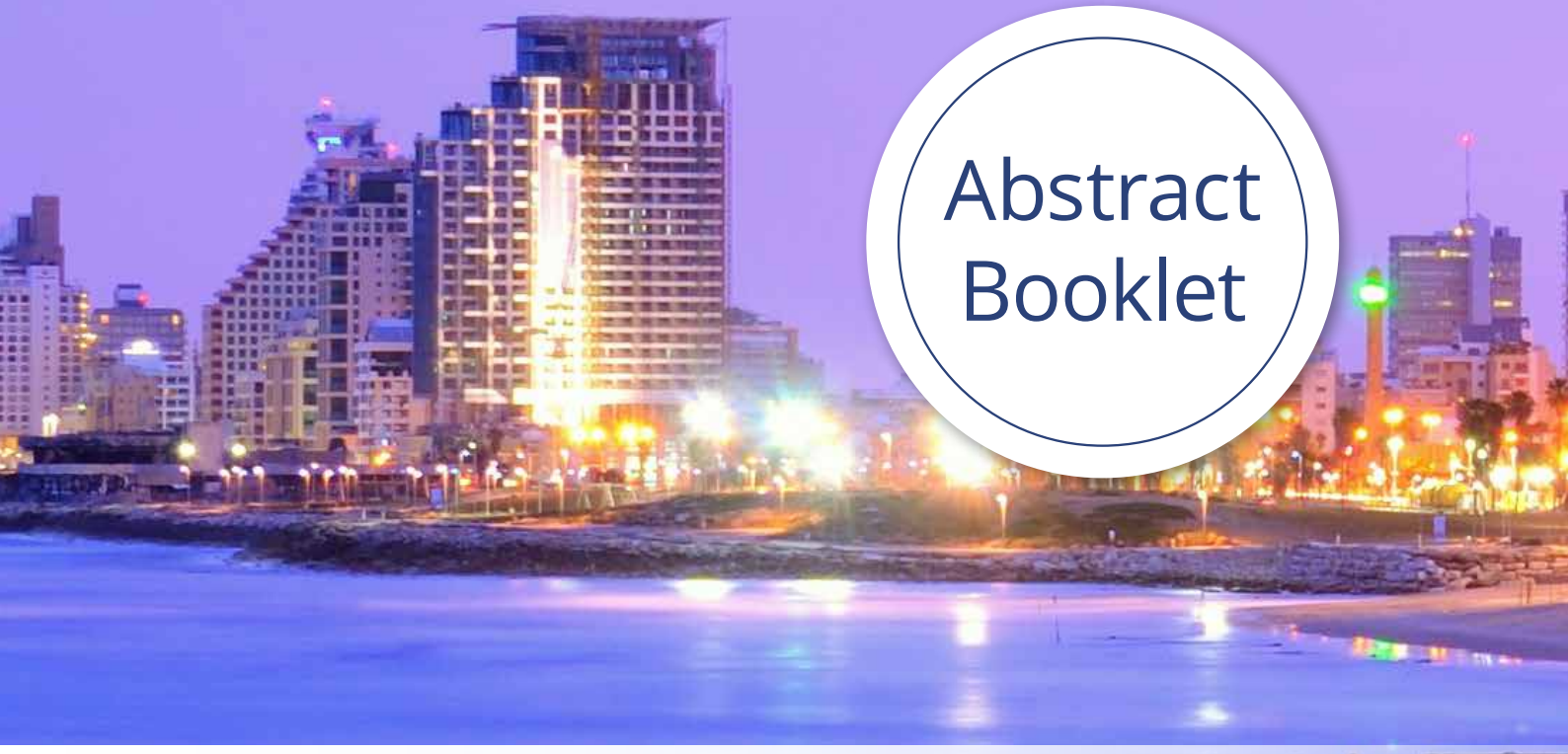
איגוד רופאי העיניים בישראל
ISRAELI OPHTHALMOLOGICAL SOCIETY



Abstract Booklet

The 5th Annual Congress of

The Israeli Ophthalmological Society (IOS)

6-7 June 2017 | David Intercontinental Hotel, Tel Aviv

Congress Secretariat

MEDICAL Expo
Sharing Medical Knowledge

Welcome Note

Dear Friends and Colleagues,

It is our pleasure to invite you to participate in **The Fifth Annual Congress of the Israeli Ophthalmological Society (IOS),** which will take place 06-07 June 2017, at the David Intercontinental Hotel in Tel-Aviv, Israel.

The conference will include professional lectures in several sub-specialties of Ophthalmological, starring our world renowned faculty that will tackle issues and debates through a comprehensive scientific program focusing on the hottest key areas;

This meeting will combine research reports, update lectures, case presentations and professional panel discussions in collabora ion with renown invited guests including RAPID FIRE , Smart in Retrospect – What Could I Do Better? and BIG DATA sessions.

Particular emphasis will we dedicated to audience Q & A and participation.

This year we will join forces again with all of our professional colleagues: optometrists, nurses, orthoptists, photographers and technicians

The conference will hold the largest ophthalmology industry exhibition in Israel, including world leading Ophthalmology companies as well as Israeli leading firms in our field, all of which contribute all year-round in developing and educating Ophthalmology in the world and in Israel.

The annual conference is the crowning of the IOS activities aimed to enable expansion of knowledge and free discussion of professional, ethical and legal topics.

We welcome and encourage you to take an active role in this promising gathering and to submit abstracts for presentation.

We wish you a fruitful and insightful congress and an enjoyable time in the exhilarating city of Tel-Aviv

Prof. Dan D. Gaton, M.D.

President, Israeli Ophthalmological Society

Dr. Nadav Belfair, M.D.

Head, Congress Committee

Scientific Reviewers

All contents of the presentations are scientifically evaluated in order to properly contribute for the benefit of all participants of the conference.
We would like to acknowledge the scientific reviewers:

Cornea
Dr. David Landau M.D., MBA, Head, Community Ophthalmic Services, Clalit Health Services, Jerusalem
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Prof. Igor Kaiserman, M.D., Head, Cornea and Dry Eye Clinic, Barzilai Medical Center, Ashkelon

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Prof. Igal Leibovitch, M.D., Head, Oculoplastic and Orbital Institute,
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Sheba Medical Center, Tel-Hashomer
Dr. Karin Mimuni, M.D., Head, Ophthalmology Service Hasharon Hospital,
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Cataract
Dr. Nirit Bourla, M.D., Head, Cataract Service, the Goldschleger Eye Institute,
Sheba Medical Center, Tel-Hashomer.
Prof. Guy Kleinmann, M.D., Head, Cataract Service, Department of Ophthalmology,
Kaplan Medical Center, Rehovot.
Dr. Yoav Nahum, M.D., Head, Outpatient Clinics, Ophthalmology Department,
Rabin Medical Center, Petah-Tikva

Refractive Surgery
Prof. Avi Solomon, M.D., Head, Cornea Service, Department of Ophthalmology, Hadassah-Hebrew University Medical Center Jerusalem
Prof. Irit Barequet M.D., Head, Cornea Division, the Goldschleger Eye Institute Sheba Medical Center, Tel-Hashomer
Prof. David Zadok, M.D., Head, Department of Ophthalmology, Shaare Zedek Medical Center, Jerusalem

Glaucoma
Dr. Yaniv Barkana M.D., Chair, Israeli Glaucoma Society, Independent Ophthalmologist
Dr. Noa Geffen, M.D., Glaucoma Consultant, Rabin Medical Center, Beilinson Hospital, Petah Tikva
Dr. Zvia Eliash,M.D., Vice Head, Department of Ophthalmology, Wolfson Medical Center, Holon

Ocular Oncology
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Prof. Jacob Pe'er, M.D., Chairman, Department of Ophthalmology, Hadassah-Hebrew University Medical Center Jerusalem
Dr. Udi Reich, M.D., Oculoplastics & Ocular Tumor Service, Davidoff Center for Oncology, Rabin Medical Center, Petah-Tikva

Smart In Retrospect- What Could I Do Better?
Dr. Alon Skaat, M.D., Senior Attending Ophthalmologist, the Goldschleger Eye Institute, Sheba Medical Center, Tel-Hashomer
Dr. Eitan Livny, M.D., Cornea Consultant, Rabin Medical Center, Petah Tikva
Dr. Amiran David Maoz, M.D., Cornea Specialist, Ha'emek Medical Center, Afula

RAPID FIRE
Dr. Vicktoria (Vicky) Vishnevskia-Dai, M.D,. Director, Ocular Oncology, the Goldschleger Eye Institute, Sheba Medical Center, Tel-Hashomer
Dr. Beatrice Tiosano, M.D., Head, Department of Ophthalmology, Hillel Yaffe Medical Center, Hadera
Dr. Oren Tomkins-Netzer, M.D. PhD., Uveitis Specialist, Bnai Zion Medical Center, Haifa

BIG DATA
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Dr. Shiri Soudry, M.D., Vitreo-Retina Specialist, Rambam Medical Center, Haifa

Nurses
Dr. Nurit Mathalone, M.D., Head, Retina Service, Carmel Medical Center, Haifa

Ophthalmic Technicians and Photographers
Dr. Iris Motoz, M.D., Head of the Ophthalmic Imaging Unit at Goldschleger Eye Institute, Sheba Medical Center, Tel-Hashomer.

Franco – Israeli Meeting
Dr. Nurit Mathalone, M.D., Head, Retina Service, Carmel Medical Center, Haifa
Grigiac Albert, Clalit Health Services, Haifa

Optometrists
Dr. Aviv Vidan, M.D., Head, Pediatric Ophthalmology Service, Ziv Medical Center, Zefat

Orthoptics
Dr. Claudia Yahalom, M.D., Head, Michaelson Institute for the Rehabilitation of Vision, Hadassah-Hebrew University Medical Center Jerusalem
Mr. Guy Barnett Itzhaki - M.Optom, PGDip.Orthoptics, Chair, Israeli Orthoptic Society

Guest Speakers

Prof. David Tse, F.A.C.S., Professor of Ophthalmology, Dermatology, Otolaryngology, and Neurosurgery Bascom Palmer Eye Institute, University of Miami Health System

Prof. Francois Malecaze, Chair, Department of Ophthalmology, Purpan University Medical Center, Toulouse, France. President of EuCornea

Dr. Serge Zaluski, VISIS Ophthalmological Center, Perpignan, France President, French Society of Implants and Refractive Surgery (SAFIR)

Dr. Claude Elmaleh, Ophthalmology Department, Hôtel Dieu University Medical Center, Paris, France

Dr. Michel Tazartes, Quinze-Vingts National Ophthalmology Hospital, Paris, France

Plenary (Hall 1)

Tuesday, 6 June, 2017

07:00 Workshops with the Experts
07:00 Registration
07:50 Opening
08:00 RAPID FIRE - Clinical Cases
Oculoplastic Update and Papers
09:00 Two Update Lectures
09:30 Oculoplastic Papers
10:10 Coffee Break and Visit the Exhibition
10:40 Glaucoma
12:05 Chairman's Greetings and Update
12:30 Lunch Break and Visit the Exhibition
13:15 Cataract
14:40 Coffee Break and Visit the Exhibition
15:10 Neuro-Ophthalmology
16:10 Uveitis
17:10 Closing

Wednesday, 7 June, 2017

07:00 Workshops with the Experts
07:00 Registration
08:00 Pediatric & Strabismus
09:00 BIG DATA
10:00 Coffee Break and Visit the Exhibition
10:30 Ocular Oncology
11:00 Retina
12:30 Lunch Break and Visit the Exhibition
13:15 Cornea & Contact Lenses
14:15 Refrective Surgery
15:15 Coffee Break and Visit the Exhibition
15:45 Smart in Retrospect – What Could I Do Better?
17:00 Closing

Plenary (Hall 2)

Tuesday, 6 June, 2017

07:00 Workshops with the Experts
09:00 Medical Secretaries
10:10 Coffee Break and Visit the Exhibition
10:40 Nurses
12:05 Chairman's Greetings and Update (Plenary Hall 1)
12:30 Lunch Break and Visit the Exhibition
13:15 Optometry
14:40 Coffee Break and Visit the Exhibition
16:00 A Special Intimate Oculoplastic Specialists Meeting With Prof. David Tse
17:10 Closing

Wednesday, 7 June, 2017

08:00 **Technicians and Photographers**
09:00 BIG DATA (Plenary Hall 1)
10:00 Coffee Break and Visit the Exhibition
10:30 Franco - Israeli Meeting
12:30 Lunch Break and Visit the Exhibition
13:15 Orthoptics
15:15 Coffee Break and Visit the Exhibition
15:45 Smart in Retrospect – What Could I Do Better? (Plenary Hall 1)
17:00 Closing

RAPID FIRE

Internal Ophthalmoplegia after Panretinal Photocoagulation (PRP) in a Young Diabetic Woman

Maya Eiger-Moscovich, Michal Lahav Rice, Rabin Medical Center, Petah Tikva

Purpose: To report on a possible link between panretinal photocoagulation (PRP) and internal ophthalmplegia in a young diabetic woman post vitrectomy, demonstrating horizontal diplopia and asthenopia.

Summary: A 25 year old woman after bilateral PRP and vitrectomy treatment, due to proliferative diabetic retinopathy. Her complaints were intermittent binocular horizontal diplopia for both far and near targets, situation that force her to read only with one eye open.

The examination results show 4 PD exophoria for far and 12 PD exophoria for near. Accommodative amplitude was measured 3 D, and AC/A ratio was 3/1. She was diagnosed by me as having an internal ophthalmoplegia and convergence insuficiency due to heavy PRP treatment that was given to control her previously non remitting proliferative retinopathy.

She was prescribed multifocal spectacle - myopic correction with addition and 4 PD base in prism to address her accommodative insufficiency.

Conclusion: Internal ophthalmoplegia due to destruction of the cilliary body is a well described and under-addressed complication of panretinal photocoagulation. One of the symptoms is double vision attributed to the damaged of accommodation and convergence. These symptoms can be successfully treated with various personalised fitted refractive solutions such as prisms and ophthalmic lenses as presented in this report.

A Case of Severe Visual Loss in A Congenital Lipodystrophy Patient

Boris Rosin[1,2], Tareq Jaouni[1]
[1]Department of Ophthalmology, Hadassah-Hebrew University Medical Center [2]Department of Neurobiology (Physiology), Hadassah-Hebrew University School of Medicine Jerusalem

Purpose: To report the ocular manifestations and treatment in a case of a severe bilateral visual loss due to congenital lipodystrophy complicated by secondary insulin resistant diabetes mellitus.

Methods: A review of the medical history, clinical findings, imaging and surgical treatment of a 25-year-old woman suffering from congenital lipodystrophy presenting with severe bilateral vision loss.

Results: The patient presented with combined rhegmatogenous, tractional and exudative retinal detachments accompanied by a dense vitreous hemorrhage (VH), glaucoma and severe lipid accumulation due to poorly controlled dyslipidemia and diabetis mellitus, after previously undergoing multiple surgical retinal detachment repair procedures. On last follow-up visit both retinae were flat, with the Visual Acuity (VA) improving from light perception to J3 for near and FC 3 m uncorrected for distance in the right eye (RE), and from no light perception to light perception in the left eye (LE).

Conclusion: Congenital lipodystrophy is a heterogeneous group of rare congenital disorders of lipid metabolism, manifesting as severe insulin-resistant diabetes mellitus, marked dislipidemia and associated systemic complications. Descriptions of ocular manifestations in such cases are scarce. In our case the disease lead to severe bilateral vision loss at a young age, resulting from the complications of the profound proliferative diabetic retinopathy and unusually severe lipid exudation and accumulation. Surgical treatment, addressing all the factors contributing to formation of the retinal detachment, succeeded in flattening of the retinae and significantly improving the VA in one eye. Thus, surgical control of retinal complications is therefore possible, provided adequate control of underlying systemic risk factors is achieved.

56 Years of Blind Eye: A Case Report of DMEK and pupiloplasty following trauma in childhood

Avital Adler, Eitan Livny, ophthalmology department, Rabin Medical Center, Petah Tikva

We hereby present a case of surgical pupiloplasty and DMEK in a 61 y/o man with a blind eye since his childhood, 56 years ago, due to a trauma to his left eye. In the last years, the patient underwent cataract extraction and pupiloplasty that failed to open the visual axis and improve his vision which was Hand motion (HM). In the last months ocular pain began due to corneal decompensation.

We performed puplioplasty combined with DMEK surgery.

One month after the surgery, VA was dramatically improved to 6/8.5, the visual axis was open and the cornea was clear.

Conclusion: The degree of amblyopia following ocular trauma during childhood occasionally can be minor, thus correction of anterior segment pathologies can result in surprisingly good results even decades following trauma and should be attempted when possible.

Cholesterol Granuloma of Orbit: Unusual Orbital Lesion

Michael Yulish, Joseph Pikkel, Ophthalmology, Ziv Medical Center, Safed

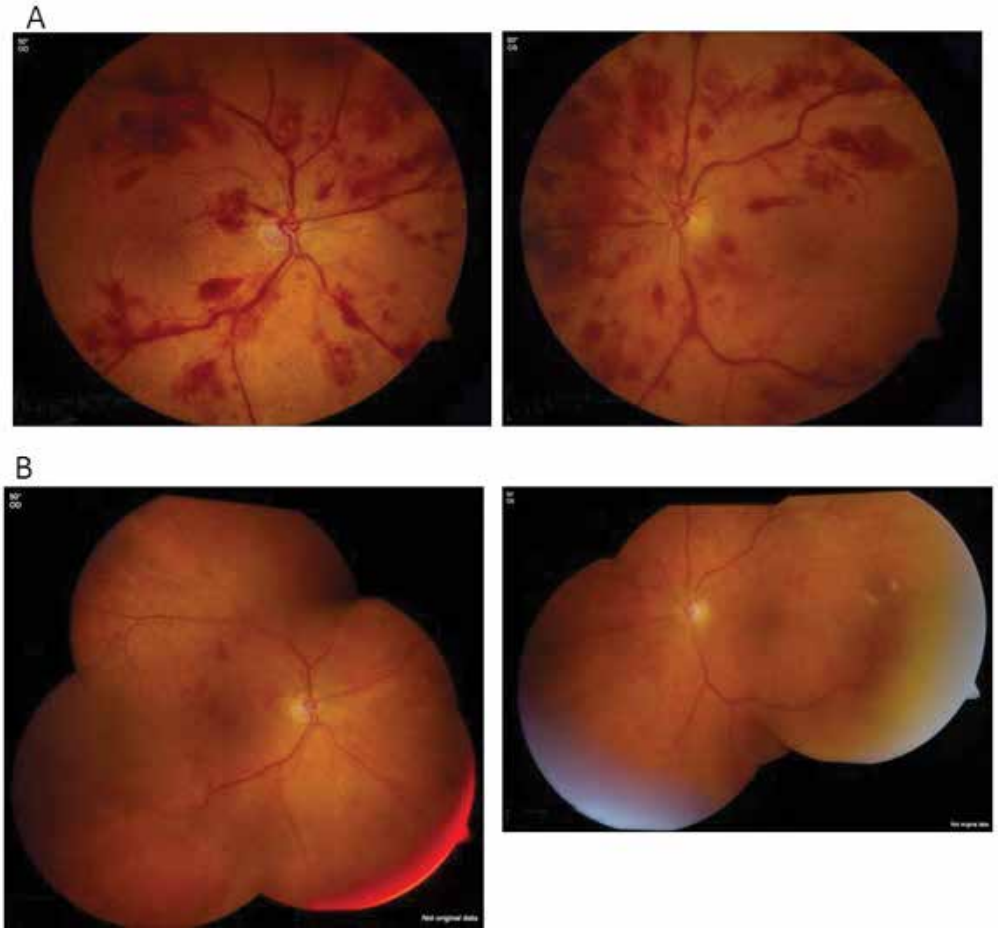
86-years old woman presented with painless left eye proptosis and down globe displacement. CT revealed large orbital mass with frontal bone destruction. Adenoid cystic carcinoma was suspected. The biopsy during the surgery revealed cholesterol granuloma.

Bilateral Simultaneous Central Retinal Vein Occlusion in Hyperviscosity Retinopathy with Good Response to Immunosuppressive Therapy

Michal Blau-Most, Alexander Rubowitz, Department of Ophthalmology, Meir Medical Center, Kfar Saba

Purpose: To describe the clinical presentation and imaging features of a patient presented with bilateral central retinal vein occlusion (CRVO), was diagnosed with hyperviscosity retinopathy due to B cell lymphoproliferative disease (most probably Waldenstrom`s macroglobulinemia), and had good response to systemic immunosuppressive therapy.

Methods: A clinical case report of an 87-years-old woman who presented with bilateral CRVO. Visual acuity, clinical examination, spectral domain optical coherence tomography (SD-OCT), color fundus photography and systemic evaluation were obtained.



Results: At presentation the ocular examination revealed bilateral CRVO, with bilateral diffused dilated and tortuous retinal veins, intraretinal deep blot hemorrhages in all four quadrants of both eyes. On OCT examination there was a significant central macular edema in both eyes. Six months after the diagnosis of hyperviscosity retinopathy and the administration of systemic immunosuppressive therapy for her B cell lymphoproliferative disease (with cyclophosphamide), almost all of the retinal hemorrhages resolved and there was partial resolution of the macular edema.

Conclusion: This case describes the association between bilateral simultaneous CRVO and hyperviscosity retinopathy diseases such as Waldenstrom`s macroglobulinemia. Administration of systemic immunosuppressive therapy was found to be beneficial for this patient.

Accelerated Photoactivated Chromophore for Keratitis–Corneal Collagen Cross-Linking (PACK-CXL) as a First-Line Treatment in a Patient with a Small Bacterial Keratitis

Boris Knyazer, Department of Ophthalmology, Soroka University Medical Center, Ben-Gurion University of the Negev, Beer Sheva

Purpose: To report the use of accelerated PACK-CXL as a first-line and only treatment in a patient with a small bacterial keratitis associated with contact lens wearing.

Methods: case report.

Results: A patient presented with a painful small peripheral corneal abscess with culture positive Pseudomonas Aeruginosa, underwent PACK-CXL with a local limited abrasion and accelerated ultraviolet-A irradiation at 365 µm and 18 mW/cm2 for 5 minutes. The corneal epithelium closed completely within 5 days, without administration of antibiotics or other topical medications.

Conclusions: Accelerated PACK-CXL was successfully used as a first-line and sole treatment in a case of small bacterial keratitis. Further characterization of the PACK-CXL effect as solo-treatment is needed in prospective case-series studies.

Lowe Syndrome: a Rare Manifestation of a Rare Disease

Ran David, Irene Antebi, Pediatric Ophthalmology Center, Hadassah-Hebrew University Medical Center, Jerusalem.

Introduction: Lowe (oculocerebrorenal) syndrome is a rare, X-linked inherited disorder, characterized by involvement of the eyes, central nervous system and kidneys. Bilateral congenital cataracts are found in all patients and glaucoma in ~50%.

Case report: A 5.5 years-old boy was noted with bilateral congenital nuclear cataracts together with generalized hypotonia since birth. Systemic workup including family history of ocular or systemic diseases, congenital infectious (TORCH) and head ultrasound, was negative. Metabolic workup revealed hyperaminoaciduria with the diagnosis of Lowe syndrome.

Figure 1. Anterior segment picture of the right eye shows a mildly elevated whitish vascularized tissue covering the inferior part of the cornea. Aphakia and the Ahmad valve tube (arrow) can be noticed.

At the age of 5 and 6 weeks he underwent lensectomy and anterior-vitrectomy without intraocular lens implantation in both eyes. He was fitted with aphakic glasses. At the age of 12 months, he developed glaucoma with corneal edema and iris bombe in the right eye. He underwent pupilloplasty and iridectomy with resistant high intraocular pressures so he had an Ahmad valve implanted. Intraocular pressures were stable for the next few years.

At the age of 5.5 years, a superficial whitish vascularized tissue was noted covering the inferior cornea of the right eye, with no signs of infection or inflammation (fig.1). Due to concerns regarding the proximity to the visual axis, a superficial keratectomy with Mitomycin-C was performed. Surgery was found to be very challenging due to the risk of perforation. Biopsy confirmed the diagnosis of corneal keloid. No recurrence of the mass was documented for 4 months of follow-up.

Summary: Corneal keloid is a rare and late manifestation of Lowe syndrome that may lead to visual impairment. We find it important to bring awareness of this entity and to emphasize that successful surgical removal of a keloid may be challenging.

Novel Maneuver for The Resolution of Pseudophakic Optic Capture and Consequent Pupillary Block: Case Report and Technique

Amir Sternfeld[1], Natalya Shilova[2], Irit Bahar[1,3], Eitan Livny[1,3]
[1]Department of Ophthalmology, Rabin Medical Center – Beilinson Hospital, Petah Tikva [2]Department of Ophthalmology, European Medical Center, Russia, [3]Sackler Faculty of Medicine, Tel Aviv University

Purpose: Posterior chamber pseudophakic pupillary block due to anterior optic capture is a rare condition with possible grave consequences. It can lead to extremely elevated intraocular pressure (IOP) and absence of anterior chamber space which may preclude the use of standard treatment methods. We describe a novel technique for its alleviation.

