Yag Capsulotomy

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Administrative

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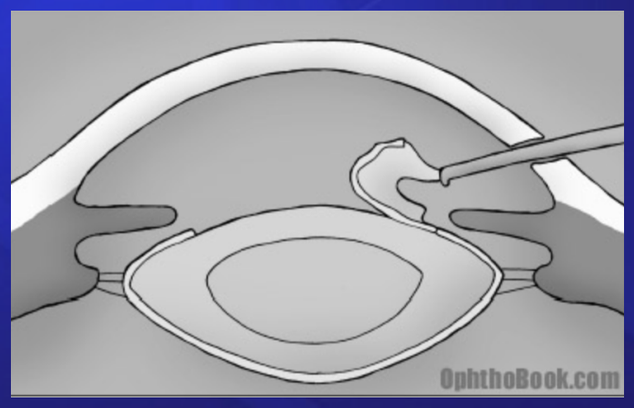
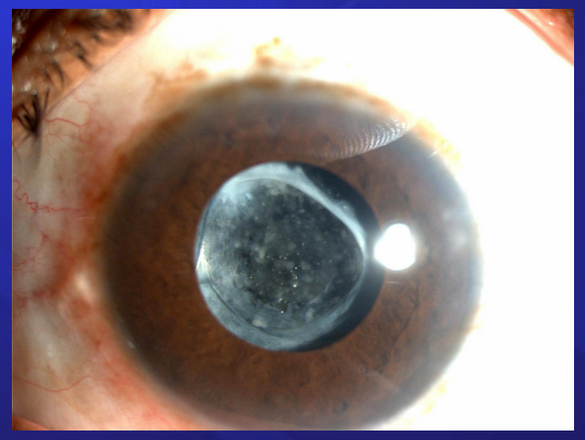
Anatomy

- Anterior capsulorhexis
- Intraocular lens sits in capsular bag



Posterior Capsular Opacity

- Opaque membrane behind IOL
- Whitish-grey in color



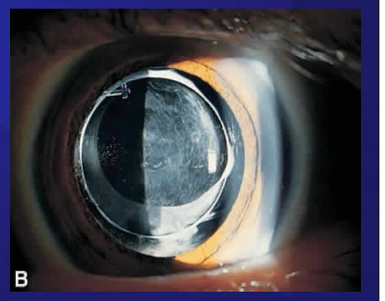
Types of PCO

Elschnig's Pearls

- Vesicles on Posterior Capsule
- May contain fluid

Myofibroblasts

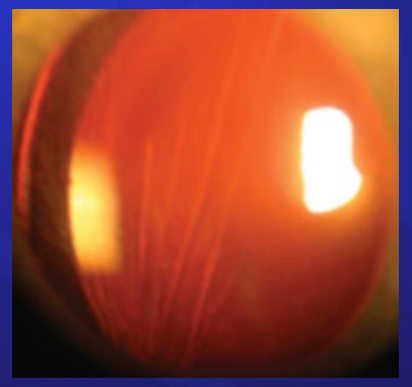
- Grey fibrous membrane
- Can cause contraction of capsule



Types of PCO

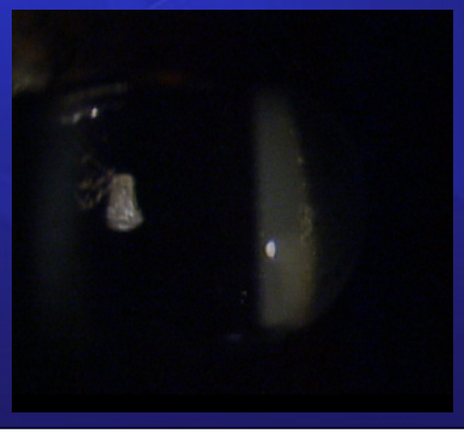
Streaks

- Folds and/or streaks in membrane
- Translucent



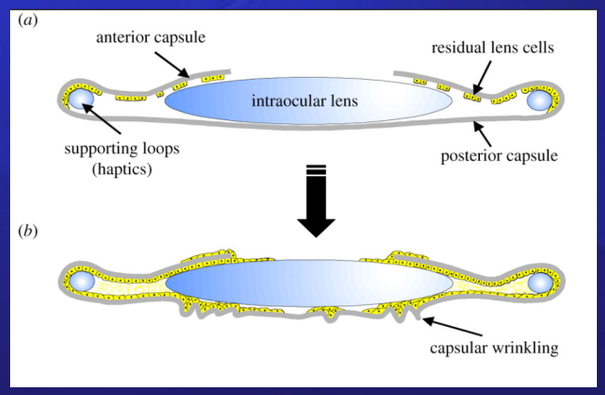
Turbid Fluid

- Stagnant opaque fluid between IOL and Posterior Capsule
- Can cause myopic shift
- Possible association with Propionibacterium acnes



