Tips and Techniques for Cataract Surgery in Glaucoma Patients

Joey Yen-Cheng Hsia, MD
Assistant Professor of Ophthalmology
Glaucoma Service
University of California, San Francisco

No Financial Disclosures
**Introduction**

- Visually significant cataract often co-exist with glaucoma in the elderly population.
- Glaucoma incisional surgery can lead to accelerated cataract formation.
- Glaucoma patients are at risk for perioperative complications.
- Set realistic expectation preoperatively.

**Preoperative Evaluation**

- **Visual potential**
  - Is the cataract or glaucoma causing the decreased vision?
  - PAP or PAM
  - Set realistic expectation
- **IOP**
  - Is the IOP at target?
  - Role of combined surgery?
  - No. of medications
- **Medical / Surgical history**
  - Anticoagulation
  - α-1 blocker
  - Prior incisional surgeries
Examination

**Gonioscopy** – angle grading, trab ostium

**Conjunctiva** - Prior incisional surgery

**Cornea** - endothelial dysfunction

**Anterior chamber depth** – shallowing

**Iris** – dilation, prior LPI, iridectomy

**Lens** – PXE, phacodynesis

**Fundus** – cupping, pallor, retinal pathology

---

Postoperative IOP Spike

- Note the **severity** of glaucoma
  - Foveal involving scotoma
  - At risk for progression with IOP spike

- **Risk factors:**
  - Advanced glaucoma, IFIS, No. of gtts, long AXL, PXE

- IOP spike occurs **4 hours** after surgery
  - Same day check up for high risk patients
History of Trabeculectomy

- **Bleb**
  - Modify incisions accordingly
  - Avoid suction / fixation ring
  - High function bleb may lead to chemosis / chamber instability
- **Failure risk**
  - Age<50, Preop IOP > 10, iris manipulation, postop IOP spike, and short interval time between trabeculectomy and cataract
  - Longer steroid +/- anti-metabolite
- **Bleb revision**

Grover-Fellman spatula; Epsilon

History of Tube Shunt

- **Tube position / length**
  - Concurrent trimming
  - Focal cataract / capsular plaque
- **Chamber stability**
  - Plug with 4-0 prolene to stabilize chamber
- **Dyscoria**
  - Pupilloplasty
- **Less affected by subsequent cataract surgery**
  - Limited data
  - Recommend longer topical steroid taper
Biometry

- Avoid contact biometry in patients with low IOP
- Biometry can predict intraoperative complication
  - Shallow (<2.5mm) / asymmetric ACD in PXG suggests zonular weakness (Küchle et al. AJO 2000)

Lens choice

Presbyopic IOL
- Depending on severity and type of glaucoma
- Apodizing IOL: ↓ contrast sensitivity
- EDOF & Trifocal similar contrast sensitivity to monofocal
- Avoid in PXF, can have decentration issues in future

Toric IOL
- effective in eyes with prior incisional glaucoma surgery
- Okay to combine with angle surgery
Intraoperative Principle

- **Simple, Clean, efficient**
  - Minimize inflammation postoperative
- If chamber stable, reduce infusion pressure in severe glaucoma
- Avoid FLACS in advanced glaucoma
- Minimize postop IOP spike
  - Thorough OVD removal
  - carbachol (Miostat), aqueous suppressants, diamox
- Water tight closure, suture the wound if patient has a incisional surgery

Narrow Angle Glaucoma

- **Shallow ACD**
  - Corneal edema
- **Iris prolapse**
  - Iris atrophy, dysphotopsia
- **High lens vault**
  - Capsulorhexis runout
Surgical Techniques

- **Deepen the AC**
  - intraoperatively: High viscosity OVD (Healon 5)
  - preoperatively: Honan balloon, IV mannitol
- **Iris prolapse**
  - Longer corneal incision
  - Avoid overfill with OVD
  - Fluid track before GENTLE hydro-dissection
  - Irrigation off before withdrawing the instrument
- **Capsulorhexis**
  - Little’s capsulorhexis rescue
  - High viscosity OVD

Pseudoexfoliation

- **Poor dilation**
  - Iris retraction
- **Zonular weakness**
  - Zonular dialysis, Vitreous prolapse, PC tear
  - Preoperative clues: ACD < 2.5mm, poor dilation, phacodynesia, severe glaucoma
- **Postoperative IOP spike**
- **Earlier cataract surgery recommended**
Surgical Techniques

• Pupil expansion
  – Iris retraction device (hooks preferred)
• Rhexis
  – Adequate size 5-5.5mm
    • phimosis to lead to future dislocation
  – CCC is key
    • FLACS if needed
    • Capsular hooks / CTR

Surgical Techniques

• Avoid zonular stress
  – Good hydro-dissection with bimanual rotation
  – Nuclear disassembly: chopping or hemi-flop
  – Tangential cortex removal
• Clean capsule
  – Remove all cortex
  – Capsular polish
• Sulcus with optic capture in severe zonulopathy
IOL and CTR

Aravind pseudoexfoliation study (AGS 2019)
- PXF with VS cataract
- Exclusion: phacodynesis, shallow chamber, or pupil dilation < 4mm
- Randomized: One piece vs 3 piece IOL +/- CTR
- N=760, Mean age 63
- At 5 years: No difference in decentration rate between the two IOL +/- CTR

Take Home Points
- Thorough preoperative evaluation and assessment of patient’s glaucoma severity
- Identify patients at risk for IOP spike, treat empirically and see them early
- Patient with history of incisional glaucoma surgery require longer steroid regimen
- Modify surgical techniques to reduce surgical complications in complex glaucomatous eyes
Thank you

Email: Joey.hsia@ucsf.edu
FAX: 415-353-4250