Observations: An 80-year-old woman presented to a tertiary medical center with left pupillary block three months after implantation of an intraocular lens in the ciliary sulcus and three days after routine evaluation for age-related macular degeneration with tropicamide 0.5%. By exerting manual pressure on the corneal surface, the inferior half of the intraocular lens (IOL) optic was reduced into the posterior chamber, creating sufficient space for immediate Nd:YaG peripheral iridotomy. After IOP dropped to 20 mmHg, the upper half of the IOL optic was reduced into the posterior chamber using a Sinskey hook inserted through a single limbal paracentesis, and the anterior chamber was filled with an ophthalmic viscoelastic device. The device was subsequently aspirated, and 1% acetylcholine was injected to constrict the pupil above the IOL optic. There were no operative complications. The corneal edema resolved, with normal cupping of the optic nerve head. At 3 months, the IOP was stable at 14-18 mmHg.

Conclusions and Importance: The maneuver described allows laser treatment in cases of pseudophakic pupillary block it is technically simple and noninvasive and was highly successful in an 80-year old patient. Repositioning the pseudophakic IOL optic may be planned as a subsequent, non-urgent procedure.

Unusual Conjunctival Nodules as First Sign of Systemic Vasculitis

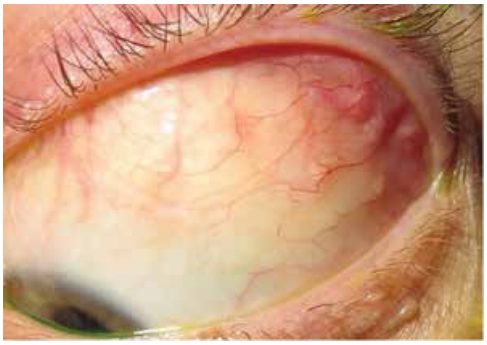
Gilad Rabina, Igal Leibovitch, Ran Ben Cnaan, Division of Ophthalmology, Tel Aviv Medical Center, Sackler Faculty of Medicine, Tel Aviv University

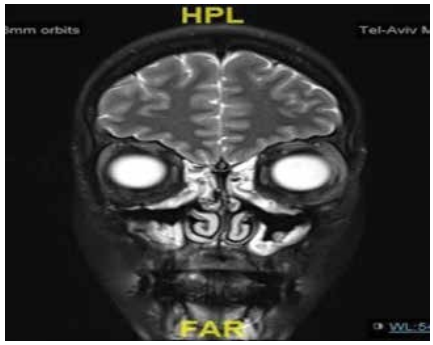
Purpose: To describe a unique manifestation of a systemic vasculitis that presented with initial finding of conjunctival nodules.

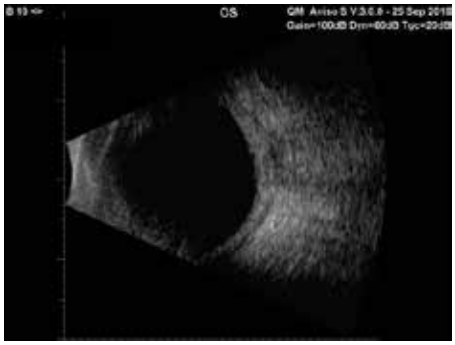
Methods: A case report of a 41 years old female with history of Asthma, treated with Symbicort and previously with Xolair, with ocular history of both eyes -5D myopia. Presented to our department with swelling of left upper eyelid in the past month and proptosis.

Results: Visual acuity at presentation was 6/7.5 in her right eye (RE) and 6/6 in the left eye (LE). No relative afferent pupillary defect (RAPD) and unrestricted eye movements in both eyes. On hertel exophthalmometer RE 21 mm and LE 23 mm. Intra-ocular pressure was normal in both eyes. RE normal eyelids, LE swelling of upper eyelid and conjunctival nodules, both eyes anterior segments and fundus were normal. On ENT doctor examination, evidence of chronic sinusitis. Laboratory workout demonstrated, Eosinophilia of 1,350 (15%), normal chemistry, C-reactive protein (CRP) 0.5 mg/dL ,serum levels of anti-nuclear antibody (ANA), anti-neutrophil cytoplasmic antibodies (ANCA), rheumatoid factor (RF), complement component (C3, C4), angiotensin converting enzyme (ACE) were normal and thyroid function tests were in normal range. MRI scan of the orbits demonstrated left lacrimal gland, Optic nerve and ethmoidal sinuses enhancement. Orbital Ultrasound (US) demonstrated LE posterior scleritis. A LE conjunctival and lacrimal gland and ethmoidal sinuses biopsy was performed and demonstrated active inflammation with eosinophilic infiltration. The patient fulfilled four out of six criteria from the classification of Churg-Strauss syndrome, and was diagnosed with Eosinophilic Granulomatosis with Polyangiitis (EGPA, Churg-Strauss Syndrome). After a rheumatologist workup a treatment of Methotrexate 10mg/week offered to the patient.

Conclusion: This is a unique case of conjunctival nodules which after workout, was diagnosed as an unusual presentation of EGPA. Ophthalmologists should be aware of this rare manifesttion.







An Infant with Eyelid Eversion Syndrome

Adham Matani, Ayelet Priel, Chaim Sheba Medical Center, Tel Hashomer

We will present a 5 month old infant presented with severe immunodeficiency and whole body skin disease and recurrent infections with fully everted eyelids.

Ichthyosis, a very rare group of iherited skin disorders featuring with excessive scale, is to be on the fist place of the differential diagnosis. The patient was successfully managed conservatively with vita-pos and lubrication.

Corneal Decompensation Following YAG Capsulotomy

Noa Avni Zauberman, Irit Barequet, Yoav Berger, Ophthalmology, Goldschleger Eye Institute, Sackler Faculty Of Medicine, Tel-Aviv University, Sheba Medical Center, Tel Hashomer

72 years old lady was referred to the cataract clinic complaining of decreased vision in her left eye for several months. She had her cataracts removed in both eyes ten years prior.

On examination visual acuity on the right eye was best corrected 6/6 and 6/15 on the left eye. AT- 20 OU. Anterior segment was normal except the left eye had a mild superior corneal edema. Pseudophakia OU with moderate PCO in the left eye. Fundus exam reveled NPDR in both eyes. Macular OCT was normal.

YAG capsulotomy was performed on the left eye and she was treated with Sterodex QID. Two days following the laser procedure she arrived to the ophthalmic emergency room complaining of blurry vision in the left eye more severe in the morning without ocular pain. Her vision was 6/15 on the left, the cornea was more edematous, the rest of the exam was normal. She continued the treatment with steroids drops QID. Follow up exam two weeks later showed that the corneal edema was getting worse without ocular inflammation, her vision dropped to 6/30p. Treatment with Nacl 5% drops was added. Endocount was performed; CD was 2211 on the right eye and it was impossible to count the cells on the left. Pacymetry was 595 microns in the right eye and 665 microns in the left eye. In the following weeks the vision dropped to 1/20 and she developed epithelial edema leading to symptomatic recurrent corneal erosions. She is now waiting for lamellar corneal transplant.

Traumatic Iris Cyst in A Child

Eitan Livny, Mohamed Atamney, Ehud Reich, Uri Elbaz, Department of Ophthalmology, Rabin Medical Center, Petah Tikva

Traumatic iris cyst are often difficult to treat. Different treatment modalities are reported in the literature ranging from minor intervention such as simple YAG laser treatment up to more extensive surgical intervention like wide surgical resection. We present a case of 6.5 years old boy that has suffered a corneal perforating injury at the age of 3 to his left eye from a shattered glass. His parents were complaining on recent episodes of red eye. A large iris stromal cyst was found on slit lamp examination occupying his temporal iris and pushing his pupil nasally. The iris cyst was treated with YAG laser with complete resolution of the cyst.

A Unique Case of Combined Hamartoma of RPE Masking FEVR. The crucial role of Fluorescein Angiography

Ehud Reich[1,2], Ruth Axer-Siegel[1,3], Moshe Snir[3,4] , Yonina Ron[3,4]
[1]Department of Ophthalmology, Rabin Medical Center [2]Davidoff Center of Oncology, Rabin Medical Center [3]Sackler School of Medicine, Tel Aviv University [4]Paediatric Ophthalmology Unit, Schneider Children's Hospital

Purpose: To describe a case of combined hamartoma of RPE with concomitant un-diagnosed previously of FEVR.

Methods: an 18 months boy was referred to Schneider Children Hospital after diagnosed elsewhere with combined hamartoma of the RPE in his right eye. Findings in this eye showed the hamartoma but also unusual fanning of vessels. His left eye showed subtle cicatricial dragging of his optic nerve. The child underwent thorough examination under anaesthesia (EUA) including fluorescein angiography that revealed the true nature of their maladies: concomitant disease with neovascularisation necessitating laser ablative therapy for the ischemic zones.

Results: This boy is suffering from hamartoma had undiagnosed conjoined Familial exudative vitroretinoapthy (FEVR) with retinal ischemia and neovascularisation necessitating retinal laser ablative therapy. His condition is stable.

Conclusions: Fluorescein angiography is a safe and an imperative in diagnosing retinal diseases in children with intraocular lesions.

C-B Choroidal Malignant Melanoma Masquerading as Granuloma in a Young Child

Vicktoria (Vicky) Vishnevskia-Dai, Ophthalmology, The Goldschleger eye institute Sheba Medical Center Tel Aviv University

Purpose: to report a rare case of malignant melanoma atypically presented at a very early age.

Case report: A healthy 13 years old girl presented at the age of 3 years to another hospital with RE strabismus and leukocoria.

She was diagnosed there as uveitis with vitreous hemorrhage and a granuloma. Full uveitis work-up reviled positive IGM antibodies to CMV and to Toxocara. Pars plana vitrectomy was performed - no cytology report was found in her chart. Due to persistent vitreous hemorrhage second vitrectomy was performed. B-mode US examination at that time demonstrated attached retina vitreous hemorrhage and a solid -hyper echogenic mass with membranes and high spikes on A mode. During the second pars plana vitrectomy the surgeon reported that when the VH cleared, a large mass superior temporal in location was noted, adjacent to the superior temporal vitrectomy ports. The surgeon felt the port is touching the mass, therefor the trocar was moved to 11`. No blood vessels were noted on the mass and no bleeding source was noted within the mass. No change of the mass was demonstrated on follow up US.

Six months later, she presented to our service with a darkly pigmented subconjunctival mas at 10-11` suspected to represent iatrogenic extraocular extension (EOE) of the tumor. Fine needle aspiration biopsy and I -125 brachytherapy plaque were performed. The tumor and EOE regressed the child is alive and well since.

Conclusion: Malignant melanoma can atypically present at all ages including very early age.

Corneal Perforation as The Presenting Sign of Acne Rosacea

Irit Knisbacher, Guy Kleinmann, Ophthalmology Department, Kaplan Medical Center, Rehovot

We describe the clinical course, treatment, and results of a 53-year-old man who presented with a large spontaneous corneal perforation (2.0X2.5 mm), most probably due to undiagnosed Acne rosacea in combination with intermittent treatment with topical steroids. Although the perforation was large it was glued successfully with histoacryl and a plastic patch covered by a bandage contact lens, a treatment usually reserved for smaller perforations. There was no need for other surgical intervention and the visual outcome was excellent.

Oculoplastic Update and Papers

B.L.I.C.K. Assessment of a Tearing Patient

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The lacrimal system comprises of three integral components responsible for the production, distribution, and drainage of tears. The main and accessory lacrimal glands secrete a tear film that protects the ocular surface and helps to maintain optimal vision. The blinking action of eyelids distributes tears across the cornea and propels tears along the lid margin toward the punctum. The lacrimal excretory system drains tears from the lacus lacrimalis into the inferior meatus. Conditions altering the complex interplay of anatomy and physiology of these components will result in symptomatic epiphora. Proper distinction between anatomical and physiological dysfunction and accurate localization of eyelid defects are essential for effective treatment. B.L.I.C.K. is a mnemonic to remind clinicians to look for five often over-looked conditions that can affect the distribution system: blink dynamic, lid malposition, imbrication, conjunctivochalasis, and kissing puncti. Clinical feature and surgical remedy for each condition will be illustrated.

Oculoplastic Emergencies

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Compressive optic neuropathy from orbital hemorrhage or tumor, orbital cellulitis, necrotizing fasciitis, mucormycosis, carotid-cavernous sinus fistula, congestive thyroid-associated orbitopathy and white-eyed syndrome require prompt intervention without delay. Salient features of each condition will be discussed.

Avoiding Dacryocystorhinostomy in Cases of Epiphora Caused by Inferior Meatus Obstruction

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Background: Naso-lacrimal-duct obstruction (NLDO) is a common cause of epiphora. After the diagnosis is established, further evaluation is seldom preformed. Dacryocystorhinostomy (DCR) is considered the gold standard treatment for NLDO. Endoscopic evaluation of the inferior turbinate and inferior meatus could help identify and treat specific pathologies of the inferior meatus.

Methods: Files of all patients presenting to the joint lacrimal clinic with symptomatic epiphora required endonasal endoscopic surgery between October 2010 and September 2016 were retrospectively reviewed. Cases in which a pathology in the inferior meatus (IM) was identified were selected for this article.

Results: In eight patients, endoscopic evaluation made it possible to localize the obstruction to the inferior meatus (IM). Obstruction was caused by cysts in 2 patients, dacryolith in 2 patients, mucocele in 2 patients, one patient had a membrane obstructing the inferior meatus and one case of concheal obstruction. All patients went through endoscopic treatment targeted at the cause of obstruction, avoiding DCR. Two patients continued to be symptomatic and were referred for endoscopic endonasal DCR.

Conclusion: Inferior meatus obstruction is an under-diagnosed cause of epiphora. Avoiding DCR surgery in select cases of NLDO may be possible when nasal endoscopic evaluation of patients with NLDO reveals distinct inferior meatus pathology.

The Impact of IgG-4-ROD on the Diagnosis of Orbital Tumors: A Retrospective Analysis

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Background: To determine the prevalence IgG4-Related Orbital Disease (IgG4-ROD) among patients who have previously undergone biopsy and were diagnosed to have Idiopathic Orbital Inflammatory Disease (IOID) or orbital lymphoproliferative disease (OLD); namely lymphoma and benign reactive lymphoid hyperplasia (BRLH). This is a retrospective cross sectional study.

Methods: The charts and slides of all patients who underwent biopsies and were histopathologically diagnosed to have either IOID or OLD were reviewed. Demographics, clinical features, initial histopathological diagnoses, treatment received and final outcome were noted. Using the diagnostic criteria for diagnosis for IgG4 disease, those cases that would classify as 'possible IgG4-RD' were reviewed, re-classified and re-assigned a diagnosis of IgG4-ROD.

Results: We reviewed 105 patients clinical charts. Of these 105 patients, upon reviewing the histopathology, 18 (17.15%) patients were found to fit the diagnostic criteria for possible IgG4 ROD. Of these 18 patients who were now reassigned the diagnosis of IgG4 ROD, the most common previous histopathological diagnosis was found to be IOID – 8 (44%), BRLH – which was noted in 5 patients (27.8%) followed by lymphoma which was noted in 2 patients (11.1%).

Conclusion: Previously diagnosed cases of IOID and OLD were found to fulfill the criteria for IgG4 – ROD. Given the advent of recent diagnostic and histopathological techniques, all cases of suspected IOID and OLD should be screened for IgG4-ROD and all previously diagnosed must be closely followed up, given the systemic implication of IgG4-RD. Histopathological reassessment of previously diagnosed cases may be considered.

The Efficacy of Vismodegib for Treatment of Orbital and Advanced Periocular Basal Cell Carcinoma

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Purpose: To evaluate the effectiveness of Vismodegib, a Hedgehog pathway inhibitor, in treating orbital and advanced periocular basal cell carcinoma (BCC).

Methods: In a retrospective study, the medical records of all patients with locally advanced orbital or periocular BCC treated with Vismodegib between the years 2012-2016 were reviewed. Data included demographics, tumor staging, neo-adjuvant and adjuvant treatments, treatment duration, response to treatment, drug-related side effects, follow-up duration and status at last follow-up.

Results: The study cohort included 12 patients (9 males and 3 females, median age was 76.5 years). 9 had orbital extension while 3 had advanced periorbital involvement, none had metastatic spread. 10 patients had gone through multiple surgeries prior to receiving Vismodegib. 5 also received radiation treatment. 8 had complete response to treatment while 4 had partial response (decrease of over 30% in tumor size). None had stable or progressive disease. Of the patients who had complete response two are still under treatment and 5 had a recurrence several months after treatment cessation. 3 were treated by Efudix cream and one got adjuvant radiation. Of those who had partial response 2 were treated with Efudix cream and one received adjuvant radiation. Median follow-up duration was 28.5 months (minimum 5 months). The most common treatment related side effect was muscle spasm (83%), followed by alopecia (58%), dysgeusia (58%), decreased appetite (33%), weight loss (33%) and hepatotoxicity (17%). 4 patients discontinued treatment due to its side effects. 3 patients died during the follow-up period from unrelated reasons.

Conclusions: Orbital and advanced periocular BCC responds well to vismodegib therapy, although the disease becomes chronic, necessitating long-term treatment or adjuvant therapy in the majority of patients. Drug-related adverse effects are manageable in most patients. As to long-term prognosis, additional prospective studies are indicated.

The Management of Microphthalmos Associated with Orbital Cyst: A Case Series of Five Patients

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Background: Congenital microphthalmia associated with orbital cyst is a rare ocular malformation. It results from an incomplete closure of the embryonic orbital fissure. The clinical presentation varies from apparently normal eye with a small cyst to a cyst occupying most of the orbit, leaving only a small space for an eye remnant. Early diagnosis of this condition is mandatory for development of useful vision when visual potential is present. When visual potential is absent, orbital size development becomes the main concern. Some believe that the presence of an eye cyst may contribute to normal bony orbital growth; however; to date there is no consensus as to the optimal management of an orbital cyst

Aims: to propose a set of recommendations on management of microphthalmos associated with orbital cysts.

Methods: A case series of 5 patients (6 orbits) treated for microphthalmia with a cyst by different medical and surgical modalities.

Results: Three out of five patients were first diagnosed with microphthalmia associated with a cyst at birth. The diagnosis was confirmed using cross-sectional imaging. Five cysts were located inferiorly and one superiorly. Four cysts involved the left orbit, while the two remaining cysts involved the right orbit. One patient had bilateral cysts. Based on clinical findings, in four eyes out of six the cyst was used as a stimulator for orbital growth together with custom-made conformers. In one case due to shallow fornixes that could not retain the conformers, fornix reconstruction and cyst excision were performed. Another case presented a cyst, which has overgrown the orbit, causing bone erosion and remodeling.

Conclusion: In this study, 3 out of 5 patients had a good cosmetic result when using the cyst as a stimulator for socket expansion. However, in cases where orbital growth is insufficient, excision of the cyst and dermis fat graft implantation may stimulate orbital growth. On the other hand, cysts can overgrow the orbit and caused bone erosion and remodeling .Therefore, a meticulous follow up and an individually tailored treatment, taking into account all of the patient`s characteristics is warranted in each case.

Assessment of Changes of Periocular Skin Sensation Following Eyelid Surgeries

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Purpose: To estimate the change in periocular cutaneous sensation following eyelid operations.

Methods: This was an interventional prospective trial that included 56 eyes of 29 patients undergoing upper eyelid blepharoplasty, upper eyelid ptosis repair, and lower eyelid ectropion and entropion repair. Eyelid's sensation was measured using a Cochet-Bonnet filament-type aesthesiometer at predetermined anatomical locations. Measurements were recorded preoperatively (baseline), and postoperatively at two- weeks and final (median: 3 months) time periods. Change in sensation was statistically evaluated. Subjective change in cutaneous sensation was also evaluated at final visit. Exclusion criteria were previous eyelid operation, any systemic disease which may influence cutaneous sensation and previous facial herpetic disease.

Results: Forty-eight eyes (85.7%) have completed follow up until final visit. The remaining eight eyes completed the preoperative and the two-weeks measurements. The mean aesthesiometry reading was calculated at the preoperative (4.21 centimeters), two- weeks (4.45 centimeters) and final postoperative (4.57 centimeters) time periods. The paired t test showed no significant difference in sensation measurement at second visit comparing to baseline (p=0.251) and at final visit comparing to baseline (p= 0.153). Paired t test showed no correlation between the type of operation and the change in sensation. Gender and age did not influence change in sensation as well. In 42 out of 48 eyelids (87.5%), the patients reported no change in subjective eyelid sensation. Subjective change in sensation and the objective measurements were found to be positively correlated, with a Pearson's correlation coefficient of 0.356 (p=0.013).

Conclusions: Our results show that eyelid sensation is not compromised objectively or subjectively by eyelid operations. Surgeons can reassure patients contemplating operation, that cutaneous sensation will not be damaged.

Conjunctival Primary Acquired Melanosis with Periocular Skin Involvement: 10 Year Outcomes

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Purpose: Report clinical outcomes in patients with conjunctival primary acquired melanosis (C-PAM) extending onto the eyelid skin in the form of lentigo maligna.

Methods: Retrospective consecutive case review of patients at a single institution with C-PAM and associated eyelid skin pigmentation over a 10-year period (2005 - 2015). Patient demographic data, diagnosis, histopathology, imaging, management and duration of follow up were recorded.

Results: 11 patients (7 female, 4 male) had diagnosis of C-PAM with associated eyelid skin involvement in the form of lentigo maligna. Mean age of patients was 67 years (range 40-88 years). All patients underwent biopsy of the conjunctiva and eyelid skin. All patients had C-PAM with atypia (severe 6/11, moderate 3/11 and mild 2/11). 8/11 (73%) patients subsequently developed invasive melanoma (7/8 both conjunctiva and skin, 1/8 skin only) within a mean time of 73 months from initial presentation (range 1 month – 24 years). All patients were discussed in regional skin MDT and referred for further systemic investigations (head and neck US or MRI, full body PET-CT, liver US and LFTs). Treatment modality for all 13 patients varied according to final diagnosis (surgery (6; 4 excision, 2 exenteration), topical interferon (1), cryotherapy (1) and observation (3). Mean follow-up duration 8.3 years (range 11 months – 24 years). There were no mortalities within the study period.

Conclusion: C-PAM with overspill onto eyelid skin carries a significantly higher risk of developing invasive melanoma (73%) compared to published data for C-PAM alone (~30%). Clinicians should have a high index of suspicion when assessing such patients and consider early aggressive treatment with close monitoring.

Bisphosphonate Induced Orbital Inflammation

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Introduction: Bisphosphonates are the main treatment for osteoporosis, paget and malignancy induced bone reabsorption. It is estimated that over 200 million people worldwide use these drugs. Bisphosphonates are known to cause orbital side effects including periocular erythema and chemosis, scleritis, restricted eye movement, visual impairment and more.

Purpose: To present a series of 5 patients who exhibited signs and symptoms of bisphosphonate induced orbital inflammation.

Methods: A review of charts of 5 patients with a clinical diagnosis of bisphosphonate induced orbital inflammation.

Results: 5 patients (3 females) mean age 54.8 (range 22-70) were examined due to non-specific complaints of conjunctival inflammation, chemosis, eyelid edema, orbital pain or limited ocular movement. All received treatment with bisphosphonates, (Zoledronate-2, Risedronate-2, Alendronater-1), up to 28 days prior to emerging symptoms. Three patients were diagnosed with retrobulbar inflammation, one had myositis and three had scleritis. Two patients were treated with Indomed, one with systemic corticosteroids and two received no treatment. All patients had complete resolution of symptoms shortly after bisphosphonate was discontinued.

Conclusion: Bisphosphonates may cause orbital inflammation in many variations and the diagnosis can be misleading. Ophthalmologists should be aware for bisphosphonates as a potential for orbital inflammation.

Glaucoma

The Effect of Different Filtration Procedures on Postural IOP Changes

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Objective: To investigate the effect of different filtration surgeries on posture related IOP changes in glaucomatous eyes.

Methods: Eyes were divided into three groups: eyes that underwent Ahmed Glaucoma Valve implantation, eyes that underwent trabeculectomy and eyes without previous filtration surgery (Ahmed, trabeculectomy and control group, respectively). IOP was measured in the sitting and then in the supine position using a Goldmann tonometer, a Tonopen XL and an Icare rebound tonometer. For measurements in the supine position, a Goldmann tonometer on a specially modified table was used.

Results: 71 eyes of 37 patients were included in the analysis: 17 in the Ahmed group, 23 in the trabeculectomy group and 31 in the control group. There was no significant difference between the three groups. The difference in IOP between the sitting and supine positions was significant in the control (2.04 mmHg) and trabeculectomy (1.6 mmHg) groups, but not in the Ahmed group (0.47 mmHg). A rise of 5 mmHg or more was documented in 5.8%, 4.5% and 16.1% of eyes in the Ahmed, trabeculectomy and control group, respectively.

