IOL Exchange

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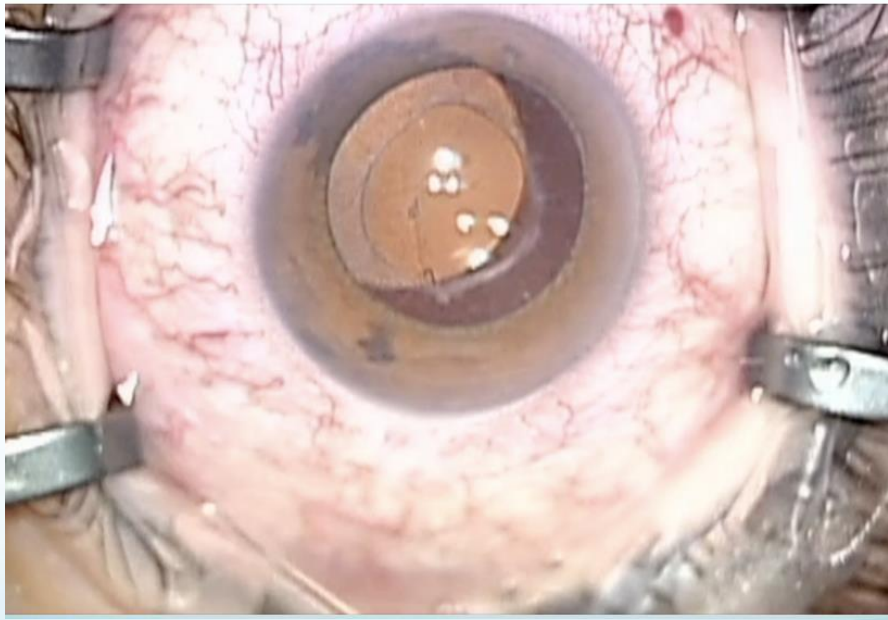
Financial Disclosure

- I have the following financial interests or relationships to disclose:
  - Alcon
  - Zeiss
  - Bausch + Lomb
  - Johnson & Johnson
  - Allergan
  - Visus
  - Vista
  - Ocular Therapeutix
  - Tarsus
  - Dompe
  - Kala
  - BVI
  - Trefoil
  - CorneaGen
  - Ocuphire

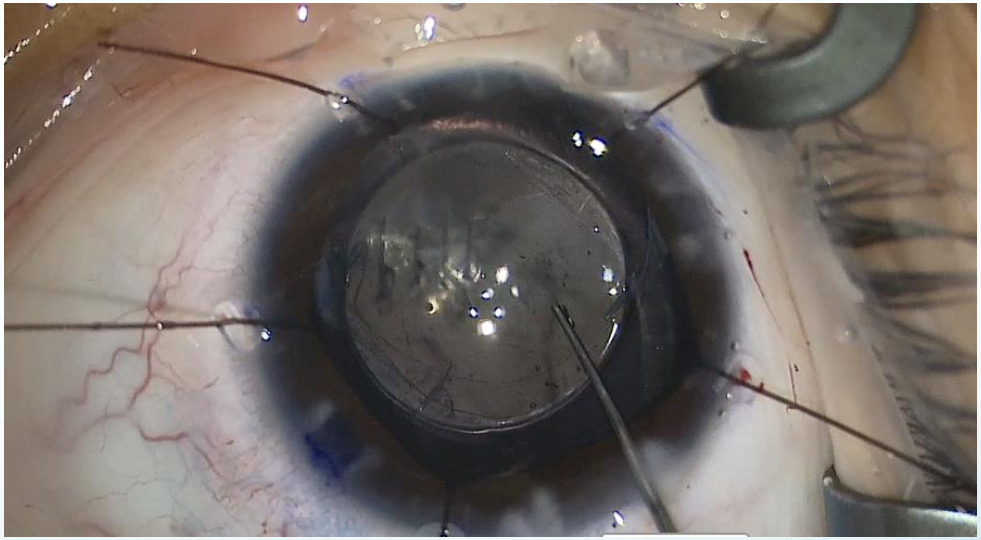
Indications for IOL Exchange or Secondary IOL Insertion

- Malpositioned or subluxated IOL
- Wrong IOL power or toricity or both
- Dysphotopsias