PCO Pathophysiology

- Retained epithelial cells proliferate
- Undergo Metaplasia
- Migrate to Posterior Capsule



Symptoms

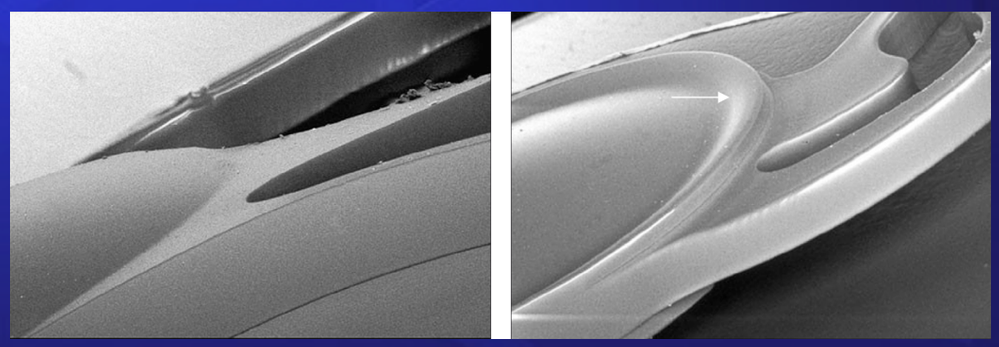
- Blurred, Hazy, Cloudy vision
- Glare and/or Halos
- Decreased Contrast sensitivity
- Monocular Diplopia
- Difficulty reading, watching tv, driving at night, etc
- Worse with Multifocal IOLs

Incidence

- 10-50% of patients
- Months to years after surgery
- Higher risk in younger patients, PSCs, and retained lens cortex

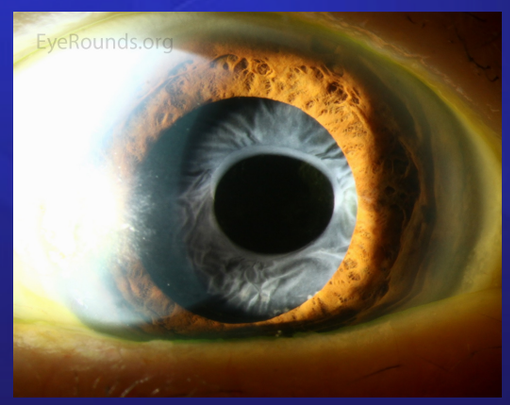
Prevention

- Polishing capsule
- Lens Materials
- IOL Design



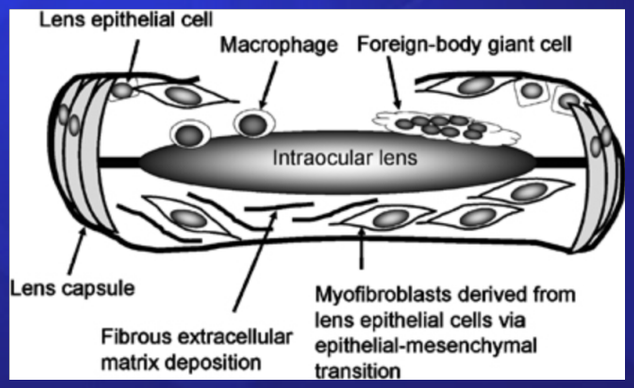
Anterior Capsular Opacity

- Opaque membrane on anterior capsule
- Contraction of anterior capsulorhexis
- Phimosis



Anterior Capsular Opacity

- Macrophages with pigment can deposit on IOL, may be from uveitis



Indications

- At least 3 months after cataract surgery
- Removing PCO is expected to improve vision
- Functional complaint
- BCVA 20/50 or worse at distance OR near