Conclusions: Our results suggest that filtration surgery has a beneficial effect on IOP rise in the supine position as compared to non-operated controls, with no significant difference between trabeculectomy and Ahmed glaucoma valve.

Update Lecture - Riahanna, Adele, Bar and Glaucoma Imaging

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Glaucoma is the leading cause of irreversible blindness worldwide. Despite major advances in imaging techniques, the pathogenesis of glaucoma remains poorly understood at present. The lamina cribrosa (LC) is the presumed site of axonal injury in glaucoma. Its thinning and deformation have been suggested to contribute to glaucoma development and progression by impeding axoplasmic flow within the optic nerve fibers, leading to apoptosis of retinal ganglion cells. To visualize the deep ocular structures such as the choroid and the LC, optical coherence tomography (OCT) imaging has been used. However, the laminar surface is not seen clearly using this method. A new generation of OCTs, the enhanced depth imaging (EDI)-OCT modality of spectral domain (SD)-OCT and the swept-source (SS)-OCT, are able to image the LC and the choroid in vivo. The lecture will review current knowledge of the LC, using SD-OCT, EDI-OCT, and SS-OCT , its structure-function correlation to glaucoma progression, and will discuss the uprising term of "glaucoma as a laminopathy, and not only as a neuropathy". How is every thing connected to Riahanna, Adele and Bar ? – just wait and see…

High Intensity Focused Ultrasound (HIFU) As A Novel Treatment for Moderate-Advanced Glaucoma Patients

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Purpose: To evaluate the safety and efficacy of the ultrasonic circular cyclo-coagulation procedure using high intensity focused ultrasound (HIFU) in moderate glaucoma patients

Methods: A prospective interventional non-comparative study. Sixteen eyes (of 16 patients) with uncontrolled moderate-advanced glaucoma were enrolled. All eyes were treated with high intensity focused ultrasound (HIFU), which contains 6 activated transducers operating at 21 MHz. A thorough ophthalmic examination and intra ocular pressure (IOP) measurements (using Goldman tonometer) were performed before the procedure and at 1 day, 1, 4 and 12 weeks after the procedure. Primary outcome was define as a surgical success (defined as ≥20% IOP reduction and IOP 5 mm Hg) at the last follow-up visit. Secondary outcomes were mean IOP at each follow-up visit, number of medications use, complications profile, and re-interventions

Results: IOP was significantly reduced from a mean preoperative pressure of 27.6±5.8 mm Hg to a mean postoperative pressure of 15.2±5.2 (P0.001), 15.3±5.3 (P0.001), 18.0±6.3 (P0.001), 17.3±2.9 (P=0.001) and 20.5±4.8 (P=0.029) mm Hg at 1 day, 1, 4, 12 and 24 weeks respectively. Surgical success was achieved in 12 of 16 eyes (75%). No major intraoperative or postoperative complications were noted.

Conclusions: Ultrasonic circular cyclo-coagulation using high-intensity focused ultrasound is an effective and well-tolerated method to reduce IOP in patients with moderate glaucoma.

The Wills Eye Glaucoma App: Interest of Patients and Their Caregivers in a Smartphone - and Tablet-Based Glaucoma Application

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Purpose: To evaluate the interest of glaucoma patients and their caregivers in a smartphone- and tablet-based glaucoma application (App), developed by the Wills Eye Glaucoma Research Center in collaboration with Drexel University.

Methods: Cross-sectional survey of patients with glaucoma and their caregivers. Main outcome measures are answers to survey questions regarding how receptive participants are to using the Glaucoma App.

Results: Fifty subjects completed the survey. The mean age (SD) was 59.5 (±17.3) years. A total of 88.6% of the participants lived in a household with access to a smartphone or tablet. The majority (72.3%) of participants would consider downloading the Glaucoma App, and younger participants (P=0.025. Participants were more likely to download the App if it was free of charge, compared with a version that costs $3, P=0.018. Although only about one third (37.8%) of participants used eye drop reminders, nearly 3 out of 4 (72.9%) participants were receptive to using the automated reminder feature of the Glaucoma App.

Conclusion: Glaucoma patients and their caregivers were very interested in using a Glaucoma App, however many were not willing to spend $3 for an App they seem to value. The free Wills Eye Glaucoma App includes educational videos, eye-drop and appointment reminders, medical and ocular data storage, visual field tutorial, and intraocular pressure tracker. These features aim to increase patients' level of knowledge about glaucoma and improve their adherence to medication and follow-up appointment recommendations.

Bilateral Same-Day Laser Peripheral Iridotomy in the Philadelphia Glaucoma Detection and Treatment Project

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Purpose: To report the outcomes of bilateral, same-day laser peripheral iridotomy (LPI) in the Philadelphia Glaucoma Detection and Treatment Project.

Methods: The Philadelphia Glaucoma Detection and Treatment Project, was a community-based initiative aimed to improve detection, management, treatment, and follow-up care of individuals at high risk for glaucoma. This novel project performed LPI, where 2 eyes received laser therapy on the same day. Of the 1,649 patients examined between January 1, 2013 and May 31, 2014, patients who underwent bilateral, same-day LPI were included in our analysis. Main outcome measures were visual acuity, intraocular pressure (IOP), and post-operative complication rates.

Results: A total of 132 eyes of 66 patients underwent bilateral, same-day LPI. Mean visual acuity remained unchanged following treatment (P=0.85). Eight patients (12.1%) had IOP spikes 5 mmHg following treatment, and 4 patients (6.1%) spiked 10 mmHg. IOP returned to normal in all but 1 patient, who was diagnosed with chronic angle-closure glaucoma. Hyphema was reported in 2 patients (3%) and glare in 1 patient (1.5%). Thirteen patients (19.7%) had repeat LPI treatment. All patients successfully tolerated LPI treatment without serious complications.

Conclusions: Performing bilateral, same-day LPI was well tolerated in a large community-based, glaucoma detection and treatment project. Applying this treatment strategy may be considered in similar settings, where patients' access to eye-care is limited and it may be a cost-effective strategy.

Long-term Outcomes and Complications of ahmed Glaucoma Valve Implantation in Primary Congenital Glaucoma

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Purpose: Steep Trendelenburg (ST) position is frequently used during laparoscopic urologic, bowel or gynecologic surgery. Prolonged ST position was significantly associated with increased intraocular pressure (IOP) that could increase the risk of postoperative optic nerve damage. The purpose of this study was to determine the effect of ST surgical positioning on IOP during laparoscopic surgery and on the structure of the optic nerve after surgery, in subjects without previously identified ocular disease.

Materials and Methods: Ten patients with no history of ocular pathology undergoing gynecologic laparoscopic surgery with ST were included. Spectral domain optical coherence tomography retinal nerve fiber layer (OCT RNFL) analysis, was conducted preoperatively and at 1 month postoperatively. IOP was obtained after anesthesia induction (referred to as baseline IOP values), after 1 hour of ST positioning, then every hour in ST positioning till the conclusion of the case, and after the patient was returned to the supine position. The iCare PRO tonometer (Tiolat Oy, Helsinki, Finland) was used for all IOP measurements.

Results: Baseline mean IOP was 14.2± 2.5 mmHg. The mean IOP at 1 hour of ST positioning was 28.3± 9.3 mmHg (significant increase from baseline, p 0.0001), and remained unchanged during ST positioning until case conclusion occurred. Once the patient was returned to the supine position the mean IOP was, 18.2± 6.4 mmHg, which was significantly higher than the baseline IOP (p0.001). There were no significant changes in OCT RNFL thickness.

Conclusion: IOP increases significantly when patients with healthy eyes are placed in the steep Trendelenburg position during gynecologic laparoscopic surgery. Although there was no deleterious effect to the RNFL thickness in this cohort without pre-existing ocular disease, the significant elevations of IOP may increase optic nerve damage in glaucoma patients undergoing these procedures. We recommend that ophthalmologists be key consultants in this process.

XEN 45™ Efficacy and Safety: A Retrospective Study

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Purpose: To evaluate the efficacy and safety of the XEN45™ implantation.

Methods: In this retrospective study, the medical records of consecutive glaucoma patients who underwent XEN implantation between 9/2016 and 2/2017, were reviewed. Outcome parameters were IOP, number of glaucoma medications, complications and the need for additional surgery. Study end points were change in mean IOP and change in the number of glaucoma medications from preoperative baseline. All parameters were evaluated at postoperative day 1, week 1, and monthly at months 1 to 6.

Results: 35 consecutive glaucoma patients underwent XEN implantation between 9/2016 and 2/2017. At baseline IOP was 25.5 (5.7) and number of glaucoma medication used was 3.4 (1.2). At day 1 and week 1 postoperatively, IOP was 10.7 (6.9) and 13 (9.6) respectively and 5 (14%) patients received glaucoma medications on the 1st week post surgery. By February 2017: 1 month, 2 months and 4 months post op visits were reached by 20, 11 and 6 patients respectively. IOP was 15.3 (6.1), 16.8 (6.7) and 14.3 (2.4), and number of glaucoma meds was 0.2 (0.6), 0.6 (1.0) and 0.1 (0.4) in 1-2-4 months postop visits respectively. Four patients needed further filtration surgery and two patients had needling. Our interim complication analysis includes: 4 patients with mild hyperemia, 3 choroidal detachments which resolved spontaneously, 2 bleb encapsulations, 2 XEN-iris touch (one of them treated with YAG laser), 2 cases of fracture of distal end of XEN tube in subconjunctiva, and one patient with flat A/C that required few intracameral viscoelastic injections. By 6/2017 all of our patient will finish the 4 months visit and 17 patients will reach their 6 months follow up post XEN surgery.

Follow-Up and Results of MIGS – XEN 45

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Purpose: To determine IOP change of XEN and Phaco-XEN patients

Methods: An ongoing, retrospective interventional non- randomized comparative chart review.

Main outcome measures were same day ,24 hours and 6 months IOP following surgery. We reviewed 40 eyes of 40 patients. Results of 6 month will be available for 40 patients by the time of presentation

Results: At the time of the data analysis, these are the following results. Mean IOP preoperatively was 24±9.97 mmHg. Mean glaucoma medication classes preoperatively were 3.05 (range 0-5). Glaucoma severity ranged from mild field loss to advanced. Mean IOP 1 month postoperative 15±6.5 mean change in IOP 1 month after surgery was -35%, on standalone procedure -42%, change in IOP on combine procedure was -31%

This review is currently ongoing; results of one 6 month follow up will be available by time of presentation.

Conclusions: XEN was found to be safe and efficacious in the postoperative period, same day, the first 24 hours and 6 months after surgery. At the time of the current report, no adverse events nor complications were noted, most of the patients didn`t require postoperative glaucoma medications or interventions. Further update on follow up results will be reported.

The Benefits of the Use of Trypan Blue in Xen Gel Stent Implantation

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Background: The XEN gel stent is a new device of a minimally invasive glaucoma surgery (MIGS). It consists of implanting a collagenous micro-fistula that connects the anterior chamber to the subconjunctival space. Conceptually, it lowers intraocular pressure (IOP) without the inherent risk of traditional drainage surgery. The stent's 6 mm length is partially obscured by the eye surrounding structures and its visibility may be problematic. The appropriate and accurate positioning of the stent is crucial for its functionality. Trypan blue is a vital stain, commonly used in mature cataract and in corneal graft DMEK surgeries to aid in visualization and improve contrast.

Objective: To test whether trypan blue staining can be utilized in the XEN gel stent procedure to improve its visualization.

Methods: Trypan blue was used to stain the XEN gel stent prior to its insertion and also following the insertion, by injecting it into the anterior chamber to verify a flow through the stent.

Results: This method was employed in seven procedures of the XEN gel stent. The stent was easily stained and observed during its insertion. The trypan blue bluish coloration was seen filling the subconjunctival bleb, reassuring that the stent is functioning. No complications were noted.

Conclusion: Use of the trypan blue in XEN gel stent procedures is beneficial and harmless. The insertion of the stent is easily done with this method, because of improved optical contrast and visibility.

Novel Glaucoma Surgery in Stand Alone and Combined Phacoemulsicifation and CO2 Laser Assisted Sclerectomy Surgery - CLASS with Mitomycin C

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Purpose: To determine IOP control utilizing CLASS and Phaco-CLASS in the postoperative period after surgery.

Methods: An ongoing, retrospective interventional non- randomized comparative chart review.

Main outcome measures were same day ,24 hours and 6 months IOP following surgery. We reviewed 40 eyes of 42 patients. Results of 60 eyes will be available by time of presentation.

Results: At the time of the data analysis, these are the following results. Mean IOP preoperatively was 21±6.55 mmHg. Mean glaucoma medication classes preoperatively were 3.6±1.04 (range 2-5). Glaucoma severity ranged from mild field loss to advanced. Mean postoperative IOP same day was 11.8±8.0 (range 0-36 mmHg, p=0.000729), 24 hours after surgery 12.8±6.33 mmHg (range 4-27, p=0.000207) and 6 months post surgery 13.5±2.3 mmHg (P0.005).

This review is currently ongoing; results at one year follow up will be available by time of presentation.

Conclusions: CLASS was found to be safe and efficacious in the postoperative period, same day, the first 24 hours and 6 months after surgery. At the time of the current report, no adverse events nor complications were noted, most of the patients didn`t require postoperative glaucoma medications or interventions. Further update on follow up results will be reported.

Why Patients with Controlled Glaucoma Continue to Loose Their Vision?

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The question why patients with controlled glaucoma continue to lose their vision and may end with blindness was raised at the conference last year but no answer was provided. This presentation will address some of the possible clinical causes such as supine position during sleep, which may cause a 9.3% IOP elevation and sleeping on the affected eye(s), which may cause 30% IOP elevation compared with upright position (p0.001). Anti-hypertensive drugs at bedtime increases the risk of anterior ischemic optic neuropathy because it decreases the perfusion pressure and is a challenge to diagnose in advanced glaucoma. Biochemical processes include the continuation of neuronal apoptosis despite controlled intraocular pressure probably because of signaling from apoptotic cell surrounding. To prevent further visual loss of these patients, practical steps such as sleeping at 20° head-up position, avoiding sleeping on the affected eye(s), avoiding taking anti-hypertensive drugs at bedtime and developing anti-apoptotic drugs are essential.

Cataract

Comparison of the Tolerability of Diclofenac and Nepafenac

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Purpose: Topical nonsteroidal anti-inflammatory drugs (NSAIDs) are widely used for the prevention and treatment of inflammation and pain following cataract surgery. Preservative-free diclofenac and nepafenac drops are commonly used ophthalmic NSAIDs. The purpose of this study was to compare the tolerability of diclofenac to that of nepafenac.

Methods: In this prospective patient-blinded study, consecutive patients undergoing cataract surgery were included. One drop of nepafenac 0.1% and diclofenac sodium 0.1% were instilled in the right and left eyes, respectively, one immediately after the other, 1 day before surgery. Visual analog scale (scale 0–10) was used to measure patient discomfort, itching, burning, and pain at 1 second (s), 15 s, 1 minute (min), and 5 min postadministration.

Results: Overall, 44 eyes of 22 patients were included in this study. Diclofenac and nepafenac had high and similar tolerability at all time points with no significant difference regarding all aspects of tolerability. A vast majority of patients (72%) did not prefer 1 drop over the other in terms of overall comfort.

Conclusions: Both diclofenac and nepafenac seem to have similar high tolerability. Diclofenac may be an affordable alternative to nepafenac and therefore should be considered by prescribing physicians, specifically in preoperative cataract patients

Accuracy of Intraocular Lens Power Calculation Using Three Optical Biometry Measurement Devices: The OA2000-, Lenstar-LS900 and IOLMaster500-

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Purpose: To compare ocular measurements and their application in intraocular lens (IOL) power calculation using the new optical biometry device, the OA-2000, with two widely used biometry systems, IOLMaster-500 and Lenstar-LS900.

Methods: Consecutive cases of eyes which had undergone cataract extraction surgery with preoperative optical biometry with OA-2000, IOL-Master-500 and Lenstar-LS900 were enrolled. Biometry measurements and IOL power calculations using the three devices were compared. The deviation of the postoperative refraction from the preoperative refractive target was calculated with different formulas (Barrett universal II, Hoffer Q, Holladay I and SRK/T) for the chosen IOL. Errors in the predicted astigmatism using the Barrett toric calculator were calculated for the implanted toric IOL power and axis.

Results: High agreement was found between the OA-2000, IOL-Master and lenstar devices for AL, ACD, average K, WTW and LT measurements (inter class correlation confidents: 1.000, 0.964, 0.998, 0.964 and 0.973, respectively, P 0.001), although statistically significant differences were detected. The mean absolute errors were similar using all formulas, ranging from 0.23 D to 0.27 D, with no statistical significant difference between the three devices per each formula. There was an ATR centroid error in the predicted astigmatism using all three devices with the Barrett toric of: 0.04 D ± 0.53 @ 20.3° (OA-2000), 0.16 D ± 0.49 @ 18.5° (IOLMaster) and 0.15 D ± 0.45 @ 27.1° (Lenstar).

Conclusions: The OA-2000 biometry measurements show good agreement with those of the IOLMaster and Lenstar. Although minor statistically significant differences in the measurements were found, our results suggest no influence on clinical outcomes using the three devices.

Intra Ocular Lenses Dislocation - Posterior and Anterior Segment Surgical Collaboration

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Purpose: To review the surgical outcome of posteriorly dislocate IOLs which required pars plana vitrectomy (PPV) with reposition or exchange of the IOL.

Methods: Consecutive cases of posteriorly dislocated IOL who were surgically treated between March 2011 and December 2015 were included in this retrospective case series.

Results: Twenty five cases of posteriorly dislocated IOL were treated over a 6 years period, all required 3 port PPV. The mean age at surgery was 70 years, in average 5.5 years following cataract surgery (range 1 day - 25 years). Eleven cases (44%)were In-the-bag IOL dislocations, 14 cases (56%) were Out of the bag IOL

The main causes of IOL malposition were surgical trauma, post pars plana vitrectomy for other reasons, blunt trauma, high myopia and pseudoexfoliation.

In 23 (90%) the existing IOL was repositioned and sutured to the sclera, the iris or both. One Case required IOL exchange and 1 eye was left aphakic.

Visual acuity improvement was found in 23 patients, 1 deteriorated, 1 did not improved

By the end of the follow up all IOL were stable and lens position was satisfactory. Postoperative vitreous hemorrhage in 7 patients resolved spontaneously and 1 patient had retinal detachment.

Conclusion: Preserving by repositioning and fixating of the lens in the posterior chamber via small incisions within a relatively closed system. Visual acuity in many of these cases was jeopardize because of reasons unrelated to the IOL malposition. Surgical success, defined as anatomical reposition and central, stable fixation of the lens, was achieved in practically all cases

Same-Day Cancellation in Patients Undergoing Cataract Surgery in The Sheba Medical Center

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Elective ocular surgery is one of the most frequently performed procedures. Of these, cataract surgery is the most common. Many strategies to improve efficiency in handling surgical resources have been developed. Among the factors responsible for inefficiency, cancelled surgeries have been understudied.

The purpose of this study was to review the number and reasons for cancellations of cataract surgeries at the Goldschleger eye institute, Sheba Medical Center, Tel-Hashomer.

A retrospective review of cancelation records and patient's medical records from January 2015 through December 2015 was conducted.

A total of fifty eight same day cancelation occurred during 2015. The proportion of male cancelations was larger than females (58.9% males, 41.1% females). The most common etiologies were hypertension (22%) and anxiety (21%). Other common etiologies were intra ocular lens related problems (9%), cough (7%), eye infection (5%), no significant cataract (5%), uninvestigated other ocular problem (7%), ,non-programed defibrillator (3%), No legal guardian available (2%) and other non-documented etiologies (3%). Most cancelation were considered "un-preventable" (74.1%). Most of the cancellation were among patients planned for their first-eye surgery.

In conclusion, ensuring efficiency in both the office and in the operating room is becoming mandatory. One factor to improve the efficiency is to minimize same-day cancellations.

Gore-Tex Suture and BunnyLens Scleral Fixation

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Purpose: To evaluate the results of 4 point scleral fixation of BunnyLens with Gore-Tex suture.

Material and Methods: Return evaluation study of all patients lacking adequate posterior capsular (PC) support who underwent scleral fixation of BunnyLens with Gore-Tex suture in Barzilai Medical Center since 2014. All patients were recalled for complete ophthalmic evaluation exam including BCVA and macular OCT.

Results: 27 eyes following dislocated intraocular lens, trauma, dropped IOL and zonulysis were included in the study. UCVA and BCVA improved substantially (P0.05). Median BCVA was 6/20. Excluding eyes with trauma, median BCVA was 6/12. The most common complication was postoperative CME in 30% of cases, 3 out of 5 eyes operated in 23g had transient postoperative hypotony, none of 22 eyes operated with 25g had hypotony. None had retinal detachment, vitreous hemorrhage or endophthalmitis.

Conclusion: Scleral fixation of IOL is an effective but surgically demanding technique. 4 point scleral fixation of BunnyLens with Gore-Tex suture has a substantial advantage of being a relatively simple and fast technique. In this series the technique has resulted in favorable visual outcomes, good centration and stability of the IOL with low rates of intraoperative and postoperative complications.

Capsular Bag - IOL Complex Stabilization Using The AssiAnchor Device

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Background: Late in-the-bag intraocular lens (IOL) subluxation is a growing problem, which is managed with a variety of IOL fixation menthols or IOL exchange. The Anchor, which was originally designed for management of subluxated crystalline lenses was successfully used to fixate the capsular bag long after cataract surgery.

Methods: The anchor comprises 2 prongs that hold the anterior lens capsule and a central rod that is sutured to the scleral wall, enabling centration of the IOL–capsular bag complex. The device was implanted in cases with late subluxation of the IOL to reposition the lens. Causes of subluxation, time from cataract surgery visual outcome and surgical complications were retrospectively evaluated.

Results: Eight pseudophakic patients presenting with subluxated posterior chamber IOLs in the capsular bag were operated on using the device. The leading causes of subluxation were pseudoexfoliation syndrome and trauma. Subluxation occurred 2 to 13 years after cataract surgery. The anchor was used successfully in all cases, although in 2 cases only 1 prong was placed under the capsulorhexis edge. In 2 eyes, 2 anchors were used to stabilize the IOL bag complex. The capsular bag holding the IOL remained centered and stable throughout the follow-up period.

Conclusions: The anchoring device, which was originally designed to preserve the lens capsule and stabilize subluxated crystalline lenses, can also be used to treat subluxation of a capsular bag–fixated IOL.

Twenty-Five-Gauge Single Port Sutureless Vitrectomy for the Surgical Management of Pediatric Cataract

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Purpose: To evaluate the safety and efficacy of 25 gauge vitrectomy system for the surgical management of pediatric cataract.

Methods: A retrospective chart review was conducted. All patients, less than 8 years of age, who underwent cataract surgery in a tertiary pediatric hospital with primary IOL implantation, were included. A planned primary posterior capsulotomy and limited anterior vitrectomy were performed via single 25 gauge port pars-plana approach by a single surgeon over a 9-year period.

Results: Sixty eyes of 48 children (50% females; average age 33 months) were included. All underwent the fully planned surgery. Out of the 60 eyes, no suture was used for the one port 25G sclerotomy in 52 eyes. Fifty one eyes showed no intra or post-operative complications. One eye developed endophthalmitis three days post-surgery. In the remaining 8 eyes the sclerotomies were sutured using a 7/0 vicryl suture; in six eyes due to intra-operative leaks. Intra-operative hemorrhage was observed and controlled in the other two. In one eye the hemorrhage was limited to the outer sclera and in the other the vitreous was involved and further indirect vitrectomy was performed to clear the hemorrhage. In one eye the IOL was found to be dislodged to the vitreous after two weeks and was repositioned to the posterior chamber. No retinal detachments were seen during long term follow up.

Conclusion: Twenty-five gauge single port sutureless vitrectomy is overall a safe and effective method to perform posterior cpasulotomy and limited vitrectomy in young children undergoing cataract surgery with primary IOL implantation.

Femtosecond Laser Assisted Cataract Surgery (FLACS) in a Complicated Case

Eliya Levinger and Shmuel Levinger, Enaim Medical Center, Tel Aviv Medical Center

To report FLACS in complicated cases including patients after radial keratectomy, intra corneal ring implantation and complicated intra ocular lens implantation. Each cases will be presented with a short film presentation.

Pre-Operative Hand Decontamination in Ophthalmic Surgery by Routine Antimicrobial Scrub Vs. An Alcoholic Hand Rub

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Aim: The goal of this experiment was to evaluate and compare the antimicrobial efficacy of routine pre-operative hand washing using commercial medicated sponge brushes versus an alcoholic hand rub, by comparing bacterial growth on ophthalmic surgeons` hands after application of each of these methods.