IOL Fixation

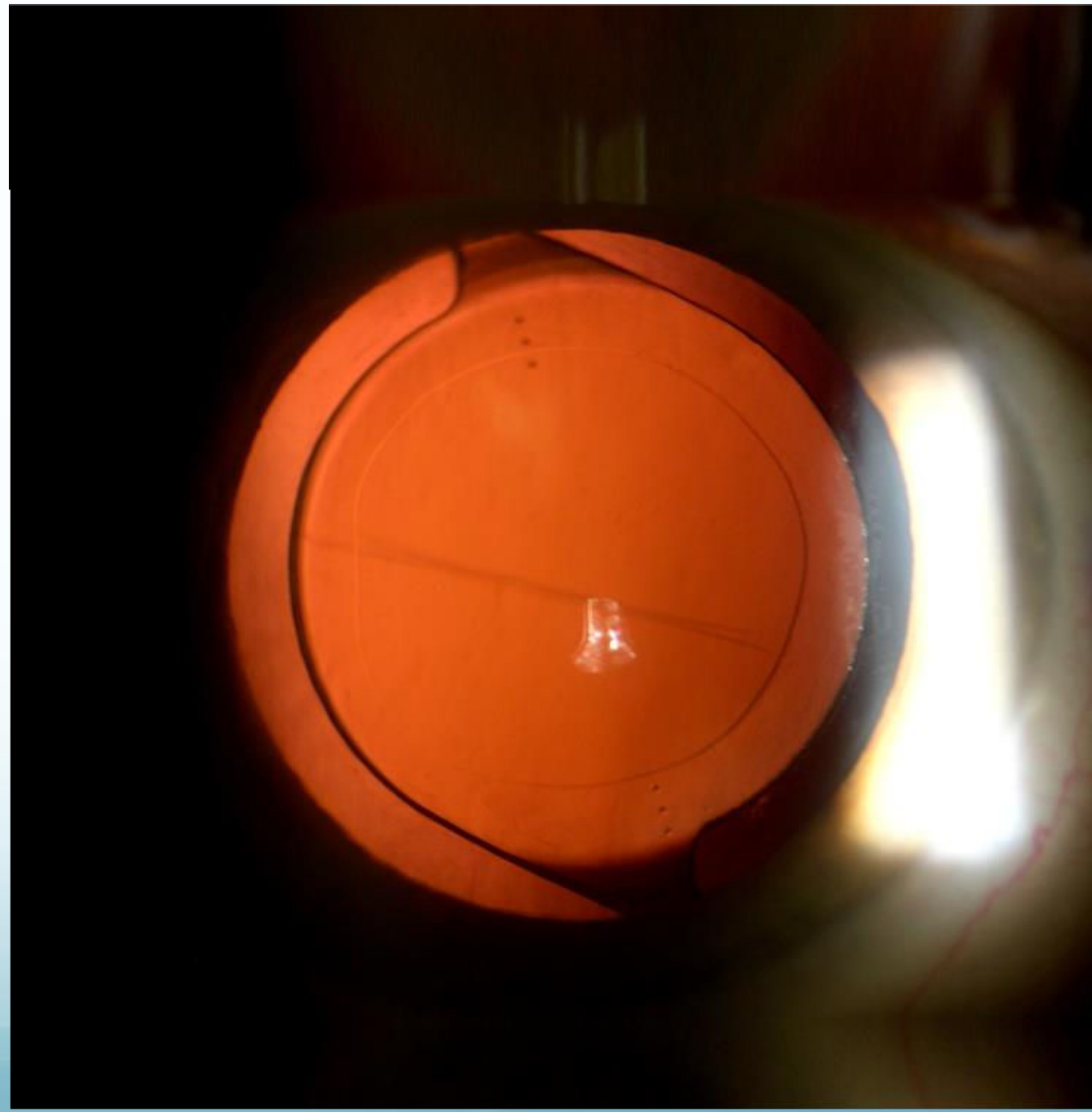
- Capsule Fixation
  - In the bag
  - In the sulcus with or without optic capture (anterior, posterior, or reverse)
- Iris Fixation
- Scleral Fixation (with or without sutures)



