examination. The differences in age of onset, gender, and neurological manifestations were compared between the two groups.

Results: Among the 48 patients, 31 were male and 17 were female, with a median age of 12 years. Visual impairment was observed in 42 cases (91.3%) and CS was present in 24 cases (55.8%). Optic atrophy was observed in 7 cases (70%). The most common neurological manifestation was myoclonus (97.9%), followed by seizures (92.5%) and cerebellar ataxia (91.3%). Abnormal findings were present in 15 cases (50.0%) on cranial magnetic resonance imaging (MRI) scans. There were no statistically significant differences in myoclonus, cerebellar ataxia, seizures, and cranial MRI findings between both groups (P > 0.05).

Conclusions: Sialidosis Type I presents with visual impairment as the main ocular manifestation. Children with and without CS show no significant differences in clinical neurological manifestations or cranial MRI.

Correlation Between Apelin and VEGF Levels in Retinopathy of Prematurity: A Matched Case–Control Study

*First Author: Jing **FENG***

Purpose: Although several clinical studies have analysed the relationship between the levels of vascular endothelial growth factor (VEGF) and apelin-13 in venous blood and retinopathy of prematurity (ROP), no definitive conclusions have been reached. This study aimed to investigate the relationship between apelin-13 levels, VEGF levels and ROP.

Methods: Differences in plasma apelin-13 and VEGF levels were analysed in two groups of infants born with birth weight < 1500 g and gestational age < 32 weeks at Peking University People's Hospital. One group comprised infants diagnosed with ROP, and the other group was a control group comprising infants without ROP.

Results: Apelin-13 levels were significantly lower in the ROP group than in the control group, while VEGF levels showed the opposite result (both P < 0.001). Infants with severe ROP had lower apelin-13 levels and higher VEGF levels than those with mild ROP (both P < 0.05).The receiver operating characteristic curve for the apelin-13 level as the indicator of ROP showed that a cut-off value of 119.6 pg/mL yielded a sensitivity of 84.8% and a specificity of 63.6%, while for the VEGF

level, the cut-off value of 84.3 pg/mL exhibited a sensitivity of 84.8% and a specificity of 66.7%.

Conclusions: Plasma apelin-13 and VEGF levels at 4–6 weeks of age may play a role in assisting the diagnosis of ROP.

Cytomegalovirus Retinitis Masked as Central Retinal Vein Occlusion in a Patient on Systemic Immunosuppression: A Case Report

*First Author: Ilyoung **JUNG***
*Co-Author(s): Jaeyon **WON***

Purpose: We detail a unique case in which the diagnosis of cytomegalovirus (CMV) retinitis was delayed due to diffuse retinal hemorrhage in a 67-year-old patient who underwent a kidney transplant. This report discusses a case of CMV retinitis in a patient on systemic immunosuppression who was diagnosed initially with central retinal vein occlusion (CRVO).

Methods: A 67-year-old male presented to our ophthalmology department due to reduced vision in both eyes during the last month. The patient's past medical history was significant, as he had undergone a kidney transplant and was taking systemic immunosuppressive agents. The clinical examination and the ancillary tests derived a diagnosis of CRVO with macular edema in the left eye. Treatment focused on reducing the macular edema, and we performed an intravitreal bevacizumab injection, but the retinal lesion worsened to show granular whitening with intralesional hemorrhage, consistent with CMV retinitis, resulting in profound vision loss.

Results: This case highlights the similarities in ocular manifestations between the acute phase of CMV retinitis and CRVO.

Conclusions: The diffuse retinal hemorrhage in CRVO can mask CMV retinitis or be combined with the acute phase of CMV retinitis. Considering the poor prognosis of CMV retinitis, ophthalmologists should conduct accurate and careful fundus examinations of CRVO patients with a history of immunosuppressive therapy.

Difference in Treatment Burden of Neovascular Age-Related Macular Degeneration Among Different Types of Neovascularization

*First Author: Jihyun **LEE***
*Co-Author(s): Jae Hui **KIM***

Purpose: To evaluate the difference in the treatment burden among different types of neovascular age-related macular degeneration (AMD).

Methods: This retrospective, observational study included 431 patients who were diagnosed with neovascular AMD. Patients were divided into three groups: type 1 or 2 neovascularization group (n = 167), type 3 neovascularization group (n = 50), and polypoidal choroidal vasculopathy (PCV) group (n = 214). The number of hospital visits per year and the number of anti-vascular endothelial growth factor (VEGF) injections per year were compared among these groups.

Results: The number of hospital visits per year was significantly higher in the type 1 or 2 neovascularization group (mean: 6.1 ± 1.5) and type 3 neovascularization (6.6 ± 1.6) than in the PCV group (6.0 ±1.5) ($P < 0.001$). The number of anti-VEGF injections per year was significantly higher in the type 3 neovascularization group (3.1 ±1. 7) than in the type 1 or 2 neovascularization group (2.3 ± 1.5) or the PCV group (2.3 ± 1.2) ($P = 0.042$). There was a significant difference in the incidence of bilateral involvement among patients in the type 1 or 2 neovascularization group (20.4%), the type 3 neovascularization group (46.0%), and the PCV group (15.4%) ($P<0.001$).

Conclusions: The high frequency of hospital visits and that of anti-VEGF injections in patients with type 3 neovascularization suggests a high treatment burden in these patients. The high incidence of bilateral involvement could be one of the primary reasons for the high treatment burden in patients with type 3 neovascularization.

Differences in Visual Prognosis and Features of Geographic Atrophy Secondary to Age-Related Macular Degeneration According to the Type of Extracellular Deposits

*First Author: Je Moon **YOON***
*Co-Author(s): Don Il **HAM***

Purpose: To investigate the differences in visual prognosis and features of geographic atrophy (GA) according to the type of extracellular deposits in age-related macular degeneration (AMD) eyes.

Methods: From Jan 2009 to Jan 2023, medical records of AMD patients who had a progression to geographic atrophy were investigated. AMD eyes were classified into three groups according to multimodal imaging before the occurrence of GA: AMD with soft drusen only (18 eyes), reticular pseudodrusen (RPD, 40 eyes), and cuticular drusen (14 eyes). The change of best-corrected visual acuity (BCVA) during the follow-up and fundus autofluorescence (FAF) features of GA at the last visit were evaluated.

Results: Among the three groups, the decline in BCVA was most severe in eyes with soft drusen only ($P = 0.025$). At the last visit, GA among the three groups showed significant differences in all features of FAF, including size, configuration, location, and FAF pattern. The foveal involvement of GA was most frequently seen in eyes with soft drusen only. GA in eyes with RPD was prone to large size, extrafoveal location, and diffuse-trickling pattern. The presence of atrophy beyond the arcade was observed only in eyes with RPD.

Conclusions: GA in eyes with soft drusen only was associated with poor visual prognosis, and those with RPD were related to the large size of GA, compared with those having other extracellular deposits. Different features of GA according to the type of extracellular deposits can imply that they have different mechanisms, which may be crucial for clinical trials.

Distribution Characteristics of Choroidal Thickness in Normal Population

*First Author: Xinyuan **ZHANG***
*Co-Author(s): Bingjie **QIU**, Qiyun **WANG***

Purpose: To characterize the distribution characteristics of choroidal thickness in healthy normal subjects and to define the diagnostic cut-off value for pachychoroid.

Methods: This cross-sectional study enrolled 446 eyes of 230 healthy subjects for the choroidal thickness distribution analysis. 149 eyes of 113 patients with CSC, 95 eyes of 81 patients with PCV, 70 eyes of 60 patients with neovascular AMD (nAMD), along with 382 eyes of 199 normal subjects matched for refractive error, age, and gender were selected for likelihood ratio analysis. Routine eye examinations were performed in all subjects. Swept-source optical coherence tomography (SS-OCT) of 9 mm×9 mm scanning mode was used to measure the subfoveal choroidal thickness (SFCT).

Results: Age and diopter were strongly correlated with SFCT (P<0.001). The diagnostic value range of pachychoroid in the 20-39 years group, 40-59 years group, 60-79 years group and ≥80 years group were 320-330 µm, 330-340 µm, 250-275 µm, and 200-225 µm, respectively. The percentages of eyes with pachychoroid in the 20-39 years group, 40-59 years group, and ≥60 years group were 14.71% (10/68), 24.48% (47/192), and 28.89% (55/184), respectively. The proportion of pachychoroid in the ≥60 years group was significantly higher than that of the 20-39 years group, showing a statistically significant difference (P=0.011).

Conclusions: Age and diopter are the independent influencing factors of SFCT. We established the range of cut-off values for pachy choroid in different age groups when controlling other factors, including diopters and gender.

Early Detection and Severity of Diabetic Retinopathy in a Developing Country: Serum Lipids and Random Plasma Glucose

*First Author: Mukta **TIWARI***
*Co-Author(s): Ashish **CHANDER**, Vinod Kumar **SINGH***

Purpose: Diabetic retinopathy (DR) is the most common vision-threatening chronic microvascular, microangiopathy complication of diabetes. To establish the causal relationship between dyslipidemia and DR to lend additional support to current treatment guidelines, recommending aggressive lowering of elevated lipids, thus preventing ocular morbidity among diabetic patients.

Methods: This cross-sectional observational study was designed to understand the role of serum lipids and random plasma glucose levels with the severity of DR. This study was accomplished with 210 patients who came to the diabetic clinic. There were two groups: Group A: All diabetics with no apparent sign of DR (Grade I) and Group B: All diabetics with any signs of DR (Grade II - V). DR was graded according to the International Clinical Diabetic Retinopathy Disease Severity Scale on dilated fundus examination and fundus photography. Serum lipids were then assessed according to NCEP ATP III guidelines.

Results: Findings of total cholesterol and triglycerides played a detrimental role in the severity of DR and the likelihood of developing a more severe form of DR was dependent on their levels (P<0.05). The association of high and low-density lipoprotein with different grades of DR was also found to be significant (P<0.05). Similarly, the values of total cholesterol, triglycerides and HDL showed a significant rise with the severity of diabetic macular oedema (DME).

Conclusions: Considering India is the diabetic capital of the world, the significant association of total cholesterol, triglycerides and HDL with DR thus concludes that along with strict glycemic monitoring and control, hyperlipidemia is also noteworthy to prevent the progression of DR and DME.

Establishment a 2D Co-culture In Vitro Model to Stimulate Diabetic Retinopathy

*First Author: Xinyuan **ZHANG***
*Co-Author(s): Qiyun **WANG***

Purpose: To establish an in vitro model that simulates the interactions between retinal vascular endothelial cells and ganglion cells under the hyperglycemic microenvironment of diabetes.

Methods: The 4-8 generation of rat retinal vascular endothelial cells (rRMECs) and ganglion cells (RGC) were co-cultured in the Transwell (0.4 µm), and cells were divided into the low glucose and high glucose concentration groups. Cell morphology was observed by fluorescence inverted microscope imaging, Cell Counting Kit-8 (CCK-8), scratch and transwell migration assay, and the lumen formation assay to detect retinal vascular endothelial cell proliferation, migration, and lumen formation ability. The apoptosis of cells was observed by the PI/Hoechest experiment for both rRMECs and RGC.

Results: The proliferation ability of rRMECs in the high glucose group was significantly increased compared to the low glucose group (P<0.05). However, the activity of RGCs cells in the high glucose group was significantly inhibited; there was a statistical significance in the cell activity of RGCs between the higher and normal

glucose groups (P<0.05). The migration rate of rRMECs was statistically significantly increased in the high glucose group (P <0.05). There was a significant difference in the apoptosis rate of rRMEC and RGC cells between the higher and normal glucose groups (P=0.008, P=0.035).

Conclusions: The establishment of this in vitro system lays the foundation for further research on the interaction between retinal vascular endothelial cells and neurons and their coupling effects under hyperglycemia.

Exploring a Diagnostic Challenge

*First Author: Ayushi **SINHA***
*Co-Author(s): Sushil **KUMAR***

Purpose: To present a seemingly familiar case of long-standing neurosensory detachment.

Methods: A 50-year-old male presented with a diminution of vision in both eyes progressive over the past 20 years, for which the patient had received numerous intravitreal anti-VEGF injections. Ophthalmic workup decreased vision with multiple yellow lesions at the posterior pole with neurosensory detachments. The multimodal imaging, diagnostic dilemma, important differentials and management are to be discussed.

Results: When encountered with atypical response to treatment, the best method is to retrace the diagnosis, thus preventing an onslaught of unnecessary interventions.

Conclusions: The case highlights the diagnostic challenges posed.

Foveal Hypoplasia: A Rare Case

*First Author: Ashma **MANANDHAR***

Purpose: To describe a rare case of foveal hypoplasia.

Methods: A case report of foveal hypoplasia was presented to our hospital.

Results: We present a patient with foveal hypoplasia associated with an underdeveloped fovea and nystagmus with a history of prematurity. Most of the patients with foveal hypoplasia have a decrease in vision.In the current case, the patient had no foveal pit or lengthening of the outer segment of the photoreceptors, both of which correspond to the worst prognosis. Also, the outer nuclear layer widening was not observed. Based on these findings, the patient had grade 4 foveal hypoplasia Re and atypical foveal hypoplasia in LE. However, the BCVA of the patient was 0.4 logMAR in the right eye and 0.1 logMAR in the left eye. A normal axial length, provided by biometry, excluded microphthalmos. Nystagmus was present, but iris transillumination was absent, which eliminates the probability of ocular albinism. Since studies have shown foveal hypoplasia related to retinopathy of prematurity, she doesn't have any ocular features of retinopathy of prematurity except the lattice degeneration in the periphery.

Conclusions: In our patient, RE showed features of foveal hypoplasia grade 4, and LE showed features of atypical foveal hypoplasia. Fundus autofluorescence images also showed an area of hypoautofluorescence in the corresponding fovea.

Fundus Examination as a Tool for Diagnosing an Underlying Systemic Disease

*First Author: Stuti **ASTIR***

Purpose: To emphasize the importance of thorough fundus examination to establish an underlying systemic disease.

Methods: We present two cases where cotton wool spots on fundus examination lead to the diagnosis of underlying disease. Case 1- A 58-year-old presented with BCVA of 3/60 in RE and 6/12 in LE. Fundus examination revealed scarred CNVM in RE and CNVM in LE on a 3-monthly anti-VEGF regime. On careful examination, two cotton wool spots were noted at the inferior arcade. He gave a history of femur fracture and significant weight loss. Blood reports showed anaemia, elevated ESR, and raised calcium levels. Peripheral smear showed monoclonal plasma cells. Chest X-ray showed multiple lytic lesions on the ribs. A diagnosis of Multiple Myeloma was made and chemotherapy was advised. Case 2- A 60-year-old female came for a fundus examination to rule out diabetic retinopathy. Her visual acuity was 6/6 in both eyes. Fundus examination showed multiple cotton wool spots at the posterior pole. FFA was suggestive of proliferative diabetic retinopathy, and was advised laser PRP in both eyes. Two months later, she was diagnosed with Diabetic nephropathy and was advised dialysis.

Results: In both our cases, the presence of cotton wool spots on fundus examination helped us in identifying an underlying systemic disease of Multiple Myeloma and Diabetic nephropathy.

Conclusions: The presence of cotton wool spots out of proportion to retinal findings should not be ignored. Detailed fundus examination aids in diagnosing an underlying disease.

Idiopathic Bilateral Macular Edema With Unknown Risk Factor: A Case Report

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Purpose: To increase awareness in diagnosing idiopathic macular edema in patients without risk factors.

Methods: A rare case report. A 50-year-old female presented with a blurred vision on his right eye for 5

months duration. The patient also complained of an inability to see straight lines (metamorphopsia). She felt itch and stings on her right eye but did not have any redness. The patient did not have any history of diabetes, hypertension, or trauma in her eyes. General physical examinations were normal, with blood pressure 110 / 70 mmHg and random blood glucose 117 g/dL. On ocular examination, the patient had a best corrected visual acuity of 0.4 in the right eye and 1.0 in the left eye and exhibited macular edema on both eyes despite any symptoms in the left eye. Intraocular pressure was recorded normal on both eyes.

Results: Funduscopy was showing macular edema in both eyes, and macular optic coherence tomography (OCT) confirmed the presence of mild diffuse retinal thickening, and cystoid macular edema with subretinal fluid. There is no serous retinal detachment. Perimetric examination shows no abnormality. To rule out other underlying causes, blood tests were done. The laboratory findings were unremarkable. Treatment was given NSAID and acetazolamide eye drops for a month.

Conclusions: Macular edema without risk factors is not a common finding. It is important to consider macular edema in patients with no diabetes or hypertension as their risk factor. Further evaluation is mandatory to find the underlying disease.

Idiopathic Polypoidal Choroidal Vasculopathy (IPCV) Masquerading as Choroidal Melanoma – A Challenging Diagnosis

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Purpose: To report a case of a challenging diagnosis of Idiopathic polypoidal choroidal vasculopathy (IPCV) which mimics choroidal melanoma.

Methods: A case report.

Results: A 43-year-old lady with no underlying medical illness presented with sudden onset of progressive left eye reduced vision associated with eye pain. Vision on the left eye was non perception to light, with positive relative afferent pupillary defect. The anterior chamber showed eight-ball hyphaema, A case report. with intraocular pressure (IOP) of 25mmHg and there was no fundal view. B-scan ultrasonography showed left eye vitreous haemorrhage with retinal detachment. There were unremarkable findings in the right eye. Anterior chamber washout was performed but complicated with continuous bleeding mixed with blood clots from the posterior chamber. Magnetic Resonance Imaging (MRI) orbit findings elicited left eye retinal detachment with subretinal and vitreous haemorrhage which was reported as left choroidal melanoma. The patient had a persistent painful left eye with raised in IOP despite maximum antiglaucoma. Subsequently, left eye enucleation was done. Histopathological examination (HPE) showed soft blackish lesion with no obvious solid mass seen and consisted of dense chronic inflammatory cell infiltrates. There was no nuclear atypia identified. Features were suggestive of Idiopathic Polypoidal Choroidal Vasculopathy.

Conclusions: IPCV can resemble other choroidal diseases depending on the stage of presentation and choroidal melanomas often are unrecognized until some symptoms appear. They may present with non-specific signs which can carry a broad list of differential diagnoses. A high index of suspicion is crucial to attain the correct diagnosis and treatment.

Incidence of Retinal Vascular Occlusion After COVID-19 Infection

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Purpose: To look for the incidence of retinal vascular occlusion after COVID-19 infection.

Methods: Retrospective cohort study with a history of retinal vascular occlusion who were diagnosed with COVID-19 infection between January 20, 2020, and May 31, 2022.

Results: The average biweekly incidence of new retinal vascular occlusions (RAO or RVO) was compared between the pre–COVID-19 infection period (26 to 2 weeks before diagnosis) and the post-infection period (2 weeks before to 26 weeks after diagnosis). A total of 1000 patients with COVID-19 infection were included. The incidence of new RVOs was higher in the 6 months after COVID-19 infection compared with the 6 months before infection. There was an increase in the incidence of RAOs after COVID-19 diagnosis. The peak incidence of RVOs occurred 6 to 8 weeks after COVID-19 diagnosis.

Conclusions: Evidence of increased risk for retinal vascular occlusion associated with COVID-19 infection, due to a combination of vascular damage and risk of higher embolism formation. Clinicians need to consider this factor when evaluating these patients.

Internal Limiting Membrane Detachment in Acute Central Retinal Artery Occlusion- a Case Series

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Purpose: To report the demography, clinical features, and outcomes of 6 patients of acute CRAO with detachment of the ILM.

Methods: A retrospective case series, including all patients with a diagnosis of acute CRAO and a detached ILM. Patients with other retinovascular and macular pathologies were excluded. All the patients

underwent OCT (HRA) macula. The minimum follow-up was 3 months.

Results: Over 3 years, out of 96 patients of acute CRAO, 6 patients were found to have a detached ILM. All 6 patients had macular edema. The mean (SD) of the central macular thickness (CMT), and the maximum macular thickness of the affected eye were 492 (180) and 687 (115) microns respectively. The CMT of the contralateral normal eye was 176 (10) microns. The patients' mean (SD) age was 42 (16) years and all were male patients. Except for one patient with a history of systemic hypertension and CVA, all other patients did not have any systemic illness. Three patients were smokers. Five patients had a presenting vision of either HM or PL, and the final vision was PL in all of them. One patient had a patent cilioretinal artery with a presenting vision of 6/12, which was the same at a 3-month follow-up. No patients developed NVG till the last follow-up at 3 months. Two patients developed CVA and stroke.

Conclusions: ILM detachment in acute CRAO is associated with macular edema, probably resulting from severe ischemia, presents with poor vision, the visual prognosis is bad, and should be cautioned about CVA and stroke.

Low Vision Magnifier Application As Assistive Tool for Patients With Stargardt Disease

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Purpose: Stargardt is a genetic eye disorder that induces macular dystrophy, causing low vision. This case report presents how to manage low vision in Stargardt.

Methods: A 17-year-old girl diagnosed with Stargardt's disease in our hospital complained of progressive vision loss. Her visual acuity was examined with a Snellen chart. Funduscopic examination was performed with a 90D condensing lens, Optical Coherence Tomography (OCT) was carried out to evaluate the macula layer, and a perimetry test was performed to evaluate central vision.

Results: The distance visual acuity on the right eye was 6/150 corrected with S- 2.00 D C- 1.50 D x 120o became 6/75. On the left eye, it was 1/60 corrected with S-1.75 D C-1.00 D x 20o became 6/75. Funduscopic examination showed beaten bronze, along with atrophy on the nasal and central macula, as well as the disappearance of the outer nuclear layer in OCT examination in both eyes. Perimetry examination showed a defect in central vision. Her near visual acuity was 3 M in 22 cm. The patient tried with a hand magnifier, dome, telescope, and magnifier application. With a magnifier application, she could read 1.5 M in 30 cm. The Magnifier application was selected for this patient because very practical.

Conclusions: Stargardt induces central vision loss thus, low vision magnifier was an important device. Magnifier application was selected and prescribed for this patient. The improved visual acuity was obtained to improve the quality of life of the patient.

Management of Retinopathy of Prematurity (ROP): Are We Preferring Intravitreal Injection Anti-VEGF More Than Conventional Laser?

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Purpose: We are practicing intravitreal injection anti-VEGF in type-1 ROP i.e. Aggressive ROP, Stage 3 disease in Zone I and zone II and also in babies with non-dilating pupils and in very sick babies. In recent years we are probably preferring Injection more than conventional laser indirect ophthalmoscope (LIO). We wanted to share our experience in the last two years about the management of ROP in our center.

Methods: A retrospective chart review was done where the use of injection anti-VEGF and laser in ROP babies in 2021 and 2022 was compared. A chi-square test was done to measure the statistical significance.

Results: Out of 50 babies (91 eyes) in 2021, 10 babies (20 eyes) were treated with injection anti-VEGF and 29 babies (50 eyes) with laser. Injection anti-VEGF followed by laser was done in 10 babies (20 eyes). In 2022, a total of 88 babies (133 eyes) were treated. Out of these 41 babies (53 eyes) were treated with Injection anti-VEGF, 28 babies (53 eyes) with laser and 12 babies (18 eyes) with injection anti-VEGF followed by laser. Use of injection anti-VEGf superseded in 2022 than 2021 (53 eyes vs 20 eyes) which was statistically significant (P=0.005). Laser treatment is declining in 2022 than in 2021 but it failed to achieve any significance.

Conclusions: The use of injection anti-VEGF in the management of Type-1 ROP is gaining popularity as it is easier for surgeons. But the long-term safety and consequences are unknown. So we should be judicious to use this controversial drug.

Multi-Modal Imaging of Pigmented Free Floating Vitreous Cyst

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Purpose: To describe the case with a pigmented vitreous cyst on fundus photographs, autofluorescence, and red-free imaging.

Methods: A 35-year-old male patient complaining of floaters and disturbance in vision during eye movements in the right eye was examined.

Results: A pigmented cystic lesion, non-lobulated lesion was noted. The lesion had few areas of pigmentation and few areas of fluid-filled vacuoles.

The lesion was freely mobile with eyeball movements. Fundus photographs, autofluorescence, and red-free imaging were done to see any abnormal pattern.

Conclusions: Congenital vitreous cysts are usually benign lesions. Differential diagnosis from other vitreous cysts requires careful clinical examination and laboratory investigations.

Multimodal Analysis on Clinical Characteristics of the Advanced Stage in Myopic Traction Maculopathy

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Purpose: To investigate the clinical features of foveal detachment (FD), full-thickness macular hole (MH), and macular hole retinal detachment (MHRD) in myopic traction maculopathy (MTM).

Methods: In the retrospective observational case series, 314 eyes of 198 patients with myopic retinoschisis were enrolled. We recorded gender, age, axial length and evaluated fundus characteristics. Epiretinal membranes (ERMs), vitreoretinal traction, and paravascular abnormalities (PVAs) described the vitreoretinal interface condition. Different retinoschisis layers (inner, middle, and outer retinoschisis) and the location with a range of outer retinoschisis were evaluated to reveal the retinal condition. Five patterns of the scleral shape: dome-shaped, sloped toward the optic nerve, symmetrical or asymmetrical around the fovea, and irregular showed retina-sclera condition. We regarded the FD, full-thickness MH, and MHRD as the advanced stage in MTM. Multivariate logistic regression assessed significant factors for the advanced stage.

Results: There were 76 eyes with FD, 6 with full-thickness MH, and 7 with MHRD. In univariate analysis, the eyes with the advanced stage were older and had higher rates of ERMs, PVAs, middle retinoschisis, outer retinoschisis, and irregular sclera shape. The number of retinoschisis layers and the grade of outer retinoschisis were higher in eyes with the advanced stage. After multivariate logistic regression, ERMs (OR, 1.983; $P = 0.024$), middle retinoschisis (OR, 2.967; $P < 0.001$), and higher grades of outer retinoschisis (OR, 2.227; 95% CI, $P < 0.001$) remained associated with the advanced stage.

Conclusions: ERMs, middle retinoschisis, and more extensive outer retinoschisis were significant characteristics of the advanced stage in MTM.

Novel Variants in CLN3 Associate With Juvenile Neuron Ceroid Lipofuscinosis and Isolated Cone-Rod Dystrophy

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Purpose: To determine the causative variants in the CLN3 gene in two Chinese families with juvenile neuron ceroid lipofuscinosis (JNCL) and isolated cone-rod dystrophy (CRD) respectively, and to analyze the correlation between the clinical phenotypes and the pathogenic variants.

Methods: Ophthalmology examinations were performed on three affected individuals from two families. Whole exome sequencing was performed on the probands. Bioinformatics analysis, Sanger sequencing and co-separation verification were performed. The pathogenicity analysis of the variants was carried out according to the ACMG guidelines. 3-D protein structure was predicted with online software.

Results: All patients showed vision loss in both eyes. Patients in the family F1 also showed epilepsy and abnormal cardiac function. We detected two compound heterozygous variants of the CLN3 gene in each of the two families, including a novel missense variant c.982G>C (p.Ala328Pro), two novel nonsense variants c.104G>A (p.Trp35X) and c.263C>G (p.Ser88X), and a splicing variant c.963-13A>G. In addition, we detected a novel nonsense variant c.2526C>G (p.Tyr842X) in MYBPC3 in family F1. All the variants were co-segregated with phenotype in the two families. Three CLN3 protein residues (Trp35, Ser88, Ala328) were highly conserved in different species. According to ACMG guidelines, the variant c.963-13A>G in CLN3 was uncertain significance, the other four variants were likely pathogenic. Protein structure was modified by the variants.

Conclusions: Four compound heterozygous variants in CLN3 and a heterozygous MYBPC3 variant were identified in a JNCL and isolated CRD families. Our findings expanded the mutational and phenotype spectrum associated with CLN3 in the Chinese population.

OCT Biomarkers and Anti-VEGF Treatment in Patients With Neovascular Age-Related Macular Degeneration in University of Malaya Medical Centre – A Real-world Experience

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Purpose: To identify the clinical profile and optical coherence tomography (OCT) biomarkers of neovascular age-related macular degeneration (nAMD) and to evaluate the real-world outcomes in a Malaysian university hospital.

Methods: This was a cross-sectional observational study conducted at the University of Malaya Medical Centre (UMMC), involving nAMD patients treated with anti-VEGF from 2017 to 2021. OCT biomarkers studied were subretinal fluid (SRF), intraretinal fluid (IRF), pigment epithelial detachment (PED), subretinal hyperreflective material (SHRM) and macular haemorrhage. Treatment burdens were assessed by the number of injections and clinic visits.

Results: The prevalence of nAMD in UMMC was 1.25% with 200 patients (226 eyes) included. The mean age was 73.4±8.8 years and both genders were equally distributed. Chinese (59.0%) were the most predominant, followed by Malays (21.5%), and Indians (19.0%). The mean best-corrected visual acuity (BCVA) was 0.854±0.682 at baseline and 0.790±0.641 at year 1. The median central subfield thickness was 319.8 (141.3)um and 275.5 (105.3)um at baseline and year 1 respectively. Post-treatment at year 1, there were improvements in SRF, IRF, PED, SHRM, and macular haemorrhage ($p<0.005$). IRF was found to be difficult in achieving complete resolution and SHRM gradually worsened after 1 year. Low rates of clinic visits (6.7) and anti-VEGF injections (4.3) at year 1, low adherence to loading doses (61.9%), and structural changes due to geographical atrophy (19.9%), subretinal fibrosis (29.6%) and ellipsoid zone disruption (12.4%) led to poorer visual outcomes.

Conclusions: Various clinical profiles and OCT findings could predict treatment outcomes in a real-world context. Suboptimal care and disease progression remain unmet needs.

Ocular Syphilis: Prozone Phenomenon

*First Author: Li Faung **TAN***
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Purpose: To report a rare occurrence of prozone phenomenon in ocular syphilis.

Methods: Case report.

Results: A 24-year-old male with newly diagnosed HIV presented with a two-week history of bilateral progressive blurring of vision preceded by floaters. He also has multiple maculopapular rashes on the soles of his feet. Visual acuity over the right eye (OD) and left eye (OS) was counting finger and hand movement respectively. Ocular examination revealed bilateral panuveitis with mild anterior chamber activity, bilateral swollen optic discs, vitritis and multiple choroiditis. Ocular syphilis was strongly suspected and the patient was subjected to Venereal Disease Research Laboratory (VDRL) testing which was non-reactive. As suspicion of ocular syphilis was high, we requested a repeat VDRL sample with higher dilution and it was reactive with a titre of 1:256. Treponemal pallidum particle agglutination was positive. The patient refused lumbar puncture. Thus, he was commenced on intravenous benzylpenicillin. Despite developing Jarisch Herxhemier reaction (JHR) during treatment, antibiotics were continued and JHR was eventually resolved. He showed good clinical response upon completion of two weeks of antibiotics with the best corrected visual acuity of 6/24 (OD) and 6/9 (OS), respectively.

Conclusions: It is important for clinicians to consider the prozone phenomenon in patients with clinical signs suggestive of syphilis despite a negative serological test to prevent delay in treatment.

Ocular involvement in Primary Central Nervous System Lymphoma: A Case Report

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Purpose: To report a case of primary central nervous system (CNS) lymphoma in an immunosuppressed patient presenting with initial ocular manifestation.

Methods: A case report.

Results: A 42-year-old lady with positive Human Immunodeficiency Virus (HIV) came to us with the initial complaint of binocular diplopia for two days duration. On examination, visual acuity was 6/6 with right ptosis and limited extraocular movement. The right pupil was fixed, 4mm dilated. Posterior segment findings were unremarkable. She was then thought to have a posterior communicating artery aneurysm, but respective imaging showed normal results. After two weeks, she progressed to have slurred speech with upper and lower limb weakness. Ocular examination revealed right-eye mild proptosis and left-eye lateral gaze restriction. Fundus examination showed discrete, multiple choroid and retinal lesion occupying the whole nasal region. Magnetic Resonance Image (MRI) of the brain and orbit revealed multiple brain hyperintense lesions, bulky extraocular muscles and perineural enhancement of the optic nerves. Diagnosis was confirmed by biopsy of globus pallidus which showed diffuse large B-cell lymphoma. After ten days post-biopsy, this patient further deteriorated and succumbed to death.

Conclusions: Primary CNS lymphoma carries a life-threatening risk. Due to its various clinical manifestations, establishing the diagnosis is very challenging. A high index of suspicion is crucial in immunosuppressed patients presenting with non-specific neurological and ophthalmic symptoms. Ideally, brain biopsy should not be delayed in establishing diagnosis and early initiation of treatment.

Off Label Use of Intravitreal Brolucizumab in Peripapillary Inflammatory Choroidal Neovascular Membrane

*First Author: Ruchir **TEWARI***

Purpose: To describe the safety and efficacy of intravitreal Brolucizumab in 3 eyes of 2 patients with

peripapillary inflammatory choroidal neovascular membrane.

Methods: This is a retrospective short case series describing the use of intravitreal Brolucizumab in cases of peripapillary inflammatory choroidal neovascular membrane. The first patient is a 42-year-old female with a history of peripapillary choroiditis in both her eyes that started 4 years ago. It resolved with oral corticosteroids, however, she later developed bilateral peripapillary choroidal neovascular membrane for which she was injected with 14 Ranibizumab and 4 Aflibercept injections, in each eye over a period of 3 years. She was shifted to intravitreal Brolucizumab in both her eyes and has been disease-free for more than 14 months since. The second patient is a 30-year-old female who was diagnosed with peripapillary neovascular membrane after an episode of posterior scleritis 6 months back. She received one injection of Brolucizumab and has been disease-free for 12 months.

Results: Both patients showed remarkable response to intravitreal Brolucizumab with long-term disease remission and no incidence of complications after a single injection.

Conclusions: Brolucizumab may be a viable alternative to other anti-VEGF agents in cases of difficult-to-treat inflammatory peripapillary CNV. Despite the concerns of intraocular inflammation, the drug may be offered to selected patients for long-term disease remission.

Ophthalmological Manifestations of Scrub Typhus From a Large Tertiary Care Center

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Purpose: Scrub typhus is one of the commonly reported tropical fevers in North India. For the first time, we report ocular manifestations in patients with Scrub typhus from the emergency department.

Methods: This study was conducted on 104 hospitalized patients diagnosed with Scrub typhus from July 2021 to October 2022, and 17 patients were excluded from the study because of co-infection (2 patients had malaria and 15 had dengue positive). All clinical, ophthalmological, and laboratory parameters of the patient were recorded. They also underwent detailed ophthalmic examination, including fundus examination using Welch Allyn PanOptic ophthalmoscope with iExaminer adapter. We correlated the patient's morbidity and mortality with ophthalmological manifestations. We followed up with patients with positive findings to establish whether the changes were permanent, temporary, or worsening.

Results: The mean age was 34.6 years; female patients (53.9%) were affected more. 23 patients had eye manifestations (3 – subconjunctival hemorrhage, 3 – nystagmus, 3 – 6th nerve palsy, 3 – keratitis, 6 – retinal hemorrhage, 2 – cotton wool spots, and 5 – papilledema). Patients with eye manifestations had 3.5 times higher mortality risk than those without (p-value 0.040, OR 3.53). Most of the ocular manifestations were spontaneously resolved at three months.

Conclusions: Scrub typhus patients can have eye manifestations with both anterior and posterior segment involvement during the acute phase of the illness. Patients with ocular involvement had significantly increased mortality risk compared to others. In scrub typhus, ophthalmic evaluation should be a part of the examination during the acute phase of the illness.

Pathogenicity and Functional Analysis of CFAP410 Mutations Causing Cone-Rod Dystrophy With Macular Staphyloma

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Purpose: Cone-rod dystrophy caused by mutations in CFAP410 is very rare. The mechanisms by which the mutations caused the disease remain largely unknown. We explored the pathogenicity and performed functional analysis of two compound heterozygous CFAP410 mutations identified in a cone-rod dystrophy with macular staphyloma patient and explored the underlying mechanisms.

Methods: A 6-year-old boy complained of decreased vision and underwent ocular examinations together with a systemic X-ray check. A blood sample was taken for WES gene sequencing. The pathogenicity of identified mutations was determined by ACMG guidelines. Mutated plasmids were constructed and transferred to HEK293T cells. Cell cycle, protein stability and degradation, and protein ubiquitination level were measured.

Results: The best-corrected visual acuity was 0.25 bilaterally. Fundus showed uneven granular pigment disorder in the periphery of the retina. SS-OCT showed thinning and atrophy of the outer retina, residual ellipsoid bands in the fovea, and macular staphyloma. Both scotopic and photopic ERG responses were severely reduced. Two heterozygous missense mutations, c.319T >C (p.Tyr107His) and c.347C>T (p.Pro116Leu) in exon 4 of the CFAP410, were pathogenic by the ACMG guideline. In vitro, mutations affected a highly conserved residue could affect cell cycle. Immunofluorescence and Western blotting showed that the mutant proteins decreased protein stability but increased protein degradation. Meanwhile, CO-IP data suggested that the ubiquitination level was altered in the mutated plasmids-transferred cells.

Conclusions: Compound heterozygous CFAP410 mutations c.319T >C and c.347C>T in CFAP410 caused cone-rod dystrophy with macular staphyloma. The pathogenic mechanisms may be associated with

alternations of protein stability and degradation through the ubiquitin-proteasome pathway.

Patient-Centered Outcome Measures in Age-Related Macular Degeneration for Use in Research and Clinical Practice: A Systematic Review

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Purpose: To summarize and assess the most common performance-based measures of activities of daily living (patient-centered outcome measures (PCOMs)), used in studies for the assessment of visual function (VF) in age-related macular degeneration (AMD).

Methods: A systematic literature search identified studies that used PCOMs to assess VF in AMD patients published from January 2015 to December 2022. Two researchers screened studies for eligibility and quality using the Mixed Methods Appraisal Tool (MMAT) 2018 (1=poor; 5=good). All studies available in English, involving participants with any severity of AMD, which used PCOMs for the assessment of VF were included.

Results: Out of 401 studies, 32 were eligible with good MMAT scores (mean 3.72). The most commonly studied PCOM was reading (11/32=34.4%), and 3 of the 11 studies (27.3%) showed that various stages of AMD were associated with impaired reading ability. Studies reported that AMD negatively affects cognition/memory (5/32=15.6%), visual search and exploration (5/32=15.6%), and mobility and physical activity levels (5/32=15.6%). Validation for the PCOMs used was only performed in 1/32 (3.1%) of the studies.

Conclusions: Performance-based PCOMs are still not widely used to assess the impact of AMD on VF. Although most of the studies using PCOMs scored well on the MMAT, only one reported validation data for the PCOMs used. We propose a framework for the validation of PCOMs, to improve their potential for use as outcome measures in future studies.

Patterns of Retinal Changes in Patients With Pregnancy-Induced Hypertension (PIH) in a Level III Government Hospital

*First Author: Jemeson **TIBURAN***
*Co-Author(s): Rachelle **ANZURES***

Purpose: To determine the patterns of retinal changes in patients with pregnancy-induced hypertension (PIH) and any association with age, gravidity, duration of pregnancy, blood pressure, proteinuria, and severity of PIH.

Methods: This is a retrospective cross-sectional analytical study which included all admitted patients diagnosed with PIH referred to Ophthalmology. A chart review was done and the parameters retrieved were the patient's age, gravidity, gestation period, blood pressure, proteinuria, severity of PIH, and indirect ophthalmoscopic findings. Statistical analysis was done using R studio.

Results: A total of 614 patients were analyzed. The mean age of patients was 31.6 years. Most of the women were beyond 32 weeks age of gestation (86.81%), multigravid (76.23%), with a blood pressure of >160/100 (41.69%), and diagnosed with gestational hypertension (42.35%). About 16% of the patients had proteinuria. The week duration of pregnancy, blood pressure, severity of PIH, and presence of proteinuria are significantly associated with retinal changes ($p<0.001$).

Conclusions: The majority of the patients diagnosed with PIH are more than 30 years old, multigravid, beyond 32 weeks age of gestation, hypertensive with a blood pressure of <160/100, and diagnosed with gestational hypertension. Retinal findings associated with PIH included hypertensive retinopathy, hypertensive choroidopathy, and exudative retinal detachment. In patients whose pregnancy is beyond 32 weeks or with gestational hypertension, the odds of having retinal changes are lowered. Retinal changes are more frequently seen in patients with a blood pressure of >160/100, Preeclampsia and Eclampsia Syndrome, Preeclampsia superimposed on chronic hypertension, and the presence of proteinuria.

Phenotypic and Genotypic Characterization of Patients With Retinitis Pigmentosa in a Tertiary Hospital in Makati, Philippines

*First Author: Tamilyn Chelsea **LADDARAN***
*Co-Author(s): Manuel Benjamin **IBANEZ**, Marianne Grace **NAVARRETE***

Purpose: To determine the phenotypic and genotypic characterization of individuals with retinitis pigmentosa (RP), identify their genetic etiologies, and provide genetic counseling.

Methods: This non-interventional observational research study investigates the genetic basis of RP by collecting medical information and DNA specimens from individuals with suspected RP. Eighteen patients from 15 unrelated families were included. Blood samples were extracted, and genetic variants were identified using next-generation sequencing. All patients underwent a complete medical interview and ophthalmological examination, as well as fundus photo and autofluorescence, and optical coherence tomography. The genetic testing results were interpreted and explained during genetic counseling. The data collected were analyzed for statistical measurement.

Results: Ten genes with 22 variants were identified. Genetic testing showed the most common mutation was in EYS (27.8%), followed by FAM161A, USH2A, RGS7, and CNGB1 (11.1% each). Mutations in BBS5, FLVCR1, PDE6A, RPGR, and SPP2 (5.5% each) were also

found. Mutations in all of these genes are known to cause RP, except RGS7. All of the patients presented with characteristics of classic RP. Those patients with mutations in USH2A and BBS5 showed syndromic features as well.

Conclusions: The study revealed 10 causative genes from 15 families through next-generation sequencing, with the identification of 1 potential novel gene, RGS7, within 1 family. Additionally, novel variants of CNGB1 and BBS5 were detected in 2 families. Given the genetic heterogeneity of RP and the limited research conducted in the Filipino population, further studies are necessary to advance our understanding of the genetic causes of RP in Filipinos.

Practice Patterns and Preferences in the Management of Age-Related Macular Degeneration Among Vitreo-Retina Specialists in the Philippines

*First Author: Reny Rose **SABADO***
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Purpose: To determine the prevailing practice patterns and preferences in the management of age-related macular degeneration (AMD) among vitreo-retina specialists in the Philippines.

Methods: Vitreo-retina specialists practicing in the Philippines were provided a link to a validated online questionnaire from February 2023 to April 2023. Data were analyzed using frequency and percent distributions.

Results: A total of 114 vitreo-retina specialists participated. The majority inquired about smoking status (97.3%) and gave cessation advice (99.1%). A high percentage provided dietary advice (94.7%) consisting of omega-3-rich food and green, leafy vegetables. Most started oral antioxidant vitamin and mineral supplements in patients with unilateral intermediate AMD (83.2%). Preparations containing the Age-Related Eye Disease Studies formula were the most prescribed (26.1%). Anti-vascular endothelial growth factor (anti-VEGF) was the preferred treatment for active subfoveal (77%), juxtafoveal (66.4%), and extrafoveal (68.1%) choroidal neovascularization. Bevacizumab was the most commonly administered (72.6%) agent, while aflibercept (83.2%) was the most preferred. Affordability was the main reason behind the disparity. The majority follow the treat-and-extend (58.4%) over the pro re nata protocol (38.9%). Sixty percent evaluate visual acuity (VA), fluid compartment, and retinal hemorrhages post-injection. Persistence or minimal reduction of fluid was the most significant parameter in evaluating response. Most preferred switching to another anti-VEGF agent whenever the response was poor (86.7%) to none (80.5%). The most common indication for low vision referral was difficulty in performing activities in daily life regardless of VA.

Conclusions: The practice patterns and preferences of vitreo-retina specialists in the Philippines conform with internationally accepted standards of care in AMD management.

Protective Effect of Curcumin-Nanoparticles on Retina in a Rat Model of Ischemia-Reperfusion Injury

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Purpose: To investigate the protective effect of Curcumin (Cur)-carbon quantum dots (CQDs) on the retina from injury after ischemia-reperfusion injury.

Methods: Intravitreal injection (IVI) of either Cur-CQD 100 mg/ml, curcumin 100mg/ml, or phosphate balanced solution (PBS) was performed in the right eye in each mouse 3 days before ischemia-reperfusion (I-R) injury. Retinal tissues were harvested 24 hours after I-R injury for analysis of apoptosis. Meanwhile, electrical retinography (ERG) was performed one week and 4 weeks after injection of Cur-CQDs for assessment of safety.

Results: Less apoptotic cells were detected in the retina treated with Cur-CQD (6.8 ±1.8 cells/field) compared to the retina treated with PBS (21.8±2.4 cells/field) and curcumin (14.3±2.2 cells/field), respectively (P=0.039, N=11). Seven days after IVI of PBS in the right eye and Cur-CQD in the left eye, there was no statistical difference in the amplitude of ERG-a wave (P = 0.186, N=5) and -b wave (P = 0.786, N=5) between PBS-injected eyes and Cur-CQD-injected eyes. Similarly, twenty-eight days after IVI of PBS in the right eye and Cur-CQD in the left eye, there was still no statistical difference in the amplitude of ERG-a wave (P = 0.354, N=5) and -b wave (P = 0.556, N=5) between these two groups.

Conclusions: There was good penetration of Cur-CQDs into retinal tissues 3 days after IVI. Cur-CQDs provided better retinal protection from injury after I-R injury than curcumin. ERG showed no dysfunction of the retina 7 and 28 days after injection of Cur-CQDs.

Purtscher-Like Retinopathy in Patients With Systemic Lupus Erythematosus (SLE): Ocular Manifestations

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Purpose: To report a clinical characteristic of Purtscher-like retinopathy (PLR) associated with systemic lupus erythematosus (SLE).

Methods: This is an observational case series of two female adults.

Results: Two females presented with a gradual onset of vision loss for 4 weeks. They were diagnosed with SLE and had no history of trauma. Case 1. The best corrected visual acuity (BCVA) was 20/100 in the right eye and hand movement in the left eye. Case 2. BCVA was hand movement in the right eye and counting fingers in the left eye. Both cases had a normal anterior segment with similar dilated fundus and optical coherence tomography (OCT) findings. Fundus examinations revealed cotton-wool spots, intraretinal haemorrhages, Purtscher flecken, and optic nerve atrophy. OCT showed hyperreflective lesions and macular oedema. The first patient was treated with corticosteroid and hydroxychloroquine, with the visual acuity improved after 3 months of treatment. Meanwhile, the second patient who was given methotrexate remained the same. These cases presented poor visual acuity caused by extensive retinal ischaemia shown as Purtscher Flecken, along with macular oedema and optic nerve atrophy. The cofounding of optic nerve atrophy and pseudo cherry red spot indicated the chronic condition of a thrombotic vaso-occlusive phenomenon involving arterioles of the retinal and optic nerve, leading to axonal necrosis.