Methods: Twenty ophthalmic surgeons were recruited at the Hadassah-Hebrew University Medical Center in Jerusalem, Israel. Samples were collected twice from the hands of each surgeon after hand decontamination using two different protocols during routine surgical practice. The routine preparation consisted of a 3-minute surgical scrub using commercial brush-sponges incorporating either 4% chlorhexidine-gluconate (CHG) or 1% povidone-iodine (PVP-I) formulations with detergent, followed by drying the hands with a sterile towel, while the 70% ethanol solution was applied for 60-seconds and allowed to air dry. Half the group was randomly assigned to provide samples first after the routine method and the alcoholic solution a week later, and the other half was sampled in the reverse order. Viable counts of bacteria were evaluated using a modified glove juice method. Bacterial colonies were enumerated after incubation for 24 hours and expressed as colony forming units (CFU)/mL for each pair of hands.

Results: Geometric mean counts were 1310 and 39 CFU/mL, in the routine and alcohol rub groups, respectively, representing a mean log10 reduction of 1.53. The difference between the paired bacterial counts for the routine vs. the alcohol rub was statistically significant (p0.0001). There was no statistically significant difference between log10 reductions for CHG and PVP-I (p=0.97).

Conclusions: This study provides evidence that an alcohol rub protocol is more effective in reducing bacterial counts on hands than routine surgical hand preparation with PVP-I and CHG in a population of practicing ophthalmic surgeons in the operative clinical setting. Thus, it provides a safe alternative as a pre-operative hand disinfection method.

Update Lecture: Current IOL Options in Cataract Surgery

Guy Kleinmann, Ophthalmology Department, Kaplan Medical Center

The current commercially available IOL will be discussed including advantages and disadvantages of IOL materials and designs, as well as different strategies to reduce dependency in reading glasses including the available premium IOL.

Neuro-Ophthalmology

Myelin Oligodendrocyte Glycoprotein-Positive Optic Neuritis Masquerading as Pseudotumor Cerebri in the Emergency Room

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We present four patients with optic neuritis associated with MOG-IgG antibodies, who presented to the emergency room in the stages of early visual loss and bilateral disc swelling. The clinical triad of headaches, bilateral disc swelling and obesity in three of these patients led to an initial ER diagnosis of probable PTC.

Bilateral disc swelling is typical of this form of ON, due to its propensity to involve the most anterior, retrobulbar portion of the optic nerve2. Ramanathan et al. reported on the radiological findings in optic neuritis associated with MOG-IgG antibodies (19 cases), AQP4-IgG antibodies (11 cases) and multiple sclerosis (14 cases). The authors showed that while both MOG-IgG ON and AQP4-IgG ON are commonly bilateral (compared to the ON in MS which is typically unilateral), AQP4-IgG ON tends to involve the posterior portion of the optic nerve and chiasm, whereas MOG-IgG ON is often associated with optic nerve head swelling and edema of the retrobulbar portion of the optic nerve, immediately posterior to the eye globe2.

In the setting of absent clinical or MRI findings outside the optic nerves, 45 percent of patients with new-onset, severe, or recurrent ON have antibodies directed against either AQP4, MOG or more rarely glycine receptor α1 subunit (GlyR)3. MOG-IgG positive ON requires early diagnosis, timely treatment and close monitoring to prevent damage accrual by the higher relapse rate associated with these antibodies4.

This case series calls for a heightened awareness of the unique findings in MOG-IgG positive optic neuritis, which include bilateral optic neuritis associated with disc edema, which may, in conjunction with headaches in an obese patient, be initially misdiagnosed as PTC in the ER setting.

MRI Protocol Enabling Early Diagnosis of Inflammatory Third Cranial Nerve Palsy

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Introduction: Isolated partial III cranial nerve palsy with pupillary sparing is increasingly managed with immediate imaging to rule out aneurism or intracranial mass. Clinical suspicion of an inflammatory process usually arises when there are signs of orbital involvement (proptosis and chemosis etc) or cavernous sinus signs. We will present a MRI technique that enabled diagnosis of an inflammatory process as the cause for the palsy prior to the development of other clinical signs.

Methods: All our patients had brain and orbit MRI protocol that included 3D FLAIR sequences and were reviewed by the same neuro-radiologist.

Results: Three patients ages 41, 53 and 73 were diagnosed with isolated partial III nerve palsy without pupillary involvement. All had periocular pain or headaches. Two patients had vascular risk factors. The ESR was slightly increased in two patients. CT brain and CTA were read as normal in all patients. MRI showed in all 3 patients FLAIR hyperintensity and contrast enhancement of the cavernous and intraorbital segments of cranial nerve III. Following image findings two patients received oral prednisone with resolution of their palsy, while one patient had spontaneous resolution of his palsy.

Conclusion: 3D FLAIR MRI enables the detection of an inflammatory or infiltrative process in the distal portion of cranial nerve III prior to development of other clinical signs of nonspecific inflammatory process. The usage of 3D FLAIR as a part of our standard protocol increases confidence in diagnosis. Furthermore, in all our cases it was possible to detect the lesion without gadolinium administration

Ophthalmic Manifestations of Internal Carotid Artery Dissection

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Purpose: To report the ophthalmologic symptoms and signs associated with internal carotid artery dissection.

Methods: We retrospectively reviewed all files of patients who presented in our department with ocular signs or symptoms of carotid artery dissection, between the years 2010 to 2017.

Results: Five patients were included in the study. Diagnosis of carotid artery dissection was confirmed on CTA of head and neck. Mean age at presentation was 53 (44-60 years). Four were males. Ocular symptoms were painful Horner syndrome in 4 patients, which remained isolated in 3. One patient, who presented with painful Horner syndrome, developed abducens paresis in the following week, and finally progressed to carotid cavernous fistula. One patient, who didn`t suffer from painful Horner syndrome, presented with permanent visual loss due to ophthalmic artery hypoperfusion. Trauma was not recalled in any patient, and an underlying connective tissue disease, Ehlers–Danlos syndrome, was found in one. Four patients were treated with anticoagulation, and healed with no neurologic sequel. One patient who subsequently developed carotid cavernous fistulae, underwent successful coiling of the cavernous sinus.

Conclusion: Ophthalmologic symptoms or signs are frequently the presenting feature in internal carotid artery dissection. Early diagnosis and treatment may prevent devastating ocular or neurologic sequel.

Surgical Management of Optic Nerve Involvement in Skull Base Meningiomas

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Introduction: Removal of meningiomas involving the optic nerve (ON) is challenging. We share our experience with the management of the ON in cases where it is involved in a skull base meningioma, demonstrate the involvement of the ON within the tumor, and present surgical solutions to achieve a good visual outcome. The role of drilling around the ON, functional evaluation of the ON, and perioperative visual evoked potential (VEP) will be discussed.

Methods: All patients with skull base meningiomas involving 1 or both optic nerves and the chiasm who were operated at the Hadassah-Hebrew University Medical Center from 2001–2016 were included. Patients underwent perioperative CT and MRI as well as neuro-ophthalmological evaluation. Data regarding the surgical procedure, complications, and visual outcomes was collected prospectively.

Results: A total of 407 patients were included. Patients presented with meningiomas of the clinoid / medial sphenoid wing (145, 36%), tuberculum sella (115, 28%), sphenoid wing/orbit (52, 13%), olfactory groove / planum sphenoid (42, 10%), cavernous sinus / sphenoid wing (26 (6%), and optic sheath (11, 3%), and with meningiomatosis (16, 4%). Drilling to perform early decompression of the optic nerve was performed in 328/407 patients (80%). Intraoperative visual evoked potential (VEP) monitoring was performed in 33 patients. For the patients whose tumors were in the most typical locations (clinoidal / medial sphenoid wing, tuberculum sella, spheno-orbital meningiomas) visual outcomes are summarized in Table 1.

Tumor	Total	Normal vision pre & postop	*Impaired vision before surgery*				Blind pre & postop
			Total	*Vision improved*	*Vision stable*	*Vision deteriorated*	
Clinoidal/ medial sphenoid wing	141	67 (47%)	*68 (48%)*	*59 (87%)*	*7 (10%)*	*2 (3%)*	6 (4%)
Tuberculum sella	115	18 (16%)	*94 (82%)*	*82 (87%)*	*7 (8%)*	*5 (5%)*	3 (3%)
Spheno-orbital	52	15 (29%)	*35 (67%)*	*29 (83%)*	*5 (14%)*	*1 (3%)*	2 (4%)

Conclusion: Drilling of the optic canal and complete release of the optic nerve is an essential technical element to achieve good visual outcomes. The role of VEP monitoring and the prognostic value of OCT are still to be defined.

Role of Cerebrospinal Fluid in Spaceflight-Induced Visual Impairment and Ocular Changes

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Purpose: Structural ocular and vision changes known as visual impairment intracranial pressure (VIIP) syndrome have been reported in long-duration mission International Space Station (ISS) astronauts. These changes are currently attributed to cephalad vascular fluid shift induced by microgravity. This study quantify pre-to-postflight changes in ocular deformation, CSF volume, and brain tissue volume to determine respective roles of the vascular fluid and CSF in VIIP.

Methods: High resolution orbit and brain MRI scans before and shortly after spaceflights for 7 long-duration mission ISS astronauts and 9 short-duration mission Space Shuttle astronauts were automatically measured and compared. Postflight increases in globe flattening and nerve protrusion were tested for association with increases in intra-orbital CSF volume, ventricular CSF volume, and brain tissue interstitial fluid volume.

Results: Compared to short-duration astronauts, long-duration astronauts had significantly greater post-flight increases in globe flattening indices (p0.00001) and optic nerve protrusion indices (p0.00001). Long-duration astronauts also had significantly greater postflight increases in orbital CSF volume (p=0.005) and ventricular CSF volume (p=0.048). There were no significant post-flight changes of grey matter or white matter volumes in either group. The large post spaceflight ocular changes observed is ISS crewmembers were associated with greater increases in intraorbital and intracranial CSF volume but not with interstitial brain tissue fluid volume.

Conclusion: The strong positive corelations between globe deformations and CSF volume increase without changes in brain volumes indicate that changes in CSF volume play a primary role while intracranial vascular fluid shift has a lessor role in the development of VIIP.

Retinal Nerve Fiber Layer May Be Better Preserved in MOG-IgG versus AQP-4IgG Optic Neuritis: A Cohort Study

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Background: Optic neuritis (ON) in patients with anti-myelin oligodendrocyte glycoprotein (MOG)-IgG antibodies has been associated with a better clinical outcome than anti-aquaporin 4 (AQP4)- IgG ON. Average retinal nerve fiber layer thickness (RNFL) correlates with visual outcome after ON.

Objectives: The aim of this study was to examine whether anti-MOG-IgG ON is associated with better average RNFL compared to anti-AQP4-IgG ON, and whether this corresponds with a bettervisual outcome.

Methods: A retrospective study was done in a consecutive cohort of patients following anti-AQP4-IgG and anti-MOG-IgG ON. A generalized estimating equation (GEE) models analysis was used to compare average RNFL outcomes in ON eyes of patients with MOG-IgG to AQP4-IgGpositive patients, after adjusting for the number of ON events. The final mean visual field defect and visual acuity were compared between ON eyes of MOG-IgG and AQP4-IgG-positive patients. A correlation between average RNFL and visual function was performed in all study eyes.

Results: Sixteen patients were analyzed; ten AQP4-IgG-positive and six MOG-IgG-positive. The six patients with MOG-IgG had ten ON events with disc edema, five of which were bilateral. In the AQP4-IgG-positive ON events, 1/10 patients had disc edema. Final average RNFL was significantly better in eyes following MOG-IgG-ON (75.33µm), compared to 63.63µm in AQP4-IgG-ON, after adjusting for the number of ON attacks (GEE, $p = 0.023$). Mean visual field defects were significantly smaller (GEE, $p = 0.046$) among MOG-IgG positive ON eyes compared to AQP-IgG positive ON eyes, but last visual acuity did not differ between the groups (GEE, $p = 0.153$). Among all eyes, average RNFL positively correlated with mean visual field defect (GEE, $p = 0.00015$) and negatively correlated with final visual acuity (GEE, $p = 0.00005$).

Conclusions: Following ON, RNFL is better preserved in eyes of patients with MOG-IgG antibodies compared to those with AQP4-IgG antibodies, correlating with better visual outcomes.

Parinaud Syndrome Revised in the MRI Era

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Purpose: To examine if neurophthalmological findings and their outcome differ between patients with Parinaud syndrome (PS) caused by intrinsic (intraaxial) versus extrinsic (pineal gland tumors) brainstem lesions, considering the degree of the brainstem involvement and hydrocephalus.

Methods: A retrospective chart review of patients diagnosed with PS. Demographic data, clinical presentation, neuroophthalmological and MRI findings, treatment modalities and outcome were analyzed.

Results: 26 patients were included, 15 were male, with a mean age of 28.6 ± 16.8 years. Eight patients had an extrinsic lesion and hydrocephalus. Two patients had only hydrocephalus. Sixteen patients suffered from an intrinsic lesion (7 with hydrocephalus).

The most frequent finding was convergence – retraction nystagmus (85%), followed by pupil light-near dissociation (80%), upgaze limitation (46%) and eyelid retraction (27%). Only 27% presented with a complete tetrad of PS.

The neurophthalmological findings did not differ between patients with extrinsic and intrinsic brainstem lesions. However, patients with hydrocephalus had more clinical findings than patients with the same grade of brainstem involvement without hydrocephalus (p= 0.03 and p=0.04).

The findings resolution rate was 50% in the intrinsic lesion without hydrocephalus group, 33% in intrinsic lesions with hydrocephalus group and 20% in patients with extrinsic lesions (P0.05). Complete resolution was achieved in 8%, partial in 25% and 67% of patients remained unchanged.

Conclusions: Our results indicate a lack of clinical-radiological correlation even with present MRI techniques. The presence of hydrocephalus is an important factor influencing the clinical findings in intrinsic lesions. The prognosis of PS is less favorable than generally reported.

Update Lecture: A Clinical Approach to the Swollen Disc - What Every Ophthalmologist Needs to Know

Daniel Rappoport, Ophthalmology Department, Kaplan Medical Center, Rehovot

The differential diagnosis of an optic disc swelling is vast. The causes may be inflammatory, infectious, ischemic, infiltrative, toxic, elevated intracranial pressure and more. It may be due to ocular pathologies or associated with neurologic diseases or other systemic causes. The correct and timely diagnosis is crucial and the ophthalmologist should be able to recognise whether the optic disc swelling is a sign of a vision or life threatening condition or whether the disc appearance is a "pseudo papilledema" or even physiologic.

The diagnosis is based on thorough history taking, careful and detailed examination and the correct use of ancillary tests (e.g. imaging).

The differential diagnosis, clinical approach and helpful clinical tips will be discussed.

Uveitis

Update Lecture: Adalimumab for Non-Infectious Intermediate and Posterior Uveitis

Eyal Raskin, Uveitis & Inflammatory Eye Disease Service, Barzilai University Medical Center, Ashkelon

This update lecture will discuss the efficacy and safety of anti- TNF biologic treatment of adalimumab (Humira) in cases of non-infectious intermediate, posterior and panuveitis. The drug role in prevention of disease exacerbation will be mention as well. 3 large multicenter international studies will be reported. This drug was recently approved worldwide, as well as in Israel, for the treatment of uveitis. This recent approval is a dramatic change in the field of uveitis management.

Effect of Anti-Tuberculous Therapy on Uveitis Associated with Latent Tuberculosis

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Purpose: To examine the clinical features of patients with uveitis associated with latent tuberculosis (TB) and examine the effect of anti-TB treatment (ATT) on uveitis outcome.

Methods: 199 eyes of 129 patients diagnosed with uveitis associated with latent TB were evaluated for recurrence of disease following treatment. Patients received either anti-TB treatment or not and information was gathered retrospectively regarding clinical outcome, vision and treatment. Main outcome measures included Best corrected visual acuity (BCVA), rate of disease recurrence.

Results: This study included Eighty-nine patients (69%) received ATT. The mean change in BCVA following treatment was 4.5±1.4 letters over the follow-up period, with no difference between eyes of patients receiving ATT and those who did not. Sixty-eight eyes (34.9%) had a recurrence of uveitis (0.64±0.08 recurrences per-year), with eyes of patients receiving ATT less likely to develop a recurrence compared to those not receiving ATT (29.5% vs. 48.2%, OR 0.47, 95% CI 0.29-0.77, p=0.003). Eyes treated with ATT recurred at an estimated median of 120 months compared with 51 months in eyes with no treatment (p=0.005).

Conclusions: Among eyes with uveitis associated with latent TB, treatment with ATT halved the risk of uveitis recurrence and delayed the onset of the first recurrence.

Safety of Anti-Tumor Necrosis Factor- α Therapy in Patients with Refractory Behçet´s Uveitis During Pregnancy: A Case Series

Michael Politis, Radgonde Amer, Ophthalmology, Hadassah Medical Center, Jerusalem

Introduction: We describe our experience with using Infliximab during pregnancy and the outcome of conception in 2 males and 2 females followed-up because of severe posterior uveitis secondary to Behçet´s disease. We also present the current literature review on the topic.

Methods: The study is a retrospective case series collected from the uveitis clinic at Hadassah Medical Center, department of ophthalmology. Patients' demographics, disease activity, treatment, pregnancy, and fetal/neonatal outcome was registered.

Results: Included were 2 female and 2 male patients. All patients suffered from refractory Behçet´s uveitis. At the time of conception, mean age was 25.2 years (range 22-29). All patients were treated with infliximab at a dose of 3-5mg/kg/infusion and a low dose of oral prednisone. Three patients were also treated with cyclosporine and one female patient was treated with azathioprine. All patients remained with infliximab during the whole period of the pregnancy. All pregnancies had no complications and ended in live births at an average of 39.2 weeks (36-41). No congenital malformations were recorded. All patients reported normal development and growth of their children. Follow-up ranged from 5 months to 4 years.

Conclusion: This case series demonstrates the safety of Infliximab administered during pregnancy in patients with Behçet´s uveitis and is comparable to what is already known in the literature about the use of Anti-TNF-α in patients suffering from other rheumatic diseases during pregnancy.

Pediatrics Uveitis: Clinical Characteistlcs in 96 Children

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Purpose: Uveitis is less common in children than in adults and its diagnosis and management can be challenging. Ocular complications may be encountered at presentation due to the occult nature of the inflammation. We aim to report on the clinical characteristics, etiology, uveitis types, visual outcome and clinical course of uveitis in a cohort of 96 children.

Methods: Retrospective cohort study. Medical files of children (≤18 years of age) treated at the uveitis service at 2 tertiary referral centers in Israel were reviewed.

Results: Ninety six children (156 eyes) were included in the study, 54 girls and 42 boys. The mean age at diagnosis of uveitis was 9.5 years. Non-infectious uveitis was found in 88 out of 96 children. Chronic anterior uveitis was the most common form of uveitis. Less common forms included intermediate uveitis, panuveitis, acute anterior uveitis and posterior uveitis. Idiopathic uveitis was found in 41 (43%) children, JIA - associated uveitis in 22 (23%) children, pars planitis in 17 (18%) children, Behçet's disease uveitis in 5 (5%) children. Infectious uveitis included toxoplasmosis in 4 children, one case of cat-scratch disease and one case of herpetic uveitis. Less common causes included Fuchs' heterochromic iridocyclitis, multiple sclerosis, MEWDS, PIC, MFC, relentless placoid chorioretinopathy, TINU and spondyarthropathy - related uveitis. The most common complications were macular edema, cataract and band keratopathy. Treatments included all treatments modalities: topical, periocular, intravitreal and systemic therapies. Visual acuity improved in most of the patients during follow-up.

Conclusion: Non-infectious uveitis is the leading cause of uveitis in our cohort. Both genders were equally affected and most of the children had bilateral disease. Chronic anterior uveitis was the most common form of uveitis, with JIA being the most commonly associated underlying disease. Treatments resulted in visual acuity improvement in most of the eyes.

Long-Term Efficacy and Safety of Immunomodulatory Therapy for Patients with Juvenile Idiopathic Arthritis Associated Uveitis

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Purpose: Our purpose is to present long-term clinical outcomes in patients treated with immunomodulatory therapy (IMT) in the long-term.

Methods: A retrospective analysis of JIA-associated uveitis patients presenting between 2005 to 2016 with a minimum of 3 years follow-up was conducted.

Results: A total of 61 patients with JIA-associated uveitis were identified, 88.5% were female. Mean age at presentation of 38 of patients not in remission (NR) was 16.2 years (range 3-44 years), and mean follow-up was 106.1 months SEM=4.69. Of the 23 patients in the remission group, mean age at presentation was 13.5 years (range 4-39), and mean follow-up 105.4 months SEM=6.67. VA differed minimally amongst the two groups, with 81.6% of 76 eyes of NR patients presenting with VA better than 20/80, compared to 84.8% of 46 eyes of remission patients. At final follow up, these proportions remained stable. Band keratopathy developed in 39.5% of NR patient eyes and in 41.3% of those in remission. NR patient eyes had a higher occurrence of cataracts (75% compared to 63%), furthermore, 54% of NR eyes underwent cataract surgery compared to 35% of the remission group. Development of glaucoma occurred in 27 eyes of the NR group and 14 of the remission group affected. The number of IMTs used differed between the two groups with 39.1% of the remission group requiring monotherapy compared to 7.9% of the NR group, conversely, 47.4% of the NR group required therapy with 4-10 IMTs. Of the group that achieved remission, 6 did so on methotrexate, 4 on mycophenolate mofetil, 3 on chlorambucil and dual therapy. Only 18 patients in our study endured side effects, all non-serious.

Conclusion: While IMT-free remission in JIA-associated uveitis may be difficult to achieve, long-term preservation of visual acuity emphasizes the benefit of IMT. The number of IMTs used to control inflammation appears to be a negative predictive factor for achieving drug-free remission in the long-term. This study highlights a population of patients who require further research to identify and address factors impeding drug-free remission

Ocular Morbidity Among Human Immunodeficiency Virus (HIV) Patients in the Era of Antiretroviral Therapy

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Background: Ocular manifestations are common among human immunodeficiency virus (HIV) patients and may cause deterioration of vision. Over the years, a huge progress has been made concerning HIV treatment following the development of the antiretroviral therapy. In this new era, reports have showed decreased and different prevalence rates of ocular morbidity.

Purpose: To evaluate the prevalence rate of ocular morbidity among HIV patients treated in a tertiary medical center in the era of the antiretroviral therapy.

Methods: This is a case control study of patients diagnosed with HIV between the years 1997-2014, treated at the Kobler AIDS Center in Tel Aviv Medical Center and examined by an ophthalmologist at the same institute. Patients' medical charts were reviewed and clinical details were recorded.

Results: Overall 453 out of 1,605 patients met the inclusion criteria mentioned above. The ocular morbidity prevalence rate found to be 20% while the most common manifestations were: HIV retinopathy (4.86%), conjunctivitis (4.19%) and cataract (3.53%). The major HIV related manifestations were: HIV retinopathy (4.86%), anterior uveitis (1.54%), posterior uveitis (0.88%), CMV retinitis (0.66%) and herpes zoster ophthalmicus (0.66%). Anterior segment diseases were found to be the most prevalent group (31.35%), with conjunctivitis the most common disease. The leading posterior segment disease was HIV retinopathy.

Conclusions: The observed ocular morbidity prevalence rates presented herein are lower compared to those described in previous studies. This decrease is most likely explained by advancements in HIV patients` treatment followed by extended life expectancy. We found a relatively high prevalence of ocular diseases typical for healthy populations, along with a low prevalence of severe HIV related diseases. In addition, because of the extended life expectancy, we noticed that age-related diseases have become more prevalent. Therefore, ophthalmologists hold an important role in long term follow-up and treatment, while caring to quality of life.

OCT Angiography Features of Vogt-Koyanagi-Harada in Active and Convalescence Stages

Keren Mano Tamir, Michal Kramer, Ophtalmology, Rabin Medical Center, Petah Tikva

Purpose: To describe OCT angiography features in Vogt-Koyanagi-Harada (VKH) at different stages of the disease in correlation to disease activity recognized by multimodal imaging.

Methods: Patients diagnosed with VKH were imaged with the OPTOVUE OCT angiography Superficial capillary plexus, deep capillary plexus, outer retina and choroid were examined in a 33 area scan in the optical coherence tomography angiography (RTVue XR100; Avanti Optovue). in addition to multimodal imaging including SD-OCT including EDI, FA and ICG angiography.

Results: Our cohort included 8 VKH patients. No significant changes were found in the superficial capillary plexus scans compared to healthy eyes. In the active phase of the disease, as defined by clinical appearance and by multimodal imaging, the Deep Capillary Plexus showed region-specific vascular patterns of reduced capillary flow distributed in "patches" as well as an irregular obscure border of the foveal avascular zone (FAZ). In the Outer Retina layer, small diffused areas of capillary deficiency were noted, in a unique "starry night" pattern. The choriocapillaris network in eyes of patients with VKH was characterized by a low density, uneven, mosaic flow area as opposed to the dense, relatively even flow seen in healthy eyes. Moreover, we discovered a "FAZ" like zone in the choroid cap of patient with VKH particularly at the active stage of the disease. In the convalescent stage, recovery of the relevant layers was demonstrated. Conclusions: OCTA adds information that may improve our understanding of pathologic mechanisms in VKH patients. The reversible findings on OCTA may suggest an infiltrates` absorption mechanism. Multi-imaging approach is a valuable tool in the diagnosis and characterization of retinal and choroidal diseases, and the OCTA provides and additional non-invasive tool in the assessment of vascular changes in VKH patients.

