

Fundamentals of Refractive Surgery: A Guide for Young Ophthalmologists

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Objective: This lecture aims to provide young ophthalmologists with a comprehensive overview of refractive surgery, including its principles, techniques, patient selection criteria, and post-operative care.

Introduction (2 minutes):

- Brief history of refractive surgery.
- Importance of refractive surgery in contemporary ophthalmology.

Basic Principles of Refractive Surgery (3 minutes):

- Overview of the eye's refractive mechanism.
- Understanding refractive errors: myopia, hyperopia, astigmatism, and presbyopia.

Common Techniques in Refractive Surgery (6 minutes):

- LASIK (Laser-Assisted In Situ Keratomileusis): Procedure, indications, and outcomes.
- PRK (Photorefractive Keratectomy): Differences from LASIK, ideal candidates.
- SMILE (Small Incision Lenticule Extraction): Latest advancements, benefits, and limitations.
- Phakic IOLs (e.g., ICL - Implantable Collamer Lens): Indications, procedure, advantages for certain patient profiles, and comparison with corneal refractive surgery.

Patient Selection and Preoperative Assessment (4 minutes):

- Criteria for patient selection: Age, corneal thickness, and health, refractive stability.
- Importance of thorough preoperative assessment: Corneal topography, pachymetry, and ocular history.

Postoperative Care and Complications (4 minutes):

- Managing patient expectations and postoperative care.
- Common complications: Dry eyes, halos, under/over-correction, and specific considerations for ICL.
- Strategies for complication prevention and management.

Conclusion and Future Directions (2 minutes):

- Summarize key takeaways.
- Emerging technologies and future trends in refractive surgery.

Current State of Corneal Cross-Linking in Ophthalmology

As. Prof. Cristina Nicula, M.D.

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Keratoconus (KCN) is a non-inflammatory corneal ectatic disease characterised by a progressive central thinning of the cornea changing it from dome-shaped to cone shaped, irregular astigmatism and in late stages decreased visual acuity. It starts at puberty and has a high progression in the second life decade. That is why it is of major importance to stop or arrest the disease progression. Crosslinking therapy (CXL) is actually the single method which can stop KCN progression. CXL means the photopolymerisation of the stromal fibrillar tissue, in order to increase their stiffness and resistance to the corneal ectasia, through the combined action of the photosensitizing substance (riboflavin – B2) with the irradiation of the UV light performed with an illuminator in a solid state of UVA kind. Contraindications of CXL are: cornea thinner than 400 μm , non-progressive KCN-(exception age between 12-20 years), herpetic keratitis history, pregnancy and severe dry eye. There are several types of CXL: Epithelium-off techniques (Epi-off conventional CXL (Dresden protocol) and Epi-off accelerated CXL), Epithelium-on techniques (Transepithelial CXL and Iontophoresis-assisted CXL), modified techniques for thin corneas (Contact Lens –assisted CXL-Jacobs procedure, Lenticule-assisted CXL and Adapted fluence CXL). Moreover, CXL can be combined with keratorefractive surgeries (intracorneal ring implantation, PRK guided topographically and implantation of toric posterior chamber implants).

Key words: keratoconus, crosslinking, progression

Clinical Diagnosis and Management of Infectious Keratitis

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Infectious Keratitis entitles a wide range of pathologies. Essentially it should be differentiated to may or may not be associated with an infection. Noninfectious keratitis can be caused by a relatively minor injury by foreign body, chemical burn and systemic disease such as Rheumatoid arthritis. Infectious keratitis can be caused by bacteria, viruses, fungi and parasites. Early diagnosis of such diseases is hallmark of recovery.

Latest Innovations in Glaucoma

Dr. Vasyl Shevchyk, M.D.

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PURPOSE: To update our knowledge about current management of glaucoma from initial diagnosis to treatment options - eye drops, laser or surgical techniques.

METHODS: This abstract will summarise the up-to-day information about glaucoma management based on national guidelines, literature review and congresses presentations.

RESULTS: The main point in making diagnosis and treatment of glaucoma still remain intraocular pressure (IOP) and its diurnal fluctuation. Our strategy is to decrease IOP to sufficient level that allow patients save their vision during whole life. Also, we need to reduce IOP fluctuation up to 3-4 mm Hg, because larger level is a significant risk factor of glaucoma progression. We can control diurnal IOP with rebound Self-Monitoring technology - Home tonometer. Gonioscopy - is a crucial examination for further strategy of glaucoma treatment. New technology (ultrasound biomicroscopy, anterior segment optical coherence tomography or Scheimpflug photography) **cannot** replace gonioscopy.

Close angle during gonioscopy:

1. Primary Angle Closure Suspect (PACS) is defined as ≥ 180 degrees of iridotrabecular contact (ITC) **without** (IOP) elevation, peripheral anterior synechiae (PAS), or optic nerve damage - recommended only observation
2. Primary Angle Closure (PAC) - PACS **and** IOP elevation or presence of PAS - lens extraction or iridotomy
3. Primary angle closure glaucoma - PAC **and** additional optic nerve damage
Acute angle crisis - recommended Paracentesis - Laser Iridotomy - Lens extraction
Chronic - hypotensive eye drops. Lens extraction is superior to iridotomy

Open angle glaucoma during gonioscopy

1. The pigmentation of the angle 0 to I grade - recommended hypotensive eye drops. Preference is given to eye drops with ability to reduce night peak of IOP - prostaglandins, carbonic anhydrase inhibitor
2. The pigmentation of the angle II to IV grade - Selective laser trabeculoplasty (SLT) as a 1-st line treatment.

According to Laser in Glaucoma and Ocular Hypertension (LiGHT) trial SLT allow to reach target IOP in 78.2% patient without eyedrops after first procedure.