Conclusions: Purtscher-like retinopathy is the most severe form of lupus retinopathy, with uncommon features among SLE patients. Therefore, ophthalmologists and immunologists should be aware of any ocular manifestation of SLE patients especially PLR.

Quantitative Analysis of Color Change After Intravitreal Anti-VEGF Injections for Small- and Medium-Sized Retinal Capillary Hemangiomas and Vasoproliferative Tumors

*First Author: Cheng-kuo **CHENG***

Purpose: Retinal angiomas are full of vascularity and red in color. After intravitreal anti-VEGF injection (IVI), the angiomas get white. We use the RGB-based model to quantify the brightness value, red ratio and area of retinal angiomas after intravitreal anti-VEGF injection.

Methods: The brightness value, defined as white intensity in our study, is the mean of the RGB value. The red ratio was the red value divided by the sum of green and blue values. Both white intensity and red ratio were divided by reference value to get the calibrated index. The lesion area was divided by disc area to get the lesion-disc area. We compare the white intensity index, red index and calibrated lesion area before and after anti-VEGF injection.

Results: There were 8 patients, 8 eyes (4 were VPT, and 4 were VHL) with retinal hemangioma. After anti-VEGF, the vascularity of angiomas decreased, and the color turned from red to white. Totally, white intensity index increased from 1.34 (±0.33) to 1.51 (±0.29) after IVI (P=0.002), and red index decreased from 1.14 (±0.43) to 0.85 (±0.15) after IVI (P<0.001). In VPT group, white intensity index increased from 1.17 (±0.20) to 1.36 (±0.13) after IVI (P=0.014) and the red index decreased from 1.39 (±0.71) to 0.87 (±0.16) after IVI (P=0.087). In VHL group, the white intensity index increased from 1.41 (±0.36) to 1.58 (±0.32) after IVI (P=0.019) and the red index decreased from 1.04 (±0.2) to 0.84 (±0.16) after IVI (P<0.001). The lesion-disc area ratio was significantly decreased in all groups.

Conclusions: IVI can reduce the vascularity of angiomas and facilitate subsequent laser treatment. This effect is more prominent in the VHL group than in the VPT group.

Rare Case of Central Retinal Vein Occlusion in a 15-Year-Old Boy as Presenting Symptom of Protein S Deficiency

*First Author: Sneha **BATRA***
*Co-Author(s): Deepak **AGARWAL***

Purpose: To report a rare case of central retinal vein occlusion (CRVO) in a 15-year-old boy as presenting symptoms of protein S deficiency.

Methods: A 15-year-old boy presented to our hospital with sudden painless dimness of vision in his left eye since one week. He was diagnosed elsewhere with optic neuritis and started on oral steroids (prednisolone 60 mg tablet). His best corrected visual acuity was 6/6, N6 in the right eye, and 6/18, N10 in the left eye (LE). Intraocular pressure was 18 mm Hg in both eyes. Fundus examination in the left eye showed CRVO with macular edema. OCT LE confirmed macular edema with subretinal fluid, central subfield thickness (CST) 562 micron. He was advised to have an intravitreal ranibizumab injection in the left eye. Oral steroid was tapered weekly. Blood tests to rule out coagulation abnormalities were prescribed.

Results: The patient did not take the injection, and came for a checkup after 1 week. Vision had improved to 6/12, N8 in the left eye. OCT revealed a significant reduction of intra retinal fluid, persistence of subretinal fluid, CST 299 micron. Blood tests showed protein S deficiency, for which he was prescribed warfarin by a hematologist. He was continued on tapering oral steroids only, and after 10 days, vision improved to 6/6, N6 with flat foveal contour on OCT, CST 214 microns.

Conclusions: Protein S deficiency can be a rare cause of CRVO in a young patient. The condition may resolve without anti-VEGF injection. Oral steroids may have a role in treatment.

Real-world Experience of the Anti-vascular Endothelial Growth Actor (VEGF) Agent – Intravitreal Faricimab (IVF) in Age-Related Macular Degeneration (AMD): A Case Report

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Purpose: IVF has shown non-inferiority to ranibizumab and aflibercept in clinical trials. However, real-world data and the effect of IVF on treatment-resistant AMD patients are lacking. We evaluate the efficacy and safety of faricimab in subretinal fluid refractory to multiple injections of bevacizumab, ranibizumab and aflibercept in patients with polypoidal choroidal vasculopathy (PCV) and neovascular AMD.

Methods: PCV patient had persistent subfoveal subretinal fluid (SRF) and temporal pigment epithelial detachment (PED). This patient received 3 injections of bevacizumab, 17 injections of ranibizumab, photodynamic therapy, and focal laser. The patient with neovascular AMD had fibrovascular PED with SRF and was treated with 10 injections of bevacizumab, 6 injections of ranibizumab and 12 injections of aflibercept at 6 to 8 weekly intervals. Both patients' BCVA was 6/9 prior to faricimab injection and each received 6mg/0.05ml of IVF.

Results: At 4 weeks review, PCV patient had complete resolution of subfoveal SRF with flattening of temporal PED. This effect was maintained even after the patient reverted back to ranibizumab. Patient with fibrovascular PED showed complete resolution of SRF at 6 weeks and achieved treatment extension till 12 weeks. This effect was not achieved with aflibercept, which was needed 8 weekly. Both patients' BCVA improved to 6/6 after IVF.

Conclusions: Faricimab showed good efficacy in both AMD patients with recalcitrant fluid without recurrence of fluid after reverting back to pre-IVF drug; and achieved treatment extension. Faricimab, with its dual inhibitory effect on both VEGF-A and Ang-2, should be an option to consider in patients with treatment-resistant fluid in AMD.

Retinal Break and Vitreous Hemorrhage After Snorkeling: A Case of Unexpected Travel Accident

*First Author: Dian Listyanti Utami **GUSTI AYU***

Purpose: Snorkeling is one of the underwater tourism activities that is often carried out by foreign tourists visiting Bali. Underwater/breath-holding activities can trigger several eye injuries, including retinal breaks, detachments, and vitreous bleeding, especially in patients who have predisposing conditions.

Methods: Case illustrations. A 54-year-old female from Germany complained of blurred vision in her left eye and seeing flashes of light 1 day after snorkeling. The visual acuity (VA) was CF 1m, and the fundus examination showed vitreous hemorrhage and retinal break in the supero nasal region. Patient with a history of surgery and laser due to retinal detachment in the right eye in 2019. Vitrectomy surgery was performed for the treatment of the patient, with 1300 silicone oil tamponade. The first day VA was improved at CF 2.5 and the retina attached. The patient returned to her home country 4 days after surgery and continued treatment there.

Results: The use of eye masks and holding breath in underwater activities such as snorkeling can trigger changes in eye pressure, which in patients with a predisposition to retinal disorders will trigger breaks, retinal detachment, and vitreous hemorrhage. Not many studies have reported this incident, and the mechanism that occurs is still being debated.

Conclusions: Retinal breaks and vitreous hemorrhages are unwanted events and can occur while traveling. The importance of a thorough examination of the eyes, including the retina, before carrying out underwater activities is recommended, especially in patients with a previous history of retinal detachment.

Revolutionizing Intravitreal Injection Clinics: Elevating Care and Efficiency

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Purpose: Intravitreal injections (IVI) are common procedures in ophthalmology clinics, with patient numbers steadily increasing every year. The IVI clinic faces numerous obstacles that compromise patient care quality. This audit aims to optimize clinic flow through quality improvement.

Methods: Two audit cycles were conducted. The first cycle analyzed intravitreal anti-vascular endothelial growth factor (anti-VEGF) therapy receiving patients from October to December 2022; the second cycle, patients from February to April 2023. Interventions implemented over a month included introducing a documentation template, incorporating a nurse for pre-procedure vital signs checking, and dispensing post-procedure antibiotic eyedrops.

Results: The doctors saw a mean of 14 patients daily, with each consultation lasting 10 minutes in a 140-minute session. The high patient volume resulted in only 73% complete documentation, affecting treatment planning. Tedious assessment and documentation during consultations increased doctors' workloads, extended visit duration, and hindered clinic flow. The re-audit showed increased clinic efficiency with a shorter clinic session (120 minutes), reduced patient waiting times (3 minutes), and increased patients seen per session (17). Complete and accurate documentation rates increased (96%).

Conclusions: Despite a heavy patient load, these interventions drove quality improvement in the IVI clinic. Thus, this audit provides valuable insights for optimizing clinic performance in similar settings across different centers.

Sensing the Invisible: Pachychoroid Neovasculopathy in a 45-Year-Old Filipino Female

*First Author: Neiman Vincent **BARGAS***

Purpose: Pachychoroid neovasculopathy (PNV) is a rare condition under pachychoroid spectrum disorders. It involves the thickening of the choroid and the development of choroidal neovascularization (CNV). The disease occurs in middle-late adulthood and causes serious visual impairment. The main objective is to raise awareness among ophthalmologists about PNV by highlighting its clinical features, diagnostic challenges, and treatment.

Methods: The significance of early detection and appropriate management is crucial in preventing irreversible vision loss in affected individuals.

Results: A 45-year-old Filipino female presented black spots on the left eye for 5 days. Visual acuity was 20/30 in the left eye. The anterior segment was unremarkable. The fundus revealed a white chorioretinal lesion surrounded by a blister-like elevation over the macula. Optical coherence tomography (OCT) showed subretinal hyperreflective material (SRHM) at the subfoveal area, subretinal & intraretinal fluid and dilated outer choroidal vessels with a subfoveal choroidal thickness of 408 µm. Fluorescein angiography showed pooling of SRHM. Initially, started with ketorolac eye drops and trimethoprim sulfamethoxazole and worked up for Toxoplasmosis. Toxoplasma serology revealed negative. Treatment switched to spironolactone. After 1 week, an orange nodule lesion was seen. Indocyanine green angiography showed choroidal hyperpermeability without CNV or polyps. On OCT angiography (OCTA), CNV was visualized. The patient was subsequently treated with an aflibercept injection.

Conclusions: In a case involving a diagnosis dilemma, OCTA detected a small plaque of CNV. This showcases the role of advanced technology in identifying subtle signs. In PNV, CNV develops in the eyes with pachychoroid features. Clinical examinations and imaging modalities are crucial to timely diagnosis. Understanding PNV and optimizing its management strategies require further research.

Severe Proliferative Retinopathy Following Pregnancy in a Young Female With Antiphospholipid Syndrome and Type 1 Diabetes Mellitus

*First Author: Oscar Jr **ACOPIADO***
*Co-Author(s): Jose Carlo **ARTIAGA***

Purpose: Antiphospholipid syndrome (APS) is an autoimmune disease that may present with venous and arterial vaso-occlusive retinopathy, retinal vasculitis and ischemic optic neuropathy. Diabetes mellitus likewise poses microvascular damage and can lead to retinal ischemia and proliferative retinopathy. Pregnancy exacerbates vasculopathy, can increase the risk of vaso-occlusive retinopathy, and can cause progression of occult diabetic retinopathy. We aim to report on a case of proliferative retinopathy in a patient with a combination of these disease states.

Methods: Case report.

Results: A 30-year-old Asian female with well-controlled type 1 diabetes mellitus and obstetric APS with a recent poor obstetric history was referred to our service for baseline examination. The patient had no ocular complaints. Visual acuity for both eyes was 20/20 with normal pupil examination and normal Amsler grid findings. Anterior segment examination was unremarkable, with no iris nor angle neovascularization. Intraocular pressure was normal. Fundoscopy showed intraretinal and preretinal hemorrhages, hard exudates, venous tortuosity, arteriolar sclerosis and narrowing, and large areas of peripheral sea-fan neovascularization encroaching the posterior pole. Fluorescein angiography revealed large areas of peripheral nonperfusion and confirmed neovascularization. OCT angiography showed increased foveal avascular zone acircularity in the superficial and deep vascular plexuses bilaterally. The patient underwent panretinal photocoagulation for both eyes.

Conclusions: Patients with a combination of APS and diabetes may present with severe retinal ischemia and proliferative retinopathy. This is the first report that shows sea-fan neovascularization in APS and diabetes. Early screening, detection, and recognition must be done to provide the appropriate treatment and prevent the progression of the disease.

Short-term Outcome of Faricimab for Aflibercept-Recalcitrant Neovascular Age-Related Macular Degeneration

*First Author: Cheng-kuo **CHENG***
*Co-Author(s): Jen-yu **LIU***

Purpose: We aim to assess the short-term outcomes of intravitreal injection (IVI) of Faricimab in patients with neovascular age-related macular degeneration (nAMD) who were recalcitrant to Aflibercept, using a treat-and-extend (T&E) regimen.

Methods: We conducted a retrospective chart review of nAMD patients who had previously undergone IVI of Aflibercept with a T&E regimen. A total of 19 eyes of 19 patients were included, all of whom had failed to extend their treatment intervals to ≥ 10 weeks while maintaining a dry macula, as observed through optical coherence tomography (OCT). These patients were subsequently switched to IVI of Faricimab with the same T&E regimen.

Results: After transitioning to Faricimab, the mean BCVA at the last follow-up was 52.05 letters (±22.59) (p=0.76), and the mean CRT measured 219.05 µm (±67.77) (p=0.058). The mean number of IVI Faricimab injections was 3.1 doses (±1.24), and the mean follow-up period after the switch was 15.47 weeks (±4.42). Remarkably, 26.3% of patients succeeded in extending the interval between treatments to ≥ 10 weeks (p<0.05), and no subretinal or intraretinal fluid was observed on OCT.

Conclusions: Patients with nAMD who exhibit recalcitrant to Aflibercept can benefit from switching to Faricimab, experiencing improvements in anatomical outcomes and achieving stability with longer intervals between IVIs.

Single-Cell Transcriptomic Atlas Reveals Tissue Architecture and Deciphers Pathological Reprogramming During Retinal Ischemia in Macaca fascicularis

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Purpose: Acute retinal arterial ischemia diseases (ARAIDs) are ocular emergencies that require immediate intervention within a restricted therapeutic window to prevent blindness. Howbeit, the underlying molecular mechanisms contributing to the pathogenesis of ARAIDs remain enigmatic. Herein, this study aims to present the transcriptomic atlas of ischemic alterations in the primate retina as a preliminary endeavor in understanding the molecular complexities of ARAIDs.

Methods: Single-cell RNA sequencing (scRNA-seq) and bioinformatics analyses were used to detect retinal changes during ischemia. Western blot and flow cytometry were used to testify to the therapeutic function of the chosen target.

Results: The findings of this study reveal notable changes in the retina under acute ischemic conditions. In our study, it was determined that rods experienced significant metabolic reprogramming during retina ischemia, resulting in compromised mitochondrial functions. Moreover, we observed a noteworthy transcriptional alteration in the activation of microglia induced by ischemia. In terms of therapeutic intervention, the targeted correction of the proinflammatory cytokine CXCL8 effectively suppresses M1 polarization in retinal ischemia, ultimately reducing the pro-inflammatory transformation in microglia activated by LPS. In addition, the apoptotic inclination of endothelial cells and the heightened interaction with microglia, which signifies the influence of microglia in disrupting the blood barrier in ischemia condition.

Conclusions: Our research has successfully identified and described the pathological alterations occurring in several significant cell types during a short period of ischemia. These observations provide valuable insights into potential targets for ameliorating retinal damage and promoting the restoration of vision.

Six Shades of Darkness: A Case Series of Retinal Artery Occlusion

*First Author: Sher Minn **TAN***

Purpose: To describe six cases of retinal artery occlusion.

Methods: Case series.

Results: We report 6 cases of retinal artery occlusion occurring within 6 months: two cases of branch retinal artery occlusion (BRAO), one case of cilioretinal artery occlusion, one case of ophthalmic artery occlusion and two cases of central retinal artery occlusion (CRAO). The age range was 34 to 68 years old. Two patients with poorly controlled comorbidities led to retinal artery occlusion posterior to the optic nerve, resulting in no significant improvement in visual acuity. The location of the occlusions may have influenced visual outcomes, as one with CRAO with supraclinoid portion of internal carotid artery occlusion and ophthalmic artery occlusion remained hand movement (HM) post-resuscitation. The timing of resuscitation for all the patients ranged from 4 hours to 30 hours. They received emergent management that included ocular massage, hyperventilation and intravenous acetazolamide injection. Despite their symptom-to-door time being over 4 hours, one patient with CRAO regained visual acuity of 6/9 post-resuscitation, while another patient with CRAO and one with BRAO improved to 2/60 and 1/60, respectively. Antiplatelet medications were initiated.

Conclusions: CRAO is a severe ophthalmological emergency that is equivalent to ischemic cerebral infarction. Immediate efforts should be reinstituted to salvage vision, regardless of the duration of symptoms. The public must be educated about the consequences associated with unmanaged comorbidities and to encourage them to promptly seek medical attention when symptoms occur.

Stargardt Disease: A Rare Case Report

*First Author: Dave **KAMBEY***
*Co-Author(s): Anugrah Handini **MASLOMAN**, Ade **NURSALIM**, Gideon **SUMUAL***

Purpose: To report a Stargardt disease case.

Methods: Report workup for a 14-year-old boy from anamnesis, eye examination, and other supporting examinations.

Results: A 14-year-old young boy presented with chief complaints of blurry vision in both eyes since childhood. Progressive loss in his ability to differentiate between faces, colors and point out details of objects. The patient is the youngest child born premature and has no similar history in his parents and any of his siblings. The patient had a history of febrile convulsion when he was 1 year old, and had no prolonged medical treatment. His visual acuity was 1/60 in both eyes with non-contact tonometry 11mmHg, normal eye movement. The retinoscopy value revealed +2.00 Dsph in both the meridians of both eyes, unable to read plates of the Ishihara chart. Normal red fundal glow in both eyes, optic disc of both eyes were normal. Numerous small whitish flecks were seen around the macula in both eyes, and an ill-defined circular lesion was seen at the macula with a beaten bronze appearance. Supportive therapy such as correction with low vision aids or the provision of sun protective glasses can help in the daily lives of patients.

Conclusions: Stargardt disease is one of the most common causes of inherited childhood visual impairment. Stargardt disease is both phenotypically and genetically highly heterogeneous. Supportive therapy such as correction with low vision aids or the provision of sun protective glasses can help in the daily lives of patients.

Stargardt Disease: A Rare Case Report in Siblings

*First Author: Isha **NIRGUDKAR***

Purpose: Stargardt disease is an inherited macular degeneration that is transmitted in an autosomal recessive or dominant pattern. It is characterized by diminution of central vision, the onset being the first 10-20 years of age. Here, we report a case of 2 siblings in the Asian subcontinent who presented this disease.

Methods: A 34-year-old female came with a history of diminution of vision since childhood, with similar complaints in her sister. She has been on follow-up since she was 7 years of age. Her ocular examination showed a posterior subcapsular cataract with nystagmus. Her macula showed a beaten bronze appearance with disc pallor on dilated fundoscopy.

Results: The patient was advised of OCT macula, which showed retinal thinning and a distortion of the foveal contour. ERG showed reduced 'a' wave amplitude and delayed flicker. Serial visual field testing showed gradual progressive generalized field depression with a severe focal central scotoma.

Conclusions: Stargardt disease needs more genetic testing to be able to detect it at an early stage. Stem cell transplant is an upcoming treatment modality for this disease, and further research can be done on the same.

Syphilis Presenting as Acute Syphilitic Posterior Placoid Chorioretinitis

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Purpose: To report an unusual occasion of acute syphilitic posterior placoid chorioretinitis (ASPPC), which manifested distinctively and was treated with complete visual recovery.

Methods: Case report.

Results: A 49-year-old gentleman with underlying hypertension and newly diagnosed Human Immunodeficiency Virus (HIV) presented with bilateral blurring of vision for the past ten days. He had associated bilateral floaters and eye redness. There were no neurological symptoms. On examination, his vision was 6/60 bilaterally with no improvement in the pinhole. Both eyes had anterior chamber cells of 3+ with anterior vitreous cells of 2+. Bilateral fundus examinations revealed hyperaemic discs with large, round, yellow placoid lesions with curvilinear edges temporal to maculae. Optical Coherence Tomography macula of both eyes showed hyperreflective nodularity of the retinal pigment epithelium with overlying loss of photoreceptor layers. Rapid Plasma Reagin was positive at a titre of 1:128. He was treated for ocular syphilis with fourteen days of intravenous aqueous crystalline Penicillin G four million units every four hours. Upon completion of the antibiotic, his visual acuity in both eyes improved to 6/12, and the placoid lesions in both eyes ultimately resolved.

Conclusions: ASPPC is a rare neurological manifestation of syphilis. The placoid lesions with curvilinear edges are distinctive, and these lesions can resolve entirely with excellent visual recovery if the patient is promptly treated with antibiotics. Ophthalmologists should offer other venereal diseases screening, such as HIV, as there is often co-infection with syphilis.

The Role of Optical Coherence Tomography Angiography in Diagnosing and Monitoring Choroidal Neovascularization

*First Author: Muhammad Adri **MOHAMED SHAFIT***
*Co-Author(s): Adha **FUAAD**, Rafidah **MD SALEH***

Purpose: To report a case of detection and monitoring of Choroidal Neovascularization complex using Optical Coherence Tomography-Angiography (OCT-A).

Methods: Case report.

Results: A 48-year-old female with dyslipidaemia and obesity presented with a sudden three-day history of right eye central scotoma and blurring of vision. The visual assessment measured 1/60 OD

and 6/6 OS. Bjerrum and Amsler charting revealed right central scotoma. The right fundus showed a small dot of subretinal hemorrhage over the foveal area. Optical coherence tomography (OCT) showed subretinal and intraretinal fluid associated with a thick choroidal lesion and retinal pigment epithelial irregularities. OCT-A was performed and demonstrated a complex CNV beneath the fovea. Intravitreal Anti-VEGF treatment was commenced. Subsequent OCT-A scans, in conjunction with clinical findings, were used to monitor CNV activity and determine the course of Anti-VEGF management. Following monthly injections, visual acuity has improved to 6/15 OD. OCT showed a macula scar with resolved subretinal and intraretinal fluid compared to the initial presentation. OCT-A revealed an interim decrease in both the size and flow of the CNV lesion.

Conclusions: OCT-A has proven to be a non–invasive, cost-effective, and without contrast image modality for detection and monitoring treatment effectiveness of Anti-VEGF in CNV patients. With follow-ups and monitoring treatment of anti-VEGF for CNV has shown effective in reducing intraretinal and subretinal fluid thus overall improving visual acuity.

Treatment Outcomes of Standard Dose and Modified Dose Perfluoropropane Assisted Pneumatic Displacement of Submacular Hemorrhage in Aneurysmal Type-1 Neovascularisation in Asian Population

*First Author: Nishant Vijay **RADKE***
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Purpose: Evaluating the treatment outcomes of standard dose and modified dose perfluoropropane (C3F8) assisted pneumatic displacement (PD) of submacular hemorrhage (SMH) in aneurysmal type-1 neovascularisation (AT-1).

Methods: Retrospective case series in patients with AT-1 associated submacular/retinal hemorrhage. Group-1: 15 eyes of 15 patients receiving limited pars plana vitrectomy (0.7-0.8 cc) + 0.6cc C3F8 and Anti-VEGF injection. Group-2: 13 eyes of 12 patients received 0.3cc C3F8 + Anti-VEGF injection. At least 3 months follow-up was needed. Baseline best corrected visual acuity (BCVA), intra-ocular pressure (IOP), spectral domain optical coherence tomography (SD-OCT) to measure the central sub-field macular thickness (CST) were recorded at the primary visit, 1 week post-op, 1-3 months post-op and the final visit. Distribution was assessed for normality using K-S test. F test for variance, students T-test (paired and independent sample for unequal variance), Mann Whitney-U test and Pearson's correlation coefficients were calculated.

Results: Pre-treatment BCVA, Final BCVA, and pre-op CST were significantly more in Group-1. Pre- and post-op BCVA were significantly improved in both groups. The difference in CST by the first week was significantly more in group-1. Pre-op/post-op BCVA, and CST were all statistically significantly improved in individual groups.

Conclusions: Faster reduction in CSTs seems to have contributed to vision recovery in group-1 suggesting the potential to use this method in selected cases.

Treatment Strategy for Macular Edema Secondary to Branch Retinal Vein Occlusion Based on Long-term Outcomes Correlating Retinal Structure by Optical Coherence Tomography Image and Visual Acuity

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Purpose: We investigated valuable predictors for the visual prognosis for macular edema secondary to branch retinal vein occlusion (BVO-ME) in our long-term (> 5 years) study.

Methods: This retrospective study enrolled 47 eyes from 45 patients treated with anti-vascular endothelial growth factor (VEGF: ranibizumab and aflibercept) therapy for BVO-ME between June 2012 and March 2022. Patients were divided into two groups according to decimal best-corrected visual acuity (BCVA) at the final visit: Group A (≥0.7) and Group B (<0.7). We investigated BCVA, the number of intravitreal injections of anti-VEGF drug, ellipsoid zone (EZ) integrity, the presence of foveal bulge, the presence of serous retinal detachment (SRD), and central retinal thickness (CRT) using optical coherence tomography (OCT).

Results: The mean follow-up period from the initial to the final visit was 64.38 ± 15.07 months. LogMAR BCVA in Group A (n=32) was significantly lower than in Group B (n=15) at all time points ($p<0.05$). The number of eyes with intact EZ band and foveal bulge in Group A was higher than those in Group B ($p<0.05$). CRT at the final visit in Group A was lower than those in Group B ($p<0.05$). The number of eyes which recurrence SRD was observed by the final visit in Group A and the number of anti-VEGF intravitreal injections in Group A by the 1st year after the initial injection were also lower than those in Group B ($p<0.05$).

Conclusions: The disorders of the EZ band and foveal bulge and recurrent SRD led to poor visual acuity with regards to BVO-ME.

Treatments of Retinal Hemangioblastoma – A Case Report

*First Author: Wen Chih **LIN***

Purpose: To report the different treatments of retinal hemangioblastomas in a patient with Von Hippel–Lindau (VHL) disease.

Methods: A case report.

Results: VHL disease is an autosomal dominant inherited disorder with multisystem involvement, including retinal and central nervous system hemangioblastomas, visceral cysts, and visceral tumors, including malignant ones. For retinal hemangioblastomas, visual deterioration may be followed by exudative or tractional retinal detachment if left untreated. Treatment of hemangioblastomas includes observation, laser photocoagulation, cryotherapy, plaque and proton beam radiotherapy, intravitreal anti-vascular endothelial growth factor (VEGF), and vitreoretinal surgery. The type, size, and location may respond differently to different treatments. Herein, we report a 26-year-old female with type 1 diabetes mellitus diagnosed with VHL initial presentation of three types of retinal hemangioblastomas, including juxtapapillary, extrapapillary, and endophytic hemangioblastomas in both eyes. For this patient, the extrapapillary hemangioblastomas responded well with focal retinal photocoagulation. For the endophytic hemangioblastoma had significant shrinkage after intravitreal injection of bevacizumab. The juxtapapillary retinal hemangioblastoma remained unchanged. Therefore, the treatment strategy may be tailored by the nature of hemangioblastoma.

Conclusions: It's important to recognize that the effectiveness and suitability of these treatment methods are significantly impacted by factors such as the tumor's location (peripheral versus juxtapapillary), its size, and the presence of any associated findings (e.g subretinal fluid, exudation, and evidence of traction).

Visual Recovery in Branch Retinal Vein Occlusion: A Case Report

*First Author: Monica **CHANDRA***
*Co-Author(s): David Christian **CHANDRA**, Eugeni Jr **SUMANTI***

Purpose: Branch Retinal Vein Occlusion (BRVO) is the second most common vascular disease after diabetic retinopathy. In BRVO, complications can occur in the form of vitreous hemorrhage, which needs immediate treatment, or leave it under observation while managing the underlying disease.

Methods: Workup for a patient with anamnesis, eye examination, other supporting examination, and management.

Results: A 53-year-old man complained of sudden loss of vision in his left eye since 1 week ago. The patient has a history of diseases such as hypertension, cardiovascular disease, hyperlipidemia, and stroke. Visual acuity in both eyes is 6/6 and 1/300. Funduscopy results showed venous tortuosity and dilatation, hemorrhages, empty vessels in the inferotemporal quadrant of the right eye, and vitreous haze in the left eye. The patient was diagnosed with branch retinal vein occlusion in the right eye and suspected vitreous hemorrhage due to branch retinal vein occlusion in the left eye. The patient was referred to an internist to regulate blood pressure, observed for a month, and educated to rest in the semiflowler position. After one month, the VA of the left eye was 6/6.

Conclusions: Initial management is directed toward determining the underlying systemic etiologic factors. In this case, appropriate management of the underlying systemic factor and semi-fowler position can restore the patient's visual acuity.

Vitreoretinal Interventions in Patients With Inherited Retinal Disease

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Purpose: The procedural burden of inherited retinal disease (IRD) patients remains poorly understood. We investigated the types and frequency of vitreoretinal procedures performed in patients with IRD in the setting of a tertiary hospital.

Methods: Electronic medical records (EMR) were interrogated for IRD patients seen at the University of Iowa from January 2009 to June 2022 who underwent vitreoretinal procedures.

Results: A total of 116 IRD patients underwent a vitreoretinal procedure out of 4680 patients identified from the EMR with probable IRD (2.5%). Of these patients, 36 (31.0%) had primary photoreceptor disease, 51 (44.9%) had macular dystrophy, 23 (19.8%) had inherited vitreoretinopathy, and 6 (5.2%) had X-linked retinoschisis (XLRS). Interventions were performed in 134 eyes and varied depending on IRD subtype. Interventions consisted primarily of gene therapy for photoreceptor disease (27 of 134 eyes; 20.1%), anti-VEGF injections for macular dystrophy (47 of 134 eyes; 35.1%), and scleral buckle and/or vitrectomy (12 of 134 eyes; 9.0%) for vitreoretinopathy and XLRS. The most frequently performed procedure was anti-VEGF injection (222 of 443 procedures; 50.1%), followed by intravitreal steroids (86 of 443 procedures; 19.4%). Patients with photoreceptor disease and Stargardt disease underwent fewer procedures, while patients with pattern dystrophy, Best disease, XLRS, and malattia leventinese underwent more vitreoretinal procedures than expected based on clinical prevalence.

Conclusions: Vitreoretinal intervention is infrequently required for IRD management, but certain IRD subtypes have a high treatment burden.

Retina (Surgical)

A Case Report of Retinal Hemangioblastoma (RHB) in Familial Von Hippel-Lindau Syndrome (VHL) and the Importance of Genetic Consultation

*First Author: Soramon **CHAICHAN***
*Co-Author(s): Tanapat **RATANAPAKORN***

Purpose: Von Hippel-Lindau Syndrome (VHL) is a rare, autosomal dominant, neoplastic disease involving multiple organ systems, including the eyes. Retinal hemangioblastoma (RHB) is the earliest sign and the most frequent finding of VHL.

Methods: We reported a 51-year-old female patient from another hospital with suspected retinal masses in the left eye. Her chief complaint was new onset floaters in the left eye for 1 month. The patient was blind in her right eye 20 years ago with suspected retinal masses, and the visual acuity of her left eye was 6/6.

Results: The fundus examination of the left eye showed two small retinal lesions with dilated feeder vessels located inferotemporal and was confirmed to be RHB by fluorescein angiography. The patient and her 3 children consisting of a daughter and 2 sons, were then sent for a genetic consultation. A Pathogenic variant, c.500G > A, p.Arg167Gln, was identified in exon 3 of the VHL gene, confirming the diagnosis of VHL for this patient and 2 of her children. With thorough systemic examination, asymptomatically, pancreatic and adrenal gland lesions were detected in this patient and one of her sons. Proper treatments and follow-up plans were given to them in a timely manner.

Conclusions: RHB is considered the earliest and the most frequently detected feature of VHL. The detection of ocular features, together with proper genetic consultation, play a critical role in early diagnosis of VHL. Therefore, timely management can be given.

A Case of Refractory Optic Disc Pit Macular Detachment Treated With a Novel Scleral Autograft Plug Technique

*First Author: Elaine Marie **TAN***
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Purpose: This study aims to present a rare case of optic disc pit maculopathy (ODP-M) in a young female patient, to report imaging findings, and to describe the surgical technique and its outcome. Because ODP-M is rare, there are currently no clear management guidelines, though various techniques have been reported. This paper describes a technique where a scleral autograft was used to cover the defect of the optic nerve head pit.

Methods: Case Report.

Results: A 22-year-old female who previously underwent pneumatic retinopexy with C3F8 gas and subthreshold laser therapy for ODP-M presented with a recurrence of blurring of vision in her left eye 4 months after initial treatment. The best corrected visual acuity (BCVA) of the left eye was 20/200. Ocular coherence tomography of the macula and optic nerve head revealed a left optic disc pit with neurosensory detachment and foveoschisis. The patient underwent pars plana vitrectomy, internal limiting membrane peeling, plugging of optic disc pit with scleral autograft, and C3F8 gas tamponade. Three months postoperatively, BCVA of the left eye improved to 20/60 with significant improvement in retinal anatomy.

Conclusions: Optic disc pit is a rare congenital anomaly presenting with visual abnormalities when associated with maculopathy. Multiple surgical treatments have been reported but no established standard of treatment. The technique using scleral autograft has shown to be effective, relatively easy to perform, and readily available, which makes it an ideal treatment option even in previously treated and refractory maculopathies.

A Challenging Case of Metallic Intraocular Foreign Body

*First Author: Anggita **OKTAVIANI***
*Co-Author(s): Satya **PRAGNANDA**, Raja **ERINDA***

Purpose: To present a challenging case of metallic intraocular foreign body (IOFB).

Methods: A case report of a 41-year-old male patient with a history of right eye trauma.

Results: A 41-year-old male patient came to the emergency unit with complaints of pain, blurred vision, and redness in his right eye after being hit by iron fragments while cutting tiles. Visual examination found poor light projection and intraocular pressure was 5 mmHg. Examination of the anterior segment of the right eye found conjunctival mixed injection, subconjunctival bleeding, and a foreign body on the nasal side. The patient was first suspected with a scleral foreign body with retinal detachment. The patient then underwent a B-ultrasound followed by a computed tomography (CT) scan that showed vitreous hemorrhage and a foreign body in the right eye, respectively. The patient was later diagnosed with IOFB and vitreous hemorrhage. Intraoperative exploration showed the metallic foreign body covered by tissue and attached to the macula. The patient showed vision improvement postoperatively.

Conclusions: Penetrated injury of the eye requires a detailed examination of all eye structures, beginning from the anterior to the posterior segment. Detailed examination and imaging should be performed to evaluate the foreign body's location, size, and material. Immediate and appropriate diagnosis and treatment strategy help improve the patient's prognosis.

Diagnosing a retained IOFB is essential for establishing the management of patients with ocular trauma.

A Retrospective Study to Assess the Outcomes of Sequential Bilateral Rhegmatogenous Retinal Detachment

*First Author: Harshal **SAHARE***

Purpose: To study the clinical outcomes in patients with sequential bilateral RRD in a tertiary care center.

Methods: Retrospective review of records of patients with sequential bilateral RRD between January 2011 to December 2019

Results: A total of 79 cases were recruited for the study. The mean age at presentation was 44.82 years. PVR greater than grade B was seen in 22.78% of initial eyes and 15.18% of subsequent eyes at presentation. PPV was done in 22.78%, SB was done in 40.50%, and BB+PPV was done in 20.25% in the initial eye, while PPV was done in 17.72%, SB in 44.30%, and BB+PPV was done in 22.78% in the subsequent eye. In the initial eye, silicone oil was used in 31.64%, and gas was used in 27.84%, while in the subsequent eye, silicone oil was used in 30.37%, and gas was used in 25.31%. The single-operation success rate in the initial eye was 48.43%, while it was 60.86% in the subsequent eye. The mean surgeries performed was 1.58.

Conclusions: Band Buckle +Pars Plana Vitrectomy yielded a higher success rate of 77.77% compared with 57.14% for Pars Plana Vitrectomy or scleral buckle alone.

A Successful Closure of a Large Macular Hole in Older Patient Using the Free Internal Limiting Membrane Flap Technique: A Case Report

*First Author: Syena **RIZA***
*Co-Author(s): Abdul Karim **ANSYORI**, Ramzi **AMIN***

Purpose: To report a case of an idiopathic macular hole in an older patient managed with pars plana vitrectomy with internal limiting membrane peeling using the free flap technique.

Methods: A 60-year-old female had been experiencing central vision loss in her right eye since 2 months before. Pre-operative visual acuity of counting fingers at 1 meter. Baseline macular Optical Coherence Tomography showed a large full-thickness macular hole measuring 756 µm in diameter associated with chronic cystoid degenerative changes and posterior hyaloid detachment in the macula but remaining attached at the edge of the optic nerve. The patient underwent pars plana vitrectomy with internal limiting membrane peeling using the free flap technique and intra-ocular SF6 gas tamponade. Furthermore, it was recommended that she maintain a face-down position for a duration of 7 days.

Results: Three weeks post-operative showed complete closure of the macular hole from its initial measure (756 µm). Visual acuity improved from counting fingers at 1 meter to 6/60.

Conclusions: Large full-thickness macular holes can be effectively managed with the use of the free internal limiting membrane flap technique. Utilizing the proper combination of pars plana vitrectomy, flap of internal limiting membrane peeling, intraocular gas tamponade, and postoperative positioning can lead to successful management of large and chronic idiopathic macular holes with limited vision recovery.

A Vision Reborn: Visual Rehabilitation After Globe Perforation During Peribulbar Anesthesia for Cataract Surgery

*First Author: Neha **BIJLANI***
*Co-Author(s): Gajendra **CHAWLA***

Purpose: To report the management of inadvertent globe perforation during peribulbar anesthesia for cataract surgery.

Methods: A 56-year-old, non-diabetic, healthy female presented with decreased vision in her right eye post cataract surgery 1 month ago elsewhere. Ocular evaluation of the right eye revealed a well centered intraocular lens (IOL) with vitreous hemorrhage obscuring retinal details. A B-scan right eye suggested an attached retina beneath a vitreous hemorrhage. Pars plana vitrectomy was undertaken, during which, after clearing vitreous hemorrhage, a large area of subretinal hemorrhage plugged with vitreous was noticed in the inferonasal quadrant, which was the possible globe perforation site. A lase barrage was done around the perforation site and fluid air exchange was performed to conclude the surgery.

Results: At 2 months post vitrectomy, the right eye best corrected visual acuity (BCVA) improved to 20/20P with a quiet eye and stable retina.

Conclusions: Inadvertent globe perforation is a rare but serious complication that can occur during peribulbar anesthesia for cataract surgery. The presence of unexplained vitreous hemorrhage in the early post-operative period following uneventful cataract surgery should arouse suspicion of globe perforation. Prompt recognition and immediate referral to a vitreo-retinal specialist are crucial for the appropriate management and optimal visual outcomes.

Adult Onset Coats Disease in an Indonesian Woman: A Rare Entity

*First Author: Rianti **PRATIWI***
*Co-Author(s): Ari **DJATIKUSUMO**, Triana **GUNARDI**, Michelle **NATALIA**, Annisa **WINDYANI**, Irma **SADIKIN***

Purpose: Coats disease is a unilateral idiopathic retinal exudative, telangiectatic condition and frequently occurs in young males. The disease diagnosed in

adulthood is a rare entity. The aim of this study is to describe the clinical features, the establishment of diagnosis, and therapy.

Methods: A 27-year-old woman presented with blurry vision of her right eye for one year which had worsened over the past month. The blurry vision was described as foggy. The anterior segment of both eyes was normal. In contrast, posterior examination of the right eye showed a yellow-whitish exudate with subretinal hemorrhage, peripheral telangiectatic vessels, and exudative retinal detachment. Fundus imaging and ocular coherence tomography (OCT) were performed. Fluorescein angiography revealed a 'light bulb' appearance in the ocular blood vessels, a hallmark of Coats disease. Laboratory results showed high levels of cholesterol. Afterward, she underwent scleral buckle surgery along with cryotherapy in the peripheral retina. At one day follow-up there was improvement of abnormal vessels and good scleral indentation.

Results: The main goals of treatment for Coats are to eliminate abnormal vascularization and thereby reduce vascular leakage and exudation. The most suitable treatments are selected based on the severity of the condition. In the third stage, where retinal detachment occurs, combination therapy is necessary by performing vitreo-retinal surgery with cryotherapy or laser photocoagulation, which is in line with our patient.

Conclusions: Adult onset Coats disease is a rare condition, particularly in women, hence thorough examinations are required. Ancillary testing such as FFA may be helpful in establishing both diagnosis and therapy.

An Unforeseen Intraoperative Intraocular Foreign Body During 25-Gauge Vitrectomy: A Challenging Case Report

*First Author: Wei-hsiang **LIN***
*Co-Author(s): An Ning **CHAO***

Purpose: To present a case of a 53-year-old female patient with retinal detachment who underwent a 25-gauge vitrectomy and unexpectedly encountered an intraocular foreign body during surgery.

Methods: A case report.

Results: The patient was referred to our hospital with a retinal break (OD) and had no history of systemic disease, trauma, or ophthalmic surgeries. Focal retinal photocoagulation was attempted, but the subretinal fluid was observed with three round holes in the superior quadrant. The patient underwent an encircling scleral buckle and 25-gauge vitrectomy under general anesthesia. During core vitrectomy, an unexpected disruption in the 25-gauge vitrector tip with a metallic appearance was noticed. The surgeon was surprised by this unexpected discovery, as there were no indications of any surgical tool collisions or misuses before this incident. The presence of an intraoperative foreign body posed a significant challenge for the surgical team, requiring an immediate adjustment to the surgical plan. A separate 25-gauge vitrector was used to complete the core vitrectomy, particularly around the foreign body. After initial attempts using a soft tip under a plano lens proved unsuccessful, 23-gauge forceps were employed to successfully remove the foreign body without any residue in the vitreous.

Conclusions: This case report highlighted the occurrence of an intraoperative intraocular foreign body during a 25-gauge vitrectomy. The surgical team learned valuable lessons, emphasizing the importance of recognizing foreign bodies, adapting surgical instruments when necessary, and executing precise maneuvers under enhanced visualization. The surgeon aimed to share this case through video to assist others who may encounter similar situations in the future.

Bilateral Endophthalmitis After Phakic Intra Ocular Lens (IOL) Surgery: A Case Report

*First Author: Joko **SATRIO***
*Co-Author(s): Dina **NOVITA**, Fatimah **NUSASTUTI**, Satya **PRAGNANDA**, Arief **WILDAN***

Purpose: To evaluate the vitreoretinal procedures outcome of patients with endophthalmitis after phakic IOL surgery: Right eye (RE) Vitreous Tap and Intravitreal Antibiotic Injection; Left eye (LE) Vitreous Tap, Vitrectomy, and Intravitreal Antibiotic Injection.

Methods: A 20-year-old man with bilateral endophthalmitis after phakic IOL surgery. The patient complained of pain, redness, eyelid swelling, and a decrease in vision: RE 10 days after surgery, and LE 29 days after surgery. The patient was diagnosed with acute endophthalmitis and then underwent vitreous tap and intravitreal antibiotic injection in RE, and vitreous tap, vitrectomy, and intravitreal antibiotic injection in LE. This was using a descriptive observational method to support my case.

Results: The patient's visual outcome RE improved from 1/300 to 6/7.5 noncorrection (NC) at the third follow-up. Visual outcome LE improved from 6/40 to 6/15 NC at the second follow-up.

Conclusions: Both vitreous tap and intravitreal antibiotic injection; and vitreous tap, vitrectomy, and intravitreal antibiotic injection are good; it depends on the condition of the patients.

Clinical Observation of Sharkskin Forceps in Epiretinal Membrane (ERM) Surgery

*First Author: Li **CHEN***
*Co-Author(s): Yong **TAO***

Purpose: We investigated the clinical effect of ERM surgery using sharkskin forceps in order to prevent shear stress and traction trauma when grasping epiretinal membranes.

Methods: In this prospective study, 38 patients with secondary ERM underwent pars plana vitrectomy (PPV) combined with membrane peeling for ERM, who were randomly divided into two groups. One group peeled the membrane using Grieshaber Sharkskin forceps, and the other group peeled the membrane using general membrane forceps. Evaluation of ERM manipulation included postoperative slow-motion video analysis of the number of times that forceps are inserted into the eye, intraoperative count of membrane grasps, the intraoperative peeling time, and observed injury to retinal tissue.

Results: ERM removal was successfully performed in all patients using two kinds of forceps, and both visual acuity and central retinal thickness (CRT) improved after surgery. The number of times that the sharkskin forceps inserted into the eye was less than that of general forceps (sharkskin forceps 2.1 ± 1.0 VS general forceps 2.3 ± 1.7, P=0.73). The intraoperative peeling time of sharkskin forceps was shorter than that of general forceps (sharkskin forceps 195.1 ± 120.1 VS general forceps 235.2 ± 145.5, P=0.38) and the intraoperative count of membrane grasps was less than that of general forceps (sharkskin forceps 7.5 ± 5.3 VS general forceps 11.2 ± 7.1, P=0.13).

Conclusions: Compared with general membrane forceps, sharkskin forceps have similar clinical efficacy and safety for secondary ERM. These novel forceps helped reduce both unnecessary surgical maneuvers and retinal injury.

Clinical and Surgical Efficiency Outcomes of a Dual-Blade, 20000 Cuts-per-Minute, Vitrectomy Probe

*First Author: Harvey **UY***

Purpose: To report the clinical outcomes, surgical efficiency, and instrument performance of a 25-gauge, 20,000 cuts-per-minute (cpm), dual blade, beveled tip vitrectomy cutter probe among eyes undergoing pars plana vitrectomy.

Methods: Prospective case series of eyes undergoing pars plana vitrectomy (PPV) for common vitreoretinal conditions using a dual blade, beveled tip, 20000 cpm Outcome measures included: rate of surgical success, operative times, number of surgical steps, use of ancillary instruments, corrected distance visual acuity (CDVA), and adverse events (AE).

Results: Fifty-five eyes underwent PPV with surgical objectives attained in all eyes. The mean (SD) total operative time (TOT), core, shave and total vitrectomy times were 1964.3 (846.9), 174.9 (116.23), 478.4 (387.3) and 655.6 (397.5) seconds, respectively. The mean (SD) number of surgical steps was 4.05 (1.1). The mean number of ancillary instruments used was 3.2 (1.9). Mean CDVA improved by 0.6 (0.7) logMAR units (P < 0.001) 3 months postoperatively. A low AE rate (5.4%) was observed.

Conclusions: A dual blade, beveled tip, 20,000 cpm MIVS system was demonstrated to safely and effectively perform VR procedures of differing complexities. Potential benefits of this novel system include reduced usage of ancillary instrumentation and low AE rates.