Anterior Uveitis, a Not So Simple Disease

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Purpose: To report the clinical course of adult patients with complicated non-infectious anterior uveitis. Patients and methods: Clinical records of patients treated between 2007 and 2017 with non-infectious anterior uveitis and known complicated course were reviewed. Demographic and clinical data included type of uveitis, related systemic diagnosis, and ophthalmologic evaluation at presentation, at 2 and at 5 years. Topical and systemic treatment were defined as chronic if given ≥6 months during the follow up year, and episodic if given for 6 months.

Results: The cohort included 16 patients. The most common form was chronic anterior uveitis (n=9), followed by acute recurrent (n=7). Systemic diagnosis included ankylosing spondylitis (n=7), psoriatic arthritis (n=1), and ulcerative colitis (n=1). All patients with chronic disease (9) were treated with chronic topical steroids. All patients (16) received systemic corticosteroids (chronic or episodic) and 13/16 required chronic immunosuppression (IMT). Nine of them (70%) received biologic therapy, typically given for systemic indications. Eight patients had complications when presented to our clinic, after a median time of 12 months from diagnosis (range 0-300). Late complications included cataract, posterior synechiae, corneal insufficiency, advanced glaucoma, band keratopathy, and retinal detachment. Ten patients underwent ocular surgeries including: phacoemulsification, trabeculectomy, tube surgery, corneal transplant, vitrectomy and synechyolysis. Mean LogMAR visual acuity (VA) at presentation was 0.4±0.4 (Including the affected eye or worse eye when bilateral), remained stable at 2 years (0.4±0.5), with a trend of deterioration by 5 years (0.7±0.8, NS). By 5 years, all but one patients still required treatment (topical and/or systemic).

Conclusion: Despite typically considered the less complicated form of uveitis, non-infectious anterior uveitis may be a severe disease, with chronic clinical course and a high rate of complications. When disease course becomes chronic, meticulous treatment to eliminate inflammation should be considered including systemic immunosuppression.

Medical Secretaries

Retinal Surgery and Intravitreal Injections - In a Nutshell

Elad Moisseiev, Tel Aviv Sourasky Medical Center

The talk will include a brief overview of common vitreoretinal surgical procedures, and common indications for their use, such as retinal detachment, epiretinal membrane and macular hole repair. Basic principles of pars plana vitrectomy will be explained. The talk will also review common indications for intravitreal injections and the various medicines that can be administered in this way, including Avastin, Lucentis, Eylea and Ozurdex. It will also explain the logic behind the treatment patterns and follow-up scheduling for the patients who undergo retinal surgery and intravitreal injections.

Nurses

Glaucoma: Overview and Innovations

Orna Geyer, Carmel Medical Center, Haifa

Glaucoma is a common eye disease that can cause irreversible blindness if left undiagnosed and untreated. Glaucoma is a leading cause of blindness in the world. In most cases, the symptoms of early-stage glaucoma are minimal or nonexistent. Early diagnosis and treatment reduce the risk of progressive loss of vision. Having a high intraocular pressure is an important risk factor. Treatment for glaucoma aims to lower the intraocular pressure. Treatment options for patients with glaucoma include medications (eye drops), laser therapy, and surgery. This lecture provides an overview of the present and new diagnostic technologies and treatment strategies in the management of glaucoma.

Hazard Signs In Pediatric Ophthalmology Clinic

Alina Melamud, Carmel Medical Center, Haifa

There are many common childhood eye problems such as strabismus and amblyopia, ptosis, nystagmus, cataract. Observing the child's eyes and paying attention to how the child behaves is very important. Unusual behavior such as tearing or tilting the heads to see things can be a warning sign. Fortunately, most childhood eye problems can be corrected if detected early. This presentation describes phenomena that may suggest ocular and / or systemic diseases that, if detected early enough, can prevent blindness and even save lives.

Optometrists

Visual Field and Intraocular Pressure as Screening Tests for Glaucoma

Yaniv Barkana, Private Practice, Ramla

Fifty percent of people with glaucoma do no know they have the disease. Consequently, better population screening is needed, and optometrists can participate in this endeavour. In this lecture, examination techniques and their interpretation will be reviewed with the aim of having more, better-informed optometrists engaged in screening for glaucoma.

Learning Disabilities, to Read or Not to Read

Dina Mostovoy, Pediatric Ophthalmologist, Private Practice of Maccabi and Leumit Health Care services, Modiin

Dyslexia is a learning disability specifically related to reading. Affected patients have difficulty recognizing and processing written language. It is important that dyslexia not be confused with reading problems related to physical or mental disabilities, such as vision disorders or structural central nervous system abnormalities. Causes of dyslexia arise from neurological differences in brain structure and function. They affect the brain's ability to store, process or communicate information. Dyslectic causes do not arise from malfunctions in the visual system, 40% of children have some degree of dyslexia, only 5% of children have been diagnosed. Children with reading impairment have the same incidence of visual problems as children with typical reading. Visual problems may co-exist with reading impairment but are present with the same incidence as in the general population. By identifying dyslexia early, children will get the help they need to reach their potential. Multiple studies have not found any correlation between visual-perceptual abilities and reading ability. If ophthalmic exam is completely normal in cases of learning or reading difficulties it is very important to provide information about dyslexia and help avoid unproven therapies.

A Special Intimate Oculoplastic Specialists Meeting With Prof. David Tse

Clinical Clues of Lateral Canthal Tendon Disinsertion

David Tse, F.A.C.S., Professor of Ophthalmology, Dermatology, Otolaryngology and Neurosurgery, Bascom Palmer Eye Institute, University of Miami Health System

The 6 cardinal clinical features of lateral canthal tendon disinsertion are as follows: 1) medial and inferior movement of the lateral commissure with eyelid closure, 2) a blunted or vertically displaced lateral canthal angle, 3) horizontal narrowing of the palpebral fissure with a reduced temporal scleral triangle, 4) incomplete apposition of the eyelid margins in the absence of an anterior lamellar shortage, 5) temporal eyelid imbrication on attempted eyelid closure, and 6) pseudo upper eyelid retraction. A thumb or cotton-tipped applicator may be used to distract the lateral commissure toward the lateral orbital rim, simulating surgical tightening of the canthal tendon; when significant dehiscence is present, one can see an immediate improvement in blink dynamics and eyelid closure.

Complications of Cosmetic Procedures: Lessons Learned

David Tse, F.A.C.S., Professor of Ophthalmology, Dermatology, Otolaryngology and Neurosurgery, Bascom Palmer Eye Institute, University of Miami Health System

The objectives of the presentation are to provide a brief overview of common and uncommon complications encountered in oculoplastic surgery by case illustrations. Special emphasis is placed on how and why complications occur and to outline an error-avoidance strategy. Few surgical procedures in addressing functional and aesthetic issues will be illustrated.

Case Study: Difficult Orbital Cases

Daniel Briscoe, Shireen Hamed-Azam, Abed Mukari, Emek Medical Center, Afula

Background/aims: Three cases of challenging orbital tumours are presented.

Methods: We review two rare tumours of the orbit in young children and one rare orbital tumour in an adult. Clinical presentation, imaging and surgical considerations, pathology and treatment are discussed.

Results: In both paediatric cases it was decided to preserve the eye and exenteration was avoided. Surgery was planned carefully and further oncological treatment was needed. The adult case needed careful surgical planning and the eye was preserved with follow up only. All cases had full visual function and movement.

Conclusion: The decision to preserve the eye in some tumours is controversial and difficult but we believe it offers the best way in most cases if planned carefully with a multi-disciplinary team.

Strabismus and Pediatric Ophthalmology

The Efficacy of Bilateral Lateral Rectus Muscle Recession Surgery According to Secondary Deviation Measurements in Unilateral Exotropic Duane Retraction Syndrome

Daphna Mezad-Koursh[1], Ari Leshno MD[2], Ainat Klein[1], Chaim Stolovich[1,3]
[1]Department of Ophthalmology, Tel Aviv Sourasky Medical Center, Tel Aviv University, Tel Aviv [2]Goldschleger Eye Institute, Sheba Medical Center, Tel Hashomer, Tel Aviv University, Tel Aviv [3]Assuta Medical Center, Tel Aviv

Exotropic Duane retraction syndrome (DRS) with abnormal head turn posture (AHP) is not common and there is limited data regarding the outcome of different surgical approaches.

Purpose: To evaluate the surgical results of asymmetric bilateral lateral rectus recession in exotropic DRS according to secondary deviation measurements.

Methods: Retrospective chart review.

Results: Seven cases of unilateral exotropic DRS were reviewed. All had globe retraction on adduction and exotropia with limited adduction. All patients had face turn. Exotropia was measured in forced primary position. Mean exotropia in the forced primary position improved from 27.9 (±5.7) PD preoperatively to 7.9 (±16.8) PD postoperatively ($p = 0.025$). Head position resolved completely in all but one case ($p = 0.031$). There were no significant changes in ductions.

Conclusions: Our results suggest that bilateral lateral rectus recession in exotropic DRS with AHP according to secondary deviation measurement successfully eliminates AHP and exotropia in most cases.

A Method for Rapid Objective Strabismus and Phoria Angle Measurement

Oren Yehezkel[1], Abraham Spierer[2], Dan Oz[1], Ran Yam[1], Michael Belkin[3]
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Purpose: We are evaluating the accuracy and repeatability of a novel strabismus and phoria angle measurement method using an automatic objective system based on eye tracking, in comparison to the prism cover test (PCT) results. The angle of strabismus is conventionally measured by the PCT is subjective, time consuming, very difficult to perform on babies, toddlers and young children and relies heavily on the examiner's skill and experience. The novel method being tested may constitute a replacement to the PCT.

Method: The concept being tested is similar to the PCT principle using a system comprising of a 3D display and glasses. Instead of shifting the line-of sight of the deviating eye by using prisms while gazing at a single target, the system displays alternately two moving dichoptic targets on a screen until the line-of-sight of each eye coincide with its corresponding target. An eye tracker is used to detect cessation of eye movements when both eyes fixate at their targets. No eye tracker calibration is required to perform the test. The strabismic prism diopter deviation is automatically calculated from the distance between the two dichoptic targets on the display and the distance of the eyes from the display. Tests were conducted under normal room lighting at 60 cm. Test group included 12 subjects with strabismus or phoria, 26.1±10.1 years of age, who are evaluated in comparison with their PCT results.

Results: Test results of the strabismic group measured were 20.7±12.1 (SD) for the eye tracking method and comparable to the cover test results of 21.0±12.5 (SD) (P=0.39, paired t test). Test duration of the novel method was 22.5±8.6 (SD) seconds.

Conclusions: These preliminary results of this work in progress indicate the possible validity of the concept of measuring strabismus angles by a system based on a 3D screen and eye tracking module.

Update Lecture: Variability of Phenotypic Presentation in Children with Congenital Stationary Night Blindness

Karen Hendler, Anfisa Kozhemiakina, Claudia Yahalom, Michaelson Institute for Rehabilitation of Vision, Department of Ophthalmology, Hadassah Hebrew University Medical Center, Jerusalem

Background: Congenital stationary night blindness (CSNB) is caused by mutations in several different genes. The disease transmission can be x-linked, autosomal recessive, or autosomal dominant. Two main forms of CSNB have been described- CSNB1 (complete CSNB) in which mostly the rod function is affected, and CSNB2 (incomplete CSNB) in which both cone and rod functions are affected.

Methods: We retrospectively reviewed charts of patients diagnosed with CSNB who were examined at the Michaelson Institute between the years 2010-2014. Information regarding phenotype and genotype of patients was recorded including visual acuity, refractive error, presence of nystagmus, visual field, and genetic testing.

Results: Seventeen patients aged 6-18 years diagnosed with CSNB were found. Variable phenotypes were found in these patients, even among siblings with the same mutation. Visual acuity ranged from 6/18-6/75. Half of the patients presented nystagmus. Most patients presented myopic refraction. Variable constriction of visual fields was observed.

Conclusions: The complexity of CSNB and the different mutations causing this disease lead to variable phenotypic presentation, sometimes even in patients with the same mutation. It seems that other factors such as environmental factors or other modifying genes may contribute to this disease. Further studies are required to provide a better understanding of this disease.

Endophthalmits following Strabismus Surgery: an IPOSC Global study

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[1]The Goldschleger Eye Institute, Sheba Medical Center, Tel Hashomer, [2]Ophthalmology Department, Rambam Center for Health, Haifa

Purpose: To examine the characteristics of patients with endophthalmitis after strabismus surgery (PSSE), the characteristics of the strabismus surgery, treatment and prognosis as reported by pediatric ophthalmologists who are members of the American Association for Pediatric Ophthalmology and Strabismus (AAOPS) around the world.

Methods: An email communication was sent to all members of AAPOS. The email included a web link to a survey that included 34 questions which examined the characteristics of patients with endophthalmitis after strabismus surgery.

Results: Three hundred forty-nine ophthalmologists responded to the questionnaire. 264 (76%) had practiced pediatric ophthalmology for over 10 years. Twenty-seven cases of endophthalmitis were reported. The medial rectus muscle (MR) was the most common muscle undergoing surgery (55%).

In 5 patients (21%) perforation was observed at the time of surgery. In all cases endophthalmitis was diagnosed 3-7 days post-surgery. The final visual acuity of 34% was no light perception (NLP).

Discussion: This series is the largest existing series on PSSE. Our data suggest that PSSE can occur also in healthy patients and in patients without a visualized scleral perforation. The majority of PSSE occur during the first week after surgery. Therefore, we believe that all patients that underwent strabismus surgery should be examined in this time frame. The prognosis was poor with 48% demonstrating a visual acuity of worse than LP at the final follow-up.

Intraocular Lens Power Prediction in Children Treated for Cataract

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Purpose: To evaluate 4 commonly used intraocular lens (IOL) calculation formulae) SRK II, SRK/T, Holladay1, and Hoffer Q) in Early postoperative refractive outcomes of pediatric eyes.

Methods: A retrospective chart review of all patients 8 years old who underwent cataract surgery with primary IOL implantation, a primary posterior capsulotomy and limited anterior vitrectomy via pars plana approach by a single surgeon over a 8-year period (since 2007).

Using axial length (AL), keratometry value (K), the manufacturer's A constant and the chosen IOL power, expected refraction was calculated with each of the 4 formulae postoperatively in order to theoretically calculate the expected refraction and to compare to the measured refraction at the follow up

Results: The accuracy of prediction of spherical equivalent (SE) was better with SRKT for the entire study group. When subdivided into subgroup there was some variety with the results.

At younger than 1 year old patients group, the SRKII formula was statistically significant better than the others. At older than 1 year old patients, there was a trend towards SRKT as better predictor, although not statistically significant.

Conclusion: In an homogenous group of children underwent similar cataract surgery with primary IOL implantation in the capsular bag, a primary posterior capsulotomy and limited anterior vitrectomy via pars plana approach it seems to be better to use the SRKII formula at younger than 1 year old patients group. There was a trend towards SRKT at older patients as a better predictor, although not statistically significant.

Surgical Managment of Glaucoma in Pediatric Sturge-Weber Syndrome Patients

Alvit Wolf, Alina Melamud, Orna Geyer, Ophthalmology Department, Carmel Medical Center, Haifa

Background: Glaucoma occurs in 50% of individuals with Sturge-Weber syndrome (SWS) and often requires surgery to control intraocular pressure (IOP).

Current literature cautions of severe complications such as choroidal effusion and exudative retinal detachment in these patients.

This work reviews the success and complications of surgical procedures to control IOP in SWS patients.

Methods: Retrospective review of pediatric SWS patients with glaucoma that underwent surgery to control IOP at Carmel Medical Center from 2005 to 2015.

Results: 12 patients were included. Eight were males and the left side was affected in 7 patients. All patients had unilateral disease without clinically significant chorodial hemangioma. The mean follow-up time was 70 months (24 - 136). Initial surgical procedures were; trabeculotomy (6), trabeculectomy (3) and combined trabeculutomy - trabeculectomy (3). Mean preoperative IOP was 28.1+-2.4mmHg on an average of 2.9+-0.7 medications. Average cup disc ratio(C/D) was 0.3 (0.1-0.7). Bimodal distribution was observed regarding patients' age at first surgery with six patients under the age of 6 months (1 week - 4.5 months) and 6 patients over the age of 4 years (4-7 years).

Eight eyes (66%) required subsequent surgery, of which 5 had infantile onset of glaucoma. Type of primary surgery didn`t affect the need for a second procedure. Ahmed glaucoma valve was implanted in 4 eyes (50%) and needling was performed in 2 eyes (25%).

Neither hemorrhagic/serous choroidal detachment nor other complications occurred in all cases.

At the last follow-up mean IOP was 18.5+-4.7 mmHg on an average of 2.0 medications. Average C/D ratio was 0.5 (0.1-1.0). Visual acuity was obtainable in 8 patients and averaged 0.45 (0.67 -0.25)

Conclusions: Surgery for glaucoma in SWS patients was successful in controlling IOP and maintaining visual function without previously reported complications. In more than 50% of eyes secondary procedure was needed to control IOP.

Horizontal Deviations in Congenital Brown Syndrome

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Purpose: To report the incidence of horizontal deviations requiring surgical correction in patients with congenital Brown syndrome.

Methods: In a retrospective study, the medical records of all the children who underwent a surgical correction of congenital Brown syndrome at Schneider Children's Medical Center from 1998 to 2016 were reviewed, analyzing the presence of pre-operative primary position horizontal misalignment.

Results: Overall, 19 eyes (8 right and 11 left eyes) of 16 patients (7 males, mean age 4.2 ± 2.6 years) were included in this study. All patients underwent a weakening procedure of the superior oblique tendon, either by Z-tenectomy (81%, n=13) or suture elongation of the superior oblique tendon (19%, n=3). Fifty-six percent of patients (n=9) had primary position horizontal deviation before surgery, including 50% (n=8) exodeviations, ranging from exophoria of 4 prism diopters (PD) to exotropia of 30PD, and one esotropia of 14PD. Fifty percent of patients (n=8) had surgery to correct the horizontal deviation, either by a recession of one muscle (31%, n=5) or of two muscles (19%, n=3). Mean preoperative horizontal deviation (9.3 ± 3.4 prism diopters, PD) decreased significantly following surgery (1.7 ± 1 PD, P=0.001, Paired t-test).

Conclusions: Significant horizontal misalignment is often present in patients with congenital Brown syndrome, and its correction should be considered at the time of surgery.

The Use of Titanium T-plate as Platform for Globe Alignment in Severe Paralytic Strabismus and Disabling Nystagmus

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A 49-year-old woman with debilitating nystagmus and oscillopsia failed conservative therapy. A titanium T-plate was anchored to the lateral orbital rim and cantilevered into the orbit where it was secured to the inferior rectus muscle tendon with a suture. After the procedure was performed on both eyes, the patient had significant decreases in the amplitudes of her nystagmus and oscillopsia, thereby improving her daily function. She had sustained duration of effect through 7 years of follow up. This novel surgical technique holds promise in the treatment of acquired nystagmus and debilitating oscillopsia for which conventional therapy may be ineffective.

The Role of Big Data In Ophthalmology

The Role of Women in Ophthalmic Research - Are We Breaking Gender Barriers?

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Purpose: Despite an improvement in the disparities between men and women, a gap between genders still exists in scientific research and medicine. The purpose of this study was to evaluate trends in the prevalence of female authorship in Ophthalmology over recent years.

Methods: Using the PubMed Search engine, we conducted an observational study of trends in gender distribution of authors in 6 Ophthalmology journals between January 2002 and December 2014. Journals were chosen based on impact factors. The full names and the positions (first, middle or last) of all authors were collected. A Google based name identifier was used to determine the gender of authors. Names identified with a probability of 3 to 1 and greater were included in final analyses.

Results: A total of 102,254 authors from 23,026 published articles were included. There was a significant rise in the percentage of female authors over time with a steeper slope for first authors than for last ($p<0.001$). The rise in the percentage of female authorship was similar in basic and clinical research but was steeper for first than for last authorship ($p<0.001$). Female contribution was consistently higher in basic research publications. The rise in the percentage of female authorship was significantly steeper for general than for sub-specialty journals ($p<0.001$). In multivariate analysis, sub-specialty journals and last author position were significantly predictive of male gender while advancing publication year and first author position were significantly predictive of female gender ($p<0.001$).

Conclusions: Despite an overall increase in the contribution of women to the field of Ophthalmology, a gap still exists between the frequency of women in roles of clinical-practice and that in roles of scientific leadership.

IOL Power Calculation

Adi Abulafia, Shaare Zedek Medical Center, Jerusalem

Modern cataract surgery is gradually becoming both a rehabilitative and a refractive procedure. The introduction of partial coherence interferometry (PCI) and optical low-coherence reflectometry (OLCR) for the measurement of axial length, along with more advanced intraocular lens (IOL) power calculation formulas, has greatly improved our ability to predict postoperative refraction. In this presentation, the role of big data in IOL power calculation will be discussed, including setting down benchmark criteria for prediction accuracy, determining IOL constants and developing new formulas.

Big Data in Cataract Surgery

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Cataract surgery is the most common surgical procedure in Medicine. Cumulative data can help identify trends in surgical techniques, IOLs quality, premium lenses penetration and, most importantly, complications such as endophthalmitis, glaucoma, TASS and many others. IRIS registry was founded in 2014 by the AAO as a powerful tool to collect data directly from electronic health records. Data from nearly 5 million cataract operations in the USA is analyzed and distributed to users and was shown to increase quality of surgery and improve outcome. In Israel, data on cataract surgery is collected annually from all surgical centers and is openly presented to all surgeons and industry as an informative and educational service to cataract professionals.

Applying Big Data Analysis to Improve Outcomes in Refractive Surgery

Or Kaiserman, [1]Department of Ophthalmology, Barzilai University Medical Center, Ashkelon [2]Care Vision Center, Tel-Aviv

More than 80 million refractive surgery procedures have been performed worldwide to correct nearsightedness, farsightedness and astigmatism with an extremely high accuracy and very good rate of success. However, rare complications do exist such as dry eyes, flap complications, glare or vision loss and even corneal ectasia.

Such a high rate of surgery is a perfect candidate for big data analysis. Big data analytics examines large amounts of data to uncover hidden patterns, correlations and other insights. When complications are extremely rare (such as ectasia) only analysis of big data can reveal their true rate of occurrence as well as their hidden risk factors.

Harvesting big data in refractive surgery requires strict preoperative, intraoperative and postoperative computerized documentation as well as an institutional policy of data analysis.

With such a system in place at CARE vision, Israel we managed to analyzed about 65,000 refractive procedures and better understand rare events such as the risk factors for post-LASIK epithelial ingrowth, the reasons for flap slippage and flap relifting, the causes of steroid induced ocular hypertension and haze after PRK and the factors affecting the need for laser retreatment years after a successful refractive procedure. With such a large data set we also managed to come up with a more sophisticated nomogram for improving the accuracy of refractive surgery and to apply artificial intelligence for predicting success and failure after refractive surgery.

The Maccabi Glaucoma Study: What Have We Learned So Far?

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The Maccabi Glaucoma Study is a big data study that includes so far 5 different studies all related to the field of glaucoma. This presentation will demonstrate the epidemiology of glaucoma in Maccabi Health Services and its association with systemic and ocular diseases. In addition, trends in visual fields performance, specific epidemiology of exfoliation syndrome and treatment adherence to glaucoma medications will be presented.

This is a population-based, retrospective, case control study, conducted using the electronic medical database of Maccabi Health Services, the second largest HMO in Israel (more than 2 million members), insuring 25% of the total population with a nationwide distribution. The study group included patients diagnosed with glaucoma, according to ICD-9 and CPT codes.

Our results suggest that prevalence and incidence of glaucoma were strongly associated with age, ranging from 0.28% at age 40-50 to 9.2% among elderly aged 80 or above (not including preglaucoma conditions). The 5 most prevalent diagnoses were open angle glaucoma (OAG, 1.61%), exfoliation glaucoma (0.20%), unspecified glaucoma (0.17%), angle closure (0.11%), and normal tension glaucoma (0.06%). Only 25% of incident glaucoma cases exhibited high adherence with treatment (covered at least 80% of the follow-up period) and 13% were non-adherent with therapy (covered less than 20% of the follow up time).Adherence was positively associated with female sex, age, socioeconomic status, frequent follow-up visits and higher baseline IOP.

We have identified 16,393 patients with exfoliation syndrome, in whom 40.3% (n=6613) had exfoliation glaucoma. PXF was significantly associated with higher rate of hospitalizations (5 hospitalizations on average in the PXF group and 3 in the controls, $p< 0.0001$), with cardiovascular diseases including hypertension (77.7% vs 74.5% in the controls, $p<0.0001$), myocardial infarction (10.4% vs 8.4% in the controls, $p< 0.0001\%$), and congestive heart failure (9.2% vs 5% in the controls, $p< 0.0001$).

Cataract was significantly more common in all glaucoma patients.