Also, after SLT IOP fluctuations was <3 mm Hg in 87% of treated eyes and SLT reduce nocturnal spike of IOP as well.

Microinvasive glaucoma surgery (MIGS) devices are no superior to SLT for IOP reduction but required long study curve and have more complications

Deep sclerotomy - as a first choice of surgical glaucoma treatment when eye drops and/or SLT were not successful. This procedure is effective as a trabeculectomy but has less intra- and postoperation complications.

CONCLUSIONS: The management of glaucoma is still a creative process but required obligatory following of principal rules.

Vitreous Floaters - Laser or Vitrectomy?

Prof. Athanasios Nikolakopoulos, M.D.
Thessorasi, Thessaloniki, Greece

Dr. K. Nikolakopoulos, M.D., Switzerland

Floater are a very common phenomenon due to Vitreous Syneresis and usually appears at an older age or in vitreous degeneration on a high myope or after a posterior infection. They are not usually significant but they sent patients to ask us, especially if they are post-surgical worried patients afraid for a complication. Usually, they are reassured by their doctors that there is nothing to worry and that symptom will change and go away later. BUT There are some people of a certain anxiety to it that THEY cannot tolerate at all and go from one Dr to Another. Internet has shown us that they even form a society looking for a solution. Another category is the big in size that they seem like a curtain and there are also professions and patients who can see clear with the other eye and ask you to do something. So, our impression is that finally the patient is the one that chooses to be treated. In our presentation we examine the literature and details of the latest Yag Floaterectomy Lasers.

The results the safety and the cost comparing the small 27g Vitrectomy.

Strabismus Management and Timing of the Surgery in Children and Adolescents

Prof. Huban Atilla, M.D.

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Prevalence of strabismus in general population is approximately 4%. While 90-95% of strabismus is observed in childhood, this rate is 5-10% in adults. In childhood during development of visual system, strabismus will interfere with healthy development and amblyopia and binocular dysfunctions will result. The rate of amblyopia due to strabismus is as high as 30-50%. Therefore, strabismus should be diagnosed and treated as early as possible in childhood. Examination is difficult in the preverbal period due to the lack of cooperation and objective examination methods such as evaluation of fixation pattern, red reflex test, retinoscopy and fundus examination are the main diagnostic methods and have great importance. Correction of refractive errors and patching treatment are mainstay of initial treatment and in cases with deviation disabling fusion and binocular vision surgery should be considered. The aim of the strabismus surgery is to achieve binocular vision and prevent amblyopia in children. In adults, in addition to gaining binocular vision, it is also performed to correct diplopia and for cosmetic purposes. Even though functional outcome is the primary goal, especially in sensory cases the cosmesis is the main concern. Botulinum toxin can also be used prior to surgery or instead of surgery in some cases.

Cased-based Neuroophthalmology - Conditions You Should Not Miss

Dr. Tea Abramia, M.D.

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Neuroophthalmic disorders may mimic benign entities and can be seen in comprehensive ophthalmologist's office. General ophthalmologists are expected to recognize and refer if they will see those patients. Four potentially vision or life threatening neuroophthalmic conditions will be discussed which should not be missed: giant cell arteritis (GCA) - typically presenting as visual loss in the elderly; Pituitary apoplexy - condition presenting as acute severe headache and bilateral visual loss; Posterior communicating artery (PCA) aneurysm - a painful, pupil involving third nerve palsy; Arterial dissection of the vertebral or carotid artery producing an acute painful Horner syndrome with or without visual loss. All ophthalmologists should be aware of those neuroophthalmic conditions that none of us can afford to miss.

Improving Patient Flow in an Outpatient Ophthalmic Clinic

Dr. Jahid Shahbazov, M.D.

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This article explores strategic measures to optimise patient flow in outpatient ophthalmology clinics, emphasising the integration of state-of-the-art technology and experienced surgeons to improve service quality and patient circulation.

Introduction: Outpatient eye clinics are crucial in providing timely and effective eye care. This article proposes a comprehensive approach to improve clinic efficiency, emphasising the use of the latest technology and the importance of having experienced surgeons perform surgeries.

Organisation of Patient Appointments: Efficient scheduling remains important in clinic optimisation. Grouping similar procedures on set days optimises resource allocation, minimises downtime and enables faster and more organised performance of surgeries involving the latest technological advances.

Patient Grouping Strategies: Investigation of patient grouping strategies becomes even more important when harmonised with the use of advanced surgical technologies. This not only speeds up clinical processes, but also emphasises the positive impact of synergy between the latest tools and the skills of experienced surgeons on the overall patient experience and satisfaction.

Pre- and Postoperative Debriefing: Comprehensive patient education before and after surgery is an integral part of optimising outpatient care. The use of advanced tools for debriefing sessions is consistent with a commitment to patient well-being, reducing anxiety and encouraging patient participation. Patient compliance will also increase the success of surgery.

Patient Education and Engagement: The active participation of patients in health care is further facilitated by the use of the latest technology. Interactive education sessions and the provision of patient information leaflets prior to the day of surgery empower patients and increase their compliance with the process.

Technology Integration and Surgical Expertise: Integration of the latest technology and collaboration with experienced surgeons contribute significantly to the optimisation of outpatient ophthalmic clinics. The use of the latest surgical tools creates a positive feedback loop that improves precision and results, raising the clinic's quality of service and patient circulation.

Conclusion: Strategic organisation of appointments, careful patient grouping, comprehensive pre- and post-operative information dissemination and integration of the latest technologies with the skills of experienced surgeons contribute to the optimisation of ophthalmology clinics. The adoption of these measures promotes operational efficiency, improves resource utilisation and enhances both the quality of service and the patient experience.