Indications

- Glare decreases vision by two lines
- To evaluate or treat retinal pathology
- If 20/40 or better all other criteria must be met and well documented

Contraindications

- Within 3 months of cataract surgery
- Uveitis
- Corneal edema
- Unable to view PCO, i.e. Corneal scars
- Uncooperative patients

Pre-Op Exam

- Refraction
- Glare testing
- Slit lamp
- Tonometry
- Dilated exam

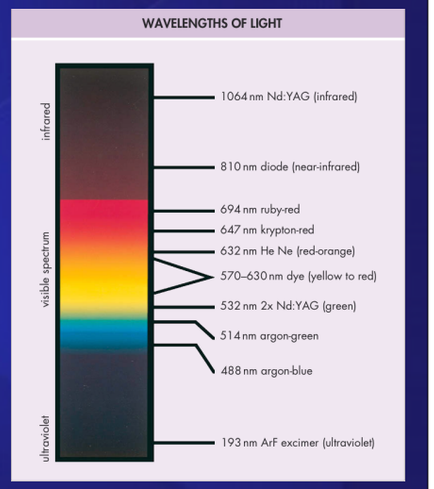
** This is all just to rule out other causes of decreased vision**

Informed Consent

- Need to have this for any surgical procedure
- Discuss procedure in layman's terms
- Discuss risks, benefits, alternatives, and elective nature of procedure
- Patient must request to have procedure done

Nd:YAG Laser

- **L**ight **A**mplification by **S**timulated **E**mission of **R**adiation
- Neodynium: Yttrium Aluminum Garnet Laser Medium
- 1064 nm infrared Wavelength
- 4 nanosecond pulse
- Red Helium-Neon (HeNe) aiming beam (632nm)



Nd:YAG Laser Mechanism

- Photodisruption
- Laser strips electrons from atoms
- Creates a plasma ball
- Electrons rejoin atoms
- Plasma ball collapses
- Acoustic shock wave is created that physically damages tissue

Laser Controls

- Laser offset (500 um anterior to 500 um posterior)
- Shot Counter
- Shot Burst (1-3)
- HeNe beam intensity and orientation
- Energy per shot (0.3-10mj)
- Laser arming

Patient Pre-OP

- Patient dilation with 2.5% Phenylephrine and 1% Tropicamide
- Topical anesthetic, Proparacaine
- IOP meds?

PCO Laser Settings

- Laser Offset: 500 um posterior
- Shot Counter: 0
- Shots per burst: 1
- Energy per shot: 1.3 mj/shot

Laser Settings for Anterior Capsulotomy

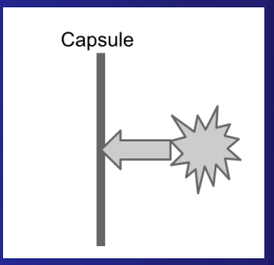
- Laser Offset: 0 um
- Shot Counter: 0
- Shots per burst: 1
- Energy per shot: 1.0 mj/shot

PCO Procedure

- Position Patient
- Apply Capsulotomy lens (66D)
  - Concentrates laser energy
  - Magnifies target tissue
  - Controls blinking and eye movement
- Have patient fixate at green light with other eye

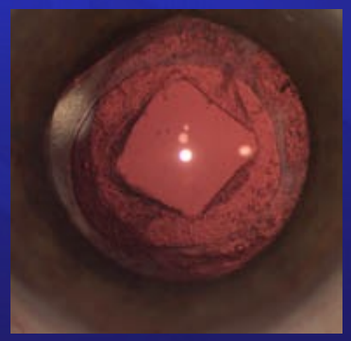
PCO Procedure

- Fuse HeNe beam spots on target tissue
- Arm laser
- Press trigger button to fire shot