Associated Morbidity of Chalazion and Blepharitis

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Objective: To evaluate the prevalence of systemic medical conditions in patients with blepharitis and chalazion.

Methods: A retrospective observational case-control study. All the members who were diagnosed with blepharitis in the Central District of Clalit Health Services in Israel (years 2000-2009; n=16706) and 16706 age- and gender-matched controls randomly selected from the district members.

Analysis of the prevalence of various ocular and systemic conditions, risk factors, age, gender, marriage status, country of origin, place of residency, and socioeconomic status.

Results: Demographically, a significantly higher tendency to develop blepharitis was found in populations of lower socioeconomic class, populations living in urban areas, and Ashkenazi Jews. A significant association of $P<0.001$ was found with some inflammatory diseases (gastritis, peptic ulcer, asthma, arthropathy, and ulcerative colitis), psychologic conditions (anxiety, irritable bowel syndrome, neuroses, and depression), hormonal conditions (hypothyroidism and prostatic hypertrophy), cardiovascular diseases (carotid artery disease, hyperlipidemia, hypertension, and ischemic heart disease), and other eye conditions (chalazion, pterygium). The strongest associations found were between blepharitis and chalazia (odds ratio [OR] 4.7; confidence interval [CI], 3.8-5.7), rosacea (OR 3; CI, 2.1-4.3), pterygia (OR 2.0; CI, 1.5-2.6), ulcerative colitis (OR 2.3; CI, 1.2-4.2), irritable bowel syndrome (OR 1.8; CI, 1.3-2.5), anxiety (OR 1.6; CI, 1.4-1.9), and gastritis (OR 1.6; CI, 1.4-1.7).

Conclusions: Some ocular and systemic conditions are more prevalent among patients with blepharitis and chalazion. Better understanding of the pathophysiologic association between those diseases and blepharitis may help in its treatment and prevention.

Association of Myopia and Cognitive Function

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Background: Myopia is a leading cause of visual impairment worldwide, and its increasing incidence is of public health concern. Cognitive function was associated with myopia among children, but evidence for adolescents is scarce.

Objective: We aimed to evaluate the association of myopia with overall cognitive function among adolescents, as well as with verbal and non-verbal intelligence subsets.

Methods: Nationwide, population-based, cross-sectional study among Israeli candidates for military service who underwent visual acuity examination and cognitive assessment at age 17 between 1993 through 2012. Myopia was defined as Spherical Equivalent < -0.5 D. Cognitive assessment yielded a cognitive function score (CFS), classified to nine-point scale. CFS included two verbal intelligence subtests (Similarities; Verbal Instructions) and two non-verbal intelligence subtests (Arithmetic; Spatial), which were classified to high and low by median. Associations were analyzed using logistic regression models adjusted for age, gender, origin, socioeconomic status, years of education, body mass index, height and year of examination.

Results: Prevalence of myopia was 32.2% among 1,022,425 adolescents (55.7% males), aged 17.2±0.3 years. A strong and consistent association was found between CFS and myopia. Comparing to intermediate CFS, the Highest CFS increased the odds of having myopia (OR: 1.85; 95% CI: 1.81 to 1.89; P<0.001), while lowest CFS reduced the odds (OR: 0.59; CI: 0.57 to 0.61; P<0.001). All subsets of cognitive assessment battery were significantly associated with myopia (P<0.001): Verbal instructions (OR: 1.63; 95% CI: 1.61 to 1.65), Similarities (OR: 1.55; 95% CI: 1.53 to 1.56), Arithmetic (OR: 1.45; 95% CI: 1.43 to 1.46) and Spatial (OR: 1.38; 95% CI: 1.37 to 1.39).

Conclusions: We found cogent evidence that cognitive function is strongly and consistently associated with myopia among adolescents. Stronger associations were found for verbal intelligence, supporting the near-work hypothesis.

Ocular Oncology

Update Lecture: Lacrimal Gland Adenoid Cystic Carcinoma: Intersection of Science and Patient Care

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Adenoid cystic carcinoma of the lacrimal gland is the emperor of all orbital maladies and the king of terrors. The grim prognosis is due to the aggressive behavior of the cancer, and permutations of the use of radical surgery or radiation therapy have not improved survival. However, infusion of a high concentration of chemotherapy through an intact lacrimal artery before any definitive surgical procedure seems to improve overall survival and decrease disease recurrence. The rationale for a new globe-sparing strategy incorporating neoadjuvant intra-arterial chemotherapy as the core element in treatment is offered, and the short-term outcomes reviewed. The future of orbital oncology will rely on elucidating the molecular dynamics to expand our precision oncology toolbox in targeting the dysregulation in cancer cells. New findings in bridging basic science, technology and clinical practice will be discussed.

Optical Density Ratio of the Sub-Retinal Fluid in Choroidal Melanoma and Metastasis

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Purpose: To investigate the optical density (OD) characteristics and clinical relevance of sub-retinal fluid (SRF) in choroidal melanoma and choroidal metastasis.

Methods: Medical records of patients with choroidal melanoma and choroidal metastasis who underwent optical coherence tomography (OCT) examinations at diagnosis prior to any intervention, and whose OCT scans showed sufficient SRF for sampling were reviewed. The highest quality B-scan containing SRF was analyzed. OD measurements obtained using ImageJ and optical density ratios (ODRs) were calculated as SRF OD divided by vitreous OD. Patient details and diagnosis were masked during measurements. Non-parametric tests for independent samples were used to detect differences in ODR between groups.

Results: Of the 39 cases of choroidal tumors who met the inclusion criteria, 14 were diagnosed as metastases and 25 as malignant melanoma. There were no significant differences between the groups in age, OCT acquisition and parameters of quality, and vitreous OD. ODR values were significantly lower in metastases cases (mean 0.68±0.18) than in melanoma cases (0.95±0.33, p=0.006). ROC curve analysis yielded an optimal cutoff of ODR=0.771 (sensitivity=78.6%, specificity=72.0%).

Conclusion: ODR can serve as an additional test to differentiate between choroidal melanoma and choroidal metastases.

The Use of Intravitreal Methotrexate for Treating Vitreoretinal Lymphoma - 20 Years Experience

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Purpose: To report our 20 years` experience in treating vitreoretinal lymphoma by intravitreal methotrexate injections.

Methods: A retrospective analysis of all the patients with vitreoretinal lymphoma that were treated in the ocular oncology service at Hadassah Hebrew Universality Medical Center since March 1997. All the patients were treated by intravitreal injections of 400mg of methotrexate in 0.05-0.1 ml according to the protocol of up to 25 injections.

Results: During the 20 years, we treated 108 eyes of 62 patients (39 females; 23 males). The age range 21-92 years (mean 61.5 years). In 46 patients (74.2%) both eyes were involved, and in 16 the disease was monocular (RE-7; LE-9) 58 patients had B-cell lymphoma and 4 T-cell lymphomas. In 47 patients (75.8%) the ocular disease accompanied primary CNS lymphoma. In 22 the ocular disease preceded the CNS lymphoma, and in 25 the CNS lymphoma preceded the ocular disease. All patients responded fully to treatment after 2-16 injections and in only one eye was there a recurrence after completion of the treatment (was treated successfully by a full second course of methotrexate). The side effects were mostly superficial (conjunctival hyphemia and keratopathy) and temporary and were reduced when using the methotrexate injections to 0.05ml.

Conclusions: Intravitreal chemotherapy using methotrexate is a very effective way of treating vitreoretinal lymphoma with 100% success rate and rare recurrences, with only superficial and temporary side effects.

Documenting ocular surface lesions with digital imaging using fluoroscein dye, improved identification and visualization

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Purpose: to validate a novel method for documenting ocular surface lesions.

Study design: randomized blind evaluation.

Methods: 16 patients with ocular surface lesions were photographed using 2 different imaging methods: standard slit lamp digital camera imaging (DCI) and digital camera imaging filtering method with fluoroscein dye (DCI-FD).

All Photos were displayed randomly to 10 independent experienced reviewers. The reviewers were blind to the lesion photographing method. The following parameters were evaluated: lesion identification, presence of corneal involvement, lesion borders visualization and reviewer`s preferred imaging method. The later parameter was measured by simultaneously displaying the 2 methods for each lesion, comparing them in regard to the image quality and lesion borders visualization. Results: DCI-FD increased lesion identification rate (96.85% vs 81.8%, p value p0.0001).

Out of the 18.1% lesion identification failure with the DCI method, 82.7% were identified by DCI-FD method p0.0001. Corneal involvement detection rate was 65.0% with DCI-FD vs 50.6% with DCI method (p0.001). DCI-FD was graded as a preferred method by the reviewers in 65.6% vs 46.3% of the lesions (p= 0.01).

Conclusions: DCI-FD is a simple and quick method for ocular surface lesions identification and visualization. In this study DCI-FD method was superior to the standard DCI method in documenting ocular surface lesions for follow up of the lesion size, lesion borders and corneal involvement.

Future studies are needed for evaluation of the method contribution in lesion differential diagnosis and in surgery.

Venetoclax Can Cause Central Serous-Like Chorioretinopathy

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Purpose: To describe an ocular side effect of a novel biologic treatment for a hematologic malignancy.

Methods: A case report.

Results: A 44-years-old man with CLL (del 17p) who relapsed twice after complete remission and partial remission to the last line of treatment was started on venetoclax, a first-in-class BCL-2 inhibitor designed to treat relapsed or refractory CLL patients who have a 17p deletion (Del(17p)) chromosomal abnormality. Two days after the dose was increased to 50mg/d he started complaining of blurred vision and vision dropped from 20/20 in BE to 20/70 (RE) and 20/28 (LE). Changes in both retinas proved to be macular sub-retinal fluid (SRF) collections on optical coherence tomography (OCT). The findings matched the central serous-like chorioretinopathy (CSR-like retinopathy) seen with MEKi treatment. Treatment continued until the patient developed febrile neutropenia due to transformation into systemic and CNS DLBCL complicated by Cryptococcal CNS infection (neither of which share the ocular findings of CSR-like retinopathy) and vision improved within days.

Conclusions: Life-extending treatments should not be stopped because of SRF and some reduction in vision. We call upon clinicians to follow the visual acuity and perform baseline and routine OCT exams for patients scheduled for venetoclax treatment.

Retina

Update Lecture: Switching Treatment in AMD - Where Are We Today?

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The efficacy of anti-VEGF therapies for the management of neovascular AMD is widely known to be high in terms of both decreasing exudative signs and also stabilizing and even improving visual acuity. However, not all patients benefit in an identical manner. When there is an incomplete or no response to treatment you may consider switching the patient to an alternative anti-VEGF agent.

Numerous studies tried to address this issue but there is currently no consensus as to how to classify optimal response and when and how to switch.

Anti-VEGF Treatment Switch- A Unique Nationwide Program for Approval and Control

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Aim: In this report, we assess a unique process implemented by a supplementary health service (Clalit Mushlam) for approving and enabling Ranibizumab treatment as a 2nd line for retinal diseases.

Introduction: Retinal diseases are the leading causes of blindness in developed countries in recent decades. Multiple anti VEGF drugs have been shown to be affective in halting deterioration and even improve vision in some of this diseases. Despite the demonstrated benefit, some patients do not achieve the expected clinical improvement. Those patients demonstrate – either no response or only partial or unsatisfying response. Furthermore, some patients stop responding after initial good response. In such cases numerus studies, have shown that switching from one anti-VEGF drug to another has the potential to benefit these patients.

Method: In March 2012, Clalit Mushlam launched a program that made Ranibizumab therapy available for patients for whom Bevacizumab did not demonstrate effectiveness. at a substantial reduced price than its actual cost. The approval was conditioned upon meeting clear clinical criteria and a controlled decision-making protocol, The process was intended to improve the treatment, while preserving a budgeting framework; To supervise the process, a professional committee was established, of leading ophthalmologists; and the appropriate indications for switch to 2nd line Ranibizumab treatment were decided.

Throughout the years of the program, eligible diagnosis were updated constantly according to the literature published and the scientific evidence of effectiveness

Results: The process was implemented in all retinal units of all public general hospitals in the country.

During those years we processed the applications of 2394 eyes of 1748 patients in 19 retinal clinics spread out through the entire country 1152 patients suffered from AMD, 417 from DME and 148 from retinal vein occlusion

Conclusion: It is the purpose of this paper to describe a widespread, well controlled, program that enables appropriate mass treatment, while preserving a budgetary framework for the state of the art management of various, blinding, retinal diseases.

Visual and Anatomical Outcome of the Diabetic Macular Edema Treated with Ranibizumab Following Bevacizumab Failure in Israel (DERBI Study) – Multi-center

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Purpose: To evaluate the functional and anatomical outcome of intravitreal ranibizumab treatment in eyes with diabetic macular edema (DME) having persistent edema unresponsive to initial therapy with intravitreal bevacizumab.

Methods: Diabetic macular Edema treated with Ranibizumab unresponsive to initial treatment with Bevacizumab in Israel (DERBI) was a retrospective, multi-center study. Eyes with persistent DME following at least 4 previous consecutive bevacizumab injections prior to ranibizumab treatment were included. To be enrolled, the last 3 bevacizumab injections had to be provided in 4-6 weeks interval, and at least 12 months of follow up must have been recorded. Data collected included demographics, ocular findings, diabetes control, details of bevacizumab and ranibizumab treatments, and visual and anatomical (SD-OCT) measurements before and after ranibizumab therapy.

Results: Two hundred and two eyes that were treated in 11 medical centers across Israel were included in the analysis. Patients received a mean (±SD) of 8.8±4.9 bevacizumab injections over a mean of 15.7±12 months prior to the switch to ranibizumab. A mean of 7±2.7 ranibizumab injections were provided during the 12 months following the switch to ranibizumab. The mean HbA1c was 7.9±1.6% at baseline and 7.8±1.5% 12 months following the switch to ranibizumab (p= NS). The median central subfield thickness (± interquartile range) according to SD-OCT reduced from 436.0±162.0 micron at baseline to 318.5±113.0 micron at month 12 (p0.001). Median logMAR visual acuity (± interquartile range) improved from 0.40±0.48 at baseline to 0.38±0.40 at month 12 (p=0.001). Mean (±SD) intraocular pressure was 15.0±2.8 mmHg at baseline and 15.1±2.9 mmHg at month 12 (p=NS).

Conclusions: The DERBI study demonstrated that ranibizumab therapy in eyes with persistent DME despite prior bevacizumab therapy can be associated with both functional and anatomical improvement.

Symmetry Response to First and Second Lines Anti-VEGF Therapy in Bilateral Diabetic Edema

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Purpose: To evaluate for correlation between fellow eyes for response to bilateral anti-VEGF treatment in patients with bilateral diabetic macular edema (DME) showing partial response for initial therapy with bevacizumab.

Methods: 74 eyes of 37 patients with bilateral DME having incomplete response to first-line bevacizumab injections that were switched for treatment with ranibizumab in both eyes were retrospectively evaluated. Data collected included demographics, visual acuity and macular thickness according to SD-OCT at baseline and during treatment.

Results: The mean±SD age at baseline was 65±7 years, 22 (59%) patients were male. Forty-nine (66%) eyes had non-proliferative diabetic retinopathy (NPDR), and HBA1C level was 8.4±1.9%. The mean number±SD of bevacizumab injections prior the switch to ranibizumab was 11±5 in the first eye (FE) and 10.9±5.4 in the second eye (SE). BCVA± SD at baseline was 0.40±0.29 LogMAR in the FE, and 0.41±0.28 LogMAR in the SE (p=0.44; t-test). After 3 injections of bevacizumab, the BCVA was 0.36±0.25 and 0.30±0.24 in FE and SE respectively (p=0.01, p=0.0004; paired t-test compare to baseline, respectively). The central subfield thickness (CST) reduced from 471±168 microns at baseline to 437±126 after three bevacizumab injections and 377±89 after 3 ranibizumab injections in the FE (p=0.0001, p=0.0003; paired t-test, respectively, compare to baseline), and from 463±142 microns to 425±112, and 404±110 in the SE (p=0.002, p=0.005; paired t-test, respectively). There was a correlation between the eyes for the decreases in the CST, both under bevacizumab and ranibizumab treatment (Pearson correlation coefficient=0.45, p=0.002, and Pearson correlation coefficient =0.33, p=0.004, respectively).

Conclusions: This study demonstrated correlation in treatment of both eyes with DME which were switched to ranibizumab due to prior incomplete response to initial therapy with bilateral bevacizumab injections. This may suggest that response in the first eye can predict the course of the fellow eye.

The Effect of Intravitreal Bevacizumab Injections in the Treatment of PPCNV Associated with AMD in the Papillo-Macular Bundle Area - Multicenter

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Aims: Peripapillary choroidal neovascularization (PPCNV) comprises about 10% of all cases of choroidal neovascularization. PPCNVs can be idiopathic or secondary to various conditions, Browning and Fraser reported that PPCNV was associated with age related macular degeneration (AMD) in 45% of cases, while 39% were idiopathic. The remaining cases of PPCNV occur secondary to multifocal choroiditis, angioid streaks, histoplasmosis, choroidal osteoma, optic disc drusen, congenital disc anomaly, pattern dystrophy, peripapillary pigment epithelium and choroidal atrophy. This study evaluate the effect of intravitreal bevacizumab injections in the treatment of PPCNV associated with AMD in the papillomacular bundle area.

Methods: Retrospective research of patients with active PPCNV associated with AMD. Bevacizumab injections (1.25 mg) were repeated monthly for the first 3 months. Re-treatment was considered if there were any signs of membrane activity.

Results: 52 eyes of 51 patients with peripapillary CNV were included in the study with a mean follow-up of 21.55 months (range 4-67). The most prevalent OCT exudation sign was subretinal fluid (73.1%). The average number of injections was 8.46 (range 3 to 21). In 40 eyes (76.9%) the injections of bevacizumab led to a complete resolution of exudation signs. Visual acuity improved in 36 eyes (69.7%), and decreased in 4 eyes (7.6%), despite treatment. Recurrence was observed in 19 eyes (35.8%).

Conclusions: To the best of our knowledge, this is the largest cohort of peripapillar CNV due to AMD treated with anti VEGF injections. As described in previous articles, we found that intravitreal injection of bevacizumab is an effective treatment for peripapillary CNV. Like conventional AMD involving the macula, recurrence rates are not scarce. This results suggests a need for more frequent follow up than previously thought, and for long follow up time.

Predictability of Intravitreal Bevacizumab Response Based on Previous Fellow Eye Outcome in Neovascular AMD and Diabetic Macular Edema Eyes

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Purpose: Intravitreal bevacizumab (IVB) often serves as first line treatment in neovascular age related macular degeneration (AMD) and diabetic macular edema (DME). Eyes that fail to show sufficient response to IVB often require conversion to other intravitreal agents. Our study aimed to assess the predictability of IVB effect on neovascular AMD and DME eyes, based on IVB response in previously treated fellow eyes.

Methods: Our retrospective study included 96 patients (192 eyes) with bilateral neovascular AMD or DME, treated in our retina clinic with IVB. Each eye received 3-6 IVB injections in each eye as initial treatment. Response to treatment in both eyes was assessed by measuring changes in central retinal thickness (CRT) using spectral domain optic coherence tomography (SD-OCT), changes in visual acuity, and the treating physician's evaluation. Non-responders to IVB were switched to intravitreal ranibizumab (IVR) treatment and their response to the treatment was evaluated.

Results: Twenty four percent of patients required early switch to IVR. As many as 66.7% of patients who required treatment switch to IVR in the first eye, sequentially required treatment switch to IVR in the fellow eye ($p<0.0001$). Patients switched to IVR in one eye were almost 15 times more likely to switch in the fellow eye (OR, 14.67; 95% CI, 4.67-46.03; $p<0.0001$). A significant positive correlation between CRT improvement in the first and fellow eyes was recorded.

Conclusion: Response to IVB injections in one eye in AMD and DME patients, can often predict response to IVB treatment in the fellow eye. Early insufficient response to IVB in one eye should suggest the consideration of another intravitreal agent for the initial treatment of the fellow eye.

Bevacizumab for AMD After Acute Myocardial Infarct: Worrying Data From a Nationwide Retrospective Study

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Objective: To analyze the mortality associated with injections of bevacizumab for age-related macular degeneration (AMD) in patients previously diagnosed with acute myocardial infarct (MI).

Methods: In the registries of the Clalit Healh Services, we identified bevacizumab-treated AMD patients with a diagnosis of MI prior to their first bevacizumab injection, delivered between September 2008 and October 2014 (n=2,100). We then generated sub-groups of patients treated within 3 (n=11), 6 (n=24), 12 (n=52) and 24 months (n=124) after MI. Those patients were compared to age and gender-matched members that had a MI at the same time and had never been exposed to anti-VEGF Survival analysis was performed using adjusted Cox regression.

Results: Bevacizumab-treated patients were slightly and insignificantly older than controls (mean age: 83.25 vs 83.19 year, P=.75). Gender distribution was similar.

At several intervals between MI and initiation of bevacizumab treatment, we found the following differences of adjusted mortality between the groups: within 3 months after MI, OR = 17.49 (95% C.I 0.63–481.03, P = .09); within 6 months, OR = 3.25, (95% C.I 0.98 – 10.74), P = .054); within 12 months, OR = 3.82, (95% C.I 1.70 – 8.56, P .001); within 24 months after MI, OR = 2.55, (95% C.I 1.49 – 4.38), P .001.

Conclusions: We report increased mortality associated with the use of intravitreal bevacizumab in AMD patients after MI, compared to age and gender-matched post-MI patients with no exposure to any anti-VEGF agent. Caution should be taken while offering bevacizumab to AMD patients after MI.

Prior Treatment with Intravitreal Injections Does Not Affect Cataract Surgery Complication Rates

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Purpose: Intravitreal injections (IVT) and cataract surgery are procedures frequently performed in the ophthalmology department. This research aimed to investigate whether prior treatment with IVT causes increased incidence of intraoperative or postoperative cataract surgery complications.

Methods: A retrospective cohort analysis reviewed all patients who underwent cataract surgery at Soroka University Hospital between January 2010 to September 2015. 204 patients with prior IVT injection treatment were included, and a control group of 143 patients with no history of IVT injections was matched. Data analyzed included demographic information, preoperative clinical characteristic, features of the IVT treatment, and prevalence of different intraoperative and postoperative complications.

Results: No correlation was found between treatment with IVT injections held prior to the cataract surgery and the rate of cataract surgery complications occuring intraperatively (3.4% vs 7.0%, p=0.130), or postoperatively (5.9% vs. 4.9%, p=0.691). In addition, no correlation was found between the complication rate and the number of injections conducted prior to the surgery (median 5 vs. 2.5, p=0.343), nor to the time period between the last injection and the operation day (median 123 vs. 185, p=0.418).

Conclusions: Performing cataract surgery after treatment with IVT injections is safe, and is not accompanied by an increased risk of complications. These results apply for patients with any numbers of injections conducted preoperatively, and different time frames between the day of last injection and operation day. It follows that, according to our research, accidental trauma of the posterior capsular bag in patients with a history of IVT injections is rare.

Update Lecture: Late Advancements in OCT

Iris Moroz, Sheba Medical Center, Tel-Hashomer Dr. Dafna Goldenberg, Tel Aviv Sourasky Medical Center

Optical coherence tomography " in 1991, this imaging technology is constantly evolving from Time- domain to spectral-domain, from 2D B scans to 3D visualization (en face) and swept source .

But there are still exciting discoveries in OCT's future. OCT angiography is a new technology that able to track blood flow in blood vessels as small as capillaries to create 4D images.

OCT can provide a wealth of data. In the last few years improved techniques for data extraction has evolved. Enhanced-depth imaging (EDI) OCT of the choroid allow to evaluate variations in choroidal thickness and the association to different retinal pathologies.

New imaging analysis can show for example disorganization of the retinal inner layers (DRIL) with disruption of the boundaries between the ganglion cell–inner plexiform layer complex, inner nuclear layer, and outer plexiform layer. DRIL likely represents an anatomic interruption in the visual transmission pathway with implications on visual acuity and prognosis in pathologies such as diabetic retinopathy

OCT Measures as Predictors of Functional Outcome for Diabetic Macular Edema Treated with Dexamethasone Implant

Dinah Zur, Tel Aviv Sourasky Medical Center

Purpose: Baseline OCT measures are of predictive value in patients with diabetic macular edema (DME) treated by anti–vascular endothelial growth factor therapy. The purpose of this study is to investigate whether morphological changes identified on SD-OCT can predict the treatment response to Dexamethasone (DEX) intravitreal implant 0.7 mg (Ozurdex®) in patients with naïve and refractory DME.

Methods: Retrospective, observational clinical study including 75 eyes of 73 patients treated with DEX implant for naïve and refractory DME with best corrected visual acuity (BCVA) 20/40 to 20/200. Other concomitant ocular diseases causing macular edema were excluded. BCVA and central macular thickness (CMT) were recorded at baseline and 1, 2 and 4 months after DEX implant. OCT scans at baseline were evaluated for subretinal fluid, cystoid changes, IS-OS continuity, hyperreflective foci (HRF), vitreomacular interface and epiretinal membrane. Statistical analysis was performed using paired T-test and OLS regression.