Comparative Analysis of Pneumatic Retinopexy With Subretinal Fluid Drainage Versus Scleral Buckling for the Management of Bullous Rhegmatogenous Retinal Detachment

*First Author: Saurabh **DESHMUKH***
*Co-Author(s): Manshu **DESHMUKH**, Krati **GUPTA**, Surpriya **HAWAIBAM**, Damaris **MAGDALENE**, Ronel **SOIBAM***

Purpose: To assess the efficacy of the pneumatic retinopexy (PR) with subretinal fluid drainage (SRF) for the treatment of bullous rhegmatogenous retinal detachment (RRD) and compare it against scleral buckling (SB) over a long period of three years.

Methods: A total of 42 cases were enrolled in the study after following the strict inclusion criteria. One specific inclusion criterion was bullous RD where the retinal surface could not be reached with scleral indentation, suggesting an unsuitable candidate for cryoretinopexy and laser retinopexy. So, in these cases, PR with SRF drainage was done.

Results: This study, the first of its kind in India, was done over a period of three years. Of the 42 cases, redetachment was seen in four cases, one was due to a missed break and three were due to new break formation. Statistical analysis showed the efficacy of PR with SRF drainage to be equal to SB.

Conclusions: PR with SRF drainage provides a cost-effective method for the treatment of bullous RRD.

Comparative Evaluation of 10k/25G Beveled-Tip Probe and 5k/23G Flat-Tip Probe in MIVS in Day Surgery for the Treatment of PDR Patients With Fibrovascular Proliferation

*First Author: Yanchun **ZHANG***
*Co-Author(s): Ziwei **KANG**, Daxi **XUE***

Purpose: To evaluate and compare the intraoperative precision of Advanced UltraVit 10k/25G beveled-tip probe (BTP) versus 5k/23G flat-tip probe (FTP) in MIVS in day surgery for the treatment of patients who have PDR with fibrovascular proliferation (FVP).

Methods: A total of 99 eyes undergoing vitrectomy between April 2022 to March 2023, with type II diabetes mellitus and progressive FVP were included in the study. All subjects received MIVS in day surgery by same surgeon randomly using a 10k/25G beveled-tip probe or a 5k/23G flat-tip probe with the Alcon CONSTELLATION® Vision System and were followed

up. The intraoperative data were recorded by operation videos. The primary endpoint was the rate of electrocoagulation. Other data were analyzed, such as demographics, number of instrument changes, actual vitrectomy time, and post-operative complications. Statistical analysis was conducted with SPSS.

Results: There was no statistical difference between the two groups in terms of age, gender, preoperative visual acuity, or IOP. The total number of intraoperative electrocoagulation points, the utilization of membrane forceps, and the number of intraoperative iatrogenic tears were with significant statistical differences between the groups ($p<0.05$);

Conclusions: The high-cut rates with low aspiration and beveled-tip with more proximate opening allow it to operate closer to the retina and perform more precise cutting and dissection of the vascular fiber membrane adhered to the surface of the retina. Compared to the 23G/5k with suction to lift and remove the proliferative membranes, 10K/25G probes are safer to lower the risk of iatrogenic vascular and retinal rupture, reduce intraoperative bleeding and the use of intraocular electrocoagulation.

Comparison of 27-Guage 20,000 vs 10,000 Cuts per Minute Vitrectomy Systems in Epiretinal Membrane Surgery

*First Author: Yong Je **CHOI***
*Co-Author(s): Kyu Hyung **PARK**, Se Joon **WOO***

Purpose: To compare the efficacy and safety of 27-gauge 20,000-cuts-per-minute (CPM) and 10,000 CPM vitrectomy systems in epiretinal membrane (ERM) surgery.

Methods: This is a single-center, prospective, randomized, case-control study. Sixty-six patients were divided into two groups of equal number and underwent ERM surgery with vitrectomy cutters with different CPMs: 20,000 (27G HYPERVIT® Dual Blade Vitrectomy Probe, Alcon) and 10,000 (27G Advanced ULTRAVIT® Bevel High Speed Probe, Alcon). Patients with idiopathic ERM were included. Exclusion criteria were coexisting ocular conditions affecting visual or anatomic function, including secondary ERM, other vitreoretinal diseases, and a history of previous vitreoretinal surgery. Primary outcome was core vitrectomy time and secondary outcomes were peripheral vitrectomy time, total operation time, and intra- and postoperative complications.

Results: In a total of 59 eyes, the average core vitrectomy time of 20K groups was significantly shorter than those of 10K CPM groups (113.6±34.3 vs 174.4±52.9 seconds, respectively, $p<0.001$). The average time for peripheral vitrectomy of 20K groups was also significantly shorter than those of 10K CPM groups (166.2±77.7 vs 205.4±80.2 seconds, $p=0.019$) There were no serious complications in both CPM groups, including endophthalmitis and retinal detachment.

Conclusions: The 27-gauge 20K CPM system showed a faster vitreous removal than the 10K CPM system without serious complications. Therefore, a 27-gauge 20,000 CPM system is more advantageous than a 27-gauge 10,000 CPM system to reduce surgical time and enhance surgical performance without additional complications.

Comparison of Incidence or Recurrence of Anterior Uveitis in Patients With Ankylosing Spondylitis Treated With Tumor Necrosis Factor Inhibitor

*First Author: Hyeonyoon **KWON***

Purpose: We compared the effects of tumor necrosis factor inhibitors (TNFi) on anterior uveitis (AU) in patients with ankylosing spondylitis (AS).

Methods: Patients diagnosed with AS and treated with at least one TNFi, including anti-TNF-α antibodies (adalimumab and infliximab) or a soluble TNF receptor molecule (etanercept), between January 2010 and December 2022, were retrospectively reviewed. We compared the recurrence rate of AU in patients with a history of uveitis and the incidence of new-onset AU in those without a history of uveitis among the three TNFi groups. We also compared the effects of two different TNFi agents in patients who underwent TNFi switching.

Results: Within two years of treatment initiation, there was no significant difference in AU recurrence among the three TNFi groups. However, the incidence of new-onset AU was significantly higher in the etanercept group than in the adalimumab group (26.4% vs. 6.3%; $p = 0.024$). After two years, the AU recurrence rate was significantly lower in the adalimumab group than in the other groups ($p < 0.001$). Among patients who underwent anti-TNFi switching, adalimumab treatment was associated with a significantly lower incidence of uveitis than etanercept ($p = 0.023$).

Conclusions: In the short-term period following TNFi therapy, etanercept induced new-onset AU more frequently than adalimumab in patients with AS. Adalimumab recipients experienced fewer AU recurrences during the subsequent long-term period compared to other TNFi recipients.

Comparison of Stereopsis and Foveal Microstructure After Internal Limiting Membrane Peeling and Inverted Internal Limiting Membrane Flap Techniques in Patients With Macular Holes

*First Author: Shohei **MORIKAWA***
*Co-Author(s): Tomoya **MURAKAMI**, Fumiki **OKAMOTO**, Tetsuro **OSHIKA**, Yoshimi **SUGIURA***

Purpose: To compare stereopsis and foveal microstructure after internal limiting membrane peeling and inverted internal limiting membrane flap technique in patients with macular holes.

Methods: Sixty-six patients with macular holes were included, of whom 41 underwent 25-gauge pars-plana vitrectomy with complete internal limiting membrane peeling (Peeling group) and 25 with the inverted flap technique (Inverted group). We evaluated stereopsis using the Titmus Stereo Test (TST) and the TNO stereo test, best-corrected visual acuity (BCVA), macular hole closure rate, and foveal microstructure with optical coherence tomography before and at 3, 6, and 12 months after surgery.

Results: Preoperatively, no difference was observed in the base and minimum diameters of the macular hole, TST score, TNO score, and BCVA between the Peeling and Inverted groups. At 12 months postoperatively, the TST score (2.1 ± 0.4 in the peeling and 2.2 ± 0.4 in the inverted groups), TNO score (2.3 ± 0.4 and 2.2± 0.5), and BCVA (0.20 ± 0.18 and 0.24 ± 0.25) were not significantly different between groups. The defect of the external limiting membrane was more common in the Inverted group than in the Peeling group at 6 months after surgery (5.4 vs. 28.0%; $p < 0.05$). No statistically significant inter-group differences were noted in the macular hole closure rate and the ellipsoid zone defect rate throughout the follow-up period.

Conclusions: There was no difference in postoperative stereopsis between the internal limiting membrane peeling group and the inverted flap technique group in patients with macular holes, but the Peeling group showed faster recovery of the outer retinal layer.

Direct Laser Photocoagulation of the Retinal Pigment Epithelium: Seal Retinal Breaks for Retinal Detachment

*First Author: Yang **XUN***

Purpose: To examine the clinical effectiveness of employing direct retinal pigment epithelium (RPE) laser photocoagulation to create chorioretinal adhesion around the retinal breaks.

Methods: Twenty eyes of 20 patients with rhegmatogenous or combined rhegmatogenous-tractional retinal detachment were included in the study; Direct RPE laser photocoagulation during vitrectom before retinal reattachment. The thickness of the neuroretina over the treated area was compared to that measured after traditional transretinal laser photocoagulation.

Results: The mean follow-up time was 24 (11-46) months. The mean best-corrected visual acuity (BCVA) at the final follow-up was significantly higher than that before surgery (p=0.001). The thickness of the neuroretina at 1 month after surgery greatly differed between areas of direct versus transretinal laser photocoagulation: 217 µm in the former and 104 µm in the latter group. There were no serious complications, and the retinas in all 20 eyes remained reattached.

Conclusions: The efficacy of direct RPE photocoagulation in retinal break sealing equals the effect of traditional transretinal photocoagulation.

Evaluating the Success and Complications of Modified Yamane Technique for Intra Scleral Fixation of IOL: A Case Series

*First Author: Gajendra **CHAWLA***
*Co-Author(s): Neha **BIJLANI***

Purpose: To analyze the surgical outcomes & complications of the modified Yamane technique for intra-scleral fixation of IOL.

Methods: A retrospective, interventional case series in which 15 patients underwent this modified Yamane technique in the last 2 years. Two diagonally opposite paralimbal, curved self-sealing scleral pockets are made 1.5 mm away from the limbus with a 26 gauge needle at 3 & 9 o'clock positions. The needle is then penetrated into the sclera to enter the anterior vitreous cavity, and brought out through a previously made scleral tunnel in the superior quadrant. The tip of leading haptic of three piece IOL is fed into tip of needle & gradually, the needle is withdrawn from 3 O'clock position. Similarly, trailing haptic is withdrawn from the opposite side. Haptics are adjusted to centralize the IOL & finally their ends are cauterized.

Results: The postoperative best corrected visual acuity achieved 6/18 or better in 87% of cases (13 of 15). Astigmatism induced by the scleral tunnel was seen; about 0.75 D - 2.50 D of Cylinder was observed. Post-operative complications included raised intraocular pressure in 5 eyes (33%), Cystoid macular edema in 2 eyes (13.3%), localized retinal detachment in 1 eye (6.6%) and optic capture with mild decentration in 2 eyes (13.3%) which were managed with conservative treatment.

Conclusions: This technique of intra-scleral fixation of IOL is safe & works well to restore vision in the majority of cases. In this technique, glue, suture, or end gripping forceps are not required, thus making it an easy, minimally invasive, faster & more economical option.

Eyesight Resurgence: Salvaging Vision Affected by Fungal Endophthalmitis Post Vitrectomy With Silicon Oil Tamponade

First Author: Gajendra ***CHAWLA***
Co-Author(s): Neha ***BIJLANI***

Purpose: To discuss the management of fungal endophthalmitis following vitrectomy with silicon oil tamponade.

Methods: A 45-year-old healthy male patient underwent an uneventful vitrectomy with silicon oil tamponade for rhegmatogenous retinal detachment. On post-operative day 3, he presented with signs and symptoms suggestive of endophthalmitis. KOH mount and culture from the anterior chamber aspirate confirmed the presence of candida albicans infection. The patient responded well to systemic, topical and bi-weekly intravitreal voriconazole treatment. Subsequently, he developed an exudative membrane in the pupillary area along with a complicated cataract, which obscured the retinal view. B-scan revealed a silicon oil-filled eye with an attached retina. After 4 weeks, the patient underwent cataract extraction and silicon oil removal along with the removal of exudates from the retinal surface and repeated intravitreal voriconazole injection.

Results: After 3 months of cataract extraction and silicon oil removal, his best corrected visual acuity (BCVA) improved to 20/120 with a quiet eye and attached retina.

Conclusions: Fungal endophthalmitis post-vitrectomy with silicon oil tamponade is a rare but potentially devastating complication and can present in the early post-operative period. With an aggressive and combined treatment approach, one can overcome such a crisis and salvage vision.

Fixing My Troubles: A New Technique of Scleral Fixation of Intraocular Lenses- a Retrospective Case Series

First Author: Deepak ***AGARWAL***

Purpose: To evaluate the outcome and viability of a modified self-sealing scleral pocket technique for scleral fixation of IOL.

Methods: An institutional, retrospective, interventional study was done taking 26 eyes where this modified technique was performed in the last year. Cases included in the study were dislocated IOL, absent posterior capsule, or subluxated cataracts. Two diagonally opposite paralimbal curved scleral pockets were made 3mm away from the limbus along with vitrectomy. A multi-piece IOL was used, and the haptics were fixed under the scleral pockets inside a linear scleral tunnel underneath the superficial scleral flap. The conjunctiva was apposed with cautery. Main outcomes measured: Mean pre and post-operative BCVA were compared, and postoperative astigmatism was measured. Statistical analysis: Pre and post-operative BCVA was compared using paired t-test. p value less than 0.05 was considered significant.

Results: Mean pre & postoperative BCVA were Log MAR 0.73 +/- 0.65 and Log MAR 0.42 +/- 0.65. This was found to be statistically significant, P=0.013. Mean post-operative astigmatism was 1.00 +/- 1.14 Dcyl. None of the cases showed complications like dislocation/subluxation of SFIOL, erosion of haptic, retinal detachment, vitreous hemorrhage, and endophthalmitis.

Conclusions: This modified simple way of scleral fixation of IOL decreases the duration of surgery with minimal complication.

Lens Sparing Vitrectomy and Anti-VEGF Intravitreal Injection for the Treatment of Aggressive Retinopathy of Prematurity (AROP)

First Author: Mario ***HUTAPEA***

Purpose: To report a case of severe aggressive ROP that was successfully treated with vitrectomy and prior anti-VEGF intravitreal injection.

Methods: A 2-month-old baby came with a complaint from his parents that the patient's eyes had no response and could not follow the objects shown. The patient was born prematurely, 32 weeks of gestational age, with a birth weight of 1680 grams. There was a history of repeated transfusions due to sepsis, and the patient used a ventilator during treatment. The patient was diagnosed with aggressive ROP on both eyes and planned to undergo intravitreal anti-VEGF injection followed by vitreous surgery in both eyes.

Results: Lens-sparing vitrectomy was performed in the right eye 3 days after Ranibizumab intravitreal injection on both eyes. The vitreous hemorrhage could be removed, but there were fibrovascular membranes extending from the optic disc to the macula. Endolaser was applied 360 degrees in the avascular area. Four days later, a vitrectomy was performed in the left eye. The vitreous hemorrhage could be removed, but there was an iatrogenic retinal break that was successfully treated with endolaser. On 1 month follow-up, the retina remained attached to both eyes, despite the fibrovascular membrane in the macula of the right eye.

Conclusions: Surgery for ROP is more challenging than adult retinal detachment surgery, and the surgical results are unforgiving. Prompt pars plana vitrectomy with prior intravitreal injection of anti-VEGF could prevent blindness in severe aggressive ROP and give a good anatomical result.

Less Invasive Fornix Incisions for Scleral Buckling in Post-trabeculectomy Glaucoma Patients

*First Author: Ssuyu **KUO***
*Co-Author(s): Tsung-tien **WU***

Purpose: To report a less invasive surgical procedure with fornix incisions for scleral buckling in post-trabeculectomy glaucoma patients.

Methods: The procedure was performed for rhegmatogenous retinal detachment in post-trabeculectomy glaucoma eyes, with or without pars plana vitrectomy. The conjunctival and tenon incisions were made at four quadrants, around 10-12 mm from the limbus, avoiding the area of the filtering bleb. The extraocular rectus muscles were hooked through the incisions, and the silicon band was passed underneath circumferentially. External drainage was done at this step if needed. Traction sutures can be placed at the limbus for globe traction. 5-O buckle sutures were placed at each quadrant (12-16mm for 240 silicon band), and a crossing knot was placed at the inferotemporal quadrant after pulling tight. The tenon and conjunctival incisions were closed layer by layer at the end of the surgery, avoiding buckle exposure.

Results: The less invasive fornix incisions for scleral buckling avoid destruction of the filtering bleb, thus preventing complications such as diffuse conjunctival scarring, bleb failure, bleb leakage, and infection. It also avoids the need for vitrectomy in these patients, in which intravitreal tamponade of expanding gas may cause over-filtration of the bleb, leading to a flat anterior chamber.

Conclusions: Fornix incisions for scleral buckling is a less invasive surgical technique for scleral buckling in post-trabeculectomy glaucoma patients, avoiding many of the undesired complications.

Macular Holes Following Vitrectomy for Submacular Hemorrhage Due to Retinal Arterial Macroaneurysm

*First Author: Shoto **MIYAMOTO***
*Co-Author(s): Takashi **ARAKI**, Hisashi **FUKUYAMA**, Fumi **GOMI**, Naoki **KIMURA***

Purpose: This study aims to describe the preoperative clinical characteristics of macular hole (MH) formation subsequent to vitrectomy for submacular hemorrhage (SMH) due to retinal arterial macroaneurysm (RAM) rupture. Furthermore, we introduce the Foveal Mountain Peak Sign (FMP sign) as a prognostic marker for MH after vitrectomy.

Methods: A retrospective analysis was conducted on eyes with SMH due to RAM rupture undergoing vitrectomy between 2014 and 2022. Grading was performed based on the presence of the FMP sign, and MH incidence was compared between the FMP sign (+) and FMP sign (-) groups. We defined the FMP sign as the foveal lesion formed like the shape of a mountain with sub-ILM hemorrhage.

Results: We identified 48 eyes with SMH due to RAM rupture. The mean follow-up period was 9.3 months. Macular holes were identified in 8 eyes (16.3%); 4 eyes were identified intraoperatively, and 4 eyes were identified postoperatively. The FMP sign was observed in 27 cases. The FMP sign (+) group exhibited a significantly higher rate of MH occurrence (28.6% vs. 0% in the FMP (-) group; P=0.0015).

Conclusions: Our findings suggest that the presence of the FMP sign may indicate an increased risk of SMH-associated MH formation. This novel sign could potentially serve as a valuable prognostic marker in these cases.

Management of Intraocular Foreign Body (IOFB) in Open Globe Injury

*First Author: Adji **PRAMANTO***
*Co-Author(s): Ari **ANDAYANI**, I Wayan Gede **JAYANEGARA**, I Made Agus **KUSUMADJAJA**, Ni Made Ari **SURYATHI***

Purpose: The purpose of this case presentation is to enhance understanding of managing IOFB with complications, therefore enabling appropriate patient management.

Methods: A 39-year-old male patient with an initial diagnosis of right eye blunt trauma with complications epithelialized full-thickness corneal rupture, iris rupture, traumatic cataract, vitreous opacity et causa IOFB, and secondary glaucoma. In the affected eye, visual acuity when admitted was 6/60 (pinhole 6/12) with 35 mmHg of IOP. The patient was planned to undergo RE phacoemulsification + IOL (CT Asphina 19.50 D) + pars plana vitrectomy + IOFB extraction + silicon oil/gas and vancomycin-ceftazidime intravitreal injection with general anesthesia.

Results: Most of the IOFB originates from metallic materials such as iron and copper, where both metals are very reactive, and chronic deposition can trigger a deteriorating effect. The main goal of IOFB management is to prevent further damage and restore the ocular structure. After a complete examination and the location of IOFB is determined, a proper therapeutic approach can be formulated. At a mean follow-up of 3 months after surgery, BCVA in the affected eye was 6/12, retina attached, with 13 mmHg of IOP.

Conclusions: The therapeutic approach for IOFB varies based on the location, size, shape, and material of the IOFB, and the presence of complications. A proper therapeutic approach in IOFB cases could preserve visual acuity and therefore have a good impact on the quality of life for the patient.

Management of Secondary Macular Hole Post Vitreoretinal Surgeries

*First Author: Meri **DEBBARMA***
*Co-Author(s): Naresh **KANNAN**, Chitaranjan **MISHRA***

Purpose: To evaluate the anatomical and functional outcomes of secondary full-thickness macular hole (FTMH) following vitreoretinal (VR) surgery.

Methods: A retrospective interventional case series. Eyes which developed new FTMH after successful vitreoretinal surgery were included. Those with proliferative diabetic retinopathy (PDR) associated tractional retinal detachments, traumatic rhegmatogenous retinal detachment (RRD), myopic traction maculopathy, multiple VR surgeries or primary macular holes were excluded. Eyes underwent internal limiting membrane (ILMP) peeling/ ILM free flap transplantation (ILMFT) followed by tamponade or autologous retinal transplantation (ART) as per surgeon preference. Success was defined as closed MH without a foveal defect of the neurosensory retina.

Results: Fifteen eyes with a mean age of 44.8 years were included. The median time of presentation post-primary surgery was 12 [1 to 60] months. Indications for primary surgery included RRD in 66.7% eyes (10/15, 8 post pars plana vitrectomy and 2 post scleral buckle), PDR with vitreous haemorrhage (VH) in 26.7% eyes (5/15) and subluxated lens in 6.6% eyes. Overall, 80% (12/15) eyes had success, 9/12 that underwent ILMP/ILMFT (mean Minimal hole diameter (MHD) -648±198µ) and 3/3 that underwent ART (mean MHD - 1144±120µ). In eyes with success median best corrected visual acuity improved from 1 [0.5 to 2] LogMAR to 0.9 [0.3 to 1.5] LogMAR (p = 0.007). Eyes with failure after ILMP/ILMFT had a larger (MHD).

Conclusions: MHD can predict surgical success in eyes undergoing ILMP/ILMFT. ART has an excellent success rate in secondary FTMH with large MHD.

Neuropeptides in Vitreous of Patients With Proliferative Vitreoretinopathy

*First Author: Yiyi **HONG***

Purpose: Investigating the expression levels of five neuropeptides in the vitreous samples of patients with proliferative vitreoretinopathy (PVR) or vitreomacular interface diseases (VMID), exploring the differences in the expression levels of neuropeptides between different groups.

Methods: A total of 52 vitreous samples were collected during the pars plana vitrectomy from 52 patients, including 36 PVR patients and 16 VMID patients. The clinical data of patients at admission and one month after operation were recorded. The quantitative detection of OT, SP, α-MSH, β-END, NT in vitreous samples was performed by liquidchip technology. The differences and correlations of clinical and test data were compared among the groups.

Results: (1) The expression levels of five neuropeptides in the mild PVR group were lower than in the severe PVR group and VMID group ($P < 0.05$). (2) In the severe PVR group, the expression level of each neuropeptide was positively correlated with other neuropeptides ($P < 0.01$). (3) The expression level of OT had a highly significant positive impact on the risk of grade C PVR in PVR patients ($P < 0.01$). The risk of grade C PVR increased by 8.8% when OT increased by 1 pg/mL.

Conclusions: The five neuropeptides were more involved in vitreoretinal diseases with complex pathogenesis and extensive abnormal cell activation, such as severe PVR and VMID. The increased expression level of OT may be a risk factor of grade C PVR.

Pars Plana Vitrectomy, Endolaser and Silicone Oil Tamponade as a Management of Rhegmatogenous Retinal Detachment: A Case Report

*First Author: Mutia Arnisa **PUTRI***
*Co-Author(s): Abdul Karim **ANSYORI**, Ramzi **AMIN***

Purpose: To report a successful management of rhegmatogenous retinal detachment case through multiple procedures which are pars plana vitrectomy, endolaser and silicone oil tamponade.

Methods: A 60-year-old woman presented with over a month of history of vision loss in her right eye (RE), which was progressively worsening over the past three weeks. Initially, her baseline visual acuity was 1/300. She reported floaters, flashes of light, and a curtain-like shadow descending over her upper RE vision. A fundus photograph revealed a macula-off condition, retinal tear, and undulation extending from the inferior to the superotemporal region. B-Scan ultrasound indicated a v-shaped retinal detachment and a membranous lesion detachment requiring attachment to the optic nerve. Given these findings, we opted for pars plana vitrectomy, endolaser treatment, and silicone oil tamponade under general anesthesia to address the patient's condition.

Results: Despite patients experiencing vision loss for over a month, typically in literature associated with poor prognosis after this duration, we achieved satisfactory outcomes. On postoperative day 1, the right eye visual acuity was 2/60 ph 3/60. By day 10, it reached 5/60 ph 6/60, and on day 30, it was 6/60 ph 6/24. Fundus photograph and B-scan ultrasound showed attached retina. Further quality of vision confirmation is planned through contrast sensitivity and Ishihara tests soon after silicone oil removal.

Conclusions: The application of pars plana vitrectomy, endolaser, and silicone oil tamponade for rhegmatogenous retinal detachment enhances visual acuity and elevates patients' quality of life. Timely and precise management significantly influences procedural success and prognostic outlook.

Possible Combined Dye Toxicity and Phototoxicity in Two Cases Following Epiretinal Membrane Removal Surgery

*First Author: Nikita **GUPTA***

Purpose: To report two rare case reports of outer retinal and retinal pigment epithelium (RPE) damage at the macula following brilliant blue G (BBG)-assisted epiretinal membrane (ERM) removal surgery.

Methods: Retrospective review of two consecutive cases of macular toxicity.

Results: Two patients presented with a similar history of metamorphopsia and had best-corrected visual acuity of 20/200 and 20/70 in the affected eye. OCT scans showed an epiretinal membrane at the macula with increased central macular thickness. The fellow eye examination was within normal limits. BBG-assisted ERM removal and internal limiting membrane peeling surgery were performed for both patients. Over the subsequent visits, a well-defined area of outer retinal and RPE alteration was identified on OCT and fundus autofluorescence without any improvement in visual acuity. At 3-month follow-up visit, the visual acuity improved in both cases, with a decrease in the area of RPE alteration on both OCT and FAF.

Conclusions: This case series highlights the unusual occurrence of macular toxicity following brilliant blue G-assisted ERM removal surgery. Macular toxicity due to repeated usage of BBG dye and high-intensity focal endo-illumination may lead to poor visual outcomes following ERM removal or similar macular surgeries. Adequate precautions need to be taken to prevent vision loss, such as reducing the surgical time, avoiding using BBG under air and avoiding restaining wherever possible, and keeping the endoilluminator at a distance from the fovea.

Rates of Reoperation and Retinal Detachment After 27 Gauge Pars Plana Vitrectomy for Macular Hole

*First Author: Amer **AWAN***
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Purpose: To evaluate rates of reoperation and retinal detachment (RD) after 27 gauge pars plana vitrectomy (27G PPV) in eyes with full thickness and lamellar macular hole (MH).

Methods: The retrospective cross-sectional study was conducted at the tertiary care hospital from June 2015 to May 2023. It included 163 eyes of 154 patients who underwent 27G PPV for full-thickness and lamellar MH with a postoperative follow-up period of at least 3 months.

Results: The mean age was 61.9 ± 17.3 years with 57.3% being males. Most of the eyes had idiopathic stage III full-thickness MH (n=84, 49.7 %). The total mean operating time was 42.5 ± 19.8 minutes. During surgery, 98 (60.1%) eyes had concurrent phacoemulsification. Hexafluoroethane was the most commonly used tamponade agent (n=154, 94.4%). Postoperatively, the primary closure rate was 97.5% (n=156) while 4 eyes with persistent open MH required an additional procedure involving autologous internal limiting membrane (ILM) transplant and octafluoropropane (n=4, 2.5%). The complication rate was 3.6%, including iatrogenic retinal tear (n=3, 1.8%), retinal detachment (n=2, 1.2%), and raised IOP (n=1, 1.1%). There was no incidence of endophthalmitis. The cumulative reoperation rate was 3% and the presentation of RD was between 3 to 4 months. The overall best-corrected visual acuity (BCVA) improved significantly from 1.20 ± 0.67 to 0.31 ±0.17 (p=<0.001).

Conclusions: In this study, reoperations for macular holes were performed at low rates after 27G PPV. ILM peeling was associated with lower rates of reoperation, and the risk of RD was also low.

Reducing the Use of Fluorinated Gases in Vitreoretinal Surgery

*First Author: Boon Lin **TEH***
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Purpose: The healthcare industry is responsible for around 4.4% of global carbon emissions, placing it as the fifth-largest emitter worldwide. Commonly used gas tamponade in vitrectomy for retinal detachment includes sulphur hexafluoride (SF6), hexafluoroethane (C2F6) and perfluoropropane (C3F8), each with a warming potential of 23900, 9200 and 7000 times that of carbon dioxide respectively. We aimed to assess air and various more diluted concentrations of C2F6 or C3F8 as potential substitutes in mimicking 20% SF6 to mitigate our carbon footprint.

Methods: A validated model of gas kinetics in human eyes was used to simulate the effect of varying concentrations of C2F6 and C3F8. We calculated predicted maximum volumes, time to maximum volume, duration of gas in the vitreous cavity and percentage gas fills on various days postoperatively with the corresponding retinal contact angle.

Results: 20% SF6 achieves a greater gas fill on days 1-2 but quickly declines to a lower fill than dilute C2F6 and C3F8 by days 2-3. On day 7, there is a 64% fill of 8% C2F6 and 75% of 6% C3F8, compared to only 46% in 20% SF6. Although dilute mixes of gases cannot mimic 20% SF6 completely, the extent of retinal contact is similar for the first 7 days. Air achieves considerably lower percentage fills than the gases, declining below 50% after day 3, but the retinal contact angles show a less dramatic decline.

Conclusions: Retinal surgeons should consider the use of air and weaker concentrations of C2F6 or C3F8 in selected cases to replace SF6 during vitrectomy for retinal detachment.

Retinal Impacted Intraocular Foreign Body and Its Consequences

*First Author: Pankaj **ROY***
*Co-Author(s): Ava **HOSSAIN**, Pankaj **ROY**, Sujit **SARKAR***

Purpose: The objective of the study is to evaluate the structural and functional outcome of a retained intraocular foreign body located in the posterior segment removal by pars plana vitrectomy.

Methods: This purposive prospective study was conducted from January 2016 to December 2022. A total of 80 consecutive eyes of 80 patients were included in the study. The mean age was 24.24 ± 8.40 years, age range 15-45 years, male 75, female 5 underwent Pars plana vitrectomy. Visual acuity, slit lamp biomicroscopy, intraocular pressure, posterior segment examination, B-scan and CT scan of the eye & orbit were routinely done.

Results: In preoperative visual acuity, no perception of light was 4 eyes, only perception of light was 6 eyes, perception of light and projection of rays were 20 eyes, counting finger half meter was 24 eyes, counting finger half meter to 1/60 was 18 eyes, 2/60 to 5/60 were 8 cases, 6/60 was two eyes ($P < 0.003$). Anatomic success was obtained in 93.75% (75) of eyes. The postoperative visual acuity improved 6.24± 3.8 letters in the Snellen visual acuity chart. Severe inflammation was noticed in 28 (35 %) eyes in the early postoperative period, IOP elevated in 24 (30%) eyes, one silicon oil-filled eye developed band keratopathy.

Conclusions: Retained intraocular foreign body is one of the important causes of visual morbidity in young adults. Early diagnosis and prompt removal of foreign bodies is mandatory. In this study, plana vitrectomy is an important, effective and essential surgical approach for maintaining ocular integrity and better functional outcome for managing retained posterior segment intraocular foreign bodies.

Structural and Functional Outcomes in Hemorrhagic Retinal or Macular Detachment Due to Aneurysmal Type 1 Neovascularisation in Asian Patients

*First Author: Nishant Vijay **RADKE***
*Co-Author(s): Lizhen **CHEN**, Zhizhao **PENG**, Snehal **RADKE***

Purpose: To study the structural and functional outcomes of sub-macular hemorrhage (SMH) and massive hemorrhagic retinal detachments (HRD) due to Aneurysmal type-1 neovascularisation (AT1) in Asian patients.

Methods: This is a retrospective interventional case series of patients with a diagnosis of AT1-related SMH and massive HRD. Exclusion criteria: SMH less than 2 disc diameters, retinal arteriolar macroaneurysm (RAM), non-PCV wet age-related macular degeneration (AMD), trauma, and high myopia. 11 cases underwent conservative management with intravitreal anti-VEGF and expansile gas +/- photo-dynamic therapy (PDT) (Group 1). 7 cases underwent pars-plana vitrectomy (PPV) with SMH evacuation, endotamponade and anti-VEGF agents (Group 2). Students t-test was used for the test of significance, and p-value of <0.05 was considered statistically significant. Pearson's correlation coefficient was calculated for the duration of symptoms from the onset and final visual outcomes.

Results: Ten patients were males out of a total of 18 patients in both groups. The average age in Group 1 was 69.45 years, and that in Group 2 was 66.14 years. Cumulative vision outcomes of groups 1-2 assessed pre and post-treatment were statistically significant (p=0.0001). Pearson correlation coefficient was calculated between the duration of the onset of symptoms and the final visual outcome. Group-1: r= 0.71741512 suggested a linear correlation: If the duration of symptoms was longer, the final visual outcome was less. For Group-2: r = 0.30981172 and revealed a weaker correlation compared to Group-1.

Conclusions: Both Groups 1 and 2 had satisfactory anatomical and functional outcomes. Extensive HRDs improved despite a mean duration of onset of about 3 weeks.

Subtenon Anesthesia in 25G Pars Plana Vitrectomy: A Patient's & Surgeon's Perspective

*First Author: Anubhav **SINGH***
*Co-Author(s): Indranil **SAHA***

Purpose: To assess the effectivity of anesthesia in patients receiving subtenon block for 25G pars plana vitrectomy.

Methods: A retrospective review of 75 Patients (39 Males, 36 Females) who underwent 25G pars plana vitrectomy for indications other than retinal detachment. Study duration 6 months. Ophthalmic examination and preoperative anesthesia-related fitness were obtained prior to surgery. Inclusion Criteria Age 20 years or more. Planned for 25G pars plana vitrectomy for indications other than retinal detachment. Exclusion Criteria Age below 20 years. Traumatic or uveitic or rhegmatogenous retinal detachment-related indications. Impaired mental status. Subtenon's anesthesia was given.

Results: The mean surgical time was 73.5 minutes. Satisfactory akinesia was noted during the procedure. Ratio of Males: Females = 1.08:1. Among the patients, 58 (77%) had no pain during the block, and 17 (23%) had mild pain during the block. Intraoperatively 66 (88%) had no pain during surgery, 7 (9%) required supplementation of block almost towards the end of the surgery, 2 (3%) required supplementation of block within 15 minutes of surgery. 11% had excessive conjunctival trauma. 9% had severe chemosis. Mild

chemosis and conjunctival hemorrhage were noted in all cases without any intraoperative complications.

Conclusions: Sub-tenon anesthesia is safe, effective, and more comfortable for the patient, and the surgeon can proceed very well during the surgery for pars plana vitrectomy for indications other than retinal detachment. It bypasses the dreaded risk of a scleral perforation or retrobulbar hemorrhage, especially in eyes with elongated axial lengths.

Successful Treatment With an Autologous Posterior Lens Capsule Flap for Two Macular Holes of an Eccentric Macular Hole and an Original Recurrent Macular

*First Author: Nahoko **OGATA***
*Co-Author(s): Hironobu **JIMURA**, Takashi **TAKEUCHI**, Hiroki **TSUJINAKA**, Tetsuo **UEDA**, Hiromasa **HIRAI***

Purpose: To report a case with two macular holes (MHs), an eccentric macular hole and a recurrent macular hole, was successfully treated with an autologous posterior lens capsule flap transplantation method.

Methods: Case report.

Results: A woman in her 50s presented idiopathic MH in her left eye, and best-corrected visual acuity (BCVA) was decreased to 20/80. She underwent vitrectomy with posterior hyaloid removal, internal limiting membrane (ILM) peeling, and tamponade of 20% SF6 gas combined with cataract surgery. During the ILM peeling, we performed photocoagulation around the injured retina within the arcade. The MH was successfully closed, and her BCVA was improved to 20/20 1 month after surgery. Eight months after surgery, eccentric MH occurred next to the photocoagulation spots. However, her BCVA remained 20/20, thus we just followed up on her eye. Six years after surgery, her BCVA was decreased to 20/200. The eccentric MH increased in size, and the original MH re-opened. The second vitrectomy was performed, but ILM had already been peeled within the arcade during the previous surgery and a usable sufficient size of ILM which could be auto-transplant to the holes was not obtained. Thus, free flaps of the posterior lens capsule were harvested and placed within each hole. Two holes were successfully closed and her BCVA was improved to 10/20 at 3 months after the surgery.

Conclusions: The lens capsular flap transplantation method is effective and improves visual acuity in patients with either refractory MH or in whom the ILM had already been peeled.

Supra Choroidal Silicone Oil – Hypothesis and Management

*First Author: Ramya **APPANRAJ***
*Co-Author(s): Dr.Maheshwari **S***

Purpose: Though we have encountered many complications of pars plana vitrectomy, supra-choroidal silicone oil is a rare but serious complication of silicone oil injection. The purpose of this presentation is to discuss the hypothesis, methods of prevention and management of supra-choroidal silicone oil injection.

Methods: In both cases, in immediate post-operative follow-up, only one-sixth of silicone oil was seen in vitreous cavity along with re detachment. The patient was taken up for resurgery, during SOR, it was found that the oil was coming from supra-choroidal space. The hypothesis was either due to inadvertent injection of silicone oil intro supra choroidal space or through the cleft in RC coloboma.

Results: Management of supra-choroidal oil can be done through external and internal approaches. The external approach can be done using a radial scleral incision over maximum choroidal elevation, by raising infusion pressure, and by applying scleral pressure to let out the silicone oil. The internal approach can be done by placing a 3 mm circumferential incision in the pars plana anterior to the ora serrata, avoiding the retina. Perfluorocarbon liquid can be injected posteriorly to push the supra-choroidal oil anteriorly through the incision.

Conclusions: Choroidal detachment secondary to supra-choroidal injection of silicone oil is a potential complication during pars plana vitrectomy. To conclude, though it is rare, supra-choroidal silicone oil should be kept in mind and attempts should be made to remove maximum silicone oil.

Surgical Outcome of Retinal Detachment With Choroidal Coloboma In Peripheral Eyecare Facility In Nepal

*First Author: Nitin **TULSYAN***

Purpose: To study the anatomical and visual outcomes of surgery for retinal detachment (RD) in patients with choroidal coloboma. Anatomical success was defined as attachment of the sensory retina with retinal pigment epithelium with no residual subretinal fluid. Visual success is defined as an improvement in postoperative visual acuity of at least one or more Snellen lines over preoperative acuity.

Methods: Thirty eyes of 30 patients underwent surgery for RD with choroidal coloboma. Patients were divided into three groups, according to the extent of choroidal coloboma: Coloboma not involving the disc and macula (Group A), coloboma involving the disc and Macula (Group B), and coloboma involving the disc (Group C).

Results: After a mean follow-up of 6 months, 24 eyes (80%) had an attached retina and 6 eyes (20%) had recurrent RD. 24 eyes (80%) recovered ≥6/60 VA. The final median VA in Group A (6/60) was better than in Group C (3/60) and Group B (light perception and hand movement) which was statistically significant (p = 0.01).

Conclusions: Postoperative visual recovery in RD with choroidal coloboma is dependent upon the involvement of the disc and macula with the colobomatous area.

Surgical Outcomes of Primary Rhegmatogenous Retinal Detachment Repair

*First Author: Zubaida **SIRANG***
*Co-Author(s): Rehman **SIDDIQUI**, Sidra **ZAFAR***

Purpose: To determine the primary anatomical and visual outcomes of Rhegmatogenous Retinal Detachment repair and comparison with the international standards.

Methods: This clinical outcome audit was done from December 2016 to September 2017 at the Aga Khan University Hospital Karachi, Pakistan. All the patients with RRD who had undergone surgical repair by pars plana vitrectomy or scleral buckling by single VR surgeon were included in the audit.

Results: Out of the 43 cases that were analyzed, 38 had undergone pars plana vitrectomy, while scleral buckling had been done in 5 of them. The anatomical success rate was 93%, as 40 out of 43 cases had successful anatomical retinal re-attachment in a mean follow-up of 9 weeks, while 3 out of 43 cases (6.9%) needed further procedures due to re-detachment.

Conclusions: The primary re-attachment rate in our audit was 93%, which meets the international standard.

The Mysterious Foreign Body

*First Author: Ruchi **SHRESTHA***
*Co-Author(s): Purushottam **JOSHI**, Ritesh **SHAH***

Purpose: Present a rare case of a mysterious foreign body.

Methods: Case: A 62-year-old man presented with redness, foreign body sensation, and discharge in the right eye for 1 week. The foreign body was increasing in size day by day and associated with pain and discomfort. The patient was referred from elsewhere due to the inability to remove the foreign body. The visual acuity in the right eye was no perception of light, and 6/6 in the left eye. There was a history of ocular surgery in the right eye 10 years back. On examination, there was a whitish elongated foreign body coming out through the right medial canthus. The conjunctiva was congested, and the cornea was whitish opaque. The iris, lens, and posterior segment could not be visualized. We did an amplitude-brightness scan after discussion before removing the unknown foreign body. Unexpectedly, the scan showed that the posterior segment was filled with silicon oil. This was a striking point. The patient had undergone scleral buckle with pars plana vitrectomy with silicon oil in the past but lost to follow-up for 10 years. The mysterious foreign body was the scleral buckle extrusion which is a very rarely encountered complication.

Results: The scleral buckle was removed through conjunctival peritomy and closed with Vicryl sutures, but it was too late to save the eye of the patient.

Conclusions: In the modern era of vitrectomy, scleral buckle extrusion may be confused as a mysterious foreign body as the art of scleral buckling is being lost.

Utility of Preoperative Swept Source Optical Coherence Tomography in Diabetic Vitrectomy

*First Author: Arshad **MEHMOOD***
*Co-Author(s): Rehman **SIDDIQUI***

Purpose: To determine the benefit of preoperative swept-source optical coherence tomography (SS-OCT) to detect occult retinal pathologies in patients with advanced diabetic eye disease.

Methods: Fundus photos and SS-OCT were performed preoperatively in all patients scheduled for diabetic vitrectomy between January 2017 to August 2022. Fundus photos and SS-OCT scans were reviewed by two retina specialists. We used a modified BIO score on fundus photos to evaluate fundus clarity. According to this score, a 5+ vitreous haze is the one in which no fundus can be seen. A 0 score was given for no vitreous haze and a clear view of the fundus. Findings on fundus photos were compared with findings on SS-OCT.

Results: Of the 61 eligible patients, preoperative fundus photos and SS-OCT were performed in 41 patients. The mean age was 60±10 years. Out of the total, male patients were 61%. The median duration of diabetes was 12 years. Cataract was present in 31 (50%) patients, while lens was clear in 10 (16.39%) and pseudophakic patients were 21 (30.78%). Vitreous hemorrhage was present in 36 (87.80%) patients, of which 07 (11.48%) patients had no fundus view (modified BIO-score 5/5). On fundus photos, TRD was visible in 20 (48.78%) patients and ERM in 01 (2.43%) patients. Compared to this, SS-OCT revealed TRD in 23 (56.10%) patients, ERM in 07 (17.07%), macular hole in 02 (4.87%), and DME in 07 (17.07%) patients.

Conclusions: SS-OCT may be beneficial in the preoperative management of diabetic vitrectomy, especially in cases of vitreous hemorrhage. SS-OCT should be considered for preoperative evaluation of the retina even when the fundus view is hazy such as in the presence of vitreous hemorrhage.

Vascular Endothelial Growth Factor (VEGF) Expression in Vitreous of Proliferative Diabetic Retinopathy and Non-diabetic Retinopathy

*First Author: Ni Made Ari **SURYATHI***
*Co-Author(s): Ari **ANDAYANI**, Ni Made **KARTIKA RAHAYU**, Made **SURASMIATI**, Ni Made **UTARI**, Ni Luh Diah **PANTJAWATI***

Purpose: VEGF is known as a potent promotor of neovascularization. Neovascularization is involved in diabetic retinopathy pathogenesis. This research aimed to investigate the difference in VEGF expression in the vitreous between diabetic retinopathy (DR) and non-DR. The result could verify the role of VEGF in diabetic retinopathy.

Methods: The cross-sectional research took place in X General Hospital from April to September 2022. A preoperative retinal examination was done to categorize patients into proliferative diabetic retinopathy (PDR) and no DR. Vitreous samples of all vitrectomy patients with a history of diabetes mellitus (DM) who fulfilled the inclusion and exclusion criteria were taken to the laboratory. Expression of VEGF in the vitreous samples was analyzed using the ELISA (enzyme-linked immunosorbent assay) method.

Results: There was an equal number of patients in both groups with statistically significant differences in sex (more men in PDR groups, p=0.014), age (younger in PDR groups, p=0.013), and DM duration (more than ten years in PDR groups, p=0.028). The range of age was 43-76 years old, with a median age of 56 years old. The mean and range of VEGF expression in vitreous was 124.646 ng/L and 33.286-206.357 ng/L, consecutively. The mean expression of VEGF in the vitreous in the no-DR group was 70.5, while in the PDR group it was 169.6 (p<0.001) with a difference in mean 99.18 (CI 95%, 79.8-118.5).

Conclusions: There was a statistically significant difference in VEGF expression between no-DR and PDR groups, with the PDR group having a higher VEGF level in vitreous.

Visual Outcomes, Safety Profile and Morphometric Response of Optical Coherence Tomography Biomarkers to Ranibizumab Biosimilar Treatment in Neovascular Age-Related Macular Degeneration: Real-World Evidence

*First Author: Mounika **BOLISETTY***
*Co-Author(s): Aditya **KELKAR***

Purpose: The aim of this study was to evaluate the safety, efficacy, and morphological response of intravitreal ranibizumab biosimilar (Razumab) in neovascular age-related macular degeneration (n-AMD) up to 12 weeks.

Methods: Retrospective analysis of 20 eyes receiving 4 weekly intravitreal Razumab. The main outcome measures were mean change in best-corrected visual acuity (BCVA),intraretinal-fluid (IRF), subretinal-fluid (SRF),central-subfield thickness (CSFT), maximum central-retinal thickness (CRT) and dimensions of pigment epithelial detachment (PED) from baseline to weeks 4, 8 and 12.