Post-Op Residual Astigmatism

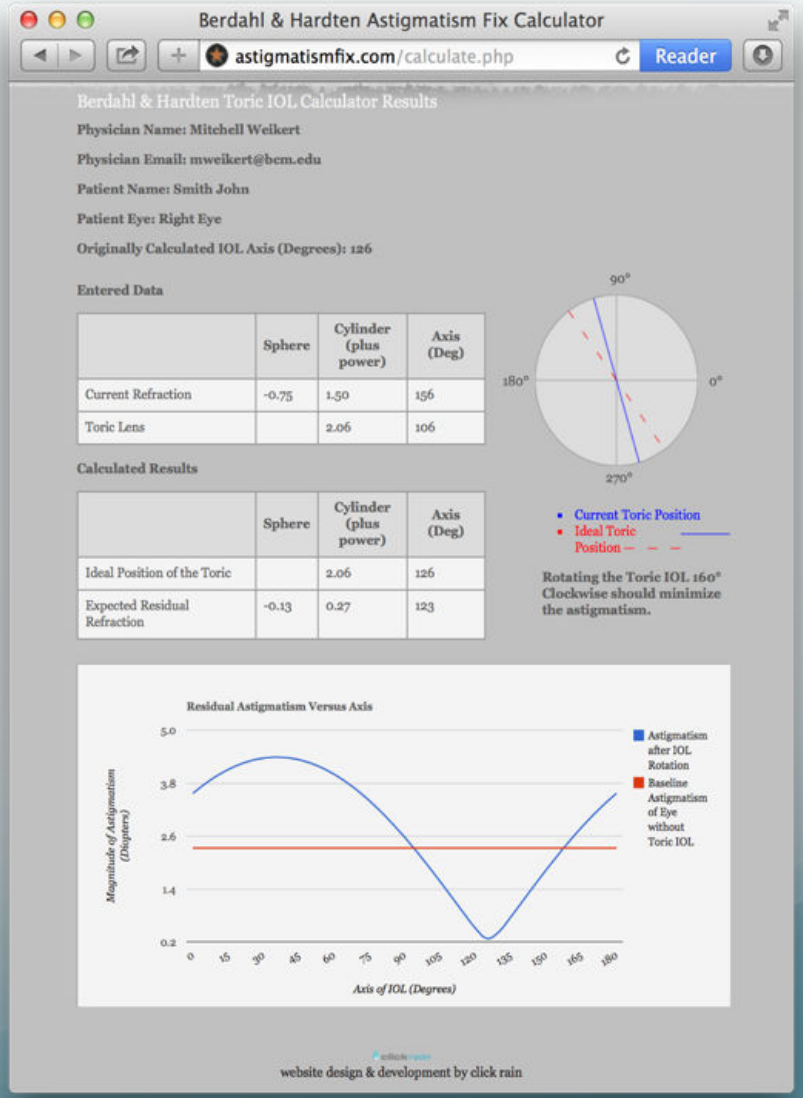
- Why does it happen?

  - Chose wrong toric IOL power
  - Aligned toric IOL along the wrong meridian
  - Errors inherent to the measurement devices, operators, and formulas