Results: 51 eyes (68%) were treatment naïve. Mean BCVA improved in eyes with naïve DME at 1, 2 and 4 months by 0.5, 0.4 and 0.4 logMAR (p0.001 for all) and with refractory DME by 0.2 (p0.001), 0.1 and 0.1 logMAR (p=0.03), respectively. Mean CMT decreased over time by 249, 253 and 250µm for naïve DME and by 237, 214 and 124µm for refractory DME (p0.001). The presence of subretinal fluid (p0.001), giant cystoid changes in the outer nuclear layer (p0.03) as well as hyperreflective foci in the inner retinal layers (p0.004) in large quantity (p=0.005) were all predictive for a larger visual benefit after DEX implant after 1, 2 and 4 months.

Conclusions: DEX implant improved VA and reduced CMT in patients with DME. Treatment naïve eyes had greater benefit than refracting cases. Subretinal fluid, giant cystoid changes in the ONL and a large amount of HRF in the inner retinal layers may serve as predictive measures on SD-OCT for treatment success.

Reversal of Cystoid Macular Edema in Gyrate Atrophy Patients

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Purpose: Gyrate atrophy (GA) of the choroid and the retina is an autosomal recessive disorder related to mutations in the ornithine-aminotransferase gene (OAT). This study reports the presentation of two families with GA. The aim of this study was to show the effect of low protein diet and pyridoxine treatment on accompanying macular edema.

Methods: Two unrelated patients with GA were studied for the effect of low protein diet (≤ 0.8g/kg/d), and oral administration of pyridoxine (500mg/day) on serum ornithine levels, best corrected visual acuity (BCVA), slit-lamp, OCT, and auto-fluorescence findings.

Blood samples for DNA, mRNA and exons of the OAT gene were screened for mutations, and splicing effect when relevant.

Results: At presentation both patients manifested typical ophthalmic features of GA including cystoids macular edema (CME). One patient also exhibited optic nerve head astrocytic hamartomas. Following treatment, in patient A, ornithine levels have lessened by 178µmol/l, BCVA improved from 6/120 in both eyes to 6/30 OD and 6/21 OS. Central macular thickness (CMT) decreased by 270µm OD and 161µm OS.

Patient B showed improvement in BCVA from 6/15 to 6/12 OD and from 6/12 to 6/8.5 OS. CMT decreased by 80µm OD and 47µm OS. Ornithine levels decreased by 140µmol/l.

OAT sequencing identified two known mutations: OAT c.159delC; p.H53Qfs7*, c.386CT_p.Thr129Ile (patient A, patient B respectively) and a novel splice site mutation, c.900+1 GA (patient B).

Conclusions: We have identified a novel mutation and two formerly described mutations in patients with GA. We have recognized for the first time, improvement in CME following treatment with low protein intake and pyridoxine supplement. This finding may have significance in the understanding of treatment options for macular edema regardless of underlying etiology.

Retinal Penetration of Intravitrealy Injected Tissue Plasminogen Activator - A Rat Model Study

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Background: The purpose of this study is to determine whether intravitreal unconjugated tPA (alteplase) can penetrate the intact neural retina and reach the subretinal space in an experimental model.

Methods: This study was performed in 24 Sprague-Dawley rats aged 12 weeks. Under general anaesthesia, the right eye was injected with either 0.75µg of 3µl tPA (14 rats; study group) or saline (10 rats, control group) into the vitreous. Animals were euthanised at 3, 24, and 48 hours. The eyes were enucleated, and cryosections were prepared for immunofluorescence staining. Goat anti-tPA antibody was used to detect tPA.

Results: In the study group, staining for tPA was detected in the deep retinal layers in all eyes. The staining was deeper and more intense at 3 and 24 hours than at 48 hours. There was no tPA staining in the retina of eyes injected with saline.

Conclusions: This experimental study shows that unconjugated tPA administered into the vitreous is capable of penetrating the deep retinal layers and the subretinal space. These findings suggest that further clinical research on the benefits of intravitreal tPA in the treatment of submacular haemorrhage is warranted.

Colony Forming Unites-Endothelial Progenitor Cells (CFU-EPCs): A Surrogate Marker for Diabetic Retinopathy and High Cardiovascular Mortality Rate

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Purpose: Diabetic retinopathy is a risk factor for increased cardiovascular death. Our purpose was to find a significant difference in levels of endothelial progenitor cells (EPCs) in the peripheral blood of patients at different stages of diabetic retinopathy.

Design: A prospective study. Colony forming units of endothelial progenitor cells (CFU-EPCs) in peripheral blood were counted. 40 subjects were enrolled (10 healthy [41±8 y], 10 type 2 diabetes mellitus (T2DM) [64±12 y] without retinopathy, 10 T2DM patients [62±26 y] with non-proliferative retinopathy (NPDR), 10 T2DM patients [66±9 y] with proliferative retinopathy (PDR)). The study was approved by the ethics committee of the hospital and every subject signed a consent form before enrollment.

Methods: Growing CFU-EPCs was by the Hill`s EPCs protocol. Blood was drawn early in the morning and was processed within 1 hour. Mononuclear cells were separated and cultured on fibronectin-coated plates with EndoCult medium (StemCell technologies, Vancouver BC Canada) for 5 days. CFU-EPCs were counted on day 5 (an average of 8 wells).

Results: Healthy subjects had 36±8 CFU-EPCs, patients without retinopathy had 13±12 CFU-EPCs (p0.01), patients with NPDR 22±26 CFU-EPCs (p=NS), and 2±2 CFU-EPCs in patients with PDR (p0.01). A significant difference was found between patients with PDR and with NPDR (p0.05).

Conclusions: CFU-EPCs are inhibited in T2DM patients with DPR. Levels of CFU-EPCs may be used as a surrogate biologic marker for severity of diabetic retinopathy and for cumulative vascular risk.

Cornea and Contact Lenses

Postmortem Evaluation of Wound Healing After Descemet Membrane Endothelial Keratoplasty (DMEK)

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Purpose: To evaluate the histopathology in post mortem DMEK eyes to obtain a better understanding of the wound healing response at the posterior corneal surface following DMEK, and potential clinical implications.

Methods: Eleven corneas of eight patients, who underwent DMEK surgery for Fuchs endothelial dystrophy were procured after death and processed for light microscopy evaluation.

Results: Nine eyes showed a 'normal' anatomy in the corneal center. One eye also had an anatomically 'normal' periphery, but ten showed specific peripheral abnormalities: in nine, the DMEK graft overlapped with the host edge of the descemetorhexis; one eye showed a dense, acellular scar overlying a portion of the DMEK graft that was detached followed by spontaneously adherence; three eyes showed graft folds with scar tissue anteriorly; in two eyes (same patient), the anterior banded layer of the host DM was still in-situ across the cornea (both required re-bubbling); and two eyes showed host DM remnants within the corneo-limbal tunnel incision that may have interfered with wound healing.

Conclusions: Incomplete host DM removal may relate to postoperative DMEK graft detachment and wound instability. Graft detachments may re-attach with interface scarring. Re-bubbling procedures may be performed within 4-6 weeks, before scarring of detached graft portions occurs.

Visual and Clinical Outcomes in Patients with Peter's Anomaly

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Purpose: To present the clinical and visual outcomes of patients with Peters anomaly.

Patients and Methods: The charts of all patients diagnosed with Peters anomaly from January 2000 to December 2012 at the Hospital for Sick Children, Toronto, Canada were reviewed. For treatment purposes, patients were classified as Peters anomaly type I or II, depending on lens involvement. Treatment modalities undertaken included observation (amblyopia treatment and refractive error correction), pupillary dilation, penetrating keratoplasty (PKP) and no treatment. Visual and clinical data were collected and stratified per treatment modality chosen. Kaplan-Meier survival analysis was used to assess corneal graft longevity in transplanted eyes.

Results: Sixty eyes of 40 patients were included. The mean follow-up time was 75.8±52.9 months (range; 12.1-225.3 months). Thirty-three (55.9%) Peters anomaly eyes had visual acuity of 20/200 or better with 8 eyes (13.5%) and 5 eyes (8.5%) having LP and NLP vision, respectively. In the PKP group (n=36), 16 eyes (44.4%) had visual acuity of 20/200 or better, with 4 eyes (11.1%) and 5 eyes (13.9%) having LP and NLP vision, respectively. Survival analysis of the first graft showed 80.5% probability to remain clear at 2 years, and 62.4% at 6 years and onward. Glaucoma was diagnosed in 20 eyes (33.3%) of which 18 eyes (90.0%) developed glaucoma following PKP.

Conclusion: Visual rehabilitation in Peters anomaly remains a challenge. Cases that can be managed by observation or minor surgical intervention achieve good vision. When PKP is indicated poorer outcomes are obtained, nevertheless patients can still attain functional visual acuity with encouraging graft longevity.

Autologous Blood Coagulum for Conjunctival Graft Fixation

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Fibrin glue has become popular for fixating conjunctival autografts since 2004. However, commercial fibrin adhesives have many disadvantages: cost, risk of infection, preparation time, and possibly more inflammation. Reports of using the patient's own plasma for hemostasis have been reported in surgery since 1992. In ophthalmology, and specifically in pterygium surgery, autologous blood coagulum for conjunctival graft fixation was first reported in 2009 by Sharma and Moore. However, the first prospective, randomized controlled study was published by Singh el al 4 years later. Since then, several studies have been published comparing graft stability, inflammation, operative time and recurrence rate between the commercial fibrin adhesive and autologous blood coagulum techniques. When comparing the autologous blood technique with the commercial fibrin adhesive method, four studies reported favorable outcomes (shorter surgical time, equal recurrence rate, similar graft stability, less graft inflammation) and 2 studies reported worse outcomes (higher graft loss and recurrence rates).

Our experience with a small series of patients has shown favorable results thus far. Most patients display a stable, smooth graft 1 day after surgery and a relatively quick and painless healing course. Graft loss occurred in 1 patient who had a relatively large graft and a significant amount of bleeding under the graft. We found the following helpful in improving our technique: a small graft size, a very thin and oversized graft, a smooth scleral bed surrounded by elevated conjunctiva at the defect borders, a controlled uniform layer of blood, at least 5 minutes of firm pressure on the graft and at least 24 hours of pressure patching of the eye after surgery. The use of a bandage contact lens did not appear to improve the outcome.

Comparison of Graft Survival Following Penetrating Keratoplasty and Descemet's Stripping Endothelial Keratoplasty in Eyes with a Glaucoma Drainage Device

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Purpose: To compare corneal graft survival rates after penetrating keratoplasty (PK) and Descemet's stripping endothelial keratoplasty (DSEK) in patients with a glaucoma drainage device (GDD) or medically managed glaucoma.

Methods: A retrospective chart review was conducted on consecutive patients who underwent primary PK or primary DSEK. Inclusion criteria consisted of eyes with a diagnosis of glaucoma prior to corneal transplantation and a minimum of 6 months of follow-up. Graft failure was defined as an edematous cornea with failure to maintain deturgescence lasting beyond a period of 1 month of intense steroid therapy or vascularization and scarring resulting in irreversible loss of central graft clarity. Corneal graft survival was calculated using Kaplan-Meier survival analysis. Patients were divided into 4 groups: GDD-PK, GDD-DSEK, medical-PK and medical-DSEK.

Results: Fifty-six eyes of 56 patients were identified as meeting inclusion criteria. Among eyes with a GDD, there was no difference in the proportion of failures between PK grafts (48%) and DSEK grafts (50%) (p=0.90). Failure occurred earlier in DSEK recipients compared to PK recipients, 5.82±6.77 months versus 14.40±7.70 months, respectfully (p=0.04). A Kaplan-Meier analysis did not identify a difference between the four groups with respect to graft failure (p=0.52).

Conclusion: There is no significant difference in graft survival rates between medically and surgically treated glaucoma patients for either PK or DSEK grafts. In patients with GDD, graft failure occurs earlier in DSEK compared to PK.

The Effect of Deep Anterior Lamellar Keratoplasty on Intraocular Pressure (IOP) Measurement

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Purpose: The wound healing of the host-donor interface in corneas after Deep Anterior Lamellar Keratoplasty (DALK)causes surface irregularities and may affect the intraocular pressure(IOP) measurement. The aim of this study was to investigate the effect of DALK surgery on IOP measurement in relation to corneal thickness (CCT), corneal curvature (CC), and corneal astigmatism (CA).

Methods: A total of 26 eyes of 13patients having undergone DALK surgery for keratoconus in one eye were enrolled in this study. IOP measurements were performed in the operated (study group) and non-operated keratoconic eye(control group), using the Goldmann applanation tonometry (GAT) and the iCare tonometer. CCTwas measured with the IOL master system and anterior segment OCT. CC and CA measurements were taken with the Tomey Corneal Topographer.

Results: Mean IOPGAT, IOPiCare in the operated eyes were 14.00±3.9mmHg and14.9±2.9mmHg (p=0.44). Mean IOPGAT, IOPiCare in the non-operated eyes were 13.9±2.9mmHg and12.9±3mmHg (p=0.26). In the non-operated keratoconic eyes both tonometer measurements were directly related to CC (r=-0.82, p=0.012, and : r=-0.83, p=0.01, for GAT and iCare, respectively) , and to CCT values measured with the OCT system(r=0.88, p=0.003, andr=0.74, p=0.033 for GAT and iCare, respectively), but not to those measured with the IOL master system.There was no correlation between CA and IOP measurments performed with both tonometers.

In eyes after DALK surgery, both tonometer measurements were not related to CCT, CC, and CA.

Conclusion: IOP measurement is not affected by previous DALK surgery.

Contact Lens-Assisted Collagen Cross-Linking (CACXL) as Standard Treatment for Patients with Keratoconus and Thin Corneas

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Purpose: To evaluate the effect of CACXL in patients with keratoconus and thin corneas.

Methods: Retrospective cohort study. Twenty two patients with progressive keratoconus and with corneal thickness less than 430 µm and greater than 300 µm after epithelial abrasion were included. After epithelial abrasion, the iso-osmolar riboflavin 0.1% in dextran was applied every 2 minutes for 25 minutes. An ultraviolet barrier-free PureVision soft contact lens (Baush&Lomb, 14-mm diameter) soaked in iso-osmolar riboflavin 0.1% for 25 minutes was placed on the cornea. The patients were treated with UV-A (365nm) irradiance for 10 minutes @ 9 mW/cm2, corresponding to a surface dose of 5.4 J/ cm2. Intraoperative corneal thickness was recorded with ultrasound pachymetry (PachPen, Accutome, USA). Postoperative visual acuity (VA), corneal topography (Pentacam, Oculus, Germany), corneal resistance (CR), corneal resistance factor (CRF) (ORA, Reichert Instruments, USA) and endothelial cell density (ECD) (EM-3000; Tomey, Nagoya, Japan), were measured in study population.

Results: Mean follow up of study was 10.3 months (range 6-20 months). There was a significant difference in preoperative corneal thickness 404.2± 27.8 µm and intraoperative corneal thickness after de-epitalization 357.1 ± 28.9 µm (P .01). Mean postoperative corneal thickness was 403.0 ± 36.8 µm (range: 297 to 452 µm) in the last follow-up. Our study didn't reveal significant corneal endothelial loss (P = 0.06) or changes in thinnest cornea location (P= 0.33). The corneal topography parameters, as K max, K steeep, K flat, K mean and astifmatism of anterior and posterior surface were stable at the last follow-up. The postoperative follow-up didn't reveal any significant sight-threating events.

Conclusion: CACXL technique was effective and safe in performing cross-linking in corneas less than 400 µm after epithelial abrasion and appeared effective based on postperative visual acuity, ORA parameters and corneal topography.

Corneal Crosslinking for Treatment of Keratoconus-Relapse in Keratoplasty Eyes

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Background: Keratoconus is a progressive ectatic disease causing irregular astigmatism that may severely affect vision. In severe cases keratoconus patients undergo keratoplasty for visual rehabilitation. In rare cases keratoconus may recur in patients with corneal graft, resulting in visual deterioration and has a detrimental effect on the success of corneal grafts. The aim of our study was to evaluate the safety and efficacy of Corneal Cross-Linking (CXL) procedure in eyes with corneal grafts and keratoconus relapse.

Methods: We reviewed the data of 4 eyes from 3 keratoconus patients who went CXL due to keratoconus relapse after penetrating keratoplasty. Maximum keratometry (Kmax), astigmatism and thinnest corneal thickness according to topography, uncorrected distant visual acuity (UDVA), corrected distant visual acuity (CDVA) were studied preoperatively and 1 year postoperatively.

Results: Preoperative CDVA were 0.62 ± 0.1 (decimals) one month before the CXL procedure. CDVA significantly improved to 0.71 ±0.15 (decimals) one year after CXL. Preoperative Kmax and astigmatism were 51.98±11.6 diopter (D) and -8.22 ± 3.2 D, respectively. One year after the CXL procedure, Kmax and astigmatism were 51.07±7.5 and -7.5 ± 2 D, respectively. The thinnest corneal thickness was 409.75 ± 20 u and 404 ± 16 u before and after the CXL, respectively. No intra- or postoperative complications were noted after the procedures.

Conclusion: The results of our series reviewing treatment of keratoconus relapse in corneal grafts indicates that CXL is a safe and effective procedure. CXL should be considered immediately when relapse of keratoconus occurs after keratoplasty.

Update Lecture: Epidemiology and Outcome Related Risk Factors in Presumed Bacterial Keratitis in Israel

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Purpose: To determine the epidemiological pattern and identify risk factors that would influence clinical outcome in presumed bacterial keratitis in Israel. Methods: Retrospective review of all files of patients who had corneal cultures taken due to presumed bacterial keratitis from January 2011 to December 2014. Demographic and corneal ulcer features and predisposing risk factors were collected. A multivariate analysis was performed to identify the influence of these factors in best corrected visual acuity (VA) outcome. Results: 204 cases of bacterial keratitis were included. Cultures were positive in 93 (45.6%) cases. Isolated organisms were Staphylococcus coagulase negative (28%), Streptococcus pneumoniae (17.2%), Pseudomonas aeruginosa (16.1%), Staphylococcus aureus (5.4%) and others (33.3%). The most common risk factor was contact lens (CL) use (36.2%) followed by ocular surface disease (31.9%), ocular surgery (28.4%), trauma (14.2%), glaucoma (7.8%), drops use (5.4%) and keratoconus (4.9%). Mean BCVA (LogMAR) improved from 1.11±1.18 at admission to 0.83±1.11 at last follow-up visit. Eyes with a large quantity of cells and flare (n=22) had a significant improvement in BCVA than eyes with no intraocular involvement (n=113): -0.7388 vs. -0.1350, respectively (p0.0083). Patients with worse vision at admission had a better change in VA after treatment (p0.001). Ulcer location, CL, ocular diseases, surgery or trauma, systemic diseases, patient age or hospitalization days did not significant correlate with VA change. Strep. pneumoniae cases had a longer than average mean hospital stay (12.38 days vs. 8.48 days; p0.036). Pseudomonas was found in 44% of CL users compared to 4.9% in non-CL users while Strep. pneumoniae was found in 22% of non-CL users compared to 4% in CL users with positive cultures (p0.001). Conclusions: VA outcome was found to be inversely correlated with worse VA before treatment. Eyes with high intraocular involvement had higher improvement in VA then eyes with no intra ocular involvement.

Refractive Surgery

Update Lecture - SMILE: Is There Anything to Smile About?

Or Kaiserman, Department of Ophthalmology, Barzilai University Medical Center, Ashkelon and Care Vision Center, Tel-Aviv

Femtosecond laser small incision lenticule extraction (SMILE) is a recently developed type of "flapless" corneal refractive surgery with all-in-one technology. SMILE is increasingly appealing for both doctors and patients since it is minimally invasive and does not require a flap to be lifted during surgery. It displays many advantages in terms of morphology, cornea biomechanics, corneal wound healing, and nerve recovery.

SMILE achieved similar efficacy, predictability and safety as FS-LASIK. Greater preservations of corneal biomechanical strength and corneal nerves were observed in SMILE when compared with LASIK or PRK. Additionally, the incidence of postoperative dry eye syndrome was found to be less problematic in SMILE than in FS-LASIK. With advances in femtosecond laser technology, SMILE may replace excimer laser surgery in the future.

Predictors of Myopic PRK Retreatment

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Purpose: To determine the factors associated with retreatment following photorefractive keratectomy (PRK) for myopic eyes in the modern PRK era.

Setting: Care-Vision Laser Centers, Tel-Aviv, Israel

Design: Retrospective cohort study

Methods: Retrospective large database cohort study on myopic PRK with mitomycin-C performed from 2005 to 2012. Patients were divided into 2 groups according to whether or not they underwent retreatment. Multiple preoperative and intraoperative parameters were analyzed for association with retreatment.

Results: A total of 9,699 eyes of 9,699 consecutive patients were studied. Mean age was 25.9 ± 7.3 years and 54.1% were male. Mean preoperative subjective spherical equivalent and astigmatism were -4.30 ± 2.18 (range, -0.5 to -13.0) and 0.77 ± 0.83 (range, 0 to 6.0) diopters (D), respectively. Two hundred twenty-three (2.30%) eyes were retreated. The two-year retreatment rate decreased from 42 (6.17%) for primary PRK treatments done in 2005 to 2 (0.10%) for primary PRK done in 2012 (R2=0.79, P0.001). Multiple binary logistic regression analysis showed that transepithelial PRK, astigmatism ≥3.5 D, and surgeon factor significantly increased the odds of retreatment. Additional parameters significant only on univariate analysis included age 40 years, low preoperative sphere, maximum ablation depth20/20, mitomycin-C application duration 40 seconds, and optical ablation zone.

Conclusions: In the modern PRK era the retreatment incidence continues to decrease. High astigmatism and transepithelial PRK significantly increased myopic PRK retreatment.

Protecting the Flap During LASIK - Is it Necessary?

Nitsan Duvdevan-Strier[1], Michael Mimouni[1], Yuval Domnitz[3], Tzahi Sela[3], Gur Munzer[3], Igor Kaiserman[2]
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[3]Ophthalmology, Care-Vision Laser Centers, Tel-Aviv

Purpose: To compare the visual and refractive outcomes obtained after myopic astigmatic laser in situ keratomileosis (LASIK) with and without flap protection during laser ablation.

Setting: Care-Vision Laser Centers, Tel-Aviv, Israel.

Design: Retrospective comparative study.

Methods: The medical files and corneal topographies of consecutive patients eyes with myopic astigmatism (with the rule) that underwent LASIK with the Moria SBK microkeratomy by one of two surgeons between January 2014 and December 2015 were reviewed. The visual and refractive outcomes with and without flap protection during the procedure were compared. Alpin's vector analysis was applied for comparison of astigmatic outcomes.

Results: A total of 57 eyes of 57 patients were included in this study. Mean age was 31.4± 9.3 years and 56% were of male gender. Flap protection was applied in 40.4% of the eyes (n=23/57). Both groups were similar in terms of preoperative parameters. The flap protection group had a better efficacy index (1.08 ± 0.17 versus 0.96 ± 0.24, P=0.04) and index of success (0.16 ± 0.07 versus 0.23 ± 0.17, P=0.04). No significant differences were found in terms of safety index (1.10 ± 0.17 versus 1.08 ± 0.13).

Conclusion: Protecting the flap during myopic astigmatic LASIK may lead to better visual and refractive outcomes.

Discrete and Continuous Presentation of Landolt C Optotypes. Is the Threshold the Same?

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[1]Secondary Healthcare, Meuhedet Health Care services [2]Experiment planning, Independent consultant

Purpose: Visual acuity testing based on continuous presentation of optotypes is an alternative to discrete optotypes presentation, which can decrease time of examination while increasing it's quality. However it remains unclear whether the mode of presentation affects the recognition threshold of optotypes. The purpose of this study is to examine the effects of presentation mode on optotypes recognition threshold.

Methods: 17 healthy volunteers (34 eyes) underwent tests with either continuous or discrete presentation of optotypes. In test with continuous presentation angular size of optotypes was controlled by zoom while in tests with discrete presentation, optotype's angular size was adjusted with the change of examination distance with 20 cm intervals.

Change of perception of Landolt C to O (reaction) was measured based on examinees reports. Optotypes recognition thresholds were calculated using the method of limits for an angular size of optotype in a reaction point.

Results: 17 healthy volunteers (Caucasian, 8 male and 9 females) underwent tests. Age varied from 21 to 49 with the average age of 35.6. The average angular size of the optotypes recognition threshold was significantly different between continuous presentation 0.29°(s.d.= 0.11) and discreet presentation 0.10° (s.d.=0.03) with p value 1.44 x 10 -12.

Conclusions: Visual acuity tests based on continuous and discreet presentation have different optotypes recognition thresholds. Further studies are needed to elucidate the connection between different modes of optotype presentation and optotypes recognition thresholds .

Risk Factors Predicting Steroid Induced Ocular Hypertension Following Photorefractive Keratectomy

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[3]Department of Ophthalmology, Barzilai Medical Center, Ashkelon and the Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer Sheba, Israel 4Care-Vision Laser Centers, Tel-Aviv

Purpose: To assess the risk factors for steroid induced ocular hypertension (OHT) following photorefractive keratectomy (PRK).