Results: Improvement in BCVA was seen at all visits, although not significantly (4 weeks: P = 0.18; 8 weeks: P = 0.4; 12 weeks: P = 0. 06). At 12 weeks,90% of eyes either maintained or had an improvement in BCVA, with 40% of them showing an improvement of ≥3-lines and only 5% of them losing ≥3-lines of visual acuity. The median PED height and PED width reduced by 20.5 µm (P = 0.03) and 557.5 µm (P = 0.14), respectively, along with a mean reduction of 57.26 µmin CSFT (P < 0.001) and 44.15 µm in CRT (P = 0.004), respectively, at 12 weeks. On qualitative analysis, resolution of SRF and IRF was observed in 45% and 25% of eyes at 12 weeks. There were no serious ocular or systemic side effects identified.

Conclusions: In a real-world scenario, Razumab is an efficacious and economical anti-vascular endothelial growth factor (anti-VEGF) agent for optimal management of n-AMD. The therapeutic outcomes demonstrated reasonable stabilization and improvement in visual acuity, and favorable anatomical outcomes pertaining to OCT-biomarkers with an acceptable safety profile.

Vitreo Retina Surgery in Myopic Eyes – An Overview

*First Author: Ramya **APPANRAJ***

Purpose: The aim of this presentation is to give a complete overview about vitreo retinal surgeries in myopic eyes.

Methods: Myopic eyes are more prone to retinal diseases like retinal detachment, myopic macular hole, vitreo retinal interface abnormalities like vitreo macular traction and schisis. All these conditions warrant surgical management. Though vitreo retinal surgery is a commonly performed surgery, performing vitreo retinal surgery in myopic eyes is quiet challenging due to long axial length, posterior staphyloma, vitreo schisis and foveal schisis, and needs few modifications like planning the position of trocar insertion more towards horizontal plane and more posterior and need of few special instruments like myopic forceps and special staining like ICG due to poor contrast, due to underlying chorioretinal atrophy to increase anatomical and surgical outcome.

Results: Myopic RD secondary to macular macular hole is yet another challenging situation, and the need of free flap and hinged ILM flap, lens capsule implantation and neuro sensory retinal autograft are the options available.

Conclusions: Understanding the anatomy of myopic eyes and modifications of surgical techniques favour better outcome.

Vitreous Opacities on Optical Coherence Tomography (OCT) and Their Association With Retinal Breaks

*First Author: Suklengmung **BURAGOHAIN***
*Co-Author(s): Priyank **BHOLA**, Amber **DUBEY**, Henal **JAVERI***

Purpose: This study aims to investigate the relationship between vitreous opacities visualized through optical coherence tomography (OCT) (Star Dust Sign) and the presence of retinal breaks.

Methods: Fifty-three patients who reported floaters of less than 2 weeks' duration were included. They underwent spectral-domain OCT (SD-OCT) scans using Heidelberg Spectralis. The presence of the Star-Dust Sign was examined. The group exhibiting a positive Star-Dust Sign was further analyzed, focusing on the opacities' number and their association with retinal breaks, vitreous hemorrhage, and retinal hemorrhage. ImageJ software was employed to enhance images, and the VGG image annotator quantified opacities in fovea-centered scans.

Results: Among the 53 patients with floaters, 45.3% (24) were Star-Dust Sign positive. Among the Star-Dust Sign positive cases, 58.3% had retinal breaks, 54.2% had vitreous hemorrhage, and 37.5% had retinal hemorrhage. Statistically significant associations were observed between the quantity of vitreous opacities and the presence of retinal breaks ($p=0.014$), vitreous hemorrhage ($p=0.03$), and retinal hemorrhage ($p=0.03$).

Conclusions: The presence of the Star Dust sign can be a risk factor for the presence of retinal breaks or haemorrhage. The number of vitreous opacities and the presence of retinal breaks, vitreous and retinal haemorrhage have a statistically significant association. Therefore, SD-OCT imaging can be a valuable tool for screening retinal tears in patients presenting with floaters, aiding in the timely identification and management of potential retinal pathologies.

Translational Research in Ophthalmology

Differential Bioenergetic Profile of Stem-Cell Derived Retinal Pigment Epithelium (SC-RPE) in Comparison to Native RPE

*First Author: Mayuri **BHARGAVA***
*Co-Author(s): Paul **BLAKELEY**, Regha **KAKKAD**, Bhav **PARIKH**, Xinyi **SU***

Purpose: Replacing dysfunctional retinal pigment epithelium (RPE) with healthy tissue is a promising treatment for late age-related macular degeneration. Since oxidative stress leads to RPE mitochondrial dysfunction, it is imperative that cell sources can withstand stress. Current RPE cell products in pre-clinical trials derived from human embryonic stem cells (hESCs) and skin-derived human induced pluripotent stem cells (skin-hiPSCs) lack data on bioenergetics in comparison to native RPE. Moreover, stem cells have inherently distinct metabolic profiles which can be retained post differentiation, underscoring the need to study bioenergetics. Our purpose was to assess stem cell-derived RPE characterization and bioenergetics in vitro in comparison to adult human RPE (AHRPE), to understand if SC-RPE is bioenergetically similar to their native counterparts.

Methods: Characterization of stem cell RPE (skin-hiPSCs/hESCs) was studied using gene expression and protein localization. Bioenergetics in basal and stressed conditions were measured by seahorse assay. AHRPE was harvested from cadavers.

Results: SC-RPE demonstrated RPE-specific genes and proteins, cobblestone-like morphology, and functional characteristics comparable to AHRPE. Bioenergetically, skin-hiPSC/hESC-RPE had lower oxidative potential at baseline and lower resistance to oxidative stress in comparison to AHRPE. In comparison to SC-RPE, AHRPE showed upregulation of mitochondrial respiration and metabolic pathways related to the specialized functions of phagocytosis and mitigation of oxidative stress performed by RPE in vivo.

Conclusions: Bioenergetically SC-RPE has low oxidative potential and lesser stress resistance compared to AHRPE. Thus, SC-RPE needs to model closer to AHRPE by making them more oxidative which can impart resistance to SC-RPE and empower them for better survival post-transplantation.

Environmental Sustainability of Outreach and Telemedicine Models at a Tertiary Eye-Care Centre in South India

First Author: Hari Bhadari ***ANAND***
Co-Author(s): Radhika P ***VENU****, Rengaraj* ***VENKATESH****, Dayakar* ***YADALLA***

Purpose: To estimate the transport-related carbon emissions saved by the outreach and Telemedicine aspects of our organisation.

Methods: This retrospectively collected data on our CY2022 Outreach (patients are screened at camps set up locally, with necessary personnel and equipment travelling to them) and Telemedicine (run by trained Mid-Level-Ophthalmic-Personnel/MLOP) programs. The former bused patients to-and-fro from the campsite to the base hospital, and reduced the need for a minimum of four peri-operative visits for cataract surgery to one. Post-op-assessment was done at the campsite. The latter enabled patients to get quality care for emergencies/pre-op assessment/post-op exams near their homes, reducing travel. The needy could be referred to higher centres. Assumptions were made on the mode of transport and distance from residences to campsite/telemedicine centre. India-specific carbon emission factors were employed for calculations.

Results: 85% of the patients visiting the telemedicine/teleophthalmology centres had their concerns addressed at site, without requiring referral. The pre-operative assessment was utilised by 5310 (9% of total surgeries - 58,405) patients, reducing travel by 652,062km. 16,173 (27.7%) patients availed of post-operative visits via telemedicine, reducing travel by 2,134,596 kilometers (km). Outreach saw 19,550 patients (33.5%) arrive from 226 camps, covering roughly 111.8km each. They reduced travel by 13,116,558km and emissions by up to 75%. The estimated cumulative emission reduction was 586.4 tons of CO2 – equalling what 26,653 fully grown trees fix annually.

Conclusions: The study proves, beyond doubt, outreach & telemedicine's role in enhancing patient experience while being planet-friendly. Every small contribution towards reducing emissions is paramount to the sustainability of ophthalmic care.

Ethambutol-Induced Cellular Apoptosis in a Model of Mouse Retinal Organoid Culture

First Author: Hui-chen ***CHENG***
Co-Author(s): An-guor ***WANG****, Jenn-yah* ***YU***

Purpose: Ethambutol (EMB) is the first-line antibiotic for the treatment of tuberculosis and Mycobacterium avium complex, with optic neuropathy as a major adverse event. In this study, we aimed to investigate the impact of EMB on retinal ganglion cells (RGCs) in a model of mouse retinal organoid culture, with a focus on the apoptotic pathway.

Methods: Adult mice retinal explants were collected and treated with different concentrations of EMB for 24 hours. The explants treated with different concentrations of EMB were then fixed, and immunohistochemistry staining with different markers was performed. We first defined Brn3a+ cells as RGCs and calculated the cell number of Brn3a+ cells in mouse retinal explants. Then, we used cleaved caspase 3 (c-Casp3) and terminal deoxynucleotidyl transferase dUTP nick end labeling (TUNEL) assay as markers of apoptosis to evaluate the cellular apoptosis in the EMB-treated retinal organoid culture.

Results: We found that EMB was cytotoxic to Brn3a+ cells of the mouse retinal explants and the cell number decreased significantly with higher concentration of EMB in a dose-dependent relationship. Cellular swelling with increasing cytoplasmic vacuoles was also observed in Brn3a+ cells. In addition, c-Casp3+ cells increased in retinal explants treated with EMB 2mM, compared to the control. However, c-Casp3+ cells decreased in retinal explants treated with EMB 4mM, but still higher than control. The number of TUNEL+Brn3a+cells was highest in retinal explants treated by EMB 2mM, followed by EMB 4mM and EMB 0mM (control).

Conclusions: Our results suggested that EMB can cause cytotoxicity in RGCs in a model of mouse retinal organoid culture, which may result from a dysregulated apoptotic pathway.

Isolated Retinitis Pigmentosa (RP) in Novel FLVCR1 Variants: A Case Report

First Author: Marianne Grace ***NAVARRETE***
Co-Author(s): Manuel Benjamin ***IBANEZ****, Tamilyn Chelsea* ***LADDARAN***

Purpose: To report a case of a 45-year-old female presenting with isolated retinitis pigmentosa associated with novel mutations of the Feline Leukemia Virus Subgroup C Cellular Receptor 1 (FLVCR1) gene.

Methods: Here we present a case of a 45-year-old female with isolated retinitis pigmentosa but no evidence of sensory ataxia or autonomic neuropathy. The patient underwent thorough phenotyping with fundus photography, fundus autofluorescence, (FAF), macular optical coherence tomography (OCT) as well as genetic testing.

Results: The phenotypic profile of the patient showed a typical RP appearance. Genetic testing through next-generation sequencing (NGS) revealed homozygous mutations in a novel variant in the FLVCR1 gene, c. 1482 C > A (p.Asn494Lys).

Conclusions: Feline Leukemia Virus Subgroup C Cellular Receptor 1 (FLVCR1) gene has typically been implicated in syndromic retinitis pigmentosa, with associated variants presenting with posterior column ataxia with

retinitis pigmentosa (PCARP). Recent reports have identified sporadic cases of non-syndromic retinitis pigmentosa with varying degrees of sensory-autonomic neuropathy, further expanding the broad heterogeneity of FLVCR1 mutation phenotypes. To our knowledge, this mutation has not yet been reported in literature among individuals with FLVCR1-related retinitis pigmentosa. Given the paucity of available publications on FLVCR1-gene-associated retinitis pigmentosa without ataxia, this report can help contribute to further understanding the broad phenotypic spectrum of FLVCR1 mutations.

Targeting Local Osteogenic and Ancillary Cells by Mechanobiologically Optimized Magnesium Scaffolds for Orbital Bone Reconstruction in Canines

*First Author: Rui **HUANG***

Purpose: Large-sized orbital bone defects have serious consequences that destroy orbital integrity and result in maxillofacial deformities and vision loss. The treatment of orbital bone defects is currently palliative and not reparative, suggesting an urgent demand for biomaterials that regenerate orbital bones.

Methods: In this study, via alloying, extrusion, and surface modification, we developed mechanobiologically optimized magnesium (Mg) scaffolds (Ca–P-coated Mg–Zn–Gd scaffolds, referred to as Ca–P–Mg) for the orthotopic reconstruction of large-sized orbital bone defects. The osteogenic effects of these optimized magnesium scaffolds were evaluated in both rat cranial bone defects and canine orbital bone defects.

Results: At 6 months after transplanting the scaffolds to a clinically relevant canine large animal model, large-sized defects were successfully bridged by an abundance of new bone with normal mechanical properties that corresponded to gradual degradation of the implants. The osteogenic and ancillary cells, including vascular endothelial cells and trigeminal neurons, played important roles in this process. The scaffolds robustly enhanced bone marrow mesenchymal stem cell (BMSC) osteogenic differentiation. In addition, the increased angiogenesis including an increased ratio of the specific endothelial subtype CD31hi endomucinhi (CD31hiEmcnhi) endothelial cells can facilitate osteogenesis. Furthermore, the scaffolds trigger trigeminal neurons via transient receptor potential vanilloid subtype 1 (Trpv1) to produce the neuropeptide calcitonin gene-related peptide (CGRP), which promotes angiogenesis and osteogenesis.

Conclusions: Our investigations revealed the efficacy of Ca–P–Mg scaffolds in healing orbital bone defects and warranted further exploration of these scaffolds for clinical applications.

Visual Sciences

Efficacy and Tolerability of 1% Pilocarpine, Alone and With 0.5% Bromfenac, in Newly Diagnosed Presbyopes: A Comparative Study

*First Author: Anu **JAIN***

Purpose: To compare the efficacy and tolerability of 1% Pilocarpine alone with that of 1% Pilocarpine with 0.5% Bromfenac therapy in managing newly diagnosed presbyopia.

Methods: This prospective observational study recruited new patients of presbyopia. After an initial ophthalmic assessment, patients were randomized into two groups. Group A patients were prescribed once daily instillation of 1% Pilocarpine while Group B patients were advised once daily instillation of both 1% Pilocarpine and 0.5% Bromfenac eyedrops. After two weekly follow-ups for 8 weeks, the outcome was assessed in terms of improvements in distance corrected near visual acuity (DCNVA,) and near point of accommodation (NPA), tolerability of Pilocarpine with and without Bromfenac, and preference of the eyedrops over presbyopic glasses.

Results: A total of 72 patients (38 in Group A and 34 in Group B) were initially enrolled in the study. Seven (18.42%) patients in Group A and three (8.82%) in Group B opted out of the study due to unmet near vision demands. In the remaining 62 (31 in each group) patients, improvements in DCNVA and NPA were comparable in both groups. However, significantly better tolerability was observed in group B patients.

Conclusions: The use of 1% Pilocarpine as an alternative to presbyopic glasses shows promising results with good patient compliance. Any side effects of 1% Pilocarpine that may occur can be effectively prevented with the use of a topical NSAID such as 0.5% Bromfenac.

Improvement In Distance and Near Visual Acuities Using Low Vision Devices

*First Author: Rinda **WATI***
*Co-Author(s): Chaerena **AMRI**, Havilah **ROSA**, Suhery **SUHERY***

Purpose: To determine the improvement in distance and near visual acuities in patients with low vision.

Methods: This is an observational study with a retrospective approach. The sample is low-vision patients (based on Snellen chart visual acuity examination) who undergo low-vision device examination in the refraction outpatient polyclinic. The sample should fulfill the inclusion and exclusion criteria. The data we collect including gender, age, underlying disease, best corrected visual acuity (BCVA), low vision device, and visual acuity after using the

low vision device. The T-paired sample test was used to compare BCVA before and after using a low-vision device.

Results: One hundred and fifty-seven patients are eligible as the sample in this study. Most of the subjects were men (54.8%), and the mean age was 34.37 years old. The approximate BCVA of the patient in the distance was 1.34 (in logarithm of the minimum angle of resolution (logMAR) Visual Acuity), in near was 2.56 M. The visual acuity of distance vision after using a low-vision device is 0.49. The near vision after using a low-vision device is 1.48 M. The improvement of distance and near visual acuities is statistically significant with p = 0.000 and p = 0.000 consecutively.

Conclusions: The use of low vision devices significantly improved distance and near visual acuities in patients with low vision regardless of the underlying disease and the type of the low vision devices.

Postoperative Visual Outcomes of Combined Cataract Surgery and Vitrectomy Using High-Order Aspheric Intraocular Lens (DIB00V) for Epiretinal Membrane

*First Author: Minami **CHINO***

Purpose: To examine post-operative visual outcomes using a high-order aspheric intraocular lens (DIB00V) for epiretinal membrane (ERM).

Methods: Twelve eyes of 12 patients who underwent vitrectomy combined with cataract surgery which inserted DIB00V for ERM between January 2022 and June 2023 were included. The distance corrected visual acuity (BCVA) at 500 cm, 100 cm, 70 cm, 50 cm, and 30 cm before and after 1 month were measured. The patients having a postoperative BCVA (logMAR) ≤ 0.00 were defined as group G (5 patients), and the patients with BCVA > 0.00 were defined as group P (7 patients). A difference of 0.15 or less between post BCVA at 500 cm and 100 cm was defined as having defocus. To evaluate postoperative defocusing ability, BCVA at each distance for each group and BCVA at each distance between the groups were compared.

Results: The pre-operative BCVA and post-operative BCVA at each distance in group G were 0.23±0.07, -0.03±0.04, 0.16±0.13, 0.28±0.13, 0.56±0.12, and 0.75±0.06, respectively. The corresponding BCVA in group P was 0.23±0.06, 0.09±0.05, 0.23±0.09, 0.36±0.14, 0.47±0.19, and 0.76±0.16, respectively. The post BCVA at 500 cm and 100 cm were not significantly different and there was a significant difference between 500 cm and 70 cm, 50 cm, and 30 cm in both groups. The BCVA at each distance between the two groups showed no significant differences. Defocus was observed in 50.0% of all subjects, 20.0% in group G, and 71.4% in group P.

Conclusions: DIB00V showed a mild defocusing effect after ERM surgery.

VIDEOS

AI, Digital Innovation and Virtual Health

Artificial Intelligence (AI) in Glaucoma – The Novel, Self-built, Cost-effective & Multimodal AI Tool Box

*First Author: Shruthy Vaishali **RAMESH***
*Co-Author(s): Anugraha **BALAMURUGAN***

Purpose: In this video, we report the first novel, self-built, cost-effective, and multimodal artificial intelligence that we have built for glaucoma diagnostics.

Methods: The various highlights of it are reported, such as (1) Evolution, (2) Utilizing Human Intelligence in Artificial Intelligence, (3) Human-In-The-Loop Learning, and (4) AI Neural.

Results: The following phenomena are shown in great detail, such as (1) Supervised Labelled Training, (2) Tackling The Black Box Phenomenon, (3) The Multimodal Comprehensive AI Model With Fundus, OCT, VF, AS-OCT, UBM & Gonioscopy, and (4) Big Data vs. Small Data.

Conclusions: Utilizing human intelligence in AI for detecting glaucomatous fundus images by using HITL machine learning has never been reported in the literature before. This AI model not only has good sensitivity and specificity in accurate glaucoma predictions but is also an explainable AI, thus overcoming the black box dilemma.

Demystifying the Role of Artificial Intelligence in Pediatric Ophthalmology

*First Author: Kirandeep **KAUR***

Purpose: This video presentation delves into the groundbreaking role of AI in enhancing diagnostic accuracy, treatment efficacy, and access to quality eye care for pediatric patients.

Methods: PubMed-based literature search was done to understand the impact of artificial intelligence on pediatric ophthalmology.

Results: AI-driven tools have shown exceptional capabilities in vision screening, enabling timely detection of visual disorders in children. Through the analysis of retinal images and ocular data, machine learning algorithms can swiftly identify refractive errors, amblyopia, and other conditions that might compromise a child's visual development. This allows for interventions to be initiated during critical windows of visual maturation, optimizing the chances of successful treatment outcomes. In the realm of diagnostics, AI algorithms exhibit remarkable pattern recognition abilities that aid in the identification of complex ophthalmic conditions. By processing diverse datasets and integrating patient-specific factors, these algorithms assist ophthalmologists in deciphering intricate cases, leading to more accurate diagnoses and tailored treatment plans. Customized treatment strategies can be devised based on AI-generated insights from patient data, optimizing therapeutic approaches for each individual child. Additionally, AI-driven telemedicine solutions break down geographical barriers, allowing remote consultations and follow-ups. Collaboration between AI developers, ophthalmologists, pediatricians, and regulatory bodies is vital to ensure the safe and responsible integration of AI technologies.

Conclusions: In conclusion, this video sheds light on the transformative impact of Artificial Intelligence in pediatric ophthalmology. By streamlining early detection, enhancing diagnostic accuracy, and enabling personalized treatment strategies, AI is redefining the landscape of pediatric eye care.

Leveraging Artificial Intelligence in the Diagnosis and Treatment of Corneal and Refractive Disorders

*First Author: Bharat **GURNANI***
*Co-Author(s): Kirandeep **KAUR***

Purpose: The aim of this video presentation is to explore the multi-dimensional impact Artificial Intelligence (AI) has in enhancing diagnosis, management, and treatment, thus forging a pathway to more precise and patient-centered care.

Methods: The presentation commences with an examination of existing challenges in corneal and refractive disorder management and the inadequacies of conventional methods. It systematically explores AI's applications, such as (1) automated diagnosis - leveraging deep learning models to identify and diagnose intricate corneal patterns and refractive anomalies, (2) treatment optimization - customizing treatment using AI analysis to fine-tune surgical techniques and forecast outcomes, and (3) monitoring and follow-up care - utilizing AI algorithms to monitor

recovery, predict complications, and streamline remote care.

Results: The application of AI in the ophthalmological field has resulted in unprecedented advancements. Automated diagnosis enhances accuracy, treatment optimization facilitates personalized plans, and innovative monitoring tools augment patient care. The tangible benefits experienced by medical professionals and patients are further supported by case studies and expert insights, shedding light on ethical considerations, potential limitations, and future prospects.

Conclusions: This video presentation encapsulates a paradigm shift initiated by AI in the field of corneal and refractive disorders, bridging the technological and medical domains. By illustrating the transformative potential of AI, the presentation sets the foundation for a future where eye care becomes more accurate, accessible, and tailored to individual needs. The comprehensive guide aligns with contemporary research, governmental regulations, and future trends, making it a valuable resource for professionals eager to understand and harness the power of AI in ophthalmology.

Simulation-Based Training in Phacoemulsification Surgery

*First Author: Kimaya **CHAVAN***
*Co-Author(s): Chetan **AHIWALAY**, Ashish **BACCHAV***

Purpose: To demonstrate the efficacy of simulation-based training in Phacoemulsification surgery.

Methods: Video demonstration of the simulator features, training tools, performance parameters and course delivery.

Results: Competency-based training using a virtual reality simulator.

Conclusions: Simulation-based training is very useful for novice surgeons.

Smart Vision Glasses

*First Author: Sahithya **BHASKARAN***
*Co-Author(s): Jeyaseeli **FLORA***

Purpose: Vision impairment is a serious setback in one's life. Effective rehabilitation has been shown to increase the quality of life and independence in persons with Visual Impairment. Rehabilitation options for the visually impaired are scarce, and also affordability and access are major challenges.

Methods: Smart Vision Glass (SVG) is a wearable device incorporating artificial intelligence, machine vision and machine learning to recognize objects, read text, recognize faces, and navigate safely. It helps people with visual impairment understand the world through audio feedback. Persons with vision impairment (Visual acuity <6/60, Visual field <20 degrees), total blindness and children with learning disability will benefit from this device. This is a lightweight, portable device attached to a spectacle. It can recognise faces with age and expression, store faces, read Indian languages and handwritten notes, and identify obstacles in one's path.

Results: More than 200 patients with vision impairment have benefitted from this device so far. Compared to other AI gadgets, this device is affordable, supporting local languages and handwritten notes. SVG is a comprehensive, affordable solution that encourages independence and promotes inclusivity.

Conclusions: This provides an opportunity to not have to hold on to an optical aid or a sighted guide. SVG supports the Indian regional language. It is an all-in-one device that promotes independence and mainstream opportunities for patients with VI. Additionally, It also assists children with special needs and learning disability to read and identify things around them, allowing them to enter inclusive mainstream learning.

The Tall Lamp – Does Your Work Hurt?

*First Author: Vigneshwar **RAMAKRISHNAN***
*Co-Author(s): Rekha **SREEDHAR***

Purpose: Slit lamp examination is an indispensable part of ophthalmology practice. During a slit-lamp examination, awkward posture with fine motor control creates tension in the head, neck, and upper extremities. Mostly, our work involves slouching, stooping, and bending forward. The prevalence of musculoskeletal disorders in ophthalmologists ranges between 50-80% in various countries. Therefore we aimed to develop a system that helps to prevent physical strain and maintain ergonomic posture during examination.

Methods: Our approach involved a collaborative effort between ophthalmologists, engineers and usability experts. We meticulously analysed the ergonomic obstacles inherent in ophthalmic procedures, considering anthropometric data and ergonomic principles to guide the design process. To align the head, neck and torso in a straight line, we have designed a slit lamp platform system to examine the patient, with the doctor in a standing position. The prototype was refined to the current design based on the suggestions of ophthalmic practitioners.

Results: Implementation of our ergonomic system helps in aligning the head, neck and torso in a straight line. Practitioners reported a significant reduction in physical strain and an increased level of comfort during procedures. The qualitative feedback further underscored the user-friendly interface and intuitive design.

Conclusions: This is a simple yet effective solution to prevent musculoskeletal disorders in ophthalmologists. By prioritising practitioners' well-being, we anticipate improved patient outcomes and prolonged careers

for ophthalmologists. As ophthalmic care evolves in all aspects, embracing an ergonomic system for the ophthalmologist holds the key to sustaining excellence in patient care and practitioner satisfaction.

Academia, Research, Teaching and Education in Ophthalmology

Application of iStent Inject: Technique, Indications and Outcomes

First Author: Sahebaan ***SETHI***

Purpose: This video is for ophthalmologists to acquaint themselves with the correct technique of implantation along with understanding indications and contraindications to implanting this device. Positioning the patient for the MIGS procedure is also unique. Since there is no published literature or experience shared by any ophthalmologist on the outcomes of this device officially, this video will provide a verified platform to follow.

Methods: This video starts with a two-case scenario of patients who were non-compliant and uncontrolled with antiglaucoma medications and were suffering from severe ocular surface disease and how they benefitted from iStent inject implantation. The video showcases an animated version of iStent inject implantation (taken from Glaukos Corp. with permission), for easier understanding of the placement, device and injector design. This is followed by a high-definition video of the device implantation. Explained in detail is how to attain adequate MIGS stance. The viewer is then made aware of the general considerations while choosing a suitable candidate and the contraindications for the device. Complications and outcomes are discussed.

Results: Teaching points in the video are: (1) Indications and contraindications for iStent inject implantation. (2) Achievement of adequate patient and surgeon positioning for MIGS. (3) Technique of iStent inject implantation. (4) Two case scenarios exemplifying the application of the device (5) Side effects of the procedure (6) Short literature review.

Conclusions: iStent inject implant is a promising device for open angles, mild-moderate stage of glaucoma. It is especially useful in patients who have an allergy to, are non-compliant, or have difficulty in taking their anti-glaucoma medications.

Best Dystrophy – Made Easy

First Author: Harinikrishna ***BALAKRISHNAN***

Purpose: Best vitelliform macular dystrophy is the second most common macular dystrophy caused by a mutation in the BEST1 gene on the 11q13 chromosome. It has a complex presentation with multiple stages. This educational video aims to make it simpler to understand the course, pathology, and stages of the disease, which would especially benefit the postgraduates and residents.

Methods: An educational video that runs less than 5 minutes, created with the sole motive of making learning simple.

Results: An important topic like best dystrophy was made easy to understand for the residents.

Conclusions: This educational video aims to make it simpler to understand the course, pathology, and stages of the disease, which would especially benefit the postgraduates and residents.

Eye Grader – App to Grade Clinical Signs in Ophthalmology

First Author: Anju ***KURIAKOSE***

Purpose: To create a smartphone app with different grading systems to help with the clinical grading of ophthalmic signs.

Methods: The authors searched for various grading systems for clinical signs in ophthalmology and sanitized the results to get reliable information. Then the data was made into sections based on sub-specialty and then disease. This was made into a smartphone app using some programming tools such as PhoneGap and Cordova. Thus, the authors made a comprehensive Ophthalmology App for Grading in Ophthalmology and named it 'Eye Grader".

Results: Ophthalmology is a very visual field of medicine. We can see and objectively assess several parameters and disease severity. There are grading systems for AC Depth, Lens Opacity, Cells, Flare, Papilledema, gonioscopy, vitreous haze, afferent pupillary defect, hyphaema, tropias, cataract, glaucoma, diabetic retinopathy, age-related macular degeneration, dry eye, meibomian gland dysfunction, retinopathy of prematurity, sickle cell retinopathy, hypertensive retinopathy, macular hole, retinoblastoma, and so on. This app provides a handy reference for any type of grading in ophthalmology with a searchable index based on the parameter and also the name of the grading.

Conclusions: The app is freely accessible through the Android Play store and is being planned for the Apple App Store as well in the near future. It is a quick and free reference app that helps to make uniform clinical gradings for easy and proper documentation and follow-up of patients. We hope this free App made by the authors and available on Play Store helps ophthalmologists all over the world follow uniform clinical grading.

Let's Do It: The Potential of General Ophthalmologist

*First Author: Hiranmoyee **DAS***

Purpose: To kindle some interest in oculoplasty and aesthetic procedures among the comprehensive ophthalmologists.

Methods: Retrospective analysis of various oculoplastic and aesthetic procedures performed by a general ophthalmologist at a tertiary health care centre in northeast India.

Results: Lid surgeries (various types of lid reconstruction, ptosis correction, blepharoplasty, orbital surgeries (reduction & fixation of orbital fracture, removal of orbital foreign body, exenteration), conjunctival, lacrimal, squint & glaucoma were found being done.

Conclusions: A general ophthalmologist also can attain the required minimal skills by good reading, attending lectures, workshops, live demonstrations and practising skills in hands-on courses. Good instruction courses of various national and international ophthalmic societies and dedicated sessions of oculopastic societies in their annual conferences are also very helpful.

Pterygium Excision: The Saw Wire Suture Way

*First Author: Manmeet **SINGH***

Purpose: To introduce a new technique for the removal of pterygium and provide a clear corneal surface without having much need for additional scraping/ polishing.

Methods: We took 7 eyes of 7 patients with grade 3 primary pterygiums, in which we introduced a plane of blunt dissection beneath the junction of the neck and body of pterygium followed by the introduction of a 4-0 mersilk suture (acting as a saw wire dissector). On the other hand, an assistant held and introduced the muscle hook for counter-traction force. Dissection is made within 2-3 seconds, giving a clean and smooth corneal surface.

Results: In all cases, there was a clean dissection of the pterygium head from the corneal surface with minimal need for scraping using a crescent blade. Post-op results yielded an improvement in vision in all cases.

Conclusions: This technique provides the best results in terms of giving a better dissection plane, smoother corneal surface, less time, and minimal need for additional scraping and/or polishing. It has given us yet another technique modality to evaluate in a more detailed view the comparison between peel-off or air injection techniques in future as a research prospective.

Repurposing - An Interesting Approach to Eyecare Waste

*First Author: Prabhu Krishna **RAVILLA SRIRAM***
*Co-Author(s): Nishant **MAINDARGI**, Rengaraj **VENKATESH***

Purpose: Consumption has defined the human race in the 21st century, depleting the Earth's finite resources at an alarming pace. Urgent action is no longer a choice, but a necessity. To navigate these challenges, the concept of 7 'R's of sustainability - Reduce, Reuse, Recycle, Repurpose, Recharge, Repair, and Rethink, gains significance. This video introduces repurposing and rethinking within the realm of ophthalmology, showcasing their potential roles.

Methods: We looked at the several ways we implement repurposing of waste in our center and highlighted a few of the important ones in the video.

Results: Repurposing of waste can be implemented across the healthcare setup. Operating rooms are the major source of waste, and repurposing can play a huge role in reducing that. Plastic covers, often discarded, are ingeniously employed to enhance sustainability. In the operating room, they can be used to cover and shield PHACO foot pedals from fluid damage. Moreover, these covers are repurposed to protect fragile A-scan printouts, enhancing their longevity. IOL boxes, typically discarded in the OR after cataract surgery, are repurposed to organize eye drop bottles and prevent confusion. These boxes also safeguard critical machine switches from inadvertent disruptions during surgery. These are just a few of the many examples covered in the video.

Conclusions: Repurposing is an effective, easy-to-implement method of decreasing eyecare waste and carbon footprint; this video encourages ophthalmologists to contribute to an eco-friendly and sustainable eye care environment. Repurposing has enormous potential in mitigating waste generation, promoting resource efficiency, and fostering a more sustainable future.

Tips and Tricks for Safe Manual Small Incision Cataract Surgery (MSICS)

*First Author: Megha **NAIR***
*Co-Author(s): Shivraj **TAGARE***

Purpose: This instructional video aims to provide valuable tips and tricks for novice surgeons to perform Manual Small Incision Cataract Surgery (MSICS) safely and effectively.

Methods: The video begins by stressing the importance of wet lab simulation to foster smooth hand-eye coordination, which is essential for any microsurgeon. By showcasing the critical steps of MSICS, from tunnel construction to anterior chamber formation, it equips viewers with essential insights for performing the procedure accurately. The video highlights the

introduction of the MSICS tunnel stamp, a novel device aiding surgeons in creating precise sclero-corneal tunnels. This innovative tool can significantly enhance surgical precision, especially for those early in their MSICS journey. Furthermore, the video addresses the various approaches for nucleus prolapse in different cataract grades.

Results: The video acts as a comprehensive guide for novice surgeons seeking to refine their MSICS skills in a safe and efficient manner. By emphasising the importance of consistent practice outside the operating room and building on foundational skills, the video sets a path for continuous improvement and successful outcomes.

Conclusions: This instructional video offers valuable insights and techniques to enable novice surgeons to perform MSICS with confidence, enhancing patient care and ophthalmic surgical practices. Aspiring ophthalmic surgeons can benefit significantly from this instructional resource, paving the way for a rewarding and successful career in ophthalmology.

Video-based Learning and Teaching in Ophthalmology

*First Author: Mantapond **ITTARAT***
*Co-Author(s): Sunee **CHANSANGPETCH***

Purpose: To demonstrate video lessons for ETDRS testing.

Methods: This is the video lesson for ETDRS testing. Students use this lesson to learn how to do the ETDRS testing correctly within 2 minutes.

Results: Video-based learning is a great tool for e-learning. It grabs viewer attention and adds to learner engagement. It allows training to be flexible and practical.

Conclusions: Video-based learning is a cost-effective training approach.

Big Data, Artificial Intelligence and Telemedicine in Ophthalmology

Unlocking Codeless Paradigms: A Blueprint for Constructing Ophthalmic Artificial Intelligence (AI) Models Without Coding

*First Author: Suklengmung **BURAGOHAIN***
*Co-Author(s): Henal **JAVERI***

Purpose: The purpose of this video is to enable clinicians, researchers, and medical professionals with limited coding expertise to develop robust ophthalmic AI models by utilizing codeless machine learning platforms.

Methods: We employed an automated machine learning (AML) platform that provides a user-friendly interface for designing, training, and evaluating AI models without the need for coding.

Results: This video demonstrates an easy and approachable method for clinicians and researchers with limited coding expertise to develop competent AI models by leveraging transfer learning from pre-trained models on AML platforms. A codeless machine-learning platform facilitates model creation without necessitating intricate programming skills.

Conclusions: The utilization of codeless machine learning platforms presents a user-friendly pathway for clinicians and researchers to develop effective ophthalmic AI models. This approach lowers the barriers to entry in AI model development, promoting broader engagement in AI-driven medical diagnostics. As demonstrated through our video, these platforms empower non-programmers to contribute meaningfully to the advancement of ophthalmology, ultimately enhancing patient care and disease management.

Cataract

'Reverse Kelman Phacotip' for Posterior Polar Cataract

*First Author: Abhijit **HANDIQUE***

Purpose: To evaluate the efficacy of 'reverse Kelman phacotip', which is a simple modified version of 'classical Kelman phacotip' in posterior polar cataract surgery. The 'classical Kelman phacotip' is modified to reverse the curvature in the opposite direction. This modification changes the entire surgical technique and phacofluidics and thus provides enhanced safety to the posterior capsule and increased maneuverability. These could be useful in the management of posterior polar cataracts, which have a higher intraoperative risk of posterior capsular dehiscence.

Methods: Twenty otherwise uncomplicated cataracts were operated using a 'reverse Kelman phaco tip'. All surgical events were documented, and a surgical video was recorded. A modified 'phaco-chop' technique and 'no nucleus rotation' fragment removal was performed which was allowed by the 'reverse Kelman phacotip'.

Results: The surgical procedure was uneventful in 18 cases. 2 out of the 20 cases, encountered posterior capsular dehiscence and were managed successfully as per the recommended procedure.

Conclusions: 'Reverse Kelman phacotip' can be considered a superior alternative choice in operating posterior polar Cataracts. This is because of enhanced safety to the posterior capsule contributed by the

modified technique and no requirement for nuclear rotation. This technique is demonstrated in the surgical video.

A Challenging Case of Viral Endotheliitis With the Decompensated Cornea Managed With Small Incision Cataract Surgery

*First Author: Kanchangouri **SATPUTE***
*Co-Author(s): Dattatraya **SHINDE***

Purpose: To show how simple surgical techniques give excellent visual outcomes in challenging situations.

Methods: We had 60 a 60-year-old female patient with a history of viral endothelitis 10 years back, now with a diminution of vision in the left eye. On slit lamp examination, we noted corneal decompensation and grade 4 nuclear sclerosis. The patient was one-eyed with other eye pthysical since childhood.
In this challenging situation, instead of going to phacoemulsification, we decided to go for small incision cataract surgery (SICS).

Results: Small incision cataract surgery was done with a foldable intra-ocular lens in a bag with excellent post-operative vision. The patient had a vision of counting fingers at 1 meter before surgery, which improved to 6/36 on post-operative day 1 and 6/18 (BCVA) after 1 month.

Conclusions: We conclude that simple SICS gives better results in challenging situations like this case instead of going for phacoemulsification, which may worsen the condition with further endothelial damage.

A New Approach to Re-enclave Dislodged Haptic in Subluxated Iris Claw Anterior Chamber Intraocular Lens

*First Author: Pei Fang **NEOH***
*Co-Author(s): Zamri **NOORDIN***

Purpose: To demonstrate a new, easy approach to re-enclave dislodged haptic in subluxated iris claw anterior chamber intraocular lens.

Methods: Video.

Results: We would like to introduce an alternative way to re-enclave the dislodged haptic of an iris claw anterior chamber intraocular lens (AC-IOLs) retropupillarily through a pre-existing surgical peripheral iridotomy. A 10-year-old boy had an iris claw anterior chamber intraocular lens (AC-IOLs) implantation post-cataract surgery 8 years ago. He was noted to have bilateral spontaneous subluxated iris claw AC-IOLs during routine follow-up. The main challenge of re-enclaving the haptic is the atrophied iris stroma from previous surgery that hinders the conventional technique of using the enclavation needle to re-enclave the haptic. In this video, we will demonstrate a simple technique to overcome this by using a Sinskey hook (an alternative option is a 23G cannula that is attached to a 3cc syringe).

Conclusions: A non-conventional technique to enclave the haptic of an iris claw anterior chamber intraocular lens (AC-IOLs) retropupillarily through a surgical peripheral iridotomy by using a common readily available surgical instrument in cataract surgery. This serves as an alternative option in certain challenging cases where conventional technique is not feasible.

Conquering Hypermature Intumescent Cataracts- The Double Rhexis Method

*First Author: Ankit **AGRAWAL***
*Co-Author(s): Sameeksha **AGRAWAL**, Krishna Kumar **AGRAWAL***

Purpose: Capsulorhexis is the most important step for a good cataract surgery. In an intumescent cataract, the risk of rhexis run-out is high. Here is an easy technique of double rhexis, which helps in reducing the risk of capsulorhexis runout in intumescent cataracts.

Methods: Various systems like Zepto (R) and Femtosecond Lasers have been developed which aid the surgeon in performing a round and safe capsulorhexis, but these systems are not affordable and out of reach for most surgeons. In an intumescent cataract, the risk of rhexis run-out is high due to the high intralenticular pressure as compared to the pressure in the anterior chamber. I am presenting the technique of Double Rhexis wherein firstly, the AC is filled with a high viscosity viscoelastic like sodium hyualuronate. This raises the anterior chamber pressure and does not leak much from incision sites, thus flattening the anterior capsule. Then a small central rhexis is done using cystitome and/or micro rhexis forceps, and using I/A, the cortical matter is aspirated thereby debulking the crystalline lens. Now a larger rhexis can be performed safely.

Results: The chances of rhexis runout in intumescent and hypermature cataracts by using this technique are reduced.

Conclusions: This technique makes the process of capsulorhexis in Intumescent cataracts relatively simpler, and fewer chances of rhexis run-out are there. It is especially helpful for beginner surgeons as it is easy to replicate in any setup.

Dueling a Morgagnian Cataract Which Is Mistaken as Subluxated Crystalline Lens

*First Author: Tommy **ATMAJA***

Purpose: To describe a phacoemulsification technique of morgagnioan cataract which has lost its liquefaction material and was presumed to be subluxated lens cataract.

Methods: A 75-year-old female was referred to our clinic for worsening vision in the last few months.

There was no history of trauma in her eyes. She had been diagnosed with mature cataracts several years ago. Her best-corrected visual acuity was 0,5/60 in the right eye (RE) and 3/60 in the left eye (LE), with intraocular pressure at 17 and 13mmhg, respectively. The lens showed subluxation to the interior with no phacodonesis found on the RE. We considered it a subluxated cataract lens case and planned for phacoemulsification surgery with intracapsular cataract extraction as a backup plan.

Results: We found the anterior capsule was intact intraoperatively. Capsulorexis could be performed on areas where subluxation was suspected. We considered this case as a morgagnian cataract which had lost its liquefied cortex. The nucleus was taken out of the capsule with a small iris spatula, and phacoemulsification was performed. We used a bottle height of 100cm and did segment removal slowly. During phacoemulsification, we found a weak area and this was probably the location where the cortex had emerged. We completed the surgery by inserting the posterior chamber intraocular lens without a capsular tension ring.

Conclusions: The migration of liquefied cortex into the vitreous is one of the complications of hypermature cataracts. This can lead to a misdiagnosed of crystalline lens subluxation. Therefore, this should be kept in mind during the clinical evaluation of patients.

Femtosecond Laser-Assisted Lens Exchange Surgery With Implantation of a Trifocal Intraocular Lens in a Albinism, Nystagmus and Amblyopia Case

*First Author: Yuanfei **ZHU***

Purpose: To present a rare case diagnosed with albinism, nystagmus, and amblyopia who underwent femtosecond laser-assisted lens exchange surgery with implantation of a trifocal intraocular lens in both eyes.

Methods: A 56-year-old man seeking to reduce his dependency on glasses was diagnosed as suffering from presbyopia with a history of albinism, nystagmus, amblyopia, and myopia, a refraction of -5.00 diopters (D) and -6.5 D, and best-corrected distance visual acuity (BCVA) of 20/30 in each eye. We performed femtosecond laser-assisted lens surgery (FLALS) with the implantation of trifocal lenses (Panoptix). The post-operative evaluation included a visual acuity (VA) test at three distances (far-5m, medium-60cm, and near-40cm), BCVA, and a questionnaire about the patient's experience with photic phenomena and overall satisfaction with the achieved quality of vision.

Results: One month postoperative, the patient's far, medium, and near VA was 20/30,20/30, and 20/30 in both eyes; BCVA was also 20/30 in both eyes, with no further surgeries or other associated complications. He achieved spectacle independence in his daily activities.

Conclusions: This case suggested that FLALS presents a feasible surgical technique and optimistic outcome with trifocal IOL implantation for an albinism, nystagmus, and amblyopia case.

Four-Point Flange Intrascleral Fixation With Double Suture Through the Dislocated Plate-Haptic Trifocal Intraocular Lens

*First Author: Yong **WANG***

Purpose: To describe a technique for the replacement of dislocation of plate-haptic trifocal intraocular lens (IOL) through double-suture four-point flange intrascleral fixation.

Methods: A total of 7 eyes of 7 patients with a dislocated plate-haptic trifocal IOL were enrolled for four-point flange intrascleral fixation with double 7-0 polypropylene suture. Preoperative and postoperative visual acuity, operating time, refractive results, postoperative IOL tilt and decentration, intra-operative and postoperative complications were recorded.

Results: The mean postoperative uncorrected distance visual acuity (UDVA) was 0.05 ± 0.06 logMAR. The mean postoperative uncorrected intermediate visual acuity (UIVA) at 80 cm was 0.09 ± 0.06 logMAR and the mean postoperative uncorrected near visual acuity (UNVA) at 40 cm was 0.06 ± 0.07 logMAR. The mean postoperative residual spherical equivalent values were − 0.27 ± 0.39 D. VF-14 questionnaire showed that no difficulty was found in >80% of subjects for all of the tasks. The mean surgical time was 16.23 ± 5.64 minutes. The mean tilt of IOL was 3.74 ± 1.31° and the mean decentration of the IOL was 0.18 ± 0.09 mm. No important complications appeared.

Conclusions: The authors have described the technique of four-point flange intrascleral fixation for plate-haptic trifocal IOL.

Gosh! A Traumatic White Intumescent Cataract in a High Myopic Eye!

*First Author: Hong Nien **LEE***

Purpose: To demonstrate an approach in managing a white intumescent cataract in a high myopic eye, which minimizes the risk of Argentinian flag sign, zonulodialysis, and posterior capsular rent.

Methods: Intraoperatively, anterior chamber depth was well maintained. Bag decompression was done prior to continuous curvilinear capsulorhexis. A round, moderately sized CCC was aimed. hydrodisection with dialing of the nucleus was avoided. The lens was aspirated with minimal phacoemulsification. A thorough polishing of the capsule was carried out.

Results: The intraocular lens was well and stable. The patient's vision regained 6/6 from hand movement.

Conclusions: Taking cautious steps in the surgery can help to avoid potential disasters. The anterior capsule can be easily ruptured in an intumescent cataract.

Groove Less/Flapless Intrascleral Fixation of Implantable Polypropylene Capsular Hooks to Reconstruct Capsular Support for Sulcus Placement of IOL

First Author: Sunil ***GANEKAL***

Purpose: To explain a novel technique of capsular bag reconstruction with polypropylene capsular hooks for stable sulcus fixation of IOL.