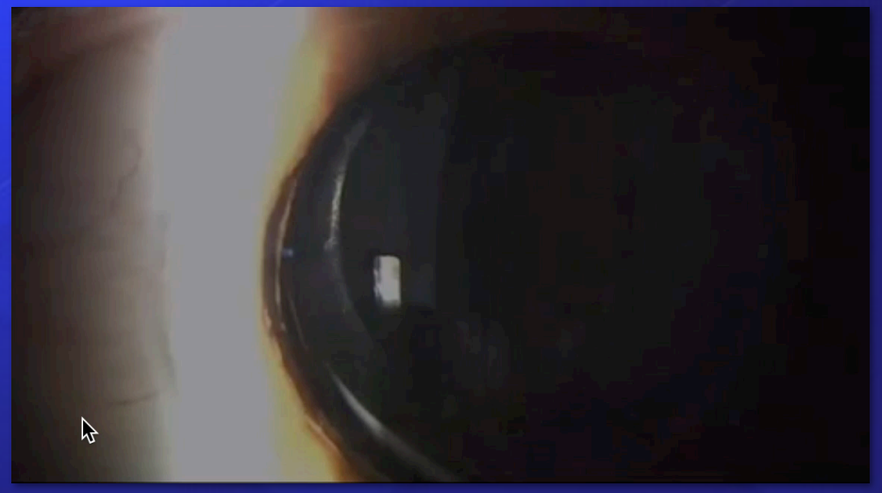


PCO Procedure

- Repeat at adjacent spots
- Make a continuous opening
- Use lowest energy level and least number of shots possible to achieve desired tissue effect

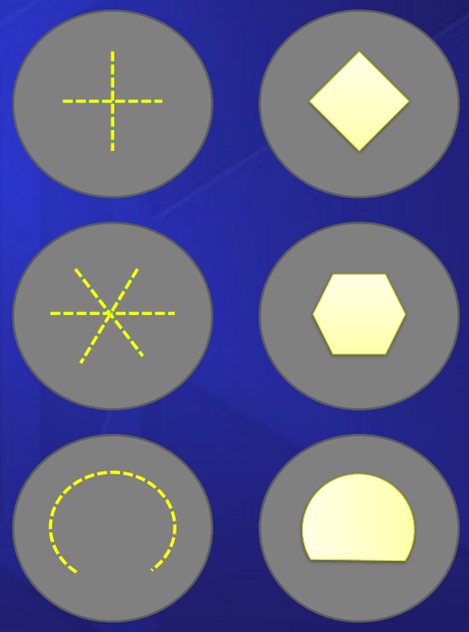


Yag Cap. Video



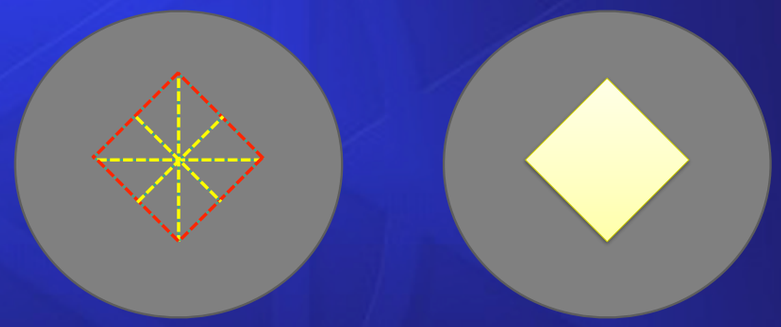
PCO Treatment Patterns

- Cruciate
- Hexagonal
- Circular



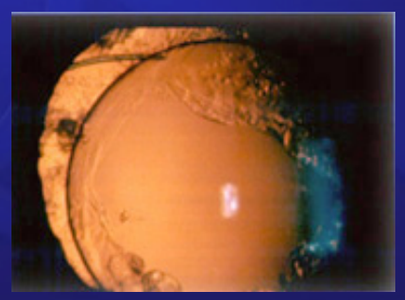
PCO Treatment Patterns

To clean up the edges:



PCO Clinical Pearls

- Center Capsulotomy on Pupil, not IOL
- Don’t make Posterior Capsulotomy Larger than Anterior Capsulorhexis
- Don’t treat passed edge of IOL, may cause vitreous prolapse



PCO Clinical Pearls

- If Turbid fluid is present, make first opening at 6 o’clock
- Tilt lens to reduce glare
- Have patient look in different positions of gaze to increase visualization of capsule if needed

Operative Note

- Medications Used
- Lens used
- Number of shots
- Energy range of shots used
- Total energy
- Complications?

