

What's New in Anterior Segment Surgery?

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1 hour

Course Description

This course reviews current innovations in anterior segment surgery, including advances in refractive cataract surgery, light adjustable lenses, femtosecond laser technology, microinvasive glaucoma surgery, intracameral drug delivery, and corneal surgery. Clinical pearls and case studies highlight patient selection, outcomes, and practical integration for optometrists co-managing surgical patients.

Course Learning Objectives

- Explain current technologies in refractive cataract surgery, including IOL options and Light Adjustable Lens advancements.
- Evaluate indications, techniques, and outcomes for microinvasive glaucoma surgery and sustained drug-delivery implants.
- Apply case-based strategies to improve patient selection, counseling, and co-management in anterior segment surgery.

Outline

I. Introduction and Context

- Rising surgical demand: ~5 million cataract surgeries projected annually by 2030.
- Patients increasingly expect spectacle independence and tailored solutions.
- Optometrists play a key role in identifying surgical candidates and guiding postoperative care.

II. Refractive Cataract Surgery

A. Current Landscape

- Surgical advances: femtosecond laser, precision capsulorhexis, IV-free anesthesia, intracameral meds.
- Patient-centered focus: balancing distance, intermediate, and near vision needs.

B. IOL Advances

- Monofocal & Toric lenses – baseline standard.
- Extended Depth of Focus & Trifocals/presbyopia-correcting.
- Small aperture IOLs
- Light Adjustable Lens (LAL) – postoperative refractive customization.

- Case example: professor/golfer benefiting from LAL.

C. Femtosecond Laser Outcomes

- Indications and limitations.
- Enhanced astigmatism control with arcuate incisions.
- LENSAR IntelliAxis-L vs ORA: lower enhancement rates (1.4% vs 7.1%).
- Cost-benefit considerations in implementation

III. Microinvasive Glaucoma Surgery (MIGS)

A. Background

- Goal: lower IOP with minimal tissue disruption, faster recovery.
- Approved for mild-to-moderate glaucoma; select use in severe/OHT.

B. Procedures & Devices

1. Goniotomy approaches – Kahook Dual Blade (KDB), SION, OMNI
2. Hydrus Microstent – HORIZON study: 73% medication-free at 3 years vs 48% phaco alone.
3. Trabecular bypass and canal scaffolding - when to choose which options

C. Post-op & Case Examples

- IOP, hyphema monitoring, staged med adjustments, post-op pearls
- Cataract + glaucoma on drops; pseudophakia + poor adherence after SLT.

IV. Developments in Procedural Pharmacotherapy

Intracameral Travoprost (iDose TR, FDA 2023)

- Titanium implant providing 2–3 years IOP reduction.
- 81% medication-free at 12 months.
- Contraindications: corneal endothelial disease, prior PK.
- Simple post-op: stop prostaglandins, follow at day 1 & 1 month.

V. Cornea Surgery Trends

- Full-thickness vs partial thickness – Much fewer full-thickness grafts over past decade. Review of current data trends.
- Corneal cross-linking – FDA accepts NDA for epi-on crosslinking in 2025
- AU-RN001 – cell therapy in development for cornea endothelial disease

VI. Integration & Future Directions

- Co-management: optimizing ocular surface, systemic conditions, and patient expectations.
- Increasing adoption of customizable technologies (LAL, sustained release devices).
- Long-term shift: surgery + implants as first-line therapy in select glaucoma patients.

VII. Take-Home Summary

- Cataract surgery is refractive surgery; customization is the new standard.
- LAL/LAL+ allow postoperative fine-tuning.
- MIGS and intracameral drug delivery expand glaucoma management.
- Cross-linking and corneal surgery advances in near future
- Optometrists remain central in guiding patients through evolving surgical options.

VIII. Q&A / Discussion