Methods: A capsular hook made of 5-0 polypropylene was attached to a curved needle. Hooks were created by thermoplasticity using a high-temperature cautery device. A fibrotic capsular band of CCC was essential for the hooks' placement. The needle attached to the capsule hook was inserted through a main incision or side-point incision opposite to the fixation site and was guided out through the sclerotomy by docking its tip in a 27-gauge (or 30-gauge) needle penetrating through the ciliary sulcus at the fixation site 1.5 mm to 2.0 mm posterior to the limbus. An intrascleral pass of the needle shaft of the hook was performed before delivering the hook into the anterior chamber. The hook was placed to hold the fibrotic capsular band at the corresponding area of capsular/zonular defect. The tension of the hook was further adjusted by pulling or pushing its externalized shaft to restore the capsular support. The three-piece posterior-chamber IOL was implanted before or after the reconstruction of the capsular support. The externalized tip of the hook was trimmed flush to the surface of the sclera using scissors. The end of the tip flush to the sclera was pushed and buried into the scleral tunnel.

Results: No intraoperative complication, IOL remained well centered. There is no erosion or exposure of the trimmed end of the hook shank. No postop complications.

Conclusions: Intrascleral polypropylene capsular hooks help to restore capsular support for out-of-the-bag IOL implantation in eyes with capsular/zonular defects.

IOL Implantation Blues

First Author: Tejas ***ATNOOR***
Co-Author(s): Krishnaprasad ***R***

Purpose: To demonstrate the various surgical situations in which IOL implantation goes awry and leads to complications. It aims to educate ophthalmic surgeons about potential complications in intraocular lens (IOL) implantation procedures. By showcasing diverse scenarios, it underscores the importance of precise surgical techniques and thorough preoperative assessment to mitigate complications.

Methods: The video compiles real cases illustrating complications during IOL implantation in otherwise routine cases. Categorized into sections, it includes various issues faced by the surgeon and also how to resolve them. Cases are presented through surgical footage of surgeries during regular recording.

Results: The video effectively raises awareness of potential complications, enhancing surgeons' understanding of various parameters to be checked, meticulous surgery, and complication management. The surgeon gains insights into various intervention strategies and risk reduction. Thereby optimizing patient results. The compilation contributes to collective ophthalmic knowledge, encouraging continuous improvement in IOL implantation techniques.

Conclusions: The IOL implantation, though appearing simple and technically nondemanding, can go wrong in a myriad of ways and produce needless trauma to eye structures and even the IOL resulting in sub-optimal outcomes. Familiarity with various IOL designs, their cartridges, loading, injection, and ultimately, implantation techniques, are the cornerstones of successful implantation. This video equips ophthalmic surgeons to anticipate, prevent, and manage complications in IOL implantation. By visually presenting real-world routine cases and discussing preventive measures, it empowers surgeons to navigate challenges effectively, ultimately improving the safety and success of cataract surgeries.

Innovative 8/0 Vicryl Assisted Hooked Haptic Externalization and Tucking

First Author: Zia ***MAZHRY***
Co-Author(s): Faiza ***HASSAN***

Purpose: The purpose of the video presentation is to showcase and explain a novel surgical technique of Innovative 8/0 Vicryl Assisted Hooked Haptic Externalization and Tucking for AcrySof Multipiece IOL. This technique involves utilizing an 8/0 Vicryl suture to facilitate the externalization and tucking of hooked haptics during IOL implantation.

Methods: The technique involves using an 8/0 vicryl suture to externalize the already hooked haptics of AcrySof multipiece IOL through both tucking sites. The IOL haptics ends are moulded into fish hooks using a heated needle holder. The Vicryl suture is threaded into a 26-27 G hypodermic needle and passed into the eye from the tucking site 1mm posterior to the limbus. The suture is pulled out of the eye through the preplaced main incision. The suture is tied to the hooked haptics of the IOL. The IOL is carefully introduced into the eye and haptics are simply externalized by applying traction on the sutures. Subsequently, the same vicryl suture is used to place the hooked haptic into the tunnel, centralize, and secure it.

Results: The lens was well-tucked and centered at the end of the procedure.

Conclusions: This innovative technique provides additional support and stability for the IOL in cases where traditional methods may not be sufficient due to compromised capsular support or other anatomical challenges. The use of 8/0 Vicryl sutures and specialized hooks enables precise manipulation and customization of IOL haptic externalization and tucking, reducing the risk of haptic damage and IOL decentration.

Instrascleral Haptic Fixation Yamane Technique in Small Pupil: Fights in Tight Spaces

*First Author: Florentina **PRISCILIA***
*Co-Author(s): Triana Hardianti **GUNARDI**, Faraby **MARTHA**, Burhana **MAWARASTI**, Andi Marsa **NADHIRA**, Lily **PUTRI***

Purpose: Intrascleral haptic fixation (ISHF) Yamane technique in small pupils with the absence of capsular support can be a challenge.

Methods: The case illustrates the ISHF Yamane technique in an aphakic 57-year-old female. Intraoperatively, retained lens fragments were found after the pupil was dilated using an iris retractor.

Results: The patient had a history of cataract extraction without lens implantation of both eyes (BE) 40 years ago, and has worn soft contact lenses (SCL) in +11.00 for both eyes afterwards. Vitreous wick was found in the anterior chamber (AC) without any cells, and aphakia was observed on the examination. Ultrasonography examination was unremarkable. The patient underwent the ISHF Yamane technique preceded by mechanical pupil dilatation. After the iris retractor was placed, an unforeseen retained lens fragment was detected with a size of 3x6x1.5 mm, followed by gentle fragment extraction. Performing the IOL implantation, especially haptic insertion to the lumen with microforceps maneuver between the iris and the endothelial cornea, was challenging due to shallow AC after mechanical pupil dilatation. Iris retractors are one of the most common modalities for mechanical pupil dilatation. Paracentesis of each retractor needs to be performed properly, without giving too much tension that pulls the iris upward, so that difficulties in surgical maneuver and disruption in intracameral fluid circulation can be avoided.

Conclusions: ISHF Yamane technique in small pupils is challenging. Thorough pre-operative examination, proper placing of the iris retractor, making sure of adequate visualization, and careful insertion of IOL are crucial to dealing with an aphakic patient with a small pupil.

Late Onset Post Vitrectomy Posterior Capsular Plaques the Worthy Truths

*First Author: Thirumalesh **M B***
*Co-Author(s): Aayesha **KHANUM***

Purpose: To demonstrate that the late onset posterior capsular opacities are secondary to the metaplastic proliferation of the lens epithelial cells and that they are present on the anterior surface of the posterior capsule. One of the easy ways to manage them is to identify the extent and peel using fine membrane peeling forceps, as this preserves the capsular integrity wholly, providing media clarity and helping preserve IOL centration.

Methods: Intraoperative marking and peeling of posterior capsular plaque will be demonstrated using a surgical video.

Results: Late-onset posterior capsular opacities are secondary to the metaplastic proliferation of the lens epithelial cells, and they are present on the anterior surface of the posterior capsule.

Conclusions: Intraoperative peeling of posterior capsular plaque during cataract surgery is a less invasive way of restoring clarity of the capsule when compared to both membranectomy and YAG capsulotomy. Our video also demonstrated that the reason for PC plaque in SO-filled eyes is oil-induced metaplasia on lens epithelial cells, and not the calcification of the lens capsule per se.

Loose Lenses: Ectopia Lentis Management in Marfan Syndrome

*First Author: Raymund **TANCHULING***

Purpose: This is a surgical video demonstrating the stepwise management of a 21-year-old female with ectopia lentis from compromised zonules from Marfan syndrome.

Methods: We highlight the crucial elements to successful surgery in a patient with compromised zonular support. The first step was the use of dispersive viscoelastic to coat the exposed zonules and tamponade the vitreous. Capsulotomy with a Gauge 27 needle was done to initiate continuous curvilinear capsulorrhexis, making sure the distal flap edge was seen, and regrasping frequently to control torque. Iris hooks were placed for bag stability during capsulorrhexis. Hydrodissection and gentle aspiration of lens material followed, avoiding aspirating near the equator in the compromised area. A capsular tension ring was implanted into the bag with small downward rotating movements toward the area of zonular weakness. Conjunctival peritomy was completed, and two adjacent sclerotomy sites were created with a bent 27-gauge trochar needle and a straight Prolene 10-0 needle. A capsular tension segment was threaded with the intracameral suture needle and looped around to exit the sclera using the trochar. Once capsular bag

centration was confirmed, the suture was tightened using a slipknot technique, and a single-piece acrylic lens was inserted in the bag.

Results: One day post-operatively, uncorrected visual acuity was 20/40, and the capsular bag- intraocular lens complex was centered and stable.

Conclusions: Posterior chamber intraocular lens implantation with capsular fixation devices remains an elegant technique in managing patients with mild to moderate lens subluxation, stressing the importance of careful preoperative planning in complex ocular cases.

Losing the Haptic But Not the Hope: Hang Back in Complicated Yamane

*First Author: Triana **GUNARDI***
*Co-Author(s): Faraby **MARTHA**, Burhana **MAWARASTI**, Andi Marsa **NADHIRA**, Florentina **PRISCILIA**, Lily **PUTRI***

Purpose: To demonstrate a novel approach for salvaging intraocular lens (IOL) dislocation following a complicated Yamane surgery in an 85-year-old patient. Our aim is to showcase the application of the Hang Back technique as a minimally invasive solution.

Methods: The video begins with a brief introduction to the patient's history of Yamane surgery and subsequent IOL dislocation. We then detail the Hang Back technique, where we suspend the haptic from losing and hang it back to an appropriate new angle, while combining another anchoring sling to enhance the overall IOL stability. Through step-by-step visuals, viewers will witness the meticulous surgical process and understand the methods used.

Results: The advent of the Yamane technique has revolutionized the field of ophthalmic surgery, offering a minimally invasive approach for transconjunctival scleral fixation of IOLs. However, in cases of postoperative complications, such as IOL decentration, innovative strategies are required to salvage the situation. This video showcases the successful application of the Hang Back technique for IOL salvation after a complicated Yamane surgery in an 85-year-old patient. It underscores the method's potential to address IOL dislocation while minimizing surgical trauma without replacing the IOL.

Conclusions: The Hang Back technique offers a promising strategy for managing IOL dislocation after complicated Yamane surgery. The practicability of this technique proposes a minimally invasive procedure in elderly individuals. Further research and widespread adoption of this technique could revolutionize the management of IOL complications, offering hope for patients facing similar challenges.

Managing Intumescent and Hard Cataracts – Not So Hard Way

*First Author: Akshay **MITRA***
*Co-Author(s): Kunal **MANDLIK**, Simran **SONI***

Purpose: The main aim of this video is to show some easy approaches towards mature and intumescent cataracts in order to avoid dreaded complications and compare them with routine surgeries done in 2021-2022.

Methods: We applied easy-to-do techniques like Tomy-rhexis, onion peel, and debulking in order to reduce complications like the Argentinian flag sign, and this extension in Intumescent and Hard Nuclear cataracts during the year 2022-2023.and compared the number of complications with the previous year's. For proper comparison, the surgeries included in the study were done by a single surgeon.

Results: (1) Significant lowering in Rhexis-related complications in hypermature and intumescent cataract was seen.

Conclusions: (1) The techniques shown in the video significantly help the surgeon in decreasing the risk of complications in high-risk cases. (2) The techniques do not require much learning curve or any special instruments. Limitation: (1) Slight decrease in complications could be attributed to increasing experience in handling complicated cases as well.

Managing Iris and Vitreous Prolapse One Month After Cataract Extraction

*First Author: Khushbakht **PETERS***

Purpose: Management of late complications secondary to cataract extraction.

Methods: A 65-year-old lady presented with a history of right cataract extraction without IOL. She had undergone phacoemulsification, which was converted to extracapsular cataract extraction. On examination, her unaided vision was CF ½ m; with glasses, it was 6/18. Continuous sutures were present but were broken. The Anterior Chamber (AC) was filled with the vitreous with iris prolapse. There was adequate capsular support from 1.30 to 10.30 o'clock. The first step in surgery was the removal of the broken sutures. This was followed by the removal of the membrane over the iris, and separation of the prolapsed iris from the cornea with the help of dry cotton wicks with repositioning. Due to the tight adherence of the iris with the sclera, mechanical separation was done with the help of suture-tying forceps, followed by the repositioning of the iris. This was followed by anterior vitrectomy. A PI was made inferiorly as we were expecting a lot of inflammation, which can later lead to fibrosis and iris bombe. A non-foldable PC IOL was placed, followed by 4 stitches to close the wound. The AC was washed of any remaining viscoelastic.

Intracameral 0.4 mg/ 0.1ml Dexamethasone with Inj. Cefuroxime 1mg/ 0.1ml was given.

Results: The patient did quite well and came after a month with a BCVA of 6/12.

Conclusions: It is important that any patient who undergoes surgery should have a regular follow-up so that if there is any complication, it can be tackled as early as possible.

Managing Posterior Capsular Rupture (PCR) During Combined Phacoemulsification and Pars Plana Vitrectomy (PPV) Surgery

First Author: Chi Lik ***AU***

Purpose: To illustrate different tips for managing PCR during combined PPV surgery.

Methods: A 61-year-old lady with a full-thickness macular hole underwent combined phacoemulsification and intraocular lens (IOL) insertion with PPV and inverted internal limiting membrane (ILM) peel. PCR occurred at the early stage when almost the whole cataract lens was still in situ. 15 different tips were demonstrated in the video.

Results: (1) Adequate mydriasis and anaesthesia. (2) Better position everything. (3) Notice PCR early. (4) Appropriate use of OVD, not too much, not too little. (5) Don't panic! Utilize the phaco probe in the anterior segment to remove as much lens matter as possible. (6) Maintain posterior infusion to keep the intraocular pressure (7) Preserve anterior CCC rim as intact as possible for sulcus IOL. (8) Avoid pulling the vitreous to the corneal wound, well utilize the vitrectomy cutter opened. (9) Avoid corneal endothelial injury by haptic, adequate OVD to protect the corneal endothelium to maintain a clear corneal view for PPV later. (10) If CCC rim allows, try optic capture of sulcus IOL. (11) Small lens fragments can be grasped up by forceps. (12) Sclerostomy trocar can be the obstacle to en-bloc externalization of the lens fragments. (13) No single instrument can remove all small fragments. Each has its pros and cons. (14) Vitrectomy cutter can also cut & aspirate out some small lens fragments. (15) Back-flush soft tip cannula can also help to remove small lens particles from the retinal surface.

Conclusions: PCR during PPV could be frightening. A vitrectomy cutter, forceps, and a back-flush are good tools. Perfluorocarbon heavy liquids or a fragmatome may not always be needed.

Phaco Flip and Chop Technique – A Good Technique to Master in Cataract Surgery

First Author: Jason Allan Seng Soon ***CHEAH***

Purpose: To demonstrate the flip and chop technique as an efficient cataract surgery.

Methods: Video presentation.

Results: Cataract surgery is the most common surgery performed in the ophthalmology field. Many techniques have been created to improve the efficiency of the surgery, reduce surgery complications, and improve post-operative visual outcomes. The phaco flip and chop technique is one of the techniques whereby the nucleus prolapses out of the capsular bag and is chopped and emulsified. This technique brings the nucleus away from the posterior capsule and it uses less phaco energy, therefore there is less corneal endothelial damage. The other advantage includes less stress on the zonules, especially in cases of pseudoexfoliation or extreme myopia.

Conclusions: In summary, the phaco flip and chop technique is a good technique to master for selected complicated types of cataracts.

Phaco Tips

First Author: Abdul ***HANNAN***

Purpose: To teach young and inexperienced cataract surgeons, tips and tricks which would help them across many phase steps.

Methods: The video contains a collection of many small tips from different steps of phaco which help produce better and faster results.

Results: Each step is explained with a voice-over.

Conclusions: No complete phaco case is shown. A collection of different steps across many phaco cases is shared.

Phacoemulsification in a Case of Advanced Pupillary Blocked Glaucoma Secondary to Crystalline Lens Subluxation

First Author: Mazaya ***MAHMUD***

Purpose: To illustrate a surgical video of phacoemusification in crytalline lens subluxation in a patient with Marfan syndrome.

Methods: A surgical video.

Results: This video illustrates a right eye cataract surgery performed on a 46-year-old gentleman who presented with bilateral advanced pupillary block glaucoma secondary to a subluxated crystalline lens requiring 4 topical anti-glaucoma. Preoperative right and left vision were 6/9 and 6/12, respectively, with an axial length of 26.2 mm on the right and 26.7 mm on the left eye. Intraoperatively, the lens dislocation range was about 120 degrees and four capsular hooks and a capsular tension segment (CTS) were temporarily fixed on the edge of the capsule to stabilize the capsule for phacoemulsification. After the completion of phacoemulsification, CTS sutured at the dislocated part superiorly with Prolene 10/0, and a capsular tension ring was inserted for additional support to the remaining zonules. A single-piece intraocular lens (IOL) was implanted in the bag. There was no vitreous loss

noted during the surgery and the IOL was stable in the bag. Postoperatively, the intraocular lens remained stable in the bag, and the intraocular pressure was maintained in the lower teens with the use of a single anti-glaucoma medication. The vision in the right eye remained with a stable visual field.

Conclusions: The phacoemulsification approach aided by a capsular hook and capsular tension segment in cases of subluxated crystalline lens is effective and can reduce the risk of postoperative wipeout syndrome, given the lower risk of abrupt and significant intraocular pressure (IOP) decrease compared to extracapsular or intracapsular cataract extraction.

Retropupillary Iris Claw Lens Removal: My Learning Curve

*First Author: Deepak **AGARWAL***
*Co-Author(s): Sneha **BATRA***

Purpose: To show mistakes and lessons learned by a young Vitreo-retina surgeon in cases requiring the removal of iris claw lenses.

Methods: The author highlights the difficulties and complications associated with the removal of iris claw lenses. Necessary changes made in surgical techniques have been highlighted, which facilitates easier removal of iris claw lenses.

Results: Iris claw lenses were successfully removed after adaptation of a few surgical changes.

Conclusions: The present video highlights the challenges faced while trying to explant iris claw lens. It shows how a young surgeon learns and adapts a simple technique to remove such lenses using basic instruments.

Scleral Fixated Intraocular Lens Implantation (SFIOL) in Complicated Surgical Scenarios

*First Author: Poornachandra **BALUGHATTA***
*Co-Author(s): Aishwarya **JOSHI**, Thirumalesh **M B**, Naren **SHETTY**, Rohit **SHETTY***

Purpose: To report a case series of SFIOL implantation using the sutureless glueless technique in various simple and complicated surgical scenarios.

Methods: A series of surgical scenarios operated by the same surgeon, showcasing successful SFIOL implantation using the scleral tucking technique. This suture-less, glue-less technique involves the construction of partial thickness scleral side-pockets, 180 degrees apart from each other, facing in opposite directions. After completing the vitrectomy, a foldable or rigid 3-piece IOL haptics are exteriorized through these ends and buried into the side-pockets. Absorbable vicryl sutures are used only to close the scleral incisions if needed. SFIOL implantation to manage various complicated cases is shown. We also demonstrate how an SFIOL is implanted in the presence of a trabeculectomy bleb and a SICS tunnel which frayed open secondary to blunt trauma.

Results: A desirable final postoperative outcome with improved visual acuity, patient comfort and lower risks of complications. This minimises major and common complications of other methods, such as suture breakage, slippage, IOL tilt/ instability and exposure of haptic. It leaves the ocular surface looking impeccable, making it almost impossible to identify and differentiate from a posterior chamber IOL implantation as the incisions heal.

Conclusions: SFIOL implantation is an invaluable procedure for lens replacement in case of absence or a major deficiency of capsular support. This sutureless glueless technique can be adapted to minimise the problems associated with other techniques.

The Conundrum of the Argentinian Flag Sign

*First Author: Arnab **PAL***

Purpose: To evaluate the risks and strategies to manage a cataract surgery complicated by early “Argentinian Flag Sign” intraoperatively.

Methods: This case of matured dense cataract encountered an early “Argentinian Flag Sign” during capsulorrhexis. This video shows how the surgeon managed to complete the phacoemulsification after evaluating the risks of continuation and then strategising to complete the surgery.

Results: The surgeon could complete the phacoemulsification uneventfully and place the PCIOL in bag.

Conclusions: This surgical video highlights the strategies how for completing phacoemulsification even after encountering the dreaded “Argentinian Flag Sign” early on intraoperatively.

The Volcanic Eruption: Dealing With an Unexpected Scenario in Routine Cataract Surgery

*First Author: Zain **KHATIB***

Purpose: To showcase a well-documented surgical video of an unexpected complication arising during routine phacoemulsification surgery.

Methods: This was a routine phacoemulsification surgery planned with a toric IOL, for a moderately dense cataract. However, to the surgeon’s utter disbelief, immediately after making the surgical 2.2mm incision, there was a volcanic eruption of vitreous spurting out through the wound. Why did this happen, and what are the steps needed to counter this problem?

Results: The lens turned out to be severely subluxated, which was only realized intra-operatively. What does the surgeon do? Does he proceed with the toric IOL as

planned? This video aims to answer these questions. The video shows the 5 essential steps needed to counter the above problem and emerge victorious: Capsulorhexis using shearing forces, hydrodissection challenges, phaco with low parameters, insertion of capsular support devices, and the advantages of pars plana vitrectomy over limbal vitrectomy for such cases.

Conclusions: Ultimately, the phacoemulsification was completed safely, and the planned toric IOL was put in the bag.

Transscleral Intraocular Lens Fixation of the Right Eye via Z-Suture Technique

*First Author: Steffani Krista **CHUA***
*Co-Author(s): Hendrik **ONSON**, Jay Marianito **VICENCIO***

Purpose: This video aims to present a case of secondary intraocular lens implantation with transscleral fixation via the Z-suture technique.

Methods: Transscleral suture fixation of the intraocular lens commonly involves creating a knot, which can lead to suture erosion. This video demonstrates a knotless technique by passing the suture intrasclerally in a zigzag pattern to bury the suture and secure the intraocular lens.

Results: The intraocular lens was securely implanted with proper centration and very minimal after-movement. With the absence of suture knots, suture-related complications can also be prevented.

Conclusions: Transcleral intraocular lens fixation may be a challenging procedure with several complications. This technique is a simple and effective approach, especially for beginning cataract surgeons, to secure the intraocular lens and prevent suture-related complications.

Troubles and Troubles. Don't Miss Signs for Success

*First Author: Keembiyage **DAYAWANSA***

Purpose: To describe the importance of identifying key landmarks which appear during surgery for ultimate success.

Methods: A case of phaco on a hard brown mature cataract will create a number of problems during the surgery.

Results: Meticulous attention to each step of surgery helped successful counter-actions.

Conclusions: Surgery was completed successfully because of the attentiveness and appropriate counter-action.

'A-PRM' (Aspiration Probe Assisted Rhexis Management) Technique in an Intumescent Cataract

*First Author: Ajinkya **DESHMUKH***
*Co-Author(s): Roopashri **MALLIKARJUN**, Gowri **MURTHY**, Praveen **MURTHY**, Vinay R Murthy **MURTHY***

Purpose: There are different methods of capsulorhexis management in an intumescent cataract. We describe a novel technique using the bi-manual aspiration probe.

Methods: After staining the anterior lens capsule, cohesive viscoelastic is injected. Initial nick is given in the capsule using a 26 gauze bent needle. The anterior chamber is entered with bimanual irrigation & aspiration probes, and cortical fluid is aspirated. The flap of the capsule is held with a vacuum using an aspiration probe. Constant irrigation helps maintain the anterior chamber. The capsulorhexis is continued in a slow and controlled manner by maneuvering the aspiration probe in a circular fashion. The surgeon uses the aspiration mode (linear mode with a vacuum of 0-700 mm of Hg) and controls the amount of vacuum using the foot paddle. This technique can also be utilized to enlarge the smaller capsulorhexis after phacoemulsification is complete and the intraocular lens is implanted. By grasping and re-grasping the tearing flap with an aspiration probe, this technique can also be used for sizing the capsulorhexis.

Results: We discuss the prerequisites, vacuum settings, advantages and limitations of this technique in this video.

Conclusions: 'A-PRM' technique is a novel method for capsulorhexis management in an intumescent cataract. It avoids the need for additional instrumentation, is cost-effective, and works best in experienced hands (foot).

Cornea, Dry Eyes, External Eye Diseases and Eye Banking

A Simple DSEK Hack for Effortless Removal of Cornea From Artificial Anterior Chamber: Every Endothelial Cell Matters

*First Author: Asmita **PATNE***

Purpose: To share a simple DSEK hack to remove the cornea from the artificial anterior chamber after the manual donor dissection without the cornea caving in, hence preventing endothelial cell loss.

Methods: After completing the donor dissection during a manual DSEK, while unlocking the artificial anterior chamber to remove the cornea button, there is a

tendency for the cornea to get caved in. This results in corneal folds and loss of endothelial cells. In this simple DSEK hack, remove the locking ring and unlock the pinch clamp connecting to the air syringe. Now, push some air from the syringe, and the cornea, along with the tissue retainer, will pop out.

Results: This technique of popping out the cornea from the artificial anterior chamber with the air pushed from the syringe, prevents corneal folds and caving in. This helps prevent the loss of endothelial cells and eventually maintains the graft quality.

Conclusions: Sometimes simple solutions are overlooked. Though this is a very small tip, every endothelial cell matters. Especially, for a beginner, this simple solution will make the learning curve flatter and reduce one of the many hurdles.

Biological Patch Graft in Ocular Surface Diseases

First Author: Anjali ***ANJALI***
Co-Author(s): Jitender ***JITENDER***

Purpose: To illustrate the role of biological patch grafts for sterile corneal perforation in ocular surface diseases.

Methods: Chronic ocular surface disorders like SJS (Steven Johnson Syndrome), TEN (Toxic Epidermal Necrolysis), OCP (Ocular cicatricial pemphigoid) are known to present with severe dry eye, recurrent epithelial defect, sterile corneal perforation and vascularized cornea. Corneal perforation in such patients needs an emergent management for globe salvage. However, management of corneal perforation in ocular surface diseases poses great therapeutic challenge, owing to severe dry eye and limbal stem cell deficiency. The imperative corneal transplantation is known to result in graft failure and repeated recurrence of corneal perforation, whereas non-biological glue like cyanoacrylate glue is known to aggravate inflammation and promote vascularization. This video demonstrates the management of sterile corneal perforation in two eyes of OCP and one eye of an SJS patient with biological patch grafts like amniotic membrane graft, tenons patch graft and small incision lenticular extraction (SMILE) lenticule one in each case. The outcome measures included healing of the corneal perforation and stablisation of the ocular surface.

Results: Corneal perforation was successfully managed, resulting in healed corneal perforation, and globe integrity was achieved in all three eyes.

Conclusions: Amniotic membrane graft, Tenon's graft, and SMILE lenticule patch graft may be considered an effective and inexpensive treatment to restore structural integrity for sterile perforation in inflammatory ocular surface disorders.

Colour Me As You Like

First Author: Aditya ***PRADHAN***

Purpose: To demonstrate a new technique of pupil-sparing corneal tattooing in eyes with congenital/traumatic aniridia.

Methods: An intra-lamellar corneal pocket was made by manual dissection, sparing the central 5mm optical zone in eyes with a previous history of congenital/traumatic aniridia. Liquid black tattoo ink was then spread inside the lamellar pocket. BCL was applied over the cornea.

Results: Glare/photophobia was reduced in all the eyes post-procedure. Cosmetic appearance also improved in some patients. No side effects were noticed in the follow-up period.

Conclusions: The technique is reproducible, affordable and easy to perform in cases with congenital/traumatic aniridia by sparing the central optical zone. It is an alternative in cases where iris prosthesis/aniridia IOL cannot be implanted/has not been implanted by the previous surgeon.

Conquering Complexity- Descemet's Stripping Endothelial Keratoplasty (DSEK) in Hazy Corneas

First Author: Shilpa ***DIKE***

Purpose: To present challenging situations in DSEK surgery and simple modifications for successful visual outcomes.

Methods: Descemet's stripping endothelial keratoplasty is an established treatment for corneal endothelial diseases like Fuchs dystrophy, pseudophakic bullous keratopathy (PBK) etc. However, many times in clinical situations, the changes may not be confined to posterior corneal layers alone, e.g. In Fuchs, there may be residual corneal haze; in PBKs, subepithelial fibrosis, anterior stromal scarring, with other challenges like distorted anterior segment, partial or near total iris tissue loss, subluxated IOLs etc.

Results: Debridement of edematous corneal epithelium improves visualisation. Staining of endothelium with Trypan Blue helps in descemetorhexis without residual remains. Anterior vitrectomy with explantation of subluxated IOL & exchanging it with 3-piece PCIOL or posteriorly fixated iris-claw is important before placing a DSEK graft. Good manual dissection using an artificial anterior chamber works equally well as microkeratome-assisted DSAEK. The pull-through technique of putting DSEK lenticule in the anterior chamber minimises endothelial cell loss.

Conclusions: Although technically challenging, DSEK, in difficult, complicated cases, outperforms compared to penetrating keratoplasty. Less intra & postoperative complications, early & sustained vision improvement

and less chance of rejection are advantages of it, making it a surgery of choice.

Corneal Masquerades: More Than What Meets the Eye

*First Author: Asmita **PATNE***

Purpose: (1) This video intends to present and share some cases which can mislead and be misdiagnosed, leading to devastating complications. (2) To create awareness about certain atypical presentations. (3) To show that by having a high index of suspicion and thinking logically, we can unmask the masquerades and manage well to give good outcomes.

Methods: All the interesting cases that were initially misdiagnosed but later unmasked and well-managed are compiled with good clinical images and made interesting by the video effects.

Results: Case 1: A case of HSV keratitis masquerading as Peripheral ulcerative keratitis. Case 2: Corneal mass initially being treated as keloid or OSSN turns out to be epithelial hypertrophy due to pseudophakic bullous keratopathy. Case 3: Limbus to limbus corneal infiltrate referred for therapeutic keratoplasty was merely a dense fungal plaque that was scraped off and medically managed. Case 4: Deposits under Bandage contact lens mimicking superficial corneal infiltrates. Case 5: What looked like a lamellar corneal tear with infiltrates trapped underneath turns out to be a post-traumatic folded LASIK flap with epithelial ingrowth.

Conclusions: (1) There is always something more than what meets our eyes. (2) Very keen observation can help us pick up subtle signs that indicate there is something being missed. (3) Timely identifying and unmasking such masquerades can prevent delays in correct diagnosis, delays in management, and devastating complications.

Descemet Membrane Endothelial Keratoplasty (DMEK) – Plan A (Always Works) Plan B (Backup Graft Not Needed) – a Step-by -Step Guide to Achieving a Successful DMEK Graft During Donor Preparation

*First Author: Ronak **SOLANKI***

Purpose: Most transitions from Descemet Stripping Endothelial Keratoplasty to DMEK surgery are hindered by the fact that the beginner DMEK surgeon is most worried about what if the donor tissue is not prepared well and achieved as desired. By following certain steps right from the mounting of the DMEK tissue to loading it before inserting it into the host, one can confidently achieve donor tissues viable for use always. A scoring system for self-analysis is also described.

Methods: We describe a wet lab training model with surgical review where, with enough practice and discipline in following the steps, one can avoid excessive manipulations of the donor tissue and prepare a good and viable tissue for insertion during DMEK surgery for better outcomes and success.

Results: DMEK tissue preparation training in the wet lab made the transition to actual surgery easier and avoided the need for a backup graft in the first few cases for the surgeon specially in the scenario where finding good quality optical grade tissue is difficult and it is not justified to waste precious tissue which could have been used for another deserving patient who needed a corneal transplant.

Conclusions: A wet lab training on discarded or non-viable tissues, following the step-by-step guide as described by the author, along with surgical video review and grading, will be very helpful for the beginner DMEK surgeon to transition confidently to DMEK surgeries without the need for a backup tissue and fear of not achieving a good Donor Graft preparation.

Descemet Stripping Automated Endothelial Keratoplasty in Toxic Anterior Segment Syndrome-Associated Endothelial Decompensation

*First Author: Akshaya **BALAJI***
*Co-Author(s): Karthikeyan **MAHALINGAM**, Nawazish **SHAIKH***

Purpose: The video highlights the difficulties in performing Descemet stripping automated endothelial keratoplasty in a case of TASS-associated endothelial decompensation.

Methods: Here we show two cases of Descemet stripping automated endothelial keratoplasty in TASS. The donor tissue was mounted onto the artificial chamber, and the thickness was measured using intraoperative optical coherence tomography. Based on the thickness of the tissue, the tissue was cut using an appropriately sized microkeratome and trephined using a disposable trephine. The host epithelium was debrided, 4mm corneal tunnel was made for pulling the tissue, and three 1mm incisions were made. The host endothelium was stained using trypan blue dye. Using a reverse sinkey, descemet stripping was attempted when a fibrous membrane-like structure was seen, which was highly suggestive of TASS sequelae. The membrane was removed, and the rest of the Descemet was stripped. The donor tissue was inserted through a pull-through technique and attached using air tamponade for 4 minutes. The wound is sutured. In the second case, a similar technique was performed, which had only iris shaffing and an absence of any fibrotic membrane from the angle.

Results: A well-centred DSAEK graft with good attachment was seen at the end of surgery in both cases.

Conclusions: Toxic anterior segment syndrome-associated endothelial decompensation is commonly

seen after complicated cataract surgery. Severe hypotony, fibrous membrane, severe postop anterior chamber inflammation and intraocular pressure spikes are the difficulties associated with such cases of DSAEK in TASS-related endothelial decompensation.

Endothelial Ersatz

*First Author: Lional Raj **DANIEL RAJ PONNIAH***

Purpose: To demonstrate by a video presentation on a novel endothelial synthetic substitute in cases of endothelial dysfunctions.

Methods: Cases of endothelial dysfunction, not associated with herpes or prior corneal surgeries, were subjected to central 6 mm Synthetic Endothelium after 7 mm descemetorhexis, attached with C3F8 gas.

Results: Novel synthetic corneal endothelial substitutes improved vision, reduced chronic corneal edema due to endothelial dysfunction, were not associated with toxicities, and could be an alternative to endothelial keratoplasties, reducing the burden of eye banks, transforming all anterior segment surgeons into corneal surgeons by transforming “transplant science to implant science”.

Conclusions: Keratoplasties for PBK & Fuchs are associated with risks of rejections & failures. Corneal availability remains a challenge, especially in the developing world, hence readily available synthetic alternative is a Breakthrough innovation needing further evaluation.

Ergonomically Designed Modified Busin Glide for DSAEK Tissue Insertion

*First Author: Sanyukta **JOSHI***
*Co-Author(s): Sudhank **BHARTI***

Purpose: In this video, we demonstrate an ergonomic modification of the existing design of the Busin glide for tissue insertion in DSAEK.

Methods: Busin glide is an instrument used in the “pull through” technique of corneal tissue insertion in DSAEK, which is a two-handed maneuver in which graft is pulled into the eye from the opposite side of the main wound using DSEK forceps in one hand and Busin glide in other. As the design of Busin glide keeps the glide and its handle in the same plane, one needs to move the elbow 90 degrees away from the body to carry out this maneuver, which makes fine wrist movements difficult as the elbow is unsupported. Ergonomic modification of this design of Busin glide will be discussed in this video so that its use can be made easier.

Results: Insertion of donor corneal tissue is made easier due to this ergonomic modification as both arms of the surgeon are kept close to the body, thus facilitating easy fine movements.

Conclusions: Ergonomic modification of instruments makes surgical steps easier and more convenient for surgeons, thereby yielding better and more consistent results.

Foreign Body Conjunctival Granuloma Secondary to Fibers After Double-Head Pterygium Excision

*First Author: Burhana **MAWARASTI***
*Co-Author(s): Amani **AUGIANI**, Yulia **AZIZA**, Florentina **PRISCILIA**, Agnes **VANIA LUMINTANG***

Purpose: This study reports conjunctival granuloma formation in response to foreign bodies and their surgical management.

Methods: The case features foreign body conjunctival granuloma in a 45-year-old male. The clinical characteristics were obtained through slit-lamp observation. A definitive diagnosis was established based on the pathology examination collected during mass resection.

Results: The patient had a history of pterygium excision on the left eye (LE) 5 years before admission. Complaints of foreign body sensations, redness, and mild tearing persisted on LE after surgery. Long-term topical steroids and antibiotics were used to relieve symptoms. The visual acuity (VA) of LE was 20/20 with correction. Irregular conjunctival masses forming fibrovascular lesions were observed on the nasal and temporal side, exceeding the limbus. Fibers, suggested gauze remains, were also trapped on the conjunctiva. This is due to the misinterpretation of dried amniotic membrane AMT usage in previous surgery. Other ocular examinations were unremarkable. The patient underwent conjunctiva mass resection with mitomycin C (MMC) and amnion membrane transplant (AMT). A conjunctival autograft was performed on the temporal side to close the wound gap. Pathology biopsy examination revealed fibrotic tissue and chronic inflammation. The embedded foreign body causes proliferative inflammation characterized by a cellular infiltrate of epithelioid cells, lymphocytes, and focal neutrophils. Applying both MMC and AMT enhances conjunctival healing while suppressing myofibroblast differentiation to reduce scar, vascular formation, and granuloma recurrence.

Conclusions: Foreign body granuloma is often underdiagnosed and untreated, causing discomfort for an extended period. Prompt handling of AMT with comprehending surgical technique is crucial to prevent undesired complications.

Hope Regained: A Case of Visual Restoration After Conjunctival Flap Surgery

*First Author: Nibedita **DAS***

Purpose: To restore any possible vision in a case of corneal flap procedure.

Methods: An 18-year-old Asian boy presented with a large fleshy conjunctival flap done elsewhere for suspected perforated corneal ulcer with foreign body post-trauma and advised evisceration for persistent pain and poor vision. He came for a second opinion if there was any possibility to retain the eye. Surgery was technically challenging.

Results: The intra-operative course of the surgery went uneventful, and the patient had excellent postoperative outcomes and final visual recovery.

Conclusions: Future visual restoration in post-corneal flap surgery done is possible, but the proper preoperative evaluation is mandatory, and should always be ready to face any untoward intraoperative complication.

Low-Cost Burr for Pterygium Surgery

First Author: Kunal ***MANDLIK***
Co-Author(s): Devika ***BHATTACHARYA***

Purpose: Pterygium is one of the common pathologies found in India due to UV exposure. Pterygium excision with conjunctival autograft or amniotic membrane graft is a simple procedure where pterygium tissue is peeled or scraped off over the corneal tissue, which many times leads to leaving residual tissue that is difficult to remove. This residual tissue has to be properly removed and the corneal surface has to be smoothened to avoid post-op pain, watering, increases the risk of corneal infections. Compact Burrs are available in the market, which help in smoothening the corneal surface but are costly, delicate, and difficult to repair and sterilize. Therefore, we designed and assembled a low-cost burr from readily available materials like syringes, a small electric motor, burr tip, and a few wires.

Methods: The raw materials required to build this are (Figure 1): (1) 50cc syringe (2) On/Off Switch (3) High torque rated voltage current motor: DC 12v (4) Two-pin connectors (5) One 9W battery (6) Burr tip that is used in most commercially available burrs.

Results: The postoperative outcome is a smooth, even corneal surface without any residual pterygium tissue. This ensures complete symptomatic relief and a desirable cosmetic outcome for the patient postoperatively. This alternative costs under 3000 Indian Rupees, a fraction of the cost of the conventional burr.

Conclusions: This low-cost burr serves the purpose of commercially available burr. It is easy and cheap to maintain and repair.

Modern Therapeutic Keratopigmentation: A New Alternative to Improve Cosmesis in Cases of Corneal Opacities

First Author: Jorge ***ALIO***
Co-Author(s): Ronald Steven Ii ***MEDALLE***

Purpose: To introduce an emerging therapeutic and less invasive corneal surgery technique that restores the appearance of severely disfigured eyes, improving cosmesis and quality of life.

Methods: Case series of 2 patients with disfigured eyes who underwent our technique of keratopigmentation.

Results: We present 2 cases of post-traumatic blind disfigured eyes with corneal opacities from trauma in blind eyes. Both had epithelial hyperplasia, and the other had strabismus. The intralamellar and automatic superficial keratopigmentation techniques were performed in the first. The second had squint surgery with automatic superficial keratopigmentation. Micronized mineral pigments were used, which are biocompatible with human cornea.

Conclusions: Modern Therapeutic Keratopigmentation provided a less invasive alternative to restore cosmesis in severely deformed/scarred corneas. This technique can be combined with other techniques, such as squint surgery, as well as avoiding more invasive types. Both patients were highly satisfied.

Non Circular Corneal Transplants: The Road Less Traveled By

First Author: Aniruddh ***HEROOR***
Co-Author(s): Rashmi ***DESHMUKH****, Gautam Singh* ***PARMAR****, Rasik* ***VAJPAYEE***

Purpose: Conventional circular corneal transplants in corneal diseases like terriens marginal degeneration, pellucid marginal degeneration, Mooren's ulcer and peripheral ulcerative keratitis result in eccentric, large grafts and excision of healthy host tissue resulting in excessive astigmatism and greater risk of graft rejection. This video serves to elucidate the various types of non-circular corneal grafts available and their surgical techniques.

Methods: A thorough literature review was conducted, and relevant publications were analysed. Various modalities of non-circular corneal transplants, including their surgical techniques, advantages and limitations, were elucidated using photographs, surgical videos and animation clips.

Results: Non-circular corneal transplants can provide effective tectonic support and yield favourable visual outcomes by mitigating post-operative astigmatism and graft rejection, as evidenced by a multitude of case series and reports.

Conclusions: Non-circular corneal transplants are an effective treatment modality for the management of peripheral corneal diseases where performing

conventional keratoplasty can prove to be tedious with high postoperative astigmatism. Larger prospective studies further evaluating the advantages and disadvantages of these procedures are perhaps the need of the hour.

Oral Mucus Membrane Graft to the Rescue of Ocular Surface Keratinization in Stevens Johnson Syndrome

*First Author: Shilpa **TARINI***

Purpose: To highlight the challenges of managing progressive keratinization in SJS and the potential benefits of bulbar surface mucus membrane grafting to improve vision.

Methods: Case report.

Results: The video involves an 18-year-old male diagnosed with Stevens-Johnson Syndrome, who presented with progressively decreased vision in his right eye over a period of 5 years. Despite unaided vision of hand movements in his right eye and 20/25 in his left eye, his quality of life and visual function were severely impacted. The patient had previously undergone mucus membrane grafting for both lids in the left eye and upper lid in the right eye, and subsequently, entropion correction along with mucus membrane grafting 1 year later. Despite these interventions, the patient's lower lid of the right eye continued to have progressive keratinization that increased in severity and involved the inferior ocular surface of the cornea. To address the visual axis obstruction and improve vision, the decision was made to excise the surface keratin, followed by oral mucus membrane grafting and amniotic membrane overlay graft for the corneal epithelial defect. One month post-surgery, the patient's unaided vision improved from hand movements to 20/250 in the right eye, indicating a significant improvement in visual function. Further follow-up is required to monitor long-term outcomes.

Conclusions: This case highlights the challenges of managing progressive keratinization in SJS and the potential benefits of bulbar surface mucus membrane grafting to improve vision.

Role of Amniotic Membrane Transplantation in Treating Acute Ocular Manifestations in Steven-Johnson Syndrome and Its Long-term Impact

*First Author: Prabhakar **SINGH***

Purpose: To emphasize the role of the amniotic membrane in treating the acute ocular manifestations of Steven-Johnson syndrome and see its long-term impact.

Methods: Steven-Johnson Syndrome (SJS) is a serious disorder affecting the skin and mucous membrane, causing multiple flaccid bullae and purpuric rashes with sheet-like epithelial detachment, including the ocular surface. The long-term outcomes following SJS are dismal and manifest as corneal vascularization, lid-wiper keratopathy, and severe dry eyes. The disease course can be modified if an amniotic membrane graft is done in the first week of the disease and the above-said complications can be avoided. This procedure thus not only decreases morbidity but also improves the quality of life.

Results: This video discusses the long-term sequelae of SJS which can be modified with timely intervention during the acute stage and thus significantly decreases morbidity.

Conclusions: (1) There should be a low threshold for doing early amniotic membrane transplantation in patients with SJS with ocular surface involvement. (2) Early intervention can change the disease course and decrease disease morbidity significantly.

Role of Tenon Advancement in Treating Limbal Ischemia in Acute Chemical Injury

*First Author: Prabhakar **SINGH***
*Co-Author(s): Abhishek **GUPTA**, Jayadev **NANDA***

Purpose: This video discusses the nuances involved in assessing and planning tenon advancement with amniotic membrane grafting for treating limbal ischemia in acute chemical injury.

Methods: A detailed description of the assessment of the degree of injury, surgical techniques, and the desirable final outcome has been shown in the video.

Results: The video demonstrates the technique of restoration of limbal vascularization by doing tenon advancement with amniotic membrane grafting and its outcome.

Conclusions: (1) Ocular surface painting with fluorescein dye is essential to assess the areas of surface involvement. Mere instilling the fluorescein dye in the cul-de-sac will underestimate the extent of the damage. (2) Tenon advancement should ideally be planned between 7-10 days following an injury when actual limbal blanching is obvious. (3) A stable and epithelized ocular surface is the desirable outcome, irrespective of the epithelial phenotype.

Triple Procedure: Secondary IOL implant, Pupilloplasty, and PreDescemet Endothelial Keratoplasty (PDEK)

*First Author: George **SITANAYA***
*Co-Author(s): Preethi **NAVEEN***

Purpose: To report a complex case that needed a secondary IOL implant, pupilloplasty, and PDEK.

Methods: A patient, 62 years old, was diagnosed with aphakic bullous keratopathy. Triple procedures were done, which were secondary IOL implantation (scleral fixated), iris reconstruction to achieve a small pupil, and PDEK.

Results: The surgery went uneventfully. At 1st post-op day, a clear cornea was achieved, IOP was a little high (24 mmHg), the anterior chamber was quiet, and the IOL was central. Good visual acuity was achieved at the 7th day post-op (6/12, BCVA).

Conclusions: PDEK can give better results compared to older methods like DSAEK due to a thin donor was transplanted. Aside from a good donor (good endothelial cell count), PDEK cases need a small pupil to maximize air tamponade and make sure the graft always stays in its place.

Wiping Out a Blemish: Removal of a Giant Conjunctival Nevus

*First Author: Nibedita **DAS***
*Co-Author(s): Joyeeta **DAS***

Purpose: To remove a giant conjunctival nevus both for cosmetic improvement and histopathology detailed examination and to prevent future complications.

Methods: A large (10 clock hours) recurrent congenital conjunctival compound nevus (incisional biopsy histopathology confirmed) with deep inferior stromal invasion of corneal limbus was surgically removed in a 30-year-old Indian gentleman. Removal of the limbal invasion had great difficulty because of deep invasion, and layer-by-layer meticulous dissection was needed for complete removal. The defect was closed with an amniotic membrane graft.

Results: The results were gratifying, with good cosmetic outcomes and no recurrence up to the last 1 year of follow-up.

Conclusions: Case selection, proper planning and additional procedures of amniotic membrane grafting or limbal stem cell transplant may be necessary in some deep limbal involving nevus.