Methods: A retrospective study. A total of 3566 eyes of 1783 patients following PRK, between January 2000 and December 2015. Patients were followed up for at least 3 months. Intraocular pressure (IOP) was measured using Goldman applanation tonometer after 1 week, 3 and 6 months. Steroid induced ocular hypertension was defined as IOP elevation of 25% while on topical steroid treatment (minimum 24 mm Hg), followed by an IOP drop of 25% when steroid treatment was discontinued.

Results: Overall, 3566 eyes of 1783 subjects were included in the final analysis of this study. The mean age of the participants was 26.9 ± 7.5 years and 54.85% were males. A total of 106 eyes (2.97%) were steroid responders. The responder group had a higher proportion of males (70.7% versus 29.2%, respectively, p0.001), higher central corneal thickness (531.9 ± 40.2 versus 521.2 ± 40.9, p=0.008), lower mean keratometric power (43.3 ± 1.8 versus 44.0 ± 1.8, p0.001), higher proportion of high myopia (6D) (31.1% versus 22.1%, p=0.03), a higher rate of post surgical corneal haze (16.9% versus 4.2%, p0.001) and were treated post operatively with more potent steroids. All factors remained significant in multivariate analysis.

Conclusions: Significant factors associated with post PRK OHT are: male gender, high CCT, low mean keratometry reading, high myopia, corneal haze and stronger steroids such as dexamethasone.

Effect of Treatment Zone Diameter on the Clinical Results of FS-LASIK and Trans-PRK for the Correction of Myopia

Assaf Gershoni, Yoav Nahum, Eitan Livny, Michael Mimouni, Sabaa Knaneh, Irit Bahar, Assuta Optic Laser Center, Tel Aviv

Purpose: To examine and compare the effect of treatment zone diameter on the results of Femtosecond laser assisted in situ keratomileusis (FS-LASIK) and Trans epithelial photorefractive keratectomy (Trans-PRK) procedures performed for the treatment of myopia.

Methods: A Retrospective cohort study was performed. The study reviewed medical files of patients who underwent Trans-PRK surgery and FS-LASIK surgery in which different treatment area diameters were used, between the years 2013-2014. The FS-LASIK group comprised of 879 eyes of 441 patients and 2630 eyes of 1315 patients were examined in the Trans-PRK group. For each type of surgery, the patients were divided into 3 groups, based on the treatment zone diameter (6 mm, 6.5 mm and 7 mm). The pre-operative Spherical equivalent (SE) for FS-LASIK was -3.7±1.9 and -4.6±2.3 for Trans-PRK (p0.0001).

Results: In the FS-LASIK group, there was no difference in both the safety and efficacy indices or in the distance from the intended result between the groups (p=0.79, p=0.57, p=0.09, respectively). In myopic Trans-PRK a treatment area of 7 mm was associated with worse outcomes in terms of safety (p=0.01) and efficacy (p0.01) in comparison with the other groups. In addition, a treatment zone of 7 mm was associated with a significantly larger distance from the refractive target (p0.001). There were no significant differences between the 6mm and the 6.5mm groups in any outcome measure. These results remained significant in multivariate analysis after correcting for age, gender, preoperative refractive error, and pachymetry.

Conclusions: Different treatment zone sizes gave similar results in FS-LASIK, while in Trans-PRK, a 7mm zone was associated with inferior outcomes in comparison to smaller treatment zones. Hence, in Trans-PRK, we recommend choosing the smallest treatment zone possible above 6mm, while considering FS-LASIK if a very large treatment zone is required.

Predictive Factors for Efficacy and Safety in Refractive Surgery for Myopia

Avi Solomon, Nir Gomel, Joseph Frucht-Pery
Ophthalmology, Hadassah Medical Center, Jerusalem

Purpose: To evaluate predictive factors for safety and efficacy in laser refractive surgery for myopia.

Methods: A prospective database of 22,174 refractive laser procedures for myopia (in 11,325 patients) performed at Hadassah Medical Center during the years 2002 - 2015 was analyzed. Complete data was available for 8,775 eyes. Gender, age, type of surgery, date of surgery, pre-operative corneal thickness and spherical equivalent (SEQ) were evaluated. The outcome measures were the safety index and efficacy index at last follow-up. A cut-off level of 0.85 for the safety index and 0.80 for the efficacy index were set to determine successful results. Univariate analysis and logistic regression were performed to determine the predictive value of pre-operative parameters in achieving safety and efficacy above the determined cut-off levels.

Results: 91.9% and 86.0% of all evaluated eyes were above the safety and efficacy cut-off levels, respectively. Younger age was significantly correlated with safety and efficacy indices above the cut-off levels (p0.001). Male gender was significantly correlated with efficacy above the cut-off level (p0.001). Myopic eyes with lower SEQ were associated with both safety (p=0.002) and efficacy (p0.001) indices above the cut-offs. The surgical procedure was found to significantly affect the outcome only using univariate analysis: Safety was found higher in PRK, while Efficacy was found higher in Lasik (p0.001, respectively). Thinner Cornea did not affect the efficacy (p=0.263) .Safety index above the cut-off level increased over the years (p0.001).

Conclusions: Efficacy in refractive surgery for myopia is correlated with younger age, male gender and low myopia. Safety is correlated with younger age, low myopia and increases over the years. PRK is safer, while LASIK is more effective in the uni-variate analysis. However multiple regression analysis found no differences of safety and efficacy between these two refractive procedures. Corneal thickness does not affect the safety of refractive procedures.

Visual Outcome and Patient Satisfaction Following Inlay, PresbyLASIK and Unilateral Multifocal IOL Implantation in Emmetropic Presbiopic Patients

Eliya Levinger, Shmuel Levinger, Enaim Medical Center, Tel Aviv Medical Center

Purpose-To assess efficacy, safety and patient satisfaction after presbyopic lens exchange using the FineVision multifocal IOL, presbyLASIK and Inlay (Presbia) in one eye (monodominant eye) in emmetropic patients.

Methods: A retrospective, nonrandomized, observational case series.Presbyopic emmetropic patients (SE ± 0.5D) over the age of 45y were evaluate for visual acuity for far and near, refraction and patient satisfaction after performing in the mondominant eye one of the correction options:

1. PresbyLASIK using the Technolas 217P Platform and SUPRACOR Algorithm (Technolas Perfect Vision GmbH, Munich, Germany)

2. Femto-laser assisted cataract surgery (FLACS) FineVision IOL (Physiol, Liege, Belgium) implanted in the nondominant eye

3. Inlay, Presbia Flexivue Microlens™

Results: Overall uncorrected distance and near vision acuity were better in the Multi IOL group compare to the presbyLASIK. For distance 93% vs 88% (better 20/25)and for near 88% vs 76% (better 20/25) respectively. No eye lost 2 lines of CDVA in the 2 groups however, in the presbyLASIK 14% (5) lost 2 lines in CNVA. Hyperopic shift was noted in the inlay group and there was reduction in distance and near visual acuity. Patient satisfaction was higher (rang 1-2) in the multi IOL 88% vs the presbyLASIK 63% group. Over all 88% in the multi IOL group vs 63% in the presbyLASIK group conceder to repeat the procedure.

Conclusions: Presbyopic lens exchange with implantation of multifocal IOL in the nondominant emmetropic eyes is the prefered procedure option for presbyopia correction today

Soft Contact Lens Discontinuation Before Laser Refractive Surgery

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Purpose: To evaluate the recommended time period for soft contact lenses discontinuation before laser refractive surgery.

Materials and Methods: This retrospective study included patients who underwent laser in situ keratomileusis (LASIK) or photorefractive keratectomy (PRK) between January 2005 and December 2014 at the Care-Vision Laser Centers, Tel-Aviv, Israel. Patients were divided into three groups based on the duration of time passed free of soft contact lens wearing prior to preoperative evaluation (24 hours, 1 to 3 days or 3 days). Spectacle wearers served as a fourth group. Postoperative safety index, efficacy index and distance from target of the four groups were compared. General linear model was used to compare main outcomes while adjusting for age, gender, preoperative measurements and procedure type (LASIK versus PRK).

Results: Overall, 19,747 eyes were included. Soft contact lenses were worn by 42.3% (24 hours: 4.8%, 1-3 days: 18.5% and 3 days: 19.0%) and spectacles by 57.7% prior to preoperative evaluation. In general linear model time free of soft contact lens was significantly associated with postoperative safety index (p=0.02), efficacy index (p=0.002) but not distance from target (p=0.29). Specifically, the 24 hour group had a significantly lower safety index and efficacy index than each of the other individual groups. No statistically significant difference in distance from target was found between the 24 hour group and the other groups.

Conclusion: The visual results after refractive surgery are less favorable when discontinuing soft contact lenses for less than 24 hours before surgery. However, there is no advantage for longer discontinuation periods of several days if lenses were discontinued for at least 24 hours.

Uncorrected Visual Acuity in Keratoconic Versus Non Keratoconic Patients - Adjusted for Cylinder and Spherical Equivalent

Riham Najjar[1], Igor Vainer[2], Michael Mimouni[2], Shmuel Levartovsky[1], Igor Kaiserman[1]
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Purpose: To compare uncorrected visual acuity (UCVA) in keratoconic versus non keratoconic patients.

Methods: The study group included 734 keratoconic patients, 514 of them were males and the control group included 1462 patients, 10 18 of them were males. Both groups were matched by age, sex, spherical equivalent and cylinder. Mean age of study group was 33.8±9.5 years; mean age of the control group was 33.20±9.7 years. Mean cylinder and spherical equivalent values of study group were -3.01±1.99 (D) and -3.34±3.29 (D) respectively. Mean cylinder and spherical equivalent values of control group were -2.97±1.35 (D) and -3.34±2.92 (D) respectively. BCVA and UCVA were expressed in LogMAR scale.

Results: Keratoconic patients showed significantly better mean UCVA compared to a matched control group. Mean LogMAR UCVA were 1.1±0.68 and 1.22±0.64 respectively (p0.0001). Keratoconic patients had better mean UCVA at almost all defocus equivalent values. Mean BCVA was significantly worse amongst keratoconic patients, compared to regular astigmatic counterparts (p0.0001).

The significantly better UCVA of keratoconic patients was shown both in the high and low myopic groups (p0.0001). Seemingly UCVA of mild keratoconic patients is better than their regular astigmatic counterparts, and becomes much worse among severe keratoconus.

Conclusion: Mild to moderate keratoconus is correlated with better UCVA. Severe keratoconus might be associated with uncompensated high order aberrations, responsible for worse UCVA.

Smart in Retrospect - What Could I Do Better?

Chairs: **Dr. Alon Skaat,** Sheba Medical Center, Tel-Hashomer
Dr. Eitan Livny, Rabin Medical Center, Petah Tikva

15:45-15:48 Opening Remarks

15:48-15:56 Posterior Polymorphous Dystrophy (PPMD) in a Child- DMEK or DSAEK?
Prof. Irit Bahar, Dr. Noa Stockhammer, Rabin Medical Center, Petah Tikva

15:56-16:03 Glaucoma - Breaking the Walls
Dr. Alon Skaat, Dr. Tzukit Zehavi, Sheba Medical Center, Tel-Hashomer

16:03-16:11 Retina - Thinking Out of the Bag
Prof. Joseph Moisseiev, Dr. Ari Leshno, Sheba Medical Center, Tel-Hashomer

16:11-16:19 Pediatrics - What to Do (or Not to Do) When There is No Capsular Support in a Child with Marfan Syndrome?
Dr. Yonina Ron, Dr. Rita Ehrlich, Rabin Medical Center, Petah Tikva

16:19-16:27 Cataract - What I should Have Done Differently – Triple Hoffman Pouch Scleral Fixation for Extreme IOL Tilt
Dr. Eitan Livny, Dr. Keren Mano Tamir, Rabin Medical Center, Petah Tikva

16:27-16:35 Neuro-Ophthalmology - When Papilledema Comes and Goes
Prof. Nitza Cohen, Bnai Zion Medical Center, Haifa

16:36-16:43 Cataract NS+++++
Prof. Ehud Assia, Meir Medical Center, Kfar Saba

16:43-16:51 Oculoplastic - A Fatal Cause of Vision Loss
Dr. Ayelet Priel, Dr. Juliana Gildener-Leapman, Sheba Medical Center, Tel-Hashomer

16:51-17:00 Discussion

Technicians and Photographers

Basics of Corneal Topography, a Useful Clinical Approach

Yoav Berger, Sheba Medical Center, Tel Hashomer

In this presentation the basic principles of corneal topography are presented. Methods for topographic imaging of the cornea will be discussed focusing on available topography devices and workup patterns in the clinical setup are illustrated.

Cataract Surgery: Pre-operative Evaluation & IOL Power Calculation

Adi Abulafia, Shaare Zedek Medical Center, Jerusalem

Modern cataract surgery is gradually becoming both a rehabilitative and a refractive procedure. The introduction of partial coherence interferometry (PCI) and optical low-coherence reflectometry (OLCR) for the measurement of axial length, along with more advanced intraocular lens (IOL) power calculation formulas, has greatly improved our ability to predict the postoperative refraction. In this presentation, different aspects of preoperative evaluation and IOL power calculation will be discussed, including different sources of prediction errors and the use of validation criteria, biometry devices, and various IOL power calculation formulas.

Refractive Surgery

Presbylasik: Basic Principles and Problems to Be Solved

Malecaze François, Purpan Service d'ophtalmologie Toulouse France

Presbyopia correction is considered nowadays as the latest frontier for refractive surgery and constitutes a real challenge for refractive surgeons.Several approaches have immerged last years. Presbylasik which enables cornea remodeling thanks to Excimer laser is an interesting approach. It is based on modulating corneal asphericity and is often associated with monovosion. It often induces, especially on patients with hyperopia, a less dependence on glasses on daily life. Despite the good results of this approach, the tolerance to monovision may be inconvenient.

Monovision in Refractive Surgery: Pros & Cons

Abraham Solomon, Department of Ophthalmology, Hadassah-Hebrew University Medical Center, Jerusalem

Monovision is one of the classical and most widely used options in refractive surgery to correct presbyopia. The main disadvantage of this strategy is producing anisometropia of -2.00 to -2.50 diopters, with a consequent reduction in binocular acuity and stereopsis. The main advantages include the higher safety and efficacy of corneal laser procedures, compared to the side effects related to lens based procedures. Success of monovision in refractive surgery was associated with anisometropia of less than 2.50 diopters, good distance correction of the dominant eye, stereoacuity reduction of less than 50' of arc, and distance esophoric shift of less than 0.6 prism diopters. A highly motivated patient who can adapt to monovision is another factor for a successful result. Careful patient selection and proper pre-operative discussion are essential in these procedures. Success rates for monovision refractive laser correction has been reported to range from 72 to 92%.

Cataract

New Generation of IOLs With Extended Depth of Focus: a Compromise?

Serge Zaluski, VISIS, Perpignan, France

Cataract surgery has become a true phacorefractive surgery in developed countries. Therefore, multifocality is a common option for our patients. However, the ophthalmologists are concerned with dysphotopsia, mainly halos, which can reduce the satisfaction of our patients. Extended depth of focus (EDOF) IOLS is a new group of IOLS with different optical properties but with the same goal: enhancing the depth of focus and limiting dysphotopsia. We will describe some different EDOF IOLS and discuss the indications.

Cornea

Pterygium Surgery at Hotel Dieu of Paris: Conjunctival and Limbal Grafts Stitched by Fibrin Tissue Glue

Claude Elmaleh, Hôtel Dieu de Paris, France

The principal challenge of the pterygium is the risk of reccurence .A long pterygium surgical experience at Hotel Dieu in Paris concluded that the best way is the reaiization of a limbal and conjonctival graft fixed by fibrin glue .

The technic is described and showed by a short film .This technic is effective because it brings limbal stem cells and realise a barrier against vascular proliferation.

The interest of fibrin glue is real: Decrease of surgical time , decrease post operative pain, decrase of post operative inflammation are noted.

Indication are discused: The routine technic is the conjonctival and limbal graft but the technic must be adapted in case of glaucoma , if the pterygium is very large or in case of double pterigium (nasal and temporal)

Pterygium: An Occupational Hazard?

Michael Hyams MD, Carmel Medical Centre, Haifa

Objective: To determine if pterygium may be defined as an occupational hazard.

Methods: The relevant literature from the last 15 years was reviewed.

Results: Occupations associated with the development of pterygium include tennis instructors, salt workers and petroleum workers. No other occupation was found to be a hazard for the development of pterygium.

A variety of non-occupational related risk factors were observed in different studies including advanced age, male gender, rural environment and exposure to sun.

Conclusion: Although pterygium is sometimes regarded as an occupational hazard, relevant literature is very scarce and provides only anecdotal relationship to a small number of occupations.

Oculoplastic Surgery

Ptosis Surgery: How to Try and Get Better

Michel Tazartes, Quinze-Vingts National Ophthalmology Hospital, Paris, France

Purpose: During ptosis surgery we must pay attention to different points during the clinical evaluation and the intra operative session in order to enhance the functional and cosmetic prognosis , and intend to avoid any re-operation .

Methods: The levator function, the level of lid margin with the cornea and the lid crease were evaluated. Also the evaluation of skin and cornea quality and the lacrimal status, the ocular motility, the frontalis muscle, the Bell's phenomenon and the Hering effect.

During operation we noticed that local anesthesia with epinephrin induce the opening of the eyelid 1/ stimulating the müller muscle, 2/paralyzing the orbicularis. 3/Raising the ptotic eyelid by lowering the normal eyelid due to the Hering effect. On the other hand the eyelid gets down when we inject local anesthesia because it induces a mechanical ptosis, and the levator function could also be affected by the direct effect of the local anesthesia or the general sedation.

Results and discussion: In order to reduce these differents problems we modified the surgical protocole 1/ injecting small doses of lidocaine without epinephrine, 2/performing a light sedation 3/by raising the normal eyelid during the setting of the pathologic eyelid to avoid the hering effect and 4/seating the patient at the end of the procedure. We could also decide to leave the eyelid simetrical , over or undercorrected at the time of surgery. All those refinements were able to reduce the rate of re-operations and allowed to get better cosmetic results.

Conclusion: The importance of clinical examination is crucial to detect preoperative findings needing a possible over or under correction during the surgical procedure. Furthermore intra operative evaluation due to anesthesia must be taken into account by the surgeon in order to get a more predictable lid level, enhance the cosmetic results and reduce the re-operations.

The Effect of Hering's Law on Different Ptosis Repair Methods

Arie Nemet, Meir Medical Center, Kfar Saba

Background: The Hering's law effect has significant importance in surgical planning and outcomes of eyelid surgery.

Objectives: The current paper examined: 1. Whether cases of unilateral congenital ptosis require surgery on the contralateral eyelid, in keeping with Hering's law. 2. Hering's law in Mullerectomy and levator aponeurosis advancem nt.

Methods: A retrospective analysis was conducted of 52 patients with unilateral ptosis. The records of 35 consecutive patients with unilateral congenital ptosis who had surgical repair between 2007 and 2012 were retrospectively analyzed. 2. All patients underwent either levator resection or frontalis sling surgery. ho underwent surgical repair from January 2011 through June 2013. Patients underwent levator aponeurosis advancement or Mullerectomy with or without tarsectomy. The decision to operate on the ptotic eye alone or on both eyelids was based on preoperative Hering's dependence and intraoperative changes in the contralateral eyelid.

Results: Congenital ptosis- There were 19 women and 16 men, and the average patient age was 9.7 ± 10 years. The mean preoperative levator function and marginal reflex distance were 6.7 ± 4.7 mm and 0.3 ± 0.47 mm, respectively. In all patients, the preoperative Hering's dependence of eyelid position did not show any decrease, and the position of the contralateral eyelid postoperatively did not differ from the baseline position.

Fifty-two patients with unilateral ptosis were included. Hering's law effect was significantly more apparent in the levator advancement approach than in Mullerectomy.

Conclusions: This research shows that Hering's law does not apply to cases of congenital ptosis. This is likely due to the fibrotic levator palpebrae muscle and its special innervations. Thus, it is not necessary to perform levator resection or a frontalis sling operation on the unaffected eyelid.

Levator surgery resulted in a higher incidence of combined intraoperative and postoperative Hering's law effect than did Mullerectomy. Cases with poor levator function or congenital ptosis can be repaired unilaterally with no need for contralateral surgery. The fibrotic levator palpebrae muscle and its special innervations probably explain this phenomenon. This should be considered in surgical planning.

Orthoptics

Vertical Diplopia- How Can We Solve It?

Hana Leiba, Kaplan Medical Center, Rehovot

Double vision can be caused by diseases of the eye,orbit, extraoular muscles, neuromuscular junction, ocular motor nerves and the brain.

In this talk we will concentrate on the differential diagnosis and the clinical evaluation of binocular, vertical diplopia.

At the end of the lecture the audience will be familiar with the examination check list for vertical diplopia and will be able to diagnose the most common diseases causing it.

Update Lecture - The Many Enigmas of Intermittent Exotropia

Guy Barnett Itzhaki, Pediatric Ophthalmology & Strabismus Service, Meir Medical Center, Kfar Saba

Intermittent exotropia (IXT) is a widely studied disease, yet its treatment remains controversial. This update reviews recent randomized controlled trials and cohort studies with a comparison group examining interventions for IXT. A randomized trial of bilateral lateral rectus recession versus unilateral lateral rectus recession with medial rectus resection for IXT revealed no statistically significant difference, between the groups, in suboptimal surgical outcomes by 3 years. Comparing part-time patching with observation for children 3–10 years old with IXT demonstrated there is a slightly lower deterioration rate with patching, although both management approaches are reasonable for treating 3 to 10 year olds with IXT.Comparing part-time patching with observation for IXT in children 12 - 35 months old generated insufficient evidence to recommend part-time patching for the treatment of IXT in children in this age group. A pilot randomized clinical trial, concluded that overminus spectacles improved distance control at 8 weeks in children aged 3 to <7 years with IXT. Long-term surgical results in IXT are less encouraging when sensory status is added to the evaluation.

Creative Solution for Complicated Strabismus

Noa Ela-Dalman, Pediatric Ophthalmology & Strabismus Service, Meir Medical Center, Kfar Saba

Surgical correction of severe paralytic or restrictive strabismus is challenging. Patients with unrecovered complete third-nerve palsy present with a large-angle exotropia and a variable vertical deviation. Lateral rectus muscle weakening is a major component of any surgical plan to treat patients with this condition. However, surgery usually results in undercorrection because no active adducting force is present to balance any lateral rectus muscle force. Functional inactivation of the lateral rectus muscle by attaching its insertion to the adjacent periosteum on the lateral orbital wall, and globe fixation to the medial periosteum may be necessary to eliminate diplopia and to improve ocular alignment in primary position. We report, for the first time, the use of a screw anchor fixation system in the treatment of strabismus. This technique may be useful in patients in whom muscle-strengthening procedures, extraocular muscle transpositions, or globe fixation to the periosteum are not indicated.

The Management of Ocular Torticollis

Claudia Yahalom, Hadassah University Hospital, Jerusalem

Torticollis can arise from nonocular (usually musculoskeletal) and ocularconditions. Abnormal head position for ocular reasons is usually assumed in order to maintain binocularity and/or to optimize visual acuity. A variety of conditions may be responsible for this condition. Different types of ocular torticollis with several case presentations and its management will be presented.

Infant Aphakia Treatment Study; The Most Brief Summary of the Infant Aphakia Treatment Study

Tamara Wygnanski-Jaffe, Sheba Medical Center, Tel-Hashomer

Intraocular lenses (IOLs) are increasingly used in infants. IOLs are superior to contact lenses in that they may closely replicate the optics of the crystalline lens, and do not require daily ongoing care and insure at least a partial optical correction at all times. The simplicity and improved visual outcome of an IOL correction may make caring of a child with unilateral congenital cataract less stressful on both parents and the child. However, contact lenses in many centers, remain the accepted treatment for children under 1 year of age due to concerns about long term safety of IOLs and the potential for a large myopic shift developing in these eyes as they grow. Contact lenses provide excellent visual results in infants treated for bilateral congenital cataracts, however two-thirds of infants treated with contact lenses for unilateral congenital cataracts remain legally blind in their aphakic eye. The poor visual outcomes are usually ascribed to competition from the sound eye and poor compliance with patching and contact lens wear regimens. Data from the pilot study and the literature suggested that superior visual results could be obtained if an IOL is used to correct unilateral aphakia during infancy, but these eyes will experience more complications. By performing the IATS study one can determine if the higher rate of complications with IOLs is offset by improved visual outcome and decreased parental and child stress. The IATS study is a multicenter randomized clinical trial comparing IOL correction for monocular aphakia, in infants enrolled for a 10 year period. Infants 28 to 210 days of age with visually significant cataract were enrolled. Follow up continued to age 10 will allow to perform subjective visual acuity testing, safety, monitoring of complications and examination of many visual, refractive, structural and behavioral parameters.

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