Post-Op Management

- Check IOP in 1 hour
  - Treat if IOP spikes 10 mmHg or more
  - Recheck IOP every 30 minutes until controlled
- Topical Steroids
  - Prednisolone Acetate 1% qid x 1 week

  Or
  - Diclofenac 0.1% tid x 3 days

Patient Instructions

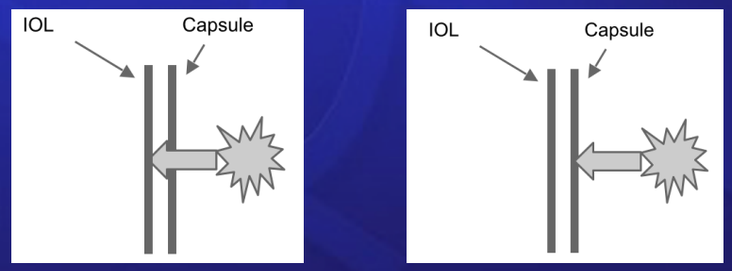
- Educate patient, give written instruction
- Blurred vision and floaters today, better tomorrow
- Call if any new flashes of light, curtains in vision, or eye pain
- Follow up in 1 week for dilated exam

Post-Op Exam

- Visual acuity
- Refraction
- Slit lamp
- Dilated exam

Complications: Lens Pits

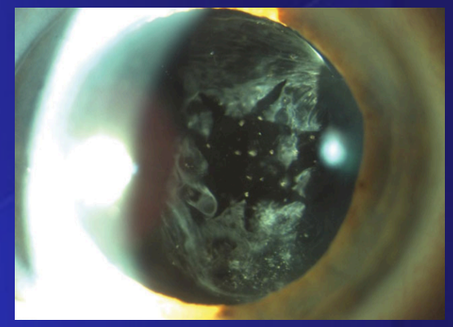
- Insufficient posterior offset or improper focus
- More common with Silicone IOLs than Acrylic
- More common with higher power settings
- Rarely clinically significant

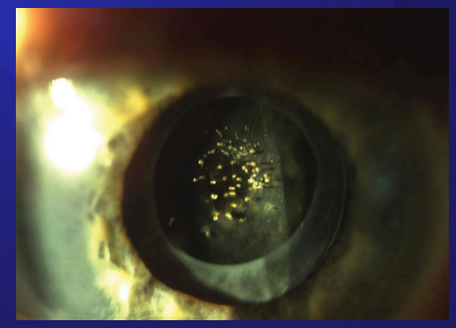


Bad Good

Complications

- Elevated IOP
- Residual PCO
- Uveitis
- Cystoid macular edema
- Vitreous Prolapse
- Retinal Tear or Detachment
- Corneal edema





Billing and Coding

- ICD-10
  - H26.491, Other secondary cataract, Right Eye
  - H26.492, Other secondary cataract, Left Eye
  - H26.493, Other secondary cataract, Bilateral
  - H26.499, Other secondary cataract, Unspecified Eye

Billing and Coding

- CPT 66821-RT or LT

  -“Discission of secondary membranous cataract (opacified posterior lens capsule and/or anterior hyaloid); laser surgery (1 or more stages)”

- 90-day global period
- May need -57 or -79 modifier

Billing and Coding

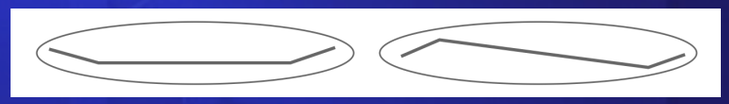
- CPT 66821 Kentucky Medicare Reimbursement 2021
  - Office: $310.30 per eye
  - Surgery Center: $289.08 per eye

Yag Cap. Comangement

- Modifier -54 indicates Optometrist is billing for the procedure only
- Modifier -55 indicates Optometrist is billing for the post-op care only
- Co-mangement fee is 20%

Crystalens

- Make Capsulotomy no larger than 4mm diameter
- Make Capsulotomy circular
  - Acute edges of Capsulotomy may expand with IOL movement
- Z-syndrome



  - Haptics position incorrectly in capsular bag
  - May be caused from capsular contraction
  - Benefit to Capsulotomy?

Thank you!

Questions?

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Special thanks to Donald Bennett O.D., M.D. and Aaron McNulty O.D., F.A.A.O. for their contributions to this lecture