Xenogenic Corneal Implants for Restoration of Corneal Structure Integrity and Stability

*First Author: Ronald Steven Ii **MEDALLE***
*Co-Author(s): Jorge **ALIO***

Purpose: To introduce new xenogenic corneal tissue implant technology for restoration of corneal anatomy after corneal ectasia/irregularity.

Methods: Case series of 3 patients with implantation of xenogenic 6.5-7mm 34um thick implant for corneal ectasia/irregularity secondary to corneal refractive surgery.

Results: We present a case of post-LASIK Ectasia with intrastromal rings. The cornea appeared flat on topography and AS OCT. K values were very low. A flap lift was done, and the implant was inserted as an inlay, achieving structural integrity, improved curvature, and maintained corneal transparency. The second had a 16-incision Radial Keratotomy resulting in a structurally unstable cornea providing highly fluctuating vision even after Bowman's Membrane implantation. The xenogenic implant was used as an onlay, improving structural integrity and homogeneity of the corneal surface on Topography/AS OCT. Transparency was maintained. The last case showed an uneven cornea after having undergone various refractive procedures. The implant was used as an onlay, resulting in moderate improvement in subjective vision. All cases did not show evidence of inflammation or an increase in cellularity.

Conclusions: Immediate availability, independence from the use of human corneal tissue, lack of immunogenicity, and the ability of the material to adapt to different corneal pathological circumstances with a potential for fewer complications and faster recovery are some of its advantages. The outcomes are very encouraging. This alternative technique may provide options for the management of corneal disease with more developments. The usual problems associated with corneal graft failures can be minimized.

Glaucoma

A Video of Performing a Non-penetrating Deep Sclerectomy (NPDS) as an Initial Surgery for Primary Congenital Glaucoma (PCG)

*First Author: Abdullah **KHAN***
*Co-Author(s): Mawaddah **SABR***

Purpose: To show the surgical techniques of NPDS as an initial surgery in a primary congenital glaucoma (PCG) patient. NPDS is considered the preferred glaucoma surgery among trained ophthalmologists in our country, which has the second highest incidence of PCG worldwide (1 in every 2,500 new births).

Methods: Video of the surgical technique of the NPDS illustrating the steps of performing the peritomy, superficial flap, deep flap, excision of the deep flap, observing the aqueous filtration, and finally closure of the superficial flap and conjunctiva.

Results: The NPDS in our population has been shown to be effective and safe with an overall success rate of 82.4% over the follow-up of 35.8 months.

Conclusions: The surgical steps illustrated show that NPDS is easy to perform. It is preferred over the conventional trabeculotomy or combined trabeculotomy trabeculectomy (T&T), due to its proven efficacy to lower the IOP and comparable success rates, but with fewer complications.

DIY for Glaucoma Procedures- Practice Makes a Doctor Perfect!

*First Author: Indira **PEGU***
*Co-Author(s): Swati **UPADHYAYA***

Purpose: To present simple innovations and do-it-yourself hacks that can be practiced by the fellows and junior consultants before a live experience on a patient's eye.

Methods: These DIY innovations are made using hospital waste products like used gloves, used keratomes, old and broken trial lenses, waste viscoelastic, suture sponges, carbon paper, surgical tape, old bottle caps, used masks, and colored toothpaste.

Results: With the DIY innovations, we were able to perform procedures like checking IOP (by i care, tonopen, applanation), CCT, laser suturolysis, laser iridotomy, AC Decompression, bleb needling on slit lamp, wet lab practice for scleral flap, flap suturing.

Conclusions: We believe that these DIY hacks can prove to be a major stepping stone in learning glaucoma management.

Deroofing the Narrow Road by Magnifying Mirror in Different Case Scenarios – Gonioscopy-Assisted Transluminal Trabeculotomy

*First Author: Nimrita **NAGDEV***
*Co-Author(s): Shivam **GUPTA***

Purpose: To depict the gonioscopy-assisted transluminal trabeculotomy technique in diverse case scenarios presenting with glaucoma.

Methods: Gonioscopy-assisted transluminal trabeculotomy, which was first described by Grover et al, is one of the minimally invasive surgical techniques in which the trabecular meshwork is circumferentially bypassed via a catheter or 6-0 polypropylene suture. We presented different case scenarios which presented with uncontrolled intraocular pressure in spite of maximum medical therapy, such as primary open-angle glaucoma, primary angle closure glaucoma, silicone oil glaucoma, phakic glaucoma, neurofibromatosis (secondary glaucoma), microspherophakia and neovascular glaucoma. The proper surgical setup depicting the surgeons and the patient's positions for performing GATT in order to have a clear view of the anterior chamber structures is demonstrated in this video. The surgical weapons needed for GATT are manifested with the proper technique of gonio-lens docking. The intraoperative challenges for management are also covered with tips and tricks for successful outcomes.

Results: Gonioscopy-assisted transluminal trabeculotomy lowered the intraocular pressure in lower teens in all the above-mentioned complex case scenarios without any dependence on antiglaucoma medications.

Conclusions: Minimally invasive glaucoma surgeries, with versatile surgical armamentarium, have led us to headway in different and difficult case scenarios with positive results.

Gateway to Safe Suture GATT (Gonioscopy Assisted Transluminal Trabeculectomy)

*First Author: Apurva **NAGTODE***
*Co-Author(s): Prabhu Krishna **RAVILLA SRIRAM**, Swati **UPADHYAYA**, Rengaraj **VENKATESH***

Purpose: It is an educational video about suture gonioscopy-assisted transluminal trabeculectomy. It also highlights the challenges faced by a beginner while performing suture GATT and simple tips and tricks to overcome them.

Methods: As performing GATT requires practice and perseverance to master it, we have compared it with learning martial arts in the Shaolin temple. The steps while performing suture GATT are described in detail. The preliminary challenges faced by the beginners are overcome with a simple A-B-C-D-E-F: A- Angle visualization; B- Blunting of the suture tip; C- Check for correct passage; D- Descemet membrane detachment; E- Experiencing resistance in the canal; and F- For better canalization, avoid bleeding.

Results: This video shows the challenges faced by a beginner and simple tips and tricks to overcome them. Behind each step, there is logic and a proper understanding of the same, making the subsequent step smoother and easier. All steps, when performed properly, lead to a successful surgical outcome.

Conclusions: By implementing these tips during the learning stages of suture GATT, one can achieve desirable results and also ensure a safe gateway to successful suture GATT.

Illuminating Progress: Pointers for Performing Ab-Externo 360-Degree Trabeculotomy With Flexible Microcatheters in Pediatric Glaucoma

*First Author: Rashmi **KRISHNAMURTHY***

Purpose: To describe certain tips to identify Schlemm's canal so as to successfully perform enhanced circumferential ab-externo trabeculotomy with illuminated microcatheter in pediatric glaucoma.

Methods: Isolated trabeculodysgenesis is the hallmark of primary congenital glaucoma (PCG). Goniotomy and trabeculotomy have been traditionally employed in treating these eyes, yet these techniques only tackle a portion of the angle pathology. However, the possibility of opening the entire 360 degrees of Schlemm's canal (SC), enables a larger area for efficient aqueous drainage. After creating the limbal-based conjunctival flap, the superficial scleral flap of appropriate thickness

is carefully dissected. Then a radial incision is gradually deepened in the area of Schlemm's canal (SC). Tips to successfully identify SC have been discussed in this video. To perform circumferential trabeculotomy, the use of sutures to thread the SC has been explored. However, the occurrence of false passages poses safety concerns. Utilisation of a flexible micro-catheter with an illuminated, atraumatic tip helps in opening the inner wall of SC easily with complete visual guidance.

Results: Meticulous surgical technique, identification of SC, and challenges in using the illuminated flexible microcatheter have been described in this video.

Conclusions: Accurate SC identification and flexible illuminated, microcatheter with an atraumatic tip-assisted circumferential trabeculotomy proves to be a successful approach for the treatment of childhood glaucoma.

Mastering Gonioscopy Assisted Transluminal Trabeculotomy (GATT): Essential Tips and Techniques for Novice Surgeons

First Author: Vishwendra Pratap ***SISODIA***
Co-Author(s): Sirisha ***SENTHIL***

Purpose: The primary purpose of this video is to offer essential guidance to early-career surgeons aspiring to become proficient in Gonioscopic assisted trans-luminal Trabeculotomy (GATT). It aims to equip them with foundational knowledge and practical skills necessary for successful GATT procedures.

Methods: This video systematically outlines the key aspects of GATT surgery, beginning with microscope adjustments and precise patient and surgeon's hand positioning. It then elaborates on mastering intraoperative gonioscopy and the crucial steps involved in identifying angle structures and preparing the necessary suture. We briefly address how to manage common intraoperative challenges. Furthermore, diverse clinical scenarios, including post-Ahmed Glaucoma Valve (AGV), post-trabeculectomy, post-trauma, post-keratoplasty and post-vitrectomy situations, are presented.

Results: Upon completing this video, viewers will possess a strong foundation in GATT techniques, making their initial steps into Minimally Invasive Glaucoma Surgery (MIGS) smoother. This comprehensive approach ensures viewers receive a well-rounded education on GATT.

Conclusions: In conclusion, while trabeculectomy has historically dominated the field of glaucoma surgery, MIGS represents its promising future. GATT, a vital component of angle-based glaucoma surgeries, is essential knowledge for any glaucoma specialist. This video underscores the significance of mastering this cost-effective, clinically safe, and efficient technique, positioning surgeons at the forefront of modern glaucoma surgery. Beyond the potential for improved patient outcomes, it also plays a pivotal role in advancing glaucoma management, particularly in economically developing regions.

Phacoemulsification With Single Pass Four Throw Pupilloplasty

First Author: Kathrina Therese ***MENDOZA***
Co-Author(s): Erika ***ELAZEGUI****, Jay Marianito* ***VICENCIO***

Purpose: One of the chronic complications of acute angle closure glaucoma is a fixed dilated pupil due to iris ischemia. Managing the patient by combining lens extraction with single pass four throw pupilloplasty (SFT) not only relieves the visual disturbance from the dilated pupil, but also relieves the peripheral anterior synechia by opening the angles.

Methods: The patient is a 54-year-old female who presented with visual acuity of 20/400, with a shallow anterior chamber, fixed dilated pupil, mature cataract, and intraocular pressure of 14 mmHg on 2 aqueous suppressants. Angles were closed on gonioscopy. The patient underwent routine phacoemulsification followed by SFT. A prolene 10-0 suture was passed through the inferior limbus, proximal iris, distal iris and out into the limbus superiorly. A Sinsky hook was used to retrieve the suture out limbus forming a loop. The suture end was passed through the loop four times. This forms a helical knot, and as the suture is pulled on each end, it will form a permanent knot. The suture was cut near the knot on both sides. The same procedure was repeated on the temporal iris.

Results: Post-operatively, visual acuity improved to 20/30, and intraocular pressure was 12 mmHg with no aqueous suppressants, pupil was 4-5 mm. The gonioscopy showed open angles on all quadrants.

Conclusions: This case highlights the successful management of primary angle closure glaucoma through the combination of lens extraction and SFT. Therefore, it emerges as a safe and effective treatment option for primary angle closure glaucoma.

Rescue Approach Using IV Cannula for GDD Tube Amputation and Retraction in a Patient With Inflammatory Membrane Following Penetrating Keratoplasty

First Author: Victor Ephraime ***PAULINO***

Purpose: GDD retraction and occlusion following tube amputation are complications of surgery. This requires immediate interventions, such as repositioning and revision, but they may be hindered by confounding eye morbidities, anatomic restrictions, and the availability of extenders. Alternative methods can be initiated for such cases.

Methods: We describe a 38-year-old female with VKH, with secondary glaucoma on the left eye. The patient underwent phaco-trabeculectomy and Ahmed implantation, which both failed, and Baerveldt

implantation. Penetrating keratoplasty for corneal decompensation was done, including amputation of the GDD tube. Subsequent check-ups showed tube retraction, the presence of epithelial down growth, and inflammatory membrane with complete tube occlusion. Due to the absence of a silicon extender, an improvised conduit was made using an 8mm 26-gauge polytetrafluoroethylene IV infusion cannula. The cannula was inserted into the tract while the GDD tube was cut shorter so that the tube cannula connection could be seen and sutured outside the tract. The tapering distal tip of the cannula was inserted snugly inside the tube, and a retro-iris placement and visualization were completed.

Results: IOP control at 10-12mmHg was achieved from day 1, and remained consistently low, with no anti-glaucoma medications. BCVA improved from 20/125 to 20/40. The 26-gauge cannula is visible and stable at the retro-pupillary margin. No further occlusion was observed despite progressive membrane proliferation. Her overall glaucoma condition remained clinically stable.

Conclusions: The small caliber infusion cannula is a cost-effective and readily available alternative to extenders. Retro-pupillary placement of a GDD tube carries a limited risk for tube occlusion secondary to a membrane formation while providing adequate control of IOP.

The iStent Videocassette Pedagogy - An Innovative Guide for Minimally Invasive Glaucoma Surgery Management (Like Never Before...!)

*First Author: Prasanna **RAMESH***

Purpose: In this video, we have highlighted the various tips and tricks of iStent (G1 & G2) implantation with many signs which have never been reported in the video literature before.

Methods: The various collection of scenarios & methods are shown in fine detail for neophytes, such as (1) The Gliding Technique (2) The Cheese Wiring Trabecular Meshwork Management Technique (3) Combined Minimally Invasive Glaucoma Surgery (MIGS) (4) The Nudge Technique (5) Tackling The Rebound Due To Cartridge Malfunction (6) Denting And Blanching Sign (7) Lost But Found (8) Practising In The MetaVerse (The 3D Novel Simulator).

Results: The pre-operative intraocular pressure (IOP) & the post-operative IOP have also been shown for the above cases with the diagnosis of all the cases.

Conclusions: The iStent videocassette pedagogy will serve as a video guide for novice MIGS surgeons & aid them in their transformative journey towards the world of MIGS.

Trabecular Peeling Technique for Ab Interno Trabeculectomy (Trap) – 1 Year Results

*First Author: Ankush **MAHAJAN***

Purpose: to evaluate the efficacy of a novel technique of performing ab interno trabeculectomy either alone or when combined with phacoemulsification in the management of glaucoma.

Methods: A retrospective study of 38 patients. The trabecular meshwork was incised at its anterior border using a 30G needle. The trabecular tissue flap was firmly grasped with a 25G ILM peeling forceps and peeled in a tangential direction using either ILM or capsulorrhexis forceps to complete 120 to 360 degrees trabeculectomy.

Results: A total of 33 underwent combined phaco with TRAP, and 5 underwent only TRAP. The pre-op IOP was 22.79±5.95 mm of Hg. The post-op IOP at 1 week, 1 month, 6 months and 1 year was 15.66±4.6 (n=38), 15.62±3.43 (n= 34), 16.15±3.07 (n= 27), and 16.11±2.74 (n= 37) (p= 0.0001), respectively. The anti-glaucoma medication use decreased from 2.0±0.83 preoperatively to 0.2±0.6 at 1 year. Hyphema occurred in 94.74% of the cases but was resolved spontaneously in all.

Conclusions: This new technique of trabecular peeling (TRAP) trabeculectomy ab interno is an effective method of achieving 120- 360 degrees of ab interno trabeculectomy, causing a clinically significant decrease in IOP in both open as well as narrow-angle glaucoma patients.

iOCT-Guided Glaucoma Surgery

*First Author: Dewang **ANGMO***
*Co-Author(s): Tanuj **DADA***

Purpose: To describe the uses of real-time intra-operative OCT (Ioct) guided glaucoma surgery in different scenarios.

Methods: iOCT with heads-up display (HUD) allows rapid visualization of the area of interest and provides the surgeon with information regarding instrument-tissue interactions. Because of its finer resolution, OCT is able to present a detailed view of the bleb wall and the sclera, and an accurate assessment of the location and extent of the bleb structure. This permits better maneuvering and better dissection of the anterior and posterior bleb wall under visualization and thereby, reducing the risk of complications.

Results: We describe iOCT-guided glaucoma surgery in different scenarios: (A) iOCT-guided Bleb Needling [1] In this procedure, we describe how under the direct visualization of iOCT bleb needling is done with minimal tissue damage and post-needling resulting in a functional bleb. (B) iOCT guided Bleb sparing epithelial exchange [BSEX][2] In this procedure, we remove the epithelium over the dysesthetic leaking bleb, with the

advancement of the surrounding normal conjunctiva, without any manipulation of the bleb itself. It is done under direct visualization using iOCT, which helps prevent inadvertent damage to the underlying bleb structures. (C) iOCT guided Glaucoma drainage device tube insertion. (D) iOCT-guided transconjunctival suturing for hyper-filtering bleb (E) iOCT-guided BANG cleft visualisation.

Conclusions: iOCT-guided glaucoma surgery permits better maneuvering and better dissection of the anterior and posterior bleb wall under visualization, and thereby reducing the risk of complications.

Intraocular Inflammation, Uveitis and Scleritis

Complicated Cataract With Occlusio Pupillae Managed Using a Low Cost Pupil Expander

*First Author: Ankit **AGRAWAL***
*Co-Author(s): Sameeksha **AGRAWAL**, Vijay Kumar **AGRAWAL**, Krishna Kumar **AGRAWAL***

Purpose: A case of complicated cataract with occlusio pupillae is always a challenge to deal with. Here I am presenting a method using a low-cost pupil expander device by which dealing with these cases becomes easier.

Methods: A low-cost pupil expander is used to expand the pupil after breaking all the synechiae. Phaco surgery is performed using one's preferred method, and the IOL is implanted in bag. After this, the expander is disengaged and explanted. Intravitreal triamcinolone acetonide is given to reduce post-op inflammation as the patient has uveitis.

Results: The cornea was quite clear on post-op day 1 with minimal corneal edema, and IOL was in situ. The vision was 6/12 uncorrected, and IOP was normal.

Conclusions: Pupil expander devices can be used to expand pupils in cases of uveitic cataracts with occlusio or seclusio pupillae, thereby making the surgery safer and easier.

Surgical Removal of Live Free-floating Parasite in Anterior Chamber

*First Author: Krati **GUPTA***
*Co-Author(s): Prerna **AHUJA**, Zelda **DADACHANJI**, Manshu **DESHMUKH**, Saurabh **DESHMUKH**, Damaris **MAGDALENE***

Purpose: To report 2 cases of intracameral live parasites and their successful surgical management.

Methods: Both patients were prepared for surgery under peribulbar anesthesia. Following surgical steps were followed - post painting and draping, two 2.8 mm clear corneal incisions were made. Pilocarpine nitrate 0.5% was injected into the anterior chamber to achieve miosis of the pupil, aiding the decreased movement of the worm. The anterior chamber was filled with an ocular viscoelastic device (VSD) from the corneal port to push the worm. The worm was viscoexpulsed in toto using the no-touch technique.

Results: The worm was then transferred into a bottle containing normal saline and transferred to the microbiology and parasitology department for identification. In both cases, it was found to be Loaloa.

Conclusions: Surgical removal of the live parasite is the mainstay of management. A thorough examination of the central nervous system must be carried out in consultation with a neurologist and systemic management should be considered.

Neuro-Ophthalmology

Spotting the Unusuals- Key to Diagnosing Supranuclear Disorders

*First Author: Rebika **DHIMAN***
*Co-Author(s): Deepak **GUPTA**, Swati **PHULJHELE**, Himani **THAKUR***

Purpose: Supranuclear disorders are a rare set of ocular motility disorders caused by lesions above the level of ocular motor nuclei. They often pose a diagnostic dilemma. In this video, we will take you through the illustrious trip of a few rare supranuclear disorders, their clinical presentations, and the characteristic signs that helped identify the lesion.

Methods: Case series.

Results: These disorders are clinically characterized by an interesting set of presentations and associations. If only one has the eye for these subtle and unusual signs, not only can we clinch the diagnosis but also get an idea about the probable site of the lesion.

Conclusions: A thorough understanding of neuro-ophthalmic anatomy is the key to diagnosing supranuclear disorders.

Ocular Imaging

Making of JohnDa's Pocket Foldable FunDaScope 2.0 – Ultraportable, Affordable, 3D Printed Smartphone Retinal Fundus Camera

*First Author: John **AKKARA***
*Co-Author(s): Anju **KURIAKOSE***

Purpose: To design and make an ultra-portable smartphone-based fundus camera that can fit in a

regular shirt or pant pocket to enable universal access to retinal imaging for ophthalmic specialists around the world.

Methods: The authors brainstormed the design flaws, disadvantages and advantages of existing fundus cameras and decided to make a new design. After initial work on paper, cardboard, and thermocol, dummy models were tested and re-designed. Free and open-source CAD (computer-aided design) software free CAD was used to design prototype models, and designs were 3D printed and tested. New modifications were brainstormed and modified. Inbuilt illumination was added, and magnetic smartphone docking was incorporated. The newly patented design was again 3D printed and assembled with the necessary electronics and filters. This new design was used to take smartphone fundus photographs and tested for ease of use as well.

Results: The Pocket Foldable FunDaScope was found to be very useful as a compact, ultraportable, affordable smartphone fundus camera and produced excellent retinal fundus photographs with a minimal learning curve. Its advantages over the existing smartphone fundus cameras were noted, and image quality was noted to be at par with other smartphone fundoscopy techniques.

Conclusions: This affordable, ultraportable smartphone fundus camera would help to revolutionise documentation of retinal fundus and allow all ophthalmic residents, vision centre ophthalmic personnel, peripheral eye camps, private and public ophthalmologists, optometrists, eye screening staff, teleophthalmology clinics - all to take fundus photographs for documentation and telemedicine at low cost.

Panorama of Retinal Pathologies in Day to Day Eye OPD

First Author: Shagun ***KORLA***
Co-Author(s): Ravinder ***GUPTA****, Jayant* ***SHARMA***

Purpose: The use of smartphones has exhausted all possibilities. Even the medical field is no longer off-limits to its use. The purpose of our recording video on a smartphone is the ease it will provide both for doctors and patients for future reference. It can play a great role in teaching for residents as well as medical and nursing students.

Methods: All these videos have been made in an OPD setting with the help of a 20 D lens by the same ophthalmologist. The phone was kept in video mode with flash on. The illumination by the flashlight of the smartphone was utilized to focus on the retina, and a video was recorded.

Results: It is an example of appropriate technology in field settings where we do not have posterior segment imaging technologies to screen and follow up the retinal pathologies.

Conclusions: The video highlights the various retinal pathologies faced by ophthalmologists in day-to-day OPDs which can be challenging in some situations. these videos can also be used to educate the patient regarding his retinal condition and aid the need for treatment and follow-ups.

USE'D'LESS IOL!

First Author: Rakshita ***KENE***
Co-Author(s): Prithvi ***CHANDRAKANTH****, Tasneem* ***NEEMUCHWALA***

Purpose: To demonstrate 5 frugal innovative smartphone-based "do-it-yourself" tools showing extraocular use of intraocular lens (IOL).

Methods: To describe the step-by-step making of 5 frugal do-it-yourself smartphone-based innovative tools which are effective in anterior segment screening of pathologies without slit-lamp aid. We used unsterile, broken haptic or expired IOLs for this innovation which were otherwise useless. 5 chart paper of size 5x2cm with a punched hole where the IOL optic is fixated with two 15D, 8D & 4x30D for anterior segment images, fluorescein imaging, gonioscopy images, and microorganism (parasite/fungus) examination, respectively. These tools demonstrated the extraocular use of IOL not limiting its use only for cataract surgeries.

Results: This video demonstrates the effective use of IOL for the examination of anterior segment pathologies in clinics deficient in slit lamps or expensive investigative tools. These tools were proven as point-of-care diagnostic tools for peripheral health centers and vision centers, especially in developing countries. It was used as a teaching tool for resident teaching, case discussions, publication, and documentation.

Conclusions: This video demonstrates an innovative way of using IOLs for anterior segment examination with smartphones without slit-lamp aid. It shows the extraocular use of IOL, and it shows the efficient use of broken haptic, unsterile and expired IOLs. It is helpful for training, teaching, counselling, and documentation purposes.

Ocular Oncology and Pathology

Dancing Worms in Orbit of Ten Patients of Eyelid Carcinoma: A Video Presentation

*First Author: Rajendra **MAURYA***
*Co-Author(s): Mehbub **KADIR**, Shreya **SHAH**, Satya **SINGH**, Vinod **SINGH**, Shivangi **SINGH***

Purpose: To describe ten patients of various types of extensive eyelid malignancies complicated by orbital myiasis. In each case, we removed > 50 live larvae crawling in orbit.

Methods: A clinical video of the mechanical removal of > 50 live maggots from the orbit of all 10 patients with eyelid carcinomas invading the orbit. Oral ivermectin was given prior to the removal of maggots. Maggots were removed mechanically with the help of forceps after immobilizing the larvae by putting 4 % xylocaine and a mixture of chloroform plus turpentine oil (1:3), which blocked the spiracles of larvae. Regular wound debridement and dressing were done for five days. Routine topical and systemic antibiotics and anti-inflammatories were administered. Secondary management of eyelid carcinomas was done by systemic chemotherapy (5FU + Cis Platinum), topical Imiqumode, EBRT, and or surgical exenteration.

Results: The majority of our cases had extensive BCC (4 cases), followed by sebaceous gland carcinoma (3 cases) and squamous cell carcinoma (3 cases). Maggots were preserved in diluted formalin and sent to entomologists for scanning electron microscopic study. Maggots were identified as Human Botfly in 5 cases, Screw Worm in 3 cases, and Flesh fly in 2 cases. One patient died due to intracranial extension rest 9 had a complete disappearance of the tumor.

Conclusions: Orbital myiasis is rare and preventable. Myiasis can complicate the eyelid malignancies. Mechanical removal after suffocating the maggots by using various chemicals is a basic treatment. Educating the patients about early treatment, good wound hygiene, and sanitation is important.

Fascia Lata Graft in Conjunctival Rhinosporidiosis With Staphyloma Formation

*First Author: Riffat **RASHID***
*Co-Author(s): Farzana **AFZAL**, Sadia **SULTANA***

Purpose: To evaluate the surgical outcome of conjunctival rhinosporidiosis associated with scleral thinning treated surgically with fascia lata graft.

Methods: We report a case of a 12-year-old female, who presented to the oculoplasty department with the complaints of painless, gradually increasing a dark-coloured swelling in her left eye for the last three months. She gave a history of regularly bathing in the local pond. On examination, her left eye vision was 6/60. There was a red fleshy lesion with small yellow dots on its surface located near the limbus, 12 to 2 o'clock position on the bulbar conjunctiva. The lesion was associated with thinning and ectasia of the adjacent sclera over an area measuring 5 x 6 mm. B-scan ultrasonography shows the scleral ectasia with a flat retina. She had undergone excision of conjunctival mass with fascia lata graft over the staphyloma. The mass was rhinosporidiosis, confirmed after histopathological examination. Post-operatively, the patient was treated with oral dapsone for 6 months. The patient was well during her one-year follow-up.

Results: Fascia lata graft is safe and effective for the treatment of staphyloma associated with rhinosporidiosis. It provides flattening of the sclera and prevents further progression of staphyloma. Post-operatively the patient was symptom free with excellent outcome. No complication was observed during her one-year follow-up period.

Conclusions: Fascia lata graft is an effective treatment for conjunctival rhinosporidiosis with staphyloma. Early diagnosed and immediate intervention can prevent complications and recurrences.

Handling of Tumor Samples in Ophthalmic Oncology and Pathology

*First Author: Vishakha **TANNA***
*Co-Author(s): Saumya **JAKATI**, S **KALIKI***

Purpose: To highlight the correct technique of submitting Ophthalmic Oncology specimens to the pathology lab to ensure appropriate reporting and establish accurate diagnosis in cases with Ophthalmic malignancies.

Methods: In cases with suspected eyelid malignant tumors like sebaceous gland carcinoma, wide excisional biopsy with intra-operative margin clearance with frozen section was performed. Appropriately labelled fresh tissue samples were sent for frozen section analysis, where the margin status was communicated to the oncologist, which helped decide the further surgical plan. In cases with conjunctival malignant tumors like Ocular Surface Squamous Neoplasia, a no-touch wide excisional biopsy with adequate margin control and cryotherapy to the margins was performed. Appropriately oriented and labelled margins were sent for histopathological margin analysis, and further treatment was carried out to prevent tumor recurrence. In cases with infiltrative orbital malignancies, a multilayered incisional biopsy was performed to establish the diagnosis, since the deeper tissue harboured tumor cells. In cases with well-defined orbital lesions, excisional biopsy was performed in toto and sent for histopathological analysis.

Results: Correct handling of Ophthalmic Oncology specimens helped us establish appropriate

histopathology diagnosis which determined the correct treatment and follow-up of patients.

Conclusions: Incorrect orientation of tissues will compromise appropriate pathology reporting and thus affect patient outcomes. Thus, pathology plays a crucial role in decision-making while tackling patients with ophthalmic malignancies, and thus good communication between the oncologist and pathologist is the key to improved outcomes.

Obtaining Long Optic Nerve During Enucleation With Orbital Implant in Case of Advanced Retinoblastoma by Using Traction Sutures and Specific Scissor

*First Author: Soma **ROY***

Purpose: Showing the technique of obtaining long optic nerve during enucleation in retinoblastoma.

Methods: With general anesthesia and aseptic precautions, conjunctival peritomy was done by Westcott scissor. Gentle deep blunt dissection of tenon's capsule performed with a short curved blunt tipped scissor. The 4 recti muscles were tied at their insertion with 4/0 black silk which acted as traction sutures. These 4 recti muscles were again tied with 6/0 vicryl, 4 to 5 mm away from the silk suture, and muscles were cut in between two sutures. The 2 oblique muscles were detached from the globe. The globe was pulled with the help of traction sutures and a medium semi-curved blunt-tipped scissor was used for the blunt dissection of tenon's and other structures from the optic nerve up to the apex of the orbit. A sharp cut on the optic nerve was made just above the apex of the orbit to preserve the structures of the obital apex. After 5 to 7 minutes of hemostasis, an appropriately sized orbital implant was implanted within tenon's capsule and the posterior layer of the capsule was closed with 6/0 vicryl by interrupted suture. The muscle's tied sutures were passed through the conjunctiva at the probable site of original insertion and the anterior tenon and the conjunctiva were closed with 6/0 vicryl. The 4 recti muscles were attached with conjunctiva and tarsorhaphy was done after inserting a confirmer.

Results: Long optic nerve, 20 mm was obtained.

Conclusions: Traction sutures, good blunt dissection and medium sized semi curved blunt tipped scissor assist in obtaining long optic nerve in enucleation.

Surgical Management of Ciliary Body Tumor

*First Author: Muhammad **KHAN***

Purpose: A common trend for the management of uveal pigmented tumors is enucleation. The purpose of this video is to show the surgical procedure for the removal of a ciliary body tumor, which was benign on histopathology. The patient has good vision.

Methods: Surgical Procedure (Video).

Results: The tumor was removed successfully and was found to be benign. This has saved the eye of the patient, the removal of which may have caused psychological effects on the patient.

Conclusions: Enucleation is not the treatment of all pigmented intraocular tumors.

Ocular Trauma

A Case Report of a Patient of Traumatic Endophthalmitis From No PL to 6/12

*First Author: Shreya **SHAH***
*Co-Author(s): Mehul **SHAH***

Purpose: Endophthalmitis is an inflammation of both the anterior and posterior chamber complicated by systemic infection, intraocular surgery, or penetrating eye trauma.

Methods: Case presentation- Presenting the case of a 7-year-old female with C/O injury by Thorn in OS 6 days back. On examination, unaided visual acuity was NOPL. the patient was given intravitreal vancomycin and Dexona and started on topical & systemic antibiotics and systemic steroids (tapering dose). Later, she underwent vitrectomy endophthalmitis and lensectomy. After one month, she was operated on for an innovative scleral fixated scleral tuck lens.

Results: Significant improvement in VA from NOPL to 6/12 was observed after diligent surgical and medical intervention.

Conclusions: Endophthalmitis is an ophthalmic emergency. It carries devastating outcomes if not recognized and treated promptly. Prevention, early recognition, prompt management, and close monitoring can minimize such outcomes.

A Surgical Technique for in Toto Excision of Traumatic Conjunctival Cyst After Manual Small Incision Cataract Surgery (MSICS)

*First Author: Uma **THIGALE***
*Co-Author(s): Pratik **GOGRI**, Prerana **SHETTY**, Divya **TARA***

Purpose: This video aims to discuss the technique for successful excision of a conjunctival inclusion cyst following manual small incision cataract surgery (MSICS), including the utilization of pre-operative imaging and the histopathological details of the cyst.

Methods: A male aged 64 years presented to the clinic with a foreign body sensation in his left eye for 1 month and underwent MSICS two months back. The patient gives a history of trauma to the left eye one month back. All preliminary examinations were recorded. Slit lamp examination, Ultrasound biomicroscopy, and

anterior segment OCT revealed a possible conjunctival inclusion cyst. The cyst was excised in toto and sent for histopathological examination. This case was diagnosed as a conjunctival inclusion cyst after surgical excision and histopathological examination.

Results: The excision of the conjunctival inclusion cyst posed a challenge due to its delicate and thin-walled nature. Despite the previous reports of cyst rupture during excision, in this case, the cyst was successfully excised without rupture. Pre-operative imaging techniques aided in the accurate identification of the cyst's location and extent. Histopathological analysis of the excised cyst confirmed its diagnosis as a conjunctival inclusion cyst.

Conclusions: Surgical excision remains the primary treatment approach for conjunctival inclusion cysts. This video highlights the successful case of complete in-toto excision of a conjunctival inclusion cyst following MSICS without cyst rupture. The combination of meticulous surgical technique and imaging guidance can lead to favorable outcomes in managing conjunctival inclusion cysts.

Complicated Cataract Surgery

*First Author: Abdul **HANNAN***

Purpose: Surgical video of a complicated cataract surgery.

Methods: Phacoemulsification was performed for cataracts, and the damaged iris was reconstructed to create near-normal optical and cosmetic results. The patient had a grinder blade injury to his eye, where the primary repair was done elsewhere, and the patient was referred for iris reconstruction and complicated cataract surgery.

Results: Step-by-step reconstruction yielded beautiful optical and cosmetic results.

Conclusions: Materials used and surgical techniques are demonstrated in the video. The video won the 5th best video award in CRST complicated cataract surgery cases in 2021.

Complicated Cataract Surgery With Extensive Iridodialysis Fixation

*First Author: Jan Bond **CHAN***
*Co-Author(s): Kian Seng **LIM***

Purpose: Describes a complicated cataract surgery done with an innovative method to temporarily fix the iris for phacoemulsification before permanent iris fixation.

Methods: A 26-year-old gentleman presented a history of traumatic eye injury from a large rope while fixing a ship while he was working in Indonesia 1 week ago. He has vitreous in the anterior chamber, hyphema, iridodialysis from 2 o'clock to 10 o'clock area, cataractus lens, phacodonesis, vitreous hemorrhage, macula hole and high intraocular pressure at 35mmHg. He was started on antiglaucoma, and his IOP was reduced to 15mmHg, and he proceeded with the surgery. The video discusses tips and points regarding this complicated surgery.

Results: The video discusses tips and points regarding this complicated surgery.

Conclusions: Complicated phacoemulsification surgery was done with a capsular tension ring and 3-piece IOL in place with iris fixation done.

Extraction of an Explosive Rusty Collated Wire From an Ocular Injury

*First Author: Channdarith **KITH***
*Co-Author(s): Piseth **KONG**, Mengsreang **SOUNG***

Purpose: To report a case of penetrating eye injury from a piece of rusted collated wire ejected while using a pneumatic nail gun.

Methods: A case of a young adult woman is recorded.

Results: A 28-year-old woman who suffered an eye injury at work. An unknown flying metallic object struck her right side, and she could barely see anything. There was no eye protection on. Visual acuity was hand motion (RE) and 6/6 (LE). On slit-lamp examination, a metal wire perforated the sclera of the right eye, with the rest of the wire jammed into the medial canthus and the nose. The cornea was partially defective. The x-ray of the orbit revealed a 5.6 cm rusty metallic wire that had penetrated the right globe and become lodged in the ethmoid sinus. The foreign body was removed, and the sclera was repaired. One week after surgery, visual acuity was 6/6. The slit lamp examination revealed a sealed scleral wound. She had visual acuity of 6/6 and no major complications between the period of 6 and 9 months. A consultation with an ENT surgeon was scheduled as a result.

Conclusions: This case drew our attention to the fact that safety precautions should be enhanced and early procedures should be carried out without hesitation. We anticipate that penetrating eye injuries caused by metallic items, particularly an explosive pneumatic nail gun, have been underreported in the workplace. Again, rusty nails or collated wire should not be reused without adequate recycling, as these agents can also cause tetanus and other issues.

Iridodialysis Repair With Secondary IOL Implantation in the Bag-In Case of Iatrogenic Iridodialysis

*First Author: Nivean **MADHIVANAN***
*Co-Author(s): Sridhar **BARATAN**, Mohan **RAJAN**, Srinivasan **RAO**, Dr Neethi S **KRISHNA**, Atheek **SHAIK***

Purpose: Iridodialysis repair with secondary intraocular lens implantation in the bag in a case of iatrogenic iridodialysis. It was done in this patient to restore the

vision and also the cosmetic appearance to reduce the glare and halos.

Methods: The iris root is the thinnest and weakest portion of the iris stroma. It can detach during trauma and complicated intraocular surgery. Iridodialysis can cause functional and cosmetic problems. There are different techniques for iridodialysis repair. In this video, we show the technique of iridodialysis repair by using a double armed 10-0 prolene straight needle (hang back technique) with vitrectomy and secondary intraocular lens implantation in the bag in a case of iatrogenic iridodialysis following manual small incision cataract surgery.

Results: This technique allows a good functional and cosmetic result. We obtained a good repositioning of the iris tissue. The patient also had a good visual outcome. Functional problems such as glare and diplopia are relieved, and there is a faster learning curve and less trauma to the iris tissue.

Conclusions: This technique is simple and allows better repositioning of iris tissue with good cosmetic and optical results.

Non-metallic Anterior Chamber Foreign Body

*First Author: Nina **HANDAYANI***
*Co-Author(s): Nabilah **AFIFAH**, T.Budi **SULISTYA***

Purpose: To demonstrate a challenging management of an anterior chamber foreign body.

Methods: The diagnosis was based on history taking with an ophthalmology examination. Removal of an anterior chamber foreign body was performed. Subjective symptoms, visual acuity, and anterior and posterior segments were observed during the follow-up.

Results: A 41-year-old man presented with discomfort and blurred vision in his right eye 4 days prior to the visit. The VA was 0.2. The slit-lamp biomicroscopic examination revealed an inferior anterior chamber foreign body (stone), measuring 5 x 2 mm and 5 mm scar at the area of a full-thickness self-sealed corneal laceration. It was possible to visualize the foreign body's entire route through the cornea, even if it has a localized corneal edema. The foreign body was removed with forceps with the superior limbal incision. The post-operative condition of the visual acuity was improved 1.0 after 2 weeks, and the inflammation was decreased.

Conclusions: The risk of an intraocular foreign body is associated with the mechanism of injury, and it must be accurate in history-taking. Intraocular foreign bodies must have surgical removal to prevent ocular inflammation and complications.

The Rocky Balboa: The Story Of 3 IOLs

*First Author: Aditya **SETHI***
*Co-Author(s): Arun **SETHI**, Vaibhav **SETHI**, Reena **SETHI***

Purpose: We are thrilled to submit the video titled "Rocky Balboa: Story of 3 IOLs" for consideration at the upcoming APAO Festival. This compelling video chronicles an extraordinary surgical journey that showcases the unwavering commitment of our medical team and the resilience of our patient, whose story reads like a gripping Hollywood movie. Through this submission, we aim to share a unique surgical timeline, depicting the challenges and triumphs encountered during three consecutive intraocular lens (IOL) surgeries spanning five years.

Methods: The video "Rocky Balboa: Story of 3 IOLs" presents a meticulously documented surgical timeline that spans over five years, depicting the challenges, strategies, and technical innovations employed during three consecutive intraocular lens (IOL) surgeries. The methods utilized in creating this gripping narrative are outlined below.

Results: Selection of appropriate IOLs based on the patient's visual needs, ocular parameters, and surgical history. Surgery 1 - Initial IOL Implantation: as per his minimal zonular weakness along with CTR placed. Surgery 2: At a follow-up during his tenure as a boxer, IOL subluxation bordering dislocation was noted, and an iris-claw IOL was safely put. Surgery 3: a last trauma leading to de-enclavation of the iris-claw IOL on one side, forced our hand to a third surgery where finally a change to yamane IOL was preferred over SFIOL or any other option.

Conclusions: Patients like an active boxer or a sportsperson in a physical sport are often challenging, and this case takes us through a gripping thriller of giving the patient the best possible outcome.

The Surprises Kept Coming – My Experience With a Case of Ocular Trauma

*First Author: Obuli **NANDHAKUMAR***
*Co-Author(s): Sowmya **JENA**, Anuja **PATIL**, Kritika **SINGH**, Lalit **VERMA**, Gauri **KHARE***

Purpose: To elucidate the difficulties we encountered in a case of blunt globe injury with traumatic Cataract and the surprises that kept coming inside intra-operatively.

Methods: A 27-year-old patient came with a history of trauma from a tennis ball 3 hours ago with a sudden, painful loss of vision. At presentation, he had traumatic mydriasis with total traumatic cataract. B-scan showed VH with retinal detachment not involving the macula. The patient was taken up for surgery, and intra-operatively, he was found to be a case of operated VR surgery in childhood (which the patient did not have any memory of), and retinal detachment happened due to internal choroidal rupture and retinal break at

the edge of buckle indent. The patient was successfully operated on. Post-operatively at one month, due to an elevated IOP, silicone oil started leaking via the inner choroidal rupture and accumulating sub-conjunctivally.

Results: We show in the video our ordeals in managing them and how we were eventually able to give a successful visual outcome to the patient.

Conclusions: The video shows how the surgeon should always be thinking on his feet and be ready to expect even the most unusual complications post-operatively.

Traumatic Cataract With Zonular Dialysis and Iridodialysis: Young Ophthalmologist at Work!

*First Author: Aafreen **BARI***
*Co-Author(s): Tushar **AGARWAL***

Purpose: To show the surgical management of traumatic cataract with zonular dialysis and iridodialysis by a young ophthalmologist.

Methods: Surgical video of a case of traumatic cataract with zonular dialysis and iridodialysis in a 12-year-old boy.

Results: Traumatic cataracts may be associated with other features of trauma like zonular dialysis, iridodialysis and posterior chamber complications. The video shows surgical management of each entity with a satisfactory outcome.

Conclusions: Surgical management of traumatic cataracts requires good pre-op evaluation and intra-operative conscience and surgical skills to address each entity associated with them. The surgical aim is a well-centred intra-ocular lens with the corresponding pupil.

'Into the Lime-Light'-Surgical Management of Retained Chuna (Edible Lime) Particles in Patients of Severe Ocular Alkali Injury

*First Author: Anshika **LUTHRA***
*Co-Author(s): Abha **GOUR**, Nikunj V **PATEL**, Virender **SANGWAN***

Purpose: "Chuna" is a calcium hydroxide paste that is consumed orally in India as an additive to chewing tobacco. It also serves as a common constituent of commercially available 'paan'. It is the most frequent source of accidental alkali injury in India; especially in the pediatric age group. These injuries bear potentially blinding consequences if not managed timely in an appropriate fashion. We discuss here a case of limestone injury with a retained intra-stromal plaque of chuna and its appropriate management.

Methods: We discuss here a case of limestone injury that was presented to us in the sub-acute phase. He had previously undergone amniotic membrane grafting elsewhere. On examination, a mid-stromal plaque of chuna deposition was observed. The patient was taken under general anesthesia for exploration and underwent careful lamellar dissection and chuna removal. The overlying stromal flap was preserved and reposited once dissection was complete. A simultaneous autologous simple limbal epithelial transplantation was conducted.

Results: On his subsequent follow-up visit at 1 month, the patient demonstrated well-integrated limbal biopsies. On his final follow-up visit at 7 months, a well-epithelised cornea and stable ocular surface were observed, with a best corrected visual acuity of 6/9P with scleral contact lenses.

Conclusions: In conclusion, chuna injuries to the eye can incite grave insults to the ocular surface with vision-threatening outcomes. Meticulous exploration and removal of chuna particles in the acute stage of the presentation can optimize final outcomes in such patients, minimizing long-term complications due to the toxic effects of the retained chuna on ocular tissues.

Ophthalmic Epidemiology and Prevention of Blindness

Empowering the Next Generation: The Impact of Junior Doctors in Addressing Blindness Through the CREATE Volunteering Program

*First Author: Qiang **LI***
*Co-Author(s): Joos **MEYER**, William **MORGAN**, Elaine **ONG**, Anak Agung Mas **TRININGRAT***

Purpose: The primary purpose of this presentation is to showcase the outcomes and impact of the Inaugural 'CREATE' Volunteering Program, held in 2023-2024. Secondary purposes include recruiting future participants, and initiating a global conversation on the potential impact of junior doctors in addressing blindness worldwide. In brief, 'CREATE' empowers junior doctors to drive positive change and contribute meaningfully to the minimisation of blindness in Indonesia and Australia by offering support through a variety of endeavours: charity, research, exchange, awareness, tutelage, and empowerment.

Methods: The launch of this program has culminated in a video presentation at the 39th Asia-Pacific Academy of Ophthalmology Congress, as a promotional effort to appeal to international junior doctors.

Results: Since 2023, as the first participants of the program, we have: raised over $20000 Australian dollars for a global ophthalmic charity; been involved in epidemiological research on ophthalmic disease burden in Indonesia and outcomes of intervention; completed an overseas exchange in Indonesia, volunteering with local ophthalmic clinics and contributing to over 200 sight-restoring and life-changing cataract surgeries. In

July 2024, two Indonesian doctors will participate in a similarly educational and didactic placement in Perth, Western Australia - thus completing the exchange aspect of 'CREATE'.

Conclusions: Ultimately, the pertinent aims of the 'CREATE' program are to raise AWARENESS of the immense burden of ophthalmic disease worldwide, and provide TUTELAGE and EMPOWERMENT to the next generation of ophthalmologists to combat and adapt to global health challenges throughout the rest of their careers.

Orbital and Oculoplastic Surgery

A Novel and Innovative Technique in Excision and Cosmesis of an Orbital Lipodermoid

*First Author: Sarita **RAVINDRAN***
*Co-Author(s): Vidya **HEGDE**, Atul **KAMATH***

Purpose: Ocular lipodermoid cysts are choristomas which are described as normal tissue growth in an abnormal location. Congenital epibulbar lipodermoid comprises adipose tissue that is covered by connective tissue. They are usually located superotemporally. Recurrence is the most common complication. Therefore, we devised a novel technique for the placement of an amniotic membrane at the site of the excised lipodermoid cyst.

Methods: A 7-year-old girl presented for evaluation of a mass lesion in the left eye that had been gradually increasing in size since birth. A slit-lamp evaluation revealed a well-circumscribed, lightly vascularized, elevated yellowish mass with hair follicle suggestive of lipodermoid measuring 6.5 × 7.5 mm 5mm supero-temporal from the limbus. She underwent CT head & orbit to rule out intra-orbital extension and underwent complete cyst excision. As the overlying conjunctiva was tightly adherent to the dermoid cyst, we had to excise a large area of approximately 7mm of overlying conjunctiva with the placement of an amniotic membrane graft which was sutured with 4 sutures.

Results: As we had placed the amniotic membrane graft, it served the dual purpose of covering the large conjunctival defect following excision, thus preventing symblepharon formation. Secondly, it significantly reduced the chances of recurrence, thus being a novel technique in orbital lipodermoid excision.

Conclusions: Orbital lipodermoid should be removed carefully and completely with minimum trauma in order to prevent rupture/recurrence. We must always choose appropriate surgical incisions for good functional and cosmetic effects. Amniotic membrane graft becomes highly effective in such scenarios to prevent adhesions and recurrence.

Achieving Unique Benefits With Transcanalicular Laser Dacryocystorhinostomy – A Minimally Invasive Approach

*First Author: Angkoon **LUANGARAM***
*Co-Author(s): Pimkwan **JARU-AMPORNPAN**, Kanograt **PORNPANICH**, Praelada **WONGSIRIMETEEKUL***

Purpose: This video demonstrates the technique of transcanalicular laser dacryocystorhinostomy (TCL-DCR) with mitomycin-C injection and stent intubation. Our experiences of results are shared with reviewed success rates. Postoperative sequential ostium photos are shown. Patient selection is also suggested.

Methods: The procedure offers a minimally invasive approach using a laser probe directed through the dilated canaliculus to ablate the lacrimal sac mucosa, the bony lacrimal fossa, and the nasal mucosa under endonasal endoscopy. Additionally, mitomycin-C is injected into the nasal mucosa, and a silicone stent is introduced to provide support for the newly created lacrimal drainage system. The ostium photographs were collected.

Results: The procedure can effectively improve epiphora with reviewed success rates of over 80 percent. Sequential ostium pictures captured up to 6 months post-surgery visualize the well-formed ostium. The pictures illustrate the establishment of a stable ostium by the 6th week after surgery. Suggested patient selection includes individuals with a high risk of complications under general anesthesia, elevated risk of bleeding, a preference for minimally invasive treatments, absence of active inflammation in cases of dacryocystitis, and absence of suspected tumors in the lacrimal drainage system.

Conclusions: TCL-DCR is a safe and effective alternative to external and endoscopic DCR, with short operative time, high success rates, and low complications. It may be particularly beneficial for patients who cannot undergo general anesthesia or have a high risk of bleeding. The procedure may be avoided in cases of ongoing dacryocystitis or suspected tumors.

Combined Anterior Lamellar Recession and Buccal Mucous Membrane Graft in the Repair of Cicatricial Entropion of the Lower Eyelid

*First Author: Justine May **TORREGOSA***
*Co-Author(s): Alex **SUA***

Purpose: To present a surgical video of a repair of cicatricial entropion in a patient with a history of Steven-Johnson syndrome using a combined technique of anterior lamellar recession and buccal mucosal graft insertion.

Methods: The first step was to do the anterior lamellar recession. Due to the severe inflammatory changes, it was difficult to delineate the lower lid anatomy of the patient. An incision was made using blade 15

just anterior to the mucocutaneous junction. Inferior dissection is then carried out along the posterior surface of the orbicularis muscle until the orbital rim. The superior edge of the anterior lamella was not excised for this case. Instead, the remaining anterior lamellar edge was sutured to the tarsus with vertical mattress sutures in a recessed position. The posterior lamellae were directed inferiorly toward the desired depth of the fornix. A 20 x 10mm graft from the labial mucosa of the lower lip was then harvested, and this was placed on the defect between the posterior and anterior lamellae. Simple continuous sutures were placed along the edges of the mucous membrane to the borders of the anterior and posterior lamella. At the conclusion of the case, a scleral ring was placed, and reverse frost sutures were placed.

Results: One month post-op shows the formation of a deep inferior fornix with a healthy mucosal graft and an inferior eyelid margin directed away from the eyeball.

Conclusions: Combining oral mucosal graft with anterior lamellar recession is an effective technique to address the severely contracted posterior lamella of cicatricial entropion.

Combined Frontalis Flap and Levator Advancement for the Correction of Congenital Ptosis With Poor Levator Action

First Author: Shruthi Tara Vasudev ***SHRUTHI***
Co-Author(s): Pallavi ***M****, Devika* ***VASUDEVAN***

Purpose: To demonstrate a modified technique of frontalis flap in severe ptosis with poor levator function.

Methods: Managing congenital ptosis with poor levator action has always been a challenge to oculoplasty surgeons, owing to the fibrotic nature of the levator aponeurosis. Many procedures have been described to manage this condition. Tarso frontal sling suspension has so far been the most popular technique. Various materials have been used, from prolene suture and silicon rods to autologous facia lata, each having its own risks and benefits. Frontalis flap advancement has been documented for a long time but is seldom practiced. Although this prevents graft harvesting and synthetic material from being used, it has certain disadvantages like eyelid standoff, eyelid pop and lash ptosis. This is due to the upward traction of the frontalis muscle against the normal posterior direction of the force of the levator muscle. Through this video, we describe a technique of incorporating the levator aponeurosis to the frontalis flap in patients with congenital ptosis with poor levator action.

Results: All patients had optimal correction of ptosis that matched with the contralateral normal eye. We did not encounter the expected complications of the conventional frontalis flap technique.

Conclusions: This technique bypasses the complications of frontalis flap like, lash ptosis, lid standoff and entropion but provides optimal correction with aesthetic benefits.

Dermofat Graft

First Author: Sofia ***IQBAL***

Purpose: To evaluate the outcome of a secondary dermofat graft in a socket with an extruded ball implant (short video) and discuss indications, advantages and surgical technique of harvesting and placing the dermofat graft.

Methods: A single case of a patient with a contracted socket, a dermofat graft was placed in the orbit, including the harvesting of the graft.

Results: Dermofat graft is an excellent option for the reconstruction of sockets, especially in cases where a ball implant has been extruded.

Conclusions: Dermofat graft is an excellent option for the reconstruction of contracted sockets, and artificial eyes can be placed easily in such sockets with very minimal chances of complications.

Frontalis Flap Suspension Technique: A Reliable Technique With Consistent Outcomes in Severe Ptosis

First Author: Raghuraj ***HEGDE***
Co-Author(s): Alexander Gerard ***GUNGAB***

Purpose: To demonstrate the video of the frontalis flap suspension technique in cases of severe ptosis with poor levator function. The purpose of this video is to provide an overview of the technique of frontalis flap suspension, its methods of application, the results observed, and its utility in treating severe ptosis. Frontalis flap suspension is a surgical procedure that has recently been rediscovered by surgeons around the world in recent years to correct severe ptosis with poor to no levator function. By visually guiding viewers through its methods, showcasing real results, and drawing insightful conclusions, this video aims to introduce this technique to new as well as ecperiencedoculoplastic surgeons.

Methods: Frontalis flap suspension involves the surgical repositioning of the levator aponeurosis and the tarsal plate in cases of severe ptosis. The procedure is performed through an eyelid incision, allowing access to the underlying structures. Dissection is done under the frontalis muscle and sub-cutaneously over the frontalis muscle. The frontalis muscle is brought down. The frontalis muscle is attached to levator aponeurosis and tarsal plate, thus consistently able to correct such cases. No autologous tissue or silicone implants were used for this surgery.

Results: Before-and-after visuals showcase the dramatic improvements achieved through frontalis

flap suspension. We explore cases of congenital, involutional, and traumatic ptosis, revealing the remarkable transformation of eyelid position and symmetry.

Conclusions: Frontalis flap suspension emerges as a reliable solution for severe ptosis correction, offering lasting benefits both functionally and aesthetically. The success of the technique hinges on meticulous surgical execution, tailored to individual patient needs.

Ingenuity in Utilizing Preputium Skin: A Hero in Rare Bilateral Cicatrical Ectropion in Congenital Ichthyosis

*First Author: Nabila **ALJUFRI***
*Co-Author(s): Andreas **ANUGRAH**, Yunia **IRAWATI**, Randy Vincent Suhartono **KINDANGEN***

Purpose: To report a case of correcting cicatrical ectropion using the only viable skin on his body, the preputium skin from the penis, using the sleeve technique.

Methods: A surgical case report. A three-year-old boy was referred with cicatrical ectropion and ichthyosis vulgaris. He had generalized scally and dry skin involvement. At initial presentation, there was lagophthalmos without corneal exposure of both eyes, prominent anterior lamellar shortening, and bilateral upper and lower eyelid cicatrical ectropion. The only skin available for autografting was the uncircumcised penis. Preputium skin was harvested using the sleeve technique. Excision of the two preputial layers under direct vision, starting with the outer layer, to allow hemostasis by ligating the bleeding vessels. This resulted in a plentiful skin graft, which was sufficient for superior and inferior eyelid correction of both eyes.

Results: Upper and lower eyelid correction was successfully performed in this patient. The skin graft was viable and yielded good results. Tarsal conjunctival exposure or lagophthalmos was immediately relief with a satisfactory cosmetic result. The donor site healed within 1 week without any complications.

Conclusions: Prepuce can be a successful option for autograft in patients with congenital ichthyosis. The prepuce in reconstructive surgery has many advantages, including accessibility, high viability and elasticity, and low donor area morbidity.

Lateral Block Resection – A Simple Technique for Lower Eyelid Tightening for Aesthetic and Non-aesthetic Cases

*First Author: Rongkai **TAN***
*Co-Author(s): Chan **HUI TZE**, Vanessa **MANSURALI***

Purpose: To demonstrate the efficacy of lateral block resection for lower eyelid tightening in a single setting with entropion correction, ectropion correction, and lower lid blepharoplasty.

Methods: Lateral block resection is performed for lower eyelid tightening in ectropion correction, and as an adjuvant lid tightening for entropion correction and lower lid blepharoplasty in a single setting. The preoperative and postoperative images of bilateral eyelids were taken for all the cases to observe postoperative outcomes and monitor postoperative complications.

Results: This presentation includes a case of bilateral entropion, a case of bilateral ectropion, and three cases of bilateral lower lid blepharoplasty (a total of 10 eyes). Lateral block resection was used for all the cases to tighten lower eyelids in a single setting. The procedure involves cutting a lateral block of eyelid tissue under the skin muscle flap of the subciliary incision. There were no intraoperative complications, and the postoperative outcomes were satisfactory. All the cases were monitored for postoperative complications, such as scarring and notching of the surgical site, under or over-correction, granuloma formation, and postoperative infection. No complications were observed.

Conclusions: Lateral block resection is a simple and safe procedure for performing formal lid tightening for patients with entropion, ectropion, or lower lid blepharoplasty under a single setting. This technique is effective and long-lasting and provides good aesthetic and functional outcomes with less risk of lateral canthal angle disruption. The orbit is not disturbed and there is no risk of suture slippage as in the lateral tarsal strip.

Maximal Levator Resection Combined With Transverse Superior Fascial Expansion (TSFE) Suspension in Severe Simple Congenital Ptosis With Poor Levator Function

*First Author: Nguyễn **HIỀN***
*Co-Author(s): Huong **DUONG***

Purpose: Evaluate outcomes of maximal levator resection combined with transverse superior fascial expansion (TSFE) suspension on the treatment of severe simple congenital ptosis with poor levator function.

Methods: The intervention uncontrol study. n= 25 eyes congenital ptosis with poor levator function. The times of follow-up mean was 12 months. Place: Vietnam National Eye Hospital.

Results: Eighteen patients had 25 ptosis eyes with levator function (LF) under 5 mm. Bell positive. MRD1 mean 3,8 mm, good contour, 30% had lagophthalmos and reduced after few months. Crease symmetry. Lid lag positive. 100% lavator muscle had fat infiltration. A place where exposed TSFE is under Whitnall's ligament. amout of levator musle resection average 15 mm.

Conclusions: A good technique using fascia lata gives good outcomes. Need more time to evaluate long-term outcomes.

Micro Anchor for Hand Surgery Adapted as a Medial Canthal Tendon Stabilisation Device in Eyelid Reconstruction

*First Author: Christine **PUTRI***
*Co-Author(s): Saadia **CHAUDHRY**, Jennifer Hy **TAN**, Martin **WIENER***

Purpose: The use of micro anchor fixation of tendon to bone is well documented for hand surgery. This device has provided an additional option for medial canthoplasty. We describe the use of micro anchor in a cancer reconstructive surgery where the medial canthal tendon was completely excised.

Methods: This video illustrates the use of micro anchor in a reconstructive surgery.

Results: A 42-year-old male patient was referred with a large non-healing lesion measuring 4.5cm x 4cm involving the right lower lid, medical canthal region, and side of the nose. Incisional biopsy confirmed this lesion to be a BCC of nodular and infiltrative types. Following an extensive excision to achieve clear margins, he was left with a large defect involving the right medial canthal region (puncti, canaliculi, medial canthal tendon and part of lacrimal sac were excised), top of the bridge of the nose, tear trough and mid-cheek areas. There were full-thickness eyelid defects involving the medial one-quarter of the upper lid and the medial half of the lower lid. In our patient, the medial canthal area was reconstructed by placing DePuy Mitek Micro Quickanchor on the lacrimal crest with attached 4/0 Ethibond sutures secured to the upper and lower cut ends of lids medially. McGregor cheek rotation flap with lateral canthotomy and cantholysis and nasolabial V-Y advancement flap was performed to repair the lower lid defect. The upper lid defect was repaired with a paramedian forehead flap.

Conclusions: This complex reconstruction surgery, which utilized a micro anchor for medial canthoplasty, restored the patient's facial appearance and function of eyelids.

Modified Intracystic Silicon Implant Under Endoscopic Control

*First Author: Shreya **SHAH***

Purpose: To demonstrate the method of modified intracystic Silicon implantation in lacrimal surgery under endoscopic control.

Methods: After all sterile preparation, local anaesthesia is given to the patient. Dilatation and probing are performed. Then, using a 22g customized cannula, entry is made into the middle meatus by bypassing the hard stop. Confirmation is done by a nasal endoscope. Further, a silicon implant is introduced in the opening, and its position is confirmed by a nasal endoscope. This is cannula dacryocystorhinostomy with a silicone implant.

Results: The procedures are less time-consuming, almost bloodless, and require no or few sutures. Confirmation by endoscopy affirms positive results. Post-operative results are comparable to conventional dacryocystorhinostomy.

Conclusions: Cannula dacryocystorhinostomy with implant is a procedure that affords good outcomes with less discomfort. Endoscopic control prevents Transcystic and extracystic positioning of the implant, thus increasing the success rate.

Navigating the Orbital Landscape: A Step-by-Step Guide in Understanding Normal Orbital Landmarks on Computed Tomography Imaging

*First Author: Sanjana **MOLUGU***
*Co-Author(s): Anasua **KAPOOR***

Purpose: This video aims to provide a comprehensive guide to performing computerized tomography of the orbit, catering to medical professionals seeking to enhance their proficiency in orbital imaging interpretation of normal structures.

Methods: Background: In the realm of ophthalmic and radiological diagnostics, computerized tomography (CT) has emerged as an indispensable tool for assessing orbital pathologies. With its intricate anatomy and proximity to critical structures, the orbit demands precise imaging techniques. Synopsis: The video delves into the intricate details of orbital CT imaging, offering a step-by-step tutorial that elucidates the imaging process. It covers the brief history of CT imaging and a checklist on how to interpret a normal scan. Additionally, the video navigates through the identification of anatomical landmarks.

Results: Highlights: Key teaching points in the video include: (1) History of CT Imaging: Understand the importance of the evolution of CT imaging. (2) Anatomical Landmarks: Familiarize yourself with identifying crucial anatomical landmarks and structures within the orbit, including the optic nerve, extraocular muscles, and extraconal structures.

Conclusions: In summary, this video offers an instructive journey through the intricacies of computerized tomography of the orbit. By illuminating crucial landmarks and an effective checklist to interpret a CT scan of orbit, it equips new residents and other fellows with the knowledge and confidence to excel in orbital imaging and contribute to enhanced patient care.

Orbital Emphysema Following Cholesterol Granuloma Excision

*First Author: Kirthi **KOKA***
*Co-Author(s): Bipasha **MUKHERJEE***

Purpose: To report a rare case of orbital emphysema post cholesterol granuloma excision that was successfully managed by needle decompression.

Methods: A retrospective interventional case report.

Results: A 50-year-old male presented with complaints of gradually progressive prominence of the left eye associated with a diminution of vision and diplopia on the up gaze. Magnetic resonance imaging showed a well-circumscribed super temporal mass with erosion and thinning of the orbital roof. Excision and complete curettage of the lesion were performed. On the 11th post-operative day, the patient presented with gross proptosis, ballooning of the conjunctiva, and exposure keratopathy following an episode of forceful nose blowing. An urgent computed tomography scan was done, which confirmed orbital emphysema. A needle orbital decompression of the air along with drawstring tarsorrhaphy was performed. The patient improved clinically and radiologically with nil recurrence at nine months follow-up.

Conclusions: Orbital emphysema commonly occurs post-trauma. Emphysema post-surgery is a rare complication and should be kept in mind for patients presenting with acute onset post-operative proptosis. This video demonstrates a simple yet effective technique of needle decompression that can be easily performed in the clinic to prevent sight-threatening complications.

Repair of Orbital Floor Fracture using Titanium Mesh

*First Author: Naz **JEHANGIR***
*Co-Author(s): Sofia **IQBAL***

Purpose: To evaluate the effectiveness of titanium mesh in the repair of orbital floor fractures in a single patient and also to list different other materials that can be used for the repair of orbital floor fractures and their advantages and disadvantages.

Methods: Video showing repair of orbital floor fracture using titanium mesh.

Results: A variety of materials are available for the repair of orbital floor fractures, and here we presented a case of repair using titanium mesh with excellent results.

Conclusions: Orbital floor fractures can be repaired with titanium mesh with good post-op results. It was a single case.

Slip 'n Slide: Orbital Socket Reconstruction With Mucus Membrane Graft Using Draw-String Technique

*First Author: Emanuele **ECHEVARRIA***
*Co-Author(s): Franklin **KLEINER***

Purpose: To illustrate a method of orbital socket reconstruction using mucus membrane graft without the need for skin bolsters.

Methods: A 40-year-old Filipino male presented with a contracted socket of the right eye after enucleation was done 24 years prior. Inferior fornix reconstruction was performed in the following manner: Horizontal incision was made along the bulbar conjunctiva from medial to lateral canthus. Dissection was performed inferiorly to expose the orbital rim. A mucus membrane graft was then obtained from the lower lip mucosa. The superior edge of the graft was sutured to the superior edge of the bulbar conjunctiva. The inferior edge of the graft was fixed to the inferior orbital rim together with the edge of the palpebral conjunctiva using a double-armed 5-0 vicryl suture passed continuously along the orbital rim. The two ends of the suture were pulled in opposite directions similar to that of a draw-string to allow the graft to fall into place while creating a deep inferior fornix.

Results: This technique gives the appearance of a deeper than normal fornix which can be addressed with a customized prosthesis.

Conclusions: The draw-string technique is a straightforward and cosmetically acceptable method of socket reconstruction without the need for a bolster on the skin.

Spark the Lash

*First Author: Swati **SINGH***
*Co-Author(s): Prerna **SINHA***

Purpose: The current video demonstrates the surgical technique of electroepilation (at a predetermined depth) that has been modified based on the author's experiences and research.

Methods: Electroepilation using radiofrequency ablation is a commonly performed procedure for misdirected eyelashes. Being a blind procedure, the accuracy of that depth in electroepilation is usually imprecise and cannot be judged intraoperatively. The mean eyelash root depth in Indians is 2.3±0.4 mm in upper eyelids and 1.9±0.2 mm in lower eyelids. The mean angle between the lash follicle root and the skin epithelium is 75±11 degrees. Hence, the authors used the above learnings to electroepilate the trichiatic lashes in seven eyelids of Stevens-Johnson syndrome patients.

Results: Using Ellman electrocautery (Surgitron® Dual EMC 90, 4MHz) in partially rectified mode, 3-4mA current is applied onto a marked 33G needle passed

at 3 mm depth (bevel end passed inside) beside the follicle for a duration that produced a slight color change of the eyelid margin skin. The electroepilation is performed under an operating microscope. After electroepilation, cilia are epilated and examined for the presence of bulbs, as well as the effects of electroepilation. There were 18 trichiatic eyelashes in seven eyelids, and the surgical technique achieved complete resolution in 87% of eyelashes at the minimum follow-up of 3 months, where the necrotic bulb could be visualized after electroepilation. However, in eyelashes where the bulb could not be visualized, the success rate was 70.5%.

Conclusions: Needle-assisted electroepilation with modifications in terms of needle entry and eyelash root examination achieves good success rates.

The Mustarde Masterstroke -Eyelid Switch Flap Revisited

*First Author: Joyeeta **DAS***
*Co-Author(s): Nibedita **DAS***

Purpose: To demonstrate the technique of reconstruction of bilateral large upper lid coloboma in a case of abortive cryptophthalmos by the Mustarde lid switch flap technique.

Methods: A 4-month-old baby presented with both eyes' upper lids large coloboma of >80% defect along with kerato-blepharon leading to vision-threatening exposure of the ocular surface. The reconstruction of simultaneous both eyelid defects was challenging. This case has been managed by utilizing the Mustarde Lid switch flap technique along with symblepharon release and fornix reconstruction under general anaesthesia. Mustarde lid switch flap is a very effective technique for the correction of large upper lid defects. However, it is not very much in use because of its technical difficulties. The principle of switch flap is a full-thickness flap on a pedicle that is switched from the lower lid to the upper lid to fill a full-thickness large eyelid defect. This presentation will showcase step-by-step surgical steps of this technique with high-quality video.

Results: After one month, both eyes' upper lids were well formed with excellent surface closure.

Conclusions: Mustarde switch flap is a useful technique in the armamentarium of upper lid reconstruction. If used judiciously, the results are gratifying.

The Reverse Stroke: Hughes Tarsoconjunctival Flap for Upper Lid Reconstruction

*First Author: Shaifali **CHAHAR***
*Co-Author(s): Santosh **HONAVAR***

Purpose: To describe surgical management of large upper eyelid defects using reverse Hughes tarsoconjunctival flap.

Methods: Video illustrating pearls in the management of eyelid defects and reconstruction describing in detail modified reverse Hughes tarsoconjunctival flap.

Results: This video describes, in brief, the nomogram utilized for eyelid reconstruction and describes in detail the management of upper eyelid defects, highlighting tips and tricks of a Hughes tarsoconjunctival graft, which can be modified to be utilized for the upper lid. We describe the advantages and outcomes in cases where it was successfully utilized.

Conclusions: Eyelids play an important role in protecting the globe. Defects in the eyelids can occur as part of congenital anomalies, surgical resection of tumors, or traumatic injuries. A thorough knowledge of the eyelid anatomy can help in eyelid reconstruction that can provide gratifying results by restoring the lid as close to the pre-surgery state as possible. Extensive upper eyelid defects have been repaired traditionally by Cutler-Beard procedure, which is a full thickness advancement bridge flap. It is a skin muscle flap wherein the tarsus is left behind. The Hughes flap is a tarsoconjunctival flap traditionally used for repairing lower eyelid defects. However, a modified technique called the reverse Hughes procedure can be utilized and can have certain advantages over the traditional Cutler-Beard procedure for adequately reconstructing extensive upper eyelid defects, giving the advantage of good tarsal support to the eyelid.

Three Bullets in a Shot: A Surgical Technique of Transconjunctival Involutional Entropion Repair

*First Author: Nur Hanisah **MOHAMAD KANI***
*Co-Author(s): Chenshen **LAM**, Othmaliza **OTHMAN***

Purpose: Transconjunctival entropion repair was renowned for effectively addressing all three fundamental causes of involutional entropion, which involves horizontal lid laxity, overriding of the preseptal orbicularis oculi, and disinsertion of the lower eyelid retractors. Hereby, we demonstrate a video of the sequential surgical procedures of transconjunctival entropion repair.

Methods: A video presentation that illustrates the procedural steps and techniques involved in transconjunctival entropion repair.

Results: The surgical techniques primarily involve three main procedures aimed at correcting the three anatomical abnormalities. The techniques included lateral canthotomy, inferior cantholysis, and lateral canthopexy for horizontal lid tightening, the plication of a lower eyelid retractor to address retractor disinsertion, and preseptal orbicularis myectomy to resolve the preseptal orbicularis override. It encompasses the utilization of both local and regional anesthesia, employing a combination of Marcaine 0.5% and adrenaline. A traction suture was applied before advancing with the procedure. Following the

canthotomy and cantholysis, a Desmarres retractor was employed to evert the lower eyelid, and the conjunctiva marking was done 5mm below the lower tarsal border to guide for the transconjunctival incision. After creating the incision and locating the inferior retractor, plication sutures were introduced. A myectomy of the preseptal orbicularis was executed, followed by the formation of a pretarsal pocket. Ultimately, the lower eyelid retractor was reattached, and the conjunctiva was closed. Lateral canthopexy and lateral canthal angle formation were done, and the procedure was completed with the closure of the orbicularis oculi and skin.

Conclusions: Transconjunctival entropion repair is a safe and effective approach for managing involutional entropion.

"The New Phase to a New Face" -the Advent of Osseointegrated Implants in Oculoplasty

*First Author: Sruthi **R S***

Purpose: This video contains a detailed explanation of the principle of using osseointegrated implants in the fabrication of orbital prostheses, the mechanism of action, and the surgical steps till the final dispensing.

Methods: A 61-year-old male presented to us with a history of bilateral rhino-orbital mucormycosis with a past history of sinus debridement, orbital decompression, and right orbital exenteration performed elsewhere 2 years ago and was deemed in remission from mucormycosis at presentation to us. He was worried about the cosmetic disfigurement and was seeking a post-exenteration orbital prosthesis. The basic mechanism behind the osseointegrated implant is as follows: 3-4 titanium implants go into stable bone where osteotomy is already made. These implants have a magnetic property. The reverse pole of these implants is incorporated into the orbital prosthesis so that the prosthesis snugly clicks on and clicks off. The surgical procedure of placing the magnetic implants into the orbital rim and dispensing the prosthesis is discussed under these 3 steps:- Step 1: Making the osteotomy and drilling the implants. Step 2: Placement of healing abutments. Step 3: Fabrication of ocular prosthesis.

Results: The patient achieved excellent cosmetic outcomes after wearing the prosthesis and is very happy with the outcome.

Conclusions: Osseointegration is used in the medical field for dental implants, ear prostheses, and craniofacial prostheses already. Osseointegrated Orbital Prosthesis is a new addition to the armamentarium of the orbital prosthesis and is superior to conventional spectacle-mounted and adhesive retention orbital prosthesis. This helps us handle the iatrogenic repercussions of devastating disease post-exenteration.

Pediatric Ophthalmology and Strabismus

Atypical Iris and Ciliochoroidal Coloboma, Persistent Fetal Vasculature and Congenital Cataract

*First Author: Deeksha **RANI***
*Co-Author(s): Sudarshan **KHOKHAR**, Venkatesh **NATHIYA**, Aishwarya **RATHOD***

Purpose: To describe the surgical management of congenital cataract in a patient with atypical iris and ciliochoroidal coloboma and persistent fetal vasculature.

Methods: The anterior capsule had a thick plaque, and 4 stab incisions were made to create an opening in the anterior capsule. After lens aspiration, a central PFV stalk with retained hypertrophic tunica vasculosa lentis was observed encircling the lens equator at 3 o'clock and 9 o'clock. On zooming up, blood flow could be seen in the vessels. Central posterior curvilinear capsulorhexis was done and the PFV stalk was cauterised and cut. Anterior vitrectomy was done.

Results: Intraoperative fundus evaluation showed dispersed vitreous haemorrhage and two atypical colobomas located nasal and temporal to the disc. There was no retinal detachment. The sulcus was formed, and a three-piece IOL was placed in the sulcus.

Conclusions: We report a rare presentation of cataract with persistent fetal vasculature in an eye with atypical iris and ciliochoroidal coloboma that was successfully managed with lens aspiration and IOL insertion.

Combined Medial Rectus Periosteal Fixation With Frontalis Flap for Congenital Third Nerve Palsy

*First Author: Alexander Gerard Nino **GUNGAB***
*Co-Author(s): Yien **LAI**, Chen-hsin **SUN**, Inez **WONG***

Purpose: To showcase our combined surgical technique on surgical management of congenital third nerve palsy.

Methods: Video demonstration of our surgical technique on medial rectus periosteal fixation and frontalis flap creation.

Results: Congenital ptosis and exodeviation are corrected adequately.

Conclusions: The combined eyelid and extraocular muscle procedure is a safe and feasible combo.

Congenital Cataract- Microcornea Syndrome

First Author: Hanif ***MALIK***

Purpose: To present a case of microcornea with cataract, managed with Lensectomy and foldable intraocular lens implantation in the bag.

Methods: A 2-year-old male presented with bilateral congenital cataract and microcornea. Vertical and horizontal corneal diameters in the RE 9.5mm and LE 9mm. KR RE 46.50 and 48.75. KR LE 46.75 and 48.25. Axial lengths RE 24.79 mm and 24.93 mm LE fundus examination was unremarkable. Cup disc ratios in both eyes were 0.1 with healthy discs. Intraocular pressure in the RE was 12, and in the left, 14. The estimated IOL power was 12.5 Diopters in both eyes (SRK T formula). The patient was planned for right eye lens matter aspiration with posterior capsulotomy and foldable IOL placement. The intraocular lens of +10 Diopters was implanted in the right eye. The other eye was operated after an interval of 4 weeks with intraocular lens placement of the same power.

Results: The patient has been followed up for 2 years. The post-operative residual refractive error is -1 DS in both eyes. Intraocular pressure in right eye 14 left eye 12. The patient maintains good vision.

Conclusions: Conventionally, intraocular placement in cases of microcornea is fraught with complications peroperatively and in the post-operative period, the most common of them being glaucoma. We present a case in which the patient had microcornea, but the axial lengths were adequate to provide ample leverage for intraocular placement. This highlights the importance of tailoring management to the needs of each patient.

En Bloc Technique for Excision of Secondary Large Iris Cyst – A Noble Innovative for Future Journey

First Author: Sidratul ***NAZNIN***

Purpose: To present a safe, effective, easy, and economical technique named en bloc cystectomy for the management of post-traumatic large-size peripheral iris cyst, which proceeds to reduce vision and leads to amblyopia.

Methods: The technique was demonstrated in a 10-year-old boy who developed a vision-reducing symptomatic iris cyst after post-traumatic cornea repair. This iris cyst (5.6x3.7 mm) filled the peripheral part of anterior chamber from 8 to 11 o'clock position and pushed the iris centrally which obscured the central visual axis. It was associated with anterior synechia behind a linear post-repair corneal scar. This cyst was impending to touch the corneal endothelium and was leading to corneal decompensation. At first, after creating a clear corneal incision, the anterior synechia was released by a synechiolysis spatula. Then, the cyst was removed from the central to the periphery, along with the sac wall, followed by adhere iris tissue excision by venous scissor. Eventually, an iris gap was created, which was repaired by the pupilloplasty technique by 10-0 polypropylene suture inserted by a 26 gauze needle. At the final step, the anterior chamber was completely cleaned out and formed, and a subconjunctival injection of antibiotic was given.

Results: At final post-operative visit; vision improved, intraocular pressure was normal, no cataract was found and there was no recurrence of cyst in next 6 month follow up.

Conclusions: En bloc cystectomy is a noble, economical and minimally invasive technique simple enough to be performed safely by surgeons of varying skill.

Intraocular Lens Implantation in a Patient With Cornea Plana

First Author: Hanif ***MALIK***

Purpose: To present a case of cornea plana with cataract, managed with lensectomy and foldable intraocular lens implantation in the bag.

Methods: A 7-year-old male presented with bilateral congenital cataract and cornea plana. Corneal diameters in both eyes were 8.5mm vertical and 9mm, while horizontal K readings RE were 33.50 and 34.75. K readings in the LE were 34.25 and 35.50. Axial lengths were 23.63 mm in the right eye and 23.82 mm in the left eye. Fundus examination was unremarkable. Cup-disc ratios in both eyes were 0.1 with healthy discs. Intraocular pressures in both the eyes were normal. Corneal topography confirmed cornea plana. The estimated IOL power was 29.50 Diopters in both eyes (SRK-T). The patient was planned for Right eye lensectomy with posterior capsulotomy and foldable IOL placement. An intraocular lens of +26 diopters was implanted in the right eye.

Results: The patient has been followed up for 10 months. The post-operative residual refractive error at 3 months was +3 DS in the right eye. Intraocular pressure in right eye 14 left eye 12. The patient maintains a best-corrected visual acuity of 6/18. The Left eye is scheduled for surgery.

Conclusions: Conventionally, intraocular placement in cases of cornea plana is wrought with complications pre-operatively, and in the post-operative period, the most common of them being glaucoma. We present a case in which the patient had cornea plana, but axial lengths were adequate enough to provide ample leverage for intraocular placement. This highlights the importance of tailoring management to the needs of each patient.

Novel Inferior Oblique Muscle Y-Splitting Procedure to Mitigate the Anti-elevation Effect Following Its Anterior-Positioning

First Author: Amar ***PUJARI***

Purpose: To describe a novel Y-splitting procedure of inferior oblique muscle to mitigate the anti-elevation effect.

Methods: A pilot, prospective interventional study was undertaken to assess the effect of inferior oblique muscle Y-splitting in patients with unilateral 3+ or more overaction. To correct primary gaze hypertropia and the excyclotorsion, a Y-splitting procedure was performed (along with routine horizontal muscle surgery as per the deviation) in 14 subjects. The effect of surgery was assessed at baseline and at 6 months post-intervention.

Results: The mean age of 14 subjects was 25.14±7.70 years. The mean pre-operative hypertropia, excyclotorsion and inferior oblique muscle over-action was 18.42±3.50 PD, 14.14±2.65 degrees, and +3.21±0.42 respectively. Following surgery, this was reduced to 1.57 ±1.74 PD of residual hypertropia (a net correction of 16.85±2.31 PD, $p = 0.005$), 3.85±1.46 degrees of residual excyclotorsion (a net correction of 10.28±1.72 degrees, $p < 0.05$), and +0.28±0.46 of residual inferior oblique over-action (a net correction ~+3) at the end of 6 months. Amongst fourteen patients, three patients still experienced residual/variable anti-elevation effect, and during the study period none of them experienced any adverse event and none of them required any additional surgeries.

Conclusions: While anteriorizing the inferior oblique muscle to correct primary gaze hypertropia and the excyclotorsion, a novel "Y-splitting" procedure can be followed to achieve the desired results with a mitigated anti-elevation effect.

Rescue of the Unsightly Medial Rectus!

First Author: Sampada ***KULKARNI IRLEKAR***
Co-Author(s): Ramesh ***KEKUNNAYA***

Purpose: Trauma and iatrogenic loss of the medial rectus muscle (MRM) during strabismus, retinal buckle, orbital or sinus surgeries are the main etiologic entities. In the literature, various terminologies were used to describe the mechanisms of rectus muscle loss; these include: slipped muscles, lost muscles, disinserted muscles, torn muscles, and pulled into two syndrome. In our video, we are describing the diagnostic approach and surgical management and outcomes of the following cases:

Methods: A video-based discussion of various cases and clinical pearls to manage difficult clinical scenarios in the following cases: (1) A disinserted MRM following direct trauma. (2) MRM entrapped in medial orbital wall fracture following blunt injury. (3) A slipped MRM following MRM resection. (4) An MRM lost behind a stretched scar following old surgery.

Results: Among the rectus muscles, due to its anatomic independency and functional characteristics, retrieving a medial rectus is uniquely challenging. In this video, we demonstrate four scenarios with case-guided diagnostic approaches and surgical strategies from our experience in a tertiary eye care center. We illustrate the importance of careful clinical examination for duction limitations, horizontal incomitance, near-distance disparity, palpebral fissure changes, saccades, careful inspection of trauma sites, and the vital role of neuroimaging.

Conclusions: Intra-operatively forced duction test plays a pivotal role in determining surgical dosage. The Oculocardiac reflex is an important sign in identifying the muscle. Anatomical surgical knowledge and visual identification of different tissue structures facilitate tracking of the muscle pathway.

Surgical Surprises During Congenital Cataract Surgery

First Author: Irum ***RAZA***

Purpose: To share a surgical surprise during a case of congenital cataract surgery.

Methods: A case of unilateral congenital cataract was selected for surgery. During surgery, after doing capsulorhexis, lens matter aspiration (LMA) was started. While doing LMA, a hemorrhage started to appear within the lens matter. That area was left while aspiration of the remaining lens matter was completed with great care so as not to increase the hemorrhage. Lastly, this area was also addressed very gently. Once all the lens matter was removed, a plaque with vessels invading from the nasal side was found adherent to the posterior capsule. This plaque was also removed carefully without rupturing the capsule. The intraocular lens was implanted, and the case was closed.

Results: This interesting case actually was a case of Persistent hyperplastic primary vitreous which needed gentle handling throughout the surgery.

Conclusions: Surgery of congenital cataract is never a simple one. Unexpected and unusual happenings do occur which just need a gentle approach. Otherwise, surgeon may land up in great trouble.

Refractive Surgery

An Easy Way to Remove Invisible Residual SMILE Lenticule Fragment

*First Author: Yu-lun **LO***
*Co-Author(s): Chao-kai **CHANG***

Purpose: The removal of a residual lenticule fragment days or weeks after SMILE surgery can sometimes be challenging due to poor visibility. The author proposed an easy solution to this condition.

Methods: Case report. The author tried to remove the lacerated residual lenticule fragment in SMILE surgery over inferotemporal quadrant OS but in vain. The upper and lower layers of the residual lenticule were dissected but not removed due to poor visibility during the primary SMILE surgery. The residual lenticule fragment was barely visible even under slit-lamp high-power magnification during follow-up. The corneal topography revealed crescent shape elevation over the inferiotemporal quadrant. Ten days after the SMILE surgery, revision was arranged to remove the residual lenticule fragment.

Results: The invisible residual SMILE lenticule fragment was successfully removed after pupil dilation under microscope retroillumination red reflex background.

Conclusions: Retroillumination red reflex can be helpful in removing poorly visible residual SMILE lenticule fragments even days after surgery.

Biscut (Bi-manual Sinskey Cut) Technique – A Modification of the Divide and Conquer Technique for Chopping of Nucleus

*First Author: Shivna **PANDYA***
*Co-Author(s): Ishan **PANDYA***

Purpose: The purpose was to describe a new modification of the conventional divide-and-conquer technique of chopping the nucleus during phacoemulsification.

Methods: After all the initial steps of the surgery have been completed, a trench of 2/3rd depth is made in the nucleus as per the conventional divide and conquer technique. Then, in place of the phacoemulsification probe, the technique uses two Sinskey hooks, advanced from two separate MVR wounds, created opposite to each other, about 45 degrees from the main wound. They are advanced into the trench, and then, using opposite force, the nucleus is divided. The method makes a simple modification of using two Sinskey hooks in place of the phacoemulsification probe itself to divide the nucleus into quadrants.

Results: Unlike the conventional divide and conquer, the method uses Sinskey instead of a probe, that creates much less zonular stress. The method is extremely useful in small pupil phaco and cataract with zonular weakness, as the hooks can be placed very close to the bottom of the trench, and minimal force is used to divide the nucleus into quadrants. the method is immensely useful to early phaco trainees, as the method uses MVR wound in place of main wound, giving higher chamber stability.

Conclusions: BiSCUT technique is a modification of the conventional divide-and-conquer to assist in difficult and hard cataracts, especially where the primary chop fails. It also serves a very useful initial teaching technique for training residents to learn the chopping.

Flattening the Curve: Traditional to Contemporary!

*First Author: Arpita **KHASNAVIS***
*Co-Author(s): Pravin **VADDAVALLI***

Purpose: To discuss various techniques (old and new) to manage post-penetrating keratoplasty (PK) astigmatism and improve the final visual outcome post-PK.

Methods: Video article – case-based discussion on factors influencing post-penetrating keratoplasty astigmatism and its management.

Results: Optical penetrating keratoplasty (PK) aims to improve a patient's postoperative vision, but astigmatism can limit visual acuity despite a clear graft. Post-penetrating keratoplasty astigmatism can be influenced by donor-related factors, host factors, and surgeon-associated factors. Donor tissue factors like the age of the donor cornea, irregularities in the donor tissue, and severity of the disease in the host tissue can induce high astigmatism in the postoperative period. Surgeon-induced factors like the type of trephination, the graft size, the nature of graft host junction apposition, and the suturing technique all influence astigmatism in the postoperative period. Management options in the post-operative period include suture adjustment, selective suture removal 3 months post PK based on topography, photorefractive procedures, toric intra-ocular lens implantation, relaxing incisions and repeat keratoplasty to reduce post-operative astigmatism.

Conclusions: Astigmatism resulting from penetrating keratoplasty tends to be influenced by donor-related factors, host factors, and surgeon-associated factors. Overall, this video article aims to provide a comprehensive overview of the various techniques to manage post-penetrating keratoplasty astigmatism and improve a patient's postoperative vision.

Flexin' on Those Gummy Capsular Adhesions: A Video Presentation

*First Author: Vincent **BERNAL***
*Co-Author(s): Carlo **NASOL**, Ma.Catherina **NASOL***

Purpose: To present a long-term (10-year) follow-up of a one-eyed pediatric patient assessed as a case of

a giant retinal tear (GRT) of the right eye. The patient was initially managed patient by repairing the GRT with a pars plana vitrectomy and insertion of a silicone oil tamponade. On follow-up, it was found that the oil had emulsified on the 3rd and 6th year of follow-up and had undergone silicone oil exchange twice after the initial surgery. A cataract had formed 6 months after the 2nd oil exchange and was removed and replaced with an IOL. Three years post-lens removal with IOL insertion, the intact capsular bag had formed a posterior capsular opacification (PCO) and had formed adhesions to the IOL. The IOL also had formed opacifications within its optic. The surgery showcases capsular bag adhesiolysis from the previously inserted IOL followed by an IOL exchange.

Methods: My method for obtaining this video is by recording it through the view of the primary surgeon.

Results: The capsular adhesions have been successfully removed by using a variety of instruments. The opacified intraocular lens has been replaced by a new intraocular lens. The whole surgery was completed successfully while keeping the capsular bag intact.

Conclusions: Opacification of the intraocular lens can indeed occur alongside extensive capsular adhesions. Preservation of the capsular bag in these cases is indeed possible with adequate pre-operative planning and intraoperative decision-making. These two features are key to the success of completing complicated surgeries.

Ironing Away the Wrinkles of Life!

*First Author: Sneha **BATRA***
*Co-Author(s): Deepak **AGARWAL**, Partha **BISWAS***

Purpose: To demonstrate correct management of post-LASIK flap folds.

Methods: Refractive surgery is one of the safest surgeries in Ophthalmology today. However, when a complication does occur, even the faintest wrinkle is enough to cause discomfort both to the patient and the surgeon. In this video, we present a case of a 19-year-old girl who presented with multiple major flap folds one day after an uneventful LASIK procedure due to inadvertent excessive squeezing of the eye.

Results: The video demonstrates the correct procedure for dealing with such an event, with epithelial debridement and painstaking ironing of the folds under a microscope. Finally, a BCL is placed, and post-operative antibiotics and steroids are started. Ultimately, the patient regained 6/6 uncorrected visual acuity with no visible corneal opacity.

Conclusions: With prompt management and correct technique, post-LASIK flap folds can be effectively managed without any residual visual deficit.

The Perfect ICL Vault

*First Author: Olesia **ZIIATDINOVA***
*Co-Author(s): Chun Chun **HE***

Purpose: To demonstrate the tips and tricks on how to get the optimal ICL vault.

Methods: The study included 88 eyes with spherical and toric ICL. All eye preoperative parameters as Pentacam data: WTW, internal anterior chamber depth, mean keratometry data, and IOL-master WTW were included in the Excel table. The postoperative 1 week results: the vault and related ICL position were added to the eye data table. The vault was measured at the slit lamp related to the corneal thickness and double-confirmed on the OCT in microns.

Results: The eye anatomy is important to choose the optimal ICL size to get the perfect vault. The most important parameters to the perfect vault are WTW, mean keratometry data, internal ACD, and planning ICL position inside the eye. The borderline WTW Pentacam sizes 11,1, 11,5, and 12,3 can sometimes give unexpected VAULT. That is why if the ICL position is going to have horizontal axis for borderline WTW Pentacam 2,8-3,2 mm ACD depth and keratometry more than 44,0 D it is better to choose smaller ICL lens size. When the internal ACD is more than 3,2 mm - choose a bigger ICL size, and a vertical or diagonal position is preferable.

Conclusions: The online calculator suggests the ICL size, but it is also important to see the eye preoperative data, exactly the WTW Pentacam, IOL master, internal ACD, and mean keratometry data, and plan the lens position inside the eye. The ICL lens axis position significant affects the vault.

Topography Guided Corneal Ablation Treatment- the Trump Card

*First Author: Sidhartha **ANANTHOJU***
*Co-Author(s): Dr Divya **KARTHIK**, Dr Tiruvengada **KRISHNAN**, Seema **RAMAKRISHNAN***

Purpose: To report topography-guided corneal ablation treatment (TCAT) in the treatment of higher-order aberrations (HOA) & irregular astigmatism following successful management of free flap that occurred during microkeratome-assisted LASIK.

Methods: During the microkeratome pass using Moria SBK keratome in the left eye, free-flap occurred due to mal-alignment of the stop. Excimer laser ablation was performed, and the free flap was sutured. Suture removal was done at 1 week post-op. The flap striae were persistent, and there was a suboptimal improvement in visual acuity (uncorrected visual acuity- UCVA 6/9, Snellen). A flap wash was done to iron out the striae. But there was an eventual fall in visual acuity, with UCVA dropping to 6/36, and the best-corrected visual acuity improving to 6/9. Topolyser vario revealed higher-order aberrations. The

patient was treated with Trans PRK (Photorefractive Keratectomy) + TCAT.

Results: Following TCAT, UCVA 6/6 was achieved within 1 month of the post-op period. The topographic evaluation showed a marked improvement in irregularity. There were no symptoms/changes in visual acuity noted in the follow-up at 1 month. No adverse events were reported.

Conclusions: Topography-guided corneal ablation has revolutionized the management of corneal surface irregularities, and the correction of higher-order aberrations following refractive surgery causing visual discomfort to the patient which makes the surgeon and the patient unsatisfied. A boon to the refractive surgeons and the patients, offering promising treatment and results.

Unplanned "Triple Procedure" in SMILE by Novice Surgeon

*First Author: Ruchyta **RANTI***
*Co-Author(s): Dini **DHARMAWIDIARINI***

Purpose: To present rare complications during small-incision lenticule extraction (SMILE) and laser-assisted in situ keratomileusis (LASIK) and a safe surgical plan to overcome them.

Methods: A 21-year-old woman presented for an SMILE procedure to correct myopia and astigmatism. Uncorrected distance visual acuity (UDVA) pre-operation was 1/60 in the right eye (RE) and 20/400 in the left eye (LE). The manifest refraction was -4.00 (20/20) in the RE and -4.00 -0.25 x 0.25 (20/20) in the LE. The central corneal thickness was 515 µm and 520 µm, respectively. RE SMILE surgery went well. LE SMILE was planned with a cap thickness of 110 µm and a lenticule thickness of 91 µm. Unfortunately, there were black spots near the pupil center during the lenticule cut on LE. The surgery converted to femtosecond LASIK on the same day. Flap creation was planned on 120 µm. The surgeon identified that parts of the stromal bed were peeling off and aborted the LASIK procedure. Anterior optical coherence tomography (OCT) examination was performed to identify the flap and stromal bed condition. The flap thickness measurement from anterior OCT was 167 µm, which might have interfered with the previous lenticule cut. After one month, LE surgery was continued using PRK.

Results: After undergoing SMILE, LASIK, and PRK, UDVA on LE is 20/20. There is no further complication.

Conclusions: If complications occur during SMILE or LASIK, further examination with proper diagnostic tools should be carried out to determine the best and safest solution. In this case, PRK is a great option to get the best visual outcome.

Retina (Surgical)

An Eye Grasp – Stone Trouble in the Eye

*First Author: Anugraha **BALAMURUGAN***

Purpose: A video demonstrating the removal of an intraocular retinochoridal foreign body.

Methods: A 31-year-old young male came with complaints of injury to his left eye while cutting a stone, following which he developed defective vision in his left eye for the past 3 days, along with complaints of pain and redness. On ocular examination, the patient had left eye visual acuity of counting fingers at 1 meter. Anterior segment examination showed focal lens opacity with cataractous changes, and further fundus examination revealed a retinochoroidal foreign body at 6 o' clock position. CT orbit revealed a 4.0mm radio opaque intraocular foreign body. The patient underwent cataract surgery by phacoemulsification and pars plana vitrectomy for intraocular stone foreign body removal with intraocular foreign body removal forceps, endolaser, and silicon oil injection.

Results: Upon 45 days follow-up after the surgery, the visual acuity improved to 6/9 with +10.50 DS. His retina remained attached, and the patient recovered without complication.

Conclusions: A careful cataract extraction with pars plana vitrectomy for intraocular stone foreign body removal, along with endolaser and silicon oil injection, will help in regaining the lost visual acuity.

Autologous Inner Limiting Membrane Transplant in Refractory Macular Hole

*First Author: Amer **AWAN***

Purpose: To present a technique of autologous inner limiting membrane (ILM) transplant in a refractory macular hole (MH).

Methods: In refractory MH, enlargement of ILM peel and autologous ILM transplant was performed with 25 gauge 3 ports pars plana vitrectomy system. The graft was stabilised with perfluorocarbon liquid (PFCL). Later PFCL fluid air exchange was done, and 25% sulphur hexafluoride was used as a tamponade agent. The wounds were closed with massaging, and no suturing was needed. The patient was advised to have face-down posturing for 18 hours. Optical coherence tomography (OCT) was performed the next day to confirm the closure of MH.

Results: After this procedure, there was the closure of MH on day 1 that was confirmed with OCT in a gas-filled eye. After the complete absorption of gas, there was further confirmation of the closure of MH on OCT. There was no complication related to this procedure. The vision improved to Log MAR (minimum angle of resolution) 0.4 from 1.0.

Conclusions: Autologous ILM transplantation is an excellent and simple technique to achieve MH closure in refractory MH.

Deflating but Not Deflated: Surgical Management of Choroidal Detachment

*First Author: Adrian **FUNG***
*Co-Author(s): Eduardo **RODITI***

Purpose: Choroidal detachment (serous or haemorrhagic) is a rare ocular pathology often associated with chronic retinal detachment, inflammation, ocular surgery or trauma. This video will demonstrate newer vitreoretinal techniques to manage this serious ocular condition.

Methods: Two patients' cases will be discussed, demonstrating the following techniques: (1) External illumination with a light pipe encased in a cannula to identify the highest point of the choroidal detachment. (2) Use of a non-valved cannula to safely drain serous and haemorrhagic suprachoroidal fluid. (3) Use of a scleral cut-down to remove a suprachoroidal haemorrhagic clot.

Results: Both patients demonstrated significant anatomical and functional improvement using the newer surgical techniques.

Conclusions: Newer surgical techniques can be used to optimise the management of choroidal detachments.

Demystifying Stage V Retinopathy of Prematurity-Related Retinal Detachment

*First Author: Komal **AGARWAL***

Purpose: To demonstrate the approach to successful management of a case of total tractional retinal detachment secondary to retinopathy of prematurity (ROP).

Methods: A 10-month-old child with GA of 28 weeks was brought with complaints of leucocoria in both eyes. Ultrasonography B scan confirmed stage V ROP. 3 23G sclerotomy ports were made 1mm behind the limbus. Pars plana lensectomy was done. Iris was trimmed. The posterior capsule was removed. Space behind the retrolental membrane (RLM) was identified and dissection of RLM was commenced from that area. A centrifugal followed by circumferential dissection of RLM was done bimanually using forceps and scissors and the RLM was separated from the underlying retina till the extent possible. The central stalk was identified and was separated from the retinal folds with blunt dissection and removed. The funnel was opened. Bimanual dissection was done to release pre-retinal membranes till the extent possible. Peripheral tractional vector (retina to ora and pars plana) was released with forceps and cutter alternatively. After sufficient release of traction, air tamponade was used, and ports were closed with 8-0 vicryl.

Results: The child was followed 2 monthly after the initial post-operative period. Two months post-operatively, the macula was attached with residual traction in the superonasal area. Light stimulation was advised. 6months postoperatively, the child was fixing and following illuminated objects. He also reached out to non-illuminated objects.

Conclusions: Meticulous dissection is the key in surgery for stage V retinopathy of prematurity. Removing maximum traction without retinotomy can lead to significantly fair anatomical and visual outcomes.

Diving Deep a Tale of Challenging Vitrectomy

*First Author: Siddharth **PATEL***

Purpose: Surgical outcome.

Methods: Surgical intervention.

Results: Good surgical outcome.

Conclusions: Handling a challenging case with basic tips and tricks.

Double IOL

*First Author: Vrinda **DALWANI***
*Co-Author(s): Syed Mohideen Abdul **KHADAR***

Purpose: The treatment of a posteriorly displaced IOL (Intraocular Lens) is highlighted in this video.

Methods: Following cataract surgery performed elsewhere three months prior, a 62-year-old woman complained of flashes in her right eye. She described having undergone two procedures in the same facility one week apart. Her best corrected visual acuity was 6/6 in both eyes when examined. The right eye's anterior segment examination revealed a single-piece IOL in the sulcus with a central Posterior Capsule Rent. The left eye exam revealed nothing unusual. The right eye's fundus examination revealed a single-piece IOL in the vitreous cavity. A pars plana vitrectomy with IOL explantation and scleral fixed IOL implantation was part of our preplanned procedure.

Results: Her posterior capsule was intact and had enough fibrosis to hold the IOL, thus we were able to successfully implant the 3-piece foldable IOL in the sulcus.

Conclusions: IOL's that have displaced posteriorly require specialized care. In our case, taking into account the symptoms, we chose to remove both IOLs. As both the IOLs were single-piece foldable, it made sense to explant both and implant a third 3-piece IOL. Since the capsular bag had undergone enough fibrosis to retain its strength for keeping an IOL in the sulcus, instead of doing a scleral fixed IOL, we chose to implant a three-piece foldable IOL in the sulcus.

Fix It If You Can: Tips and Tricks of the YAMANE Technique

*First Author: Min **SAGONG***
*Co-Author(s): Areum **JEONG***

Purpose: Many surgeons have introduced modified Yamane techniques that can be approached more easily. Therefore, we have modified the procedure originally proposed by Yamane to ensure favorable outcomes for patients and minimize challenges.

Methods: The leading haptic was grasped with 25G MaxGrip forceps through the paracentesis wound at a 9-o clock position and threaded into the lumen of the needle in the vitreous cavity. Docking haptics with the needle below the iris plane, the so-called “deep dive” technique, allows easier and more reliable docking of the trailing haptic by increasing the angle of motion.

Results: Even if the Y-position is an acute angle at the iris plane, docking becomes easier because the angle increases in the deeper vitreous cavity. This technique has a lower risk of damaging the anterior chamber. Also, docking is easier even in small pupils. Because the haptic can be moved to the center of the deep vitreous cavity. It is helpful to bend the needle less than 60 degrees as the needle approaches the deeper space.

Conclusions: We have proposed the modified procedure for vitreoretinal surgeons, which allows easy and reliable docking of both leading and trailing haptics in the vitreous cavity to avoid manipulation within the anterior chamber.

Giant Retinal Tear RD after Uneventful Vitrectomy for Advanced Traumatic Endophthalmitis!

*First Author: Veer **SINGH***
*Co-Author(s): Arjan **SINGH**, Preetam **SINGH***

Purpose: A 13-year-old boy with a 5-day history of stick trauma to the right eye presented with advanced traumatic endophthalmitis. Vision on presentations was PL+/PR accurate.

Methods: The patient underwent surgery, i.e., corneal suturing + lensectomy + vitrectomy with careful posterior hyaloid dissection without actually inducing PVD with intravitreal antibiotic-steroid Injection.

Results: The infection was resolved rapidly despite careful vitrectomy and no break intra-op. The patient developed a GRT RD 4 days later. Immediate & timely Re-Surgery with Silicone oil saved the eye & the child gained a best-corrected vision of 6/36.

Conclusions: What makes this case challenging is that even though the infection was resolved and the timely surgery for GRT RD saved the child’s eye, a surgical dilemma in such severe endophthalmitis cases regarding the extent of vitrectomy, induction of PVD, use of silicone oil remains a topic of debate, since even after such careful vitrectomy without any breaks the boy still developed a GRT RD which affected the final vision.

Glimpsing the Unusual, a Rare Intrigue of Supra Choroidal Silicone Oil

*First Author: Ramya **APPANRAJ***

Purpose: Though we have encountered many complications of pars plana vitrectomy, in this video, we have discussed two cases of supra choroidal silicone oil, which is a rare but serious complication of silicone oil injection and its hypothesis, methods of prevention and management of supra choroidal silicone oil injection.

Methods: In both cases, In immediate post-operative follow-up, only one-sixth of silicone oil was seen in the vitreous cavity along with re-detachment. The patient was taken up for re-surgery. During SOR, it was found that the oil was coming from supra choroidal space. The hypothesis was either due to inadvertent injection of silicone oil intro supra choroidal space or through the cleft in RC coloboma.

Results: Management of supra choroidal oil can be done through external and internal approaches. External approach can be done using a radial scleral incision over maximum choroidal elevation, by raising infusion pressure and by applying scleral pressure to let out the silicone oil. An internal approach can be done by placing a 3 mm circumferential incision in the pars plana anterior to the ora serrata, avoiding the retina. PFCL can be injected posteriorly to push the supra choroidal oil anteriorly through the incision.

Conclusions: Choroidal detachment secondary to supra choroidal injection of silicone oil is a potential complication during pars plana vitrectomy. With these cases, we would like to conclude that, though rare, supra choroidal silicone oil should be kept in mind, and attempts should be made to remove maximum silicone oil.

Inverted Internal Limiting Membrane Flap Technique for the Treatment of Large Idiopathic Macular Hole

*First Author: Saurabh **DESHMUKH***
*Co-Author(s): Zelda **DADACHANJI**, Manshu **DESHMUKH**, Krati **GUPTA**, Surpriya **HAWAIBAM**, Ronel **SOIBAM***

Purpose: To evaluate the efficacy of the inverted internal limiting membrane flap technique for the treatment of large macular holes.

Methods: A 69-year-old pseudophakic female presented with complaints of diminution of vision for the past six months. Her visual acuity at presentation was counting fingers at 3 meters. On examination, she had a large idiopathic macular hole measuring 628 microns. She underwent pars plana vitrectomy with an inverted internal limiting membrane flap technique.

Results: Post-surgery, the macular hole closed. At three months of follow-up, her visual acuity improved to 6/9.

Conclusions: The inverted internal limiting membrane flap method is an effective technique for the treatment of large macular holes.

Lucky Shot: Successful Removal of Metallic Intraocular Foreign Body Without Lens Extraction

*First Author: Anya **NASTITI***
*Co-Author(s): Mario **HUTAPEA**, Dany Petra **PRANATA BARUS**, Rianti **PRATIWI**, Randy **SARAYAR**, Syska **WIDYAWATI***

Purpose: Intraocular foreign bodies (IOFBs) pose significant challenges and potential risks, requiring prompt management. This case highlights successful metallic IOFB removal without lens extraction.

Methods: A 43-year-old male presented with blurred vision after a metal object hit his right eye (RE) while repairing a merry-go-round. His visual acuity of RE was 6/30 with intraocular pressure of 12 mmHg. Conjunctival lacerations at 4 o'clock pars plana were found but with intact zonules. The posterior segment was hazy, and orbital ultrasonography showed high spike haziness in the posterior vitreous. Orbital X-ray and Computed Tomography revealed a metal object in the bulbus oculi at the posteromedial. Fortunately, the entry wound was at pars plana, and the metallic object was embedded in a relatively 'safe' retina area, medial to the optic nerve, without perforating the sclera. No other critical intraocular structures were damaged, and no retinal detachment was found. A 0.5x0.1 cm metallic IOFB was effectively removed via circumferential scleral incision, eliminating the need for lens extraction.

Results: The aim of IOFB removal is to restore the ocular integrity and maintain a good visual outcome. Recent techniques in vitreoretinal surgery by using tamponades have improved the success rate of posterior IOFB removal. In line with our case, the patient underwent a successful IOFB removal by vitrectomy and insertion of silicone oil. A week after surgery, the visual acuity was improved.

Conclusions: Thorough examinations are required to establish the diagnosis and ensure the location of IOFB. Vitrectomy and scleral incision were found to be effective in removing IOFB.

Management of Subretinal Cysticercus by Minimally Invasive Vitrectomy Surgery

*First Author: Basavaraj **TIGARI***
*Co-Author(s): Mohit **DOGRA**, Ashutosh Kumar **GUPTA**, Ramandeep **SINGH***

Purpose: In this video, we will demonstrate the management of a case of subretinal cysticercus, which was removed in toto by pars plana vitrectomy in a one-eyed patient.

Methods: Standard 25-gauge vitrectomy ports were made. After securing the infusion port, a core vitrectomy was done. Posterior Vitreous detachment was done using triamcinolone acetate. Peripheral vitrectomy was completed using 360 scleral depressions. A small retinotomy was made with the help of Endo cautery just above the cyst area. Care was taken to use minimal diathermy. With the help of passive extrusion, the retinotomy site was enlarged; as the cyst was flexible and elastic, it took the shape of a retinotomy and quickly slid into the vitreous cavity without much manipulation. With the help of high suction and a standard cut rate, the cyst was removed completely without any residue. Fluid air exchange was done to remove the inflammatory fluid from the vitreous cavity and increase the laser field over the ischemic retina. The retinotomy area was lasered, and a 360º laser was completed over the ischemic retina. SF6 20% gas tamponade was given. Ports were allowed to seal spontaneously.

Results: The patient attained uncorrected visual acuity of 6/18 after one week of surgery without any ocular inflammation.

Conclusions: Revolutions in modern vitrectomy machines, in the form of suction and cut rate, have paved the way for Minimally invasive Vitrectomy Surgery for the management of Subretinal cysticercus.

Managing a Case of Sub-internal Limiting Membrane Hemorrhage in Tuberculosis Vasculitis

*First Author: David **AGGARWAL***

Purpose: A 33-year-old male laborer presented with a sudden, painless diminution of vision in the left eye for 5 days. On fundus examination, the retina was pale. Vasculitis lesions were seen across all quadrants with infiltrative disc edema. Pre-retinal hemorrhage was seen over the macula.

Methods: Blood tests (complete blood count, erythrocyte sedimentation rate, peripheral blood smear, treponema pallidum hemagglutination, human immunodeficiency virus screening test, Mantoux), chest x-ray, and magnetic resonance imaging were ordered.

Results: All tests were standard except for Mantoux. Induration of 22 mm was read at 48 hours. After starting ATT, resolution of hemorrhages and straightening of vessels was seen. But even after 1 month of ATT, hemorrhage over the macula was still persisting, and hence the patient was advised surgical intervention. During surgery, pars plana vitrectomy was done. Posterior vitreous detachment (PVD) was induced with vitrector. Even after inducing PVD, hemorrhage was stable, establishing the diagnosis of sub-ILM location. With toothed forceps, the ILM was pinched at the area of maximum protrusion, leading to curling of the ILM. Hemorrhage started leaking in

the vitreous cavity and was further. The suspected areas of neovascularization were endo-lasered. ATT was continued, and the patient was kept on standard topical post-operative medications.

Conclusions: At postoperative month 1, the retina was stable, and the patient regained BCVA of 20/20.

Membrane Dissection and Removal With PFCL Assistance in Diabetic Vitrectomy

*First Author: Bhuvan **CHANANA***

Purpose: To describe the use of perfluorocarbon liquids (PFCL) in different situations during diabetic vitrectomy.

Methods: Video clips demonstrating the role of PFCL in difficult situations during diabetic vitrectomy will be shown. The videos will highlight when to use PFCL to have a successful surgical outcome.

Results: PFCL was shown to be extremely helpful in certain situations. Removal of firmly adherent membranes from the retina was successfully performed under PFCL. PFCL acts as a third hand, tamponading and pushing the retina behind. PFCL, if injected in the proper plane, can even help to perform membrane dissection and en-block removal of taut adherent membranes. Lastly, PFCL also pressure tamponades the bleeders and provides a clear media for further surgery and pan retinal photocoagulation.

Conclusions: PFCL works as magic in certain tricky situations like pressure tamponade of uncontrolled bleeders, and en-block removal of membranes. If used judiciously, PFCL can be an extremely helpful tool in diabetic vitrectomy.

Multifaceted Approaches for Submacular Hemorrhage: A Surgical Video Synopsis

*First Author: Aayesha **KHANUM***
*Co-Author(s): Thirumalesh **M B***

Purpose: Submacular hemorrhage poses a challenging scenario in retina surgery, demanding innovative strategies for optimal visual outcomes. This abstract provides an overview of a surgical video showcasing the utilization of multiple approaches to effectively manage submacular hemorrhage. The video exemplifies the importance of tailored interventions, surgical dexterity, and the collaborative effort of the surgical team.

Methods: This abstract highlights a surgical video in which various techniques were employed to address submacular hemorrhage, emphasizing the individualized nature of treatment and the integration of cutting-edge surgical methods.

Results: Surgical Techniques: Case 1: The video features a case of submacular hemorrhage secondary to idiopathic polypoidal choroidal vasculopathy. A combination of vitrectomy and subretinal injection of tissue plasminogen activator (tPA) was employed. Case 2: Subretinal drainage. By creating a controlled retinotomy and delicately removing the subretinal clot, the surgical team successfully evacuated the hemorrhage while minimizing iatrogenic damage. Case 3: Large retinectomy in cases where drainage fails or clotted blood involving macula. Case 4: Subretinal hemorrhage and gliosis which requires retinotomy with the extraction of the subretinal gliotic membrane.

Conclusions: The presented surgical video exemplifies the efficacy of employing multiple approaches to address submacular hemorrhage. Tailoring interventions based on the specific case characteristics, alongside the integration of advanced surgical techniques, proved essential in achieving favorable outcomes.

No Time to Lie: Fibrin Glue-Assisted Surgeries for Rhegmatogenous Retinal Detachments

*First Author: Mudit **TYAGI***

Purpose: To describe a novel surgical technique of using fibrin glue as a tamponade in rhegmatogenous retinal detachments (RRD). This technique obviates the need for conventional silicone oil or gas tamponade and also helps in avoiding post-operative positioning, and is associated with an earlier post-operative recovery.

Methods: A 63-year-old patient was seen in the retina services with an inferior RRD and a best-corrected vision of 20/200. A pars plana vitrectomy was done and after a fluid air exchange. the retina was settled, and an endolaser was done around the break. Subsequently, in an air-filled globe, fibrin glue was placed over the break, and the coagulum was noted to cover it. Subsequently, the air was removed, and then the surgery was completed. No silicone oil or gas was used, and no post-operative positioning was given to the patient.

Results: The patient's retina was attached on the first post-operative day, and the vision had improved to 20/80. A fibrin coagulum was noted over the break. At 1 week, the vision had improved to 20/60, and the fibrin coagulum had nearly completely resorbed. Retina was attached at 1 month of follow-up, and the visual acuity was maintained at 20/60. There was no post-operative inflammation or rise in intraocular pressure.

Conclusions: Fibrin glue can be an effective tamponade in cases of retinal detachments. It can help in obviating the need for conventional silicone oil and gases and can result in early recovery and avoiding post-operative positioning.

Novel Indication for the Innovative Technique of Glue Assisted Retinopexy for Rhegmatogenous Retinal Detachment Surgery (GuARD) in Recurrent Detachment With Proliferative Vitreoretinopathy (PVR)

*First Author: Anjali **MAHESHWARI***
*Co-Author(s): Subhadra **JALALI**, Mudit **TYAGI***

Purpose: Fibrin glue retinopexy is an advancement in the shifting paradigm for retinal detachment surgery. Its use in primary uncomplicated rhegmatogenous retinal detachments has been reported. We report a novel indication for its usage in a complicated recurrent retinal detachment with PVR, obviating the need for prolonged retinal tamponade. or re-surgery.

Methods: A 28-year-old male with total rhegmatogenous retinal detachment and PVR following penetrating trauma to the right eye underwent lensectomy, vitrectomy, membrane peeling, PFCL usage with silicone oil injection, and endolaser. Six weeks after the initial surgery, there was re-detachment, PVR grade C3 and anterior PVR. He underwent silicone oil removal and careful membrane peeling. A single inferonasal open break was discovered, which was treated with fluid air exchange, retinal reattachment, endolaser followed by fibrin glue retinopexy of the break. Planned reinjection of oil was avoided.

Results: Fibrin glue remained an excellent adjunct to seal the break and no tamponade was required. The technique was very useful in avoiding the need for re-surgery for further oil removal. The patient, at 9 months of follow-up, has no complications so far. The fibrin glue has completely reabsorbed, the retina remains attached, and the corrected aphakic visual acuity is 20/250.

Conclusions: With a better understanding and improved techniques of fibrin glue usage, this can be used in select complicated retinal detachment surgeries that might obviate the need for prolonged retinal tamponade.

OMNIFIT Scleral Tuck Lens: A Novel Design

*First Author: Mehul **SHAH***
*Co-Author(s): Shreya **SHAH***

Purpose: A novel design scleral fixated lens which does not require suture or glue. It is a self-sustained lens and can be used in any condition with a low learning curve.

Methods: This design is fit for use in paediatric patients with ectopia lentis, Marfans syndrome, microspherophakia, in cases of trauma with primary anterior capsular rupture, closed globe contusion with zonular rupture, nucleus drop post trauma, iatrogenic with bag delivery or rent with loss of capsular support, endophthalmitis.

Results: Our cohort consisted of 97 eyes, 34 females and 63 males, 10 pediatric and 87 adults, with a mean age group of 52+/-19.1. The most common aetiology was iatrogenic aphakia (50), where primary surgery was SICS in 43.3% of eyes. The second most common was traumatic aphakia (37). Others included ectopia lentis, pediatric cataracts, and complicated cataracts. The final vision of >6/60 was in 55.6% of eyes.3 patients had vision less than PLPR preoperatively; no eye was left with vision PLPR or NOPL postoperatively; causes of diminished vision were corneal edema and refraction, the most commonly refractive cylinder 1.25d-2.00d in 17.5% of eyes.

Conclusions: A scleral tuck scleral fixated lens is a good option for the management of aphakia without many complications.

Pinch and Peel for Posterior Vitreous Detachment in Vitreoretinal Surgeries

*First Author: Indranil **SAHA***

Purpose: To demonstrate a technique - Pinch and Peel, for a safe induction of posterior vitreous detachment (PVD).

Methods: In cases of excessively adherent posterior hyaloid or in bullous retinal detachment where conventional posterior vitreous detachment with a cutter can be challenging or subjective to developing iatrogenic breaks, an intraocular forceps is used to safely induce the PVD.

Results: Safe and effective complete PVD induction.

Conclusions: PVD induction is an extremely vital step in vitreoretina surgeries. A safe and effective PVD ensures good results. Intraocular forceps and the pinch and peel technique help us in sticky cases to get the desired results.

Primary Rhegmatogenous Retinal Detachment With a Papillomacular Bundle Retinal Hole in a Highly Myopic Eye

*First Author: Ainal Adlin **NAFFI***

Purpose: To illustrate a surgical video of rhegmatogenous retinal detachment repair with the primary hole located at the papillomacular bundle in a highly myopic eye.

Methods: A surgical video.

Results: This video illustrates a 76-year-old gentleman who presented with left eye rhegmatogenous retinal detachment in his only seeing eye. This eye is highly myopic, with an axial length of 29.95 mm. Pre-morbidly, this is a pseudophakic eye with a visual acuity of 6/36. 23G vitrectomy was performed in view of his long eyeball. Intra-operatively, a very small retinal hole was found on the papillomacular bundle, just temporal to the optic disc. The subretinal fluid was drained via the primary hole, and a gentle barricade laser was applied, avoiding the fovea. 360-degree laser photocoagulation was applied to the peripheral retina despite no other

retinal break found. His eye was tamponade with silicone oil, and he was advised to face down post-operatively.

Conclusions: Papillomacular bundle retinal hole in a retinal detachment is uncommon. Urgent surgical intervention is advocated, and careful retinopexy measures must be wary in view of the location of the retinal break to preserve post-operative vision as much as possible.

Retinal Detachment With Inferior Retinochoroidal Coloboma

*First Author: Sara **RIAZ***

Purpose: Parsplana vitrectomy with endolaser and 1000 CS silicon oil insertion of a patient with retinal detachment with inferior retinochoroidal coloboma will result in a better retinal attachment rate and reasonably good visual outcomes.

Methods: Parsplana vitrectomy with Endolaser and 1000 CS silicon oil insertion.

Results: After a successful parsplana vitrectomy with endolaser and 1000 CS silicon oil insertion, the retina was attached at the end of the procedure.

Conclusions: Patients with Retinal detachment with inferior retinochoroidal coloboma will get benefit from Parsplana vitrectomy with Endolaser and 1000 CS silicon oil insertion with reasonably good visual outcome and better retinal attachment rate.

Sharpest Object in the World Is Soft and Formless

*First Author: Abhishek **ANAND***
*Co-Author(s): Vaibhav **SETHI***

Purpose: To elucidate Jet stream injury due to a faulty design of silicone oil Injection system of Geuder S4 Megatron HPS System.

Methods: Surgical video recording of a case of a failed giant retinal tear, which was sent to RIO, IGIMS-Patna for re-surgery. Simulating the same scenario ex-vivo for inadvertent jet stream injury.

Results: Preoperatively, the retina was found folded upon itself with intraretinal adhesions. SOR with membrane dissection was done. The retina was flattened under PFCL. Post-endolaser direct PFCL-SOI exchange was planned, however, due to a faulty silicon oil injection system in Geuder S4 Megatron HPS system allowed ingress of water into the silicone oil injection system. This water jet was injected at 6 Bars of pressure during PFCL Silicone oil exchange, causing extreme catastrophic injury to retinal tissue under PFCL.

Conclusions: This case describes the catastrophe that can happen due to a faulty silicon oil injection system and extreme retinal injuries can occur due to waterjet injuries and faulty designs of the silicone oil injecting system can lead to fluid ingress during direct PFCL-SOI exchange.

Solving the Quintuple...Successful Management of Co-existing Giant Retinal Tear, Fundal Coloboma, Macular Hole, PVR, and Choroidal Detachment Inspired by FIFA 2022

*First Author: Aditya **KELKAR***
*Co-Author(s): Mounika **BOLISETTY**, Apoorva **JADHAV**, Jai **KELKAR***

Purpose: This surgical educational video showcases successful management in a unique case featuring the coexistence of a giant retinal tear, fundal coloboma, macular hole, proliferative vitreoretinopathy (PVR), and choroidal detachment.

Methods: The educational video provides a demonstration of the step-by-step surgical approach, including retinal reattachment, macular hole closure, PVR management, and choroidal reattachment to address complex retinal pathologies.

Results: The video illustrates the successful outcomes achieved through the surgical intervention. The post-operative visual acuity of the patient significantly improved, and the video highlights the absence of intraoperative or postoperative complications.

Conclusions: Through this educational surgical video, viewers can gain valuable insights into the management of a challenging case involving multiple retinal pathologies. Surgeons and medical professionals can derive innovative approaches and a resolute commitment to patient care from this educational resource.

Story of a Vanished IOL

*First Author: Kiri **HARDIK***
*Co-Author(s): Upadhyaya **ABHISHEK**, Nikita **GUPTA**, Dhruv **KAMRA**, Rohan **KAPOOR**, Aditi **KOCHAR***

Purpose: To describe potential complications of retinal detachment due to dislocated 3-piece IOL. To show a unique surgical approach of explanting dislocated IOL without removing PMMA IOL already present in ciliary sulcus.

Methods: After vitrectomy, the dislocated IOL's subretinally migrated haptic was eased out from the retina. Dislocated IOL was brought into the anterior chamber by sliding above the IOL present in the ciliary sulcus and the retina was settled.

Results: Post-operatively, the patient's PMMA IOL in the ciliary sulcus was stable, and the retina was attached under silicon oil.

Conclusions: Usually, a dislocated IOL can be observed and does not harm the retina, but a 3-piece IOL's sharp

haptic can lead to a break in the retina and retinal detachment subsequently.

Strech the Unstrechables. Enzymatic Vitreolysis by Invivio Plasmin Generation Under Oil for Refractory Retinal Detachment in a Child

*First Author: Prema **SUBRAMANIAM***
*Co-Author(s): Veerappan **SARAVANAN**, Parag **SHAH**, Narendran **VENKATAPATHY***

Purpose: To know the effect of enzymatic vitreolysis by invivo plasmin generation using autologous whole blood (AWB) and tPA (tissue plasminogen activator) for refractory retinal detachment.

Methods: A 6-year-old child operated on for ectopia lentis who eventually developed retinal detachment (RD) noted during a follow-up visit underwent Belt bucking with vitrectomy and silicone oil tamponade. The first post-op visit showed a rolled retinal tear with persistent inferior RD. Re-intervention was done, but was not fruitful, with persistent detachment and apprehensive parents' attempt to try enzymatic vitreolysis by invivo plasmin generation, which was planned by injecting 25 mcg of tPA and 0.1ml of autologous whole blood simultaneously under oil, and surgical intervention was done after 4 days.

Results: Intra-operatively, the effect of plasmin generated can be visualized by the presence of unclotted blood in the anterior chamber, vitreous cavity, and subretinally. The vitreous was peeled as a membrane in piecemeal until the trimmed RR edge, which was not possible in previous surgical attempts. Post-op follow-up of 6 months and 3 months post silicone oil removal follow-up, the child was doing good with attached retina and best corrected visual acuity of 6/18.

Conclusions: Invivo plasmin generation using tPA and AWB neglects the need for sophisticated and expensive labs to extract plasmin, and also proves to be beneficial in enzymatic vitreolysis. This technique is the first of its kind used for refractory Retinal detachment and proved to be successful.

Sub Retinal and Sub Macular Perfluorocarbon Liquid Post Retinal Detachment Repair

*First Author: Nithin **GUNNA***

Purpose: To present a video of sub-macular massive perfluorocarbon liquid post-retinal detachment repair.

Methods: After the primary surgery for total retinal detachment with vitreous hemorrhage post-trauma, there was massive sub-macular perfluorocarbon liquid on post-operative day 1. The child was planned for endolaser and silicon oil exchange for the removal of submacular perfluorocarbon liquid. During the second surgery, there was significant traction noted, for which limited radial retinotomy was done along with the removal of sub-retinal perfluorocarbon liquid. Retina was attached on post-operative day 1. After 3 weeks, there was a detached retina under oil with significant traction noted in the inferotemporal quadrant with a break reopen. Now radial retinotomy+perfluorocarbon liguid+endolaser+silicon oil exchange was planned.

Results: Retina was attached on post-operative day 1 under oil. At post-operative 3 weeks, the retina was attached with dry retinal folds seen inferiorly.

Conclusions: Persistence is the key in cases of pediatric retinal detachment post-trauma.

Submacular Cysticercosis and Coexisting Macular Hole

*First Author: Diva **MISRA***
*Co-Author(s): Nisha **MISRA**, Anurag **SINGH***

Purpose: To present a case of submacular cysticercosis and macular hole.

Methods: This video presents a case of submacular cysticercosis in a 25-year-old man, managed successfully with 25 G vitrectomy. The condition involves the subretinal presence of cysts caused by the larval stage of the tapeworm Taenia solium.

Results: The video highlights the importance of precision and caution in the removal of the intact cyst without any significant collateral damage to the surrounding tissue. The video also demonstrates the management of the coexisting macular holes.

Conclusions: The video highlights the importance of precision and caution in removal of the intact cyst, without any significant collateral damage to the surrounding tissue.

Suprachoroidal Hemorrhage Drainage Using Non-valved Trocar

*First Author: Nawazish **SHAIKH***
*Co-Author(s): Shorya Vardhan **AZAD**, Akshaya **BALAJI**, Pradeep **VENKATESH***

Purpose: To show the surgical procedure of suprachoroidal hemorrhage drainage using a non-valved Trocar in 3 distinct clinical scenarios.

Methods: Three patients with Suprachoroidal hemorrhage were included in the video. Patient 1 had suprachoroidal hemorrhage secondary to trabeculectomy surgery and underwent drainage on post-operative day 5 using a non-valved 23-Gauge trocar. Patient 2 had suprachoroidal hemorrhage secondary to trabeculectomy with total cataract and underwent drainage on post-operative day 7 using a non-valved 23-Gauge trocar. Patient 3 had suprachoroidal hemorrhage secondary to trauma and underwent drainage on day 20 using a non-valved 25-Gauge Trocar.

Results: All 3 patients had a significant decrease in intraocular pressure post-surgery, as well as a significant decrease in the height of choroidal mounds. Visual gain in the 2 patients with post-trabeculectomy suprachoroidal hemorrhage drainage was negligible and could be due to increased intraocular pressure in eyes with an already compromised Optic nerve head. There was a significant gain in visual acuity in the patient with post-traumatic suprachoroidal hemorrhage and resolution of choroidal mounds, as seen in the post-operative fundus photo.

Conclusions: Suprachoroidal hemorrhage is a devastating complication which may be seen in patients following trabeculectomy, trauma and even cataract surgery. Risk factors include variation in intraocular pressure during surgery, old age, uncontrolled hypertension and sudden decompression of the eye during surgery. The scleral cut-down procedure is tedious and time-consuming, while Drainage using a non-valved trocar is an easier procedure that is both safe and effective in these patients.

Surgical Challenges in Management of Chronic Retinal Detachment in a Stickler Syndrome Patient

First Author: Isha ***AGARWAL***
Co-Author(s): Manisha ***AGARWAL****, Dipanjana* ***DAS****, Rushil* ***KUMAR SAXENA***

Purpose: Stickler Syndrome is a genetically inherited connective tissue disorder affecting maxillofacial, ocular, auditory, and musculoskeletal systems. 50% are prone to develop retinal detachment. This video aims to demonstrate the challenges in managing chronic retinal detachment in Stickler syndrome and ways to overcome them.

Methods: A 43-year-old female presented with a diminution of vision in her left eye (LE) for 10 months. She had a history of seizures, and a history of retinal detachment surgery in her daughter. Her best-corrected visual acuity (BCVA) was 6/6, N6 in the right eye (RE), and 1/60, N36 in the left eye. She had a tall, thin build with long limbs and fingers, kyphosis, micrognathia, and retrognathia. Dilated fundoscopy showed the presence of multiple radial perivascular lattices with holes in RE and chronic total retinal detachment with multiple radial lattices with holes in LE. Diagnosis of Stickler syndrome was made, and genetic counselling was advised. RE barrage laser was done and LE underwent pars plana vitrectomy with silicone oil tamponade and endolaser for the retinal detachment. Due to adherent vitreous, PVD (posterior vitreous detachment) induction was difficult, active suction, forceps and finesse loop were used to induce the PVD.

Results: Six weeks post-operatively, she had a well-attached retina with a BCVA 6/60 in LE.

Conclusions: Patients with Sticklers syndrome have a high risk of developing retinal detachment. The presence of radial lattices and the absence of PVD makes surgical management challenging. Complete PVD induction with a good vitrectomy is the key to tackling such difficult cases for successful outcomes.

Surgical Management of Optic Disc Pit With Inverted Internal Limiting Membrane Peel

First Author: Huma ***SAIGOL***

Purpose: The video shows the surgical technique of closing the optic disc pit with a 23 gauge pars plana vitrectomy and an inverted internal limiting membrane flap over the pit, with an endo-laser around the margin of the optic disc pit. Aim to close communication between pit and macula to help reduce detachment and improve vision.

Methods: The patient was operated on under general anesthesia. 23 gauge pars plana ports were made. Phacoemulsification with an intraocular lens was implanted. PPV was completed, and a 360-degree peripheral barrier laser was done. Under air tamponade, Brilliant Blue G dye was injected for 3 minutes. The dye was aspirated, and, using a 23 gauge finesse loop peeled ILM lifted from the temporal margin of serous macular detachment. 23 gauge ILM forceps were used to lift peeled ILM to the temporal margin of the optic disc. This ILM was then inverted over the optic disc from the temporal side. Unfortunately. accidental touch to a vessel caused the oozing of blood. During aspiration of blood, the inverted ILM was accidentally aspirated in a backflush needle. New ILM lifted from the nasal side of the disc and inverted over the disc and pit. Endolaser around the temporal margin of the pit and 20% SF6 injected. Ports closed, and face-down posture therapy was advised.

Results: Day 1 post-op showed gas fill and attached retina. One month follow-up: Attached retina, dry macula, and post visual acuity of 6/36 from pre-op of CF OCT showed the macular thickness of 226um from the pre-op value of 1507um.

Conclusions: Surgical intervention for optic disc pit with serous macular detachment helps in the closure of the optic disc pit and reduction/ resolution of serous macular detachment with a good visual prognosis.

Surgical Management of Vitreous Hemorrhages With Subretinal Hemorrhages

First Author: Ade ***NURSALIM***

Purpose: to showcase a challenging surgical procedure performed during a vacation setting for the management of vitreous and subretinal hemorrhages. The video aims to highlight the innovative technique employed to address this complex case, and its impact on visual acuity improvement.

Methods: The case was managed with vitrectomy and wide iatrogenic retinectomy, and manually cleaned, the subretinal hemorrhages and debris. The retina x re attached with heavy fluid and managed like a giant retinal tear.

Results: The preoperative visual acuity of the patient was limited to light perception due to extensive vitreous and subretinal hemorrhages. Postoperatively, immediate visual improvement was observed, with visual acuity improving to 3/60 on the first day after surgery. Remarkably, within a week, the visual acuity further improved to 6/60, underscoring the efficacy of the surgical intervention. This rapid improvement in visual acuity demonstrates the successful surgical management of vitreous and subretinal hemorrhages as one of the therapeutic options in the case of vitreous hemorrhages and particularly in conjunction with subretinal hemorrhages.

Conclusions: this video highlights a challenging surgical procedure undertaken during the surgical management of vitreous and subretinal hemorrhages. The technique employed in this surgery led to substantial visual acuity improvement, transforming the patient's vision from light perception to 6/60 within a week. This case emphasizes the importance of adapting surgical approaches to specific circumstances and showcases the potential for positive outcomes even in challenging scenarios.

Tackling Macular Hole Associated Epiretinal Proliferation

First Author: Suganya ***N***
Co-Author(s): Veerappan ***SARAVANAN***

Purpose: To describe the surgical challenges in full-thickness macular holes associated with epiretinal proliferation (MHEP).

Methods: A 57-year-old male presented with stable lasered proliferative diabetic retinopathy with re epiretinal membrane with lamellar macular hole and LE full thickness macular hole associated with epiretinal proliferation and was successfully treated by epiretinal proliferation embedding into the retinal cleavage combined with internal limiting membrane inversion and achieved successful closure of macular hole with improvement in vision.

Results: This technique proved to be effective in anatomical closure of FTMH and functional improvement in vision. In general, MHEPs are functionally and morphologically stable. Surgery is truly indicated if there is documentation of anatomical/physiological progression (decrease in central macular thickness, FTMH, drop in vision, or metamorphosis).

Conclusions: One should actively assess for epiretinal proliferation in FTMH associated with erm, as this will change the surgical approach, and prognostication presence of MHEP may indicate irreversible retinal damage. OCT biomarkers are helpful in counseling the patient and helping in follow-up, too. Newer modifications in surgery may show promising results.

The Rescue Needle!

First Author: Harshal ***SAHARE***

Purpose: To fill silicone oil in an underfill eye with 26G needle.

Methods: Attaching a 26-gauge needle to a silicone oil infusion syringe and inserting the needle directly into the globe without creating additional ports in the underfill silicone oil constitutes easy insertion of silicone oil.

Results: All underfilled eyes are refilled with silicone oil again without making any extra ports, which helps avoid intraoperative hypotonus globe-related complications.

Conclusions: This method allows for the refill of intraoperative underfill silicone oil without the need for an additional port, avoiding hypotonous globe-related complications.

The Versatile ILM Flap

First Author: Ruchir ***TEWARI***

Purpose: To describe the utility of the internal limiting membrane (ILM) flap technique in various vitreoretinal surgical procedures.

Methods: This is a video compilation of various retinal surgical situations where an ILM flap helps in surgical success. the various techniques for performing ILM flaps are also described.

Results: All cases had good visual recovery and no post-operative complications.

Conclusions: The ILM flap technique is a versatile procedure that has utilities in many vitreoretinal situations. It leads to better structural and functional surgical outcomes.

Three Lenses in One Eye

First Author: Mehul ***SHAH***

Purpose: The purpose is to present cataract surgery complications which can be managed very effectively using innovative methods. The incidence of posterior capsule rent is variable, and the reported numbers are between 0.2% and 14%, depending on the surgeon's experience. But it can be sight-threatening due to severe intraocular inflammation causing secondary glaucoma, corneal edema, CME, and Rd. a 65/F presented with loss of vision and painful eye with VA HM, on examination she was found to have AC PMMA lens, corneal edema, she was advised for lens removal.

Methods: The video demonstrates the removal of the AC PMMA lens; during vitrectomy, we found an acrylic lens and crystalline lens fragment in the vitreous; lens

fragment was removed by fragmentation, and acrylic IOL was removed. After one month, a scleral tuck lens was implanted.

Results: The patient regained very good vision following multiple surgeries.

Conclusions: After one month, the vision of the patient remarkably improved from HM to 6/24. It needs to be emphasized that the primary surgeon should have closed the case at PCR with an IOL drop and should have referred it to a vitreoretinal surgeon to avoid further complications.

Visualising the Obscure – Chromophore Assisted Retinal Break Detection

*First Author: Shishir **VERGHESE***

Purpose: Finding a retinal break which is responsible for retinal detachment (RD) is a critical step in the surgical treatment of this condition. In spite of improvement in visualisation systems in pars plana vitrectomy, identifying the break which is the source of subretinal fluid (SRF) could pose a challenge, especially in complex RDs, re-detachments with extensive laser scars or where there is a lack of contrast from the choroid.

Methods: Video report of cases with recurrent RD where Brilliant Blue Green (BBG) dye was injected in subretinal space to detect retinal breaks.

Results: Case 1: A 62-year-old male with hand movements vision presented with recurrent RD in the right eye. No break was detected intra-operatively and BBG dye was loaded in the subretinal injector, infusion pressure was reduced and the dye was injected into the subretinal space using a 41 gauge canula and displaced with PFCL. The plume of the dye was noticed emanating from the retinal break, thereby leading to its identification. Case 2: A 70-year-old female with recurrent RD in the right eye with no identifiable break underwent the same technique leading to its identification.

Conclusions: (1) Subretinal BBG dye is the least toxic and is useful for occult break detection as it provides a colour contrast. (2) A posterior draining retinotomy can be avoided if a retinal break is localised. (3) It is useful in recurrent RD and where there is a lack of contrast from the choroid 4. Its use for this innovative technique has not been reported previously.

Vortex Vein Decompression in Nanophthalmic Eye

*First Author: Lazza **SINGH***

Purpose: Non-rhegmatogenous retinal detachment in nanophthalmic eyes is mainly because of choroidal effusion due to thickened sclera. Vortex vein decompression is the treatment of choice. Two quadrants decompression is an effective modality for the decompression of the vortex vein.

Methods: Under peribulbar anesthesia, Vortex vein decompression was performed using 80% of the scleral thickness flap measuring 4x5mm in two quadrants (inferotemporal and inferonasal).

Results: Non-rhegmatogenous retinal detachment resolved with improvement in vision and maintained intraocular pressure.

Conclusions: Nanophthalmos is a rare genetic disease which causes choroidal effusion, leading to non-rhegmatogenous retinal detachment. Two-quadrant vortex vein decompression (inferonasal and inferotemporal quadrant) is effective in nanophthalmic eyes for providing an immediate and stable gain of vision.

When Cornea Goes Brittle, Our Resolve Goes Hard

*First Author: Obuli **NANDHAKUMAR***
*Co-Author(s): Sowmya **JENA**, Kritika **SINGH**, Gauri **KHARE***

Purpose: To share our experiences operating in a case of bilateral brittle cornea syndrome with multiple failed penetrating keratoplasties and showing retinal detachment on B-Scan.

Methods: 12-year-old child with bilateral brittle cornea syndrome with a history of multiple penetrating keratoplasty in both eyes. At presentation, RE had a perception of light, and LE had no perception of light. Total graft scarring with retinal detachment on B-scan was noted. The patient was taken up for RE temporary keratoprosthesis followed by vitreo retinal surgery with 5000CS SO endotamponade, and finally, a penetrating keratoplasty was performed in the same sitting.

Results: Post-operatively, the child has an uncorrected visual acuity of 6/60.

Conclusions: In this video, we wish to elucidate the different challenges we encountered during the surgery and also the techniques we implemented to overcome the challenges.

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