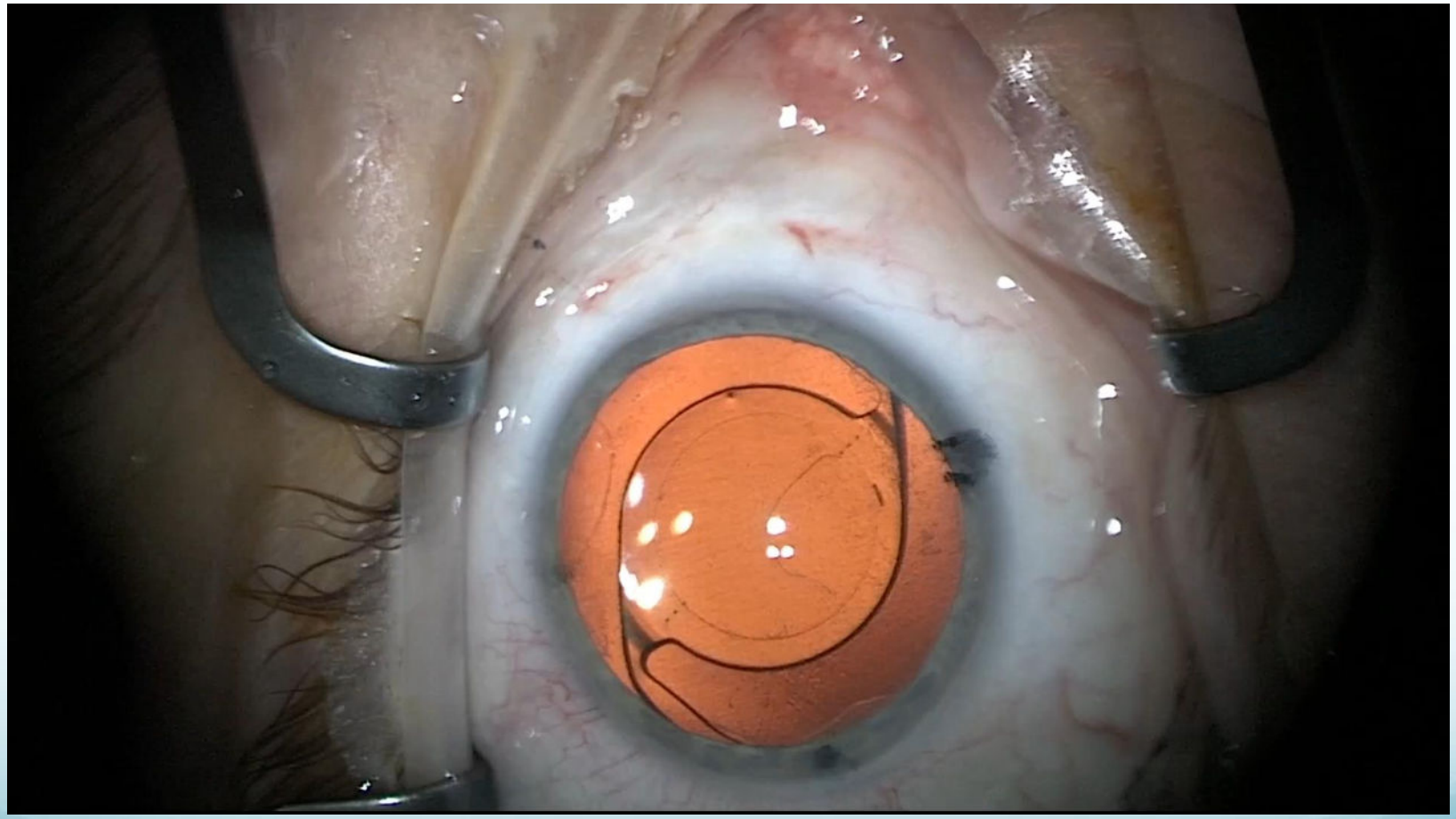


Post-Op Residual Astigmatism

- How to manage?
  - Glasses
  - LASIK/PRK
  - Corneal relaxing incisions
  - IOL rotation
  - IOL exchange
- How do you choose?
  - Patient goals
  - Level of astigmatism
  - Spherical equivalent
  - IOL alignment



In the Bag IOL Exchange



Patient

- 66 yold F with h/o PXF glaucoma had a “complicated” cataract surgery & wants second opinion
  - 2 months of post op corneal edema and inflammation
  - Still can’t see “clearly” and has eye redness
- Va OS: 1.00 + 1.00 X 156 = 20/60
- IOP: 22
- Exam:
  - 2+ conjunctival hyperemia
  - Inferiorly displaced & tilted one piece lens; circular anterior capsule

ANESTHESIA
Topical, MAC.

COMPLICATIONS
None

INDICATION FOR SURGERY
The patient is a 65-year-old woman who reports difficulty seeing road signs. Best corrected visual acuity is 20/200 which improves to 20/20 with potential acuity testing. On clinical examination, the patient has 3+ nuclear sclerosis and 3+ posterior subcapsular cataract changes. In addition, they have glaucoma on topical medications and istent implantation was discussed. After discussions of the options, risks and benefits, informed consent was obtained for both procedures.

Before surgery he never took the time to fully explain surgery.

PLAN: I discussed the above fully with the patient. A prescription was given for new glasses. Best corrected today was 20/40 to 20/50 in the O.S. The patient will continue the same drops and plan to see

MEDICATION
Valium
Hydrocodone
Diazepam

time____ 1% Tropic
___-___ x ___ add ___ 20/ 2.5% Phenyl
___-___ x ___ add ___ 20/ Time

ASSESS:

PLAN:

RETURN:_____ ( )IOP am / pm ( )SUPINE am / pm
( )CEX ( )PHOTOS ( ) OCT ( )CCT
( )GONIO ( )HVF ( ) OTHER

personal reasons, please state the

n

applicable) _____

face to face [illegible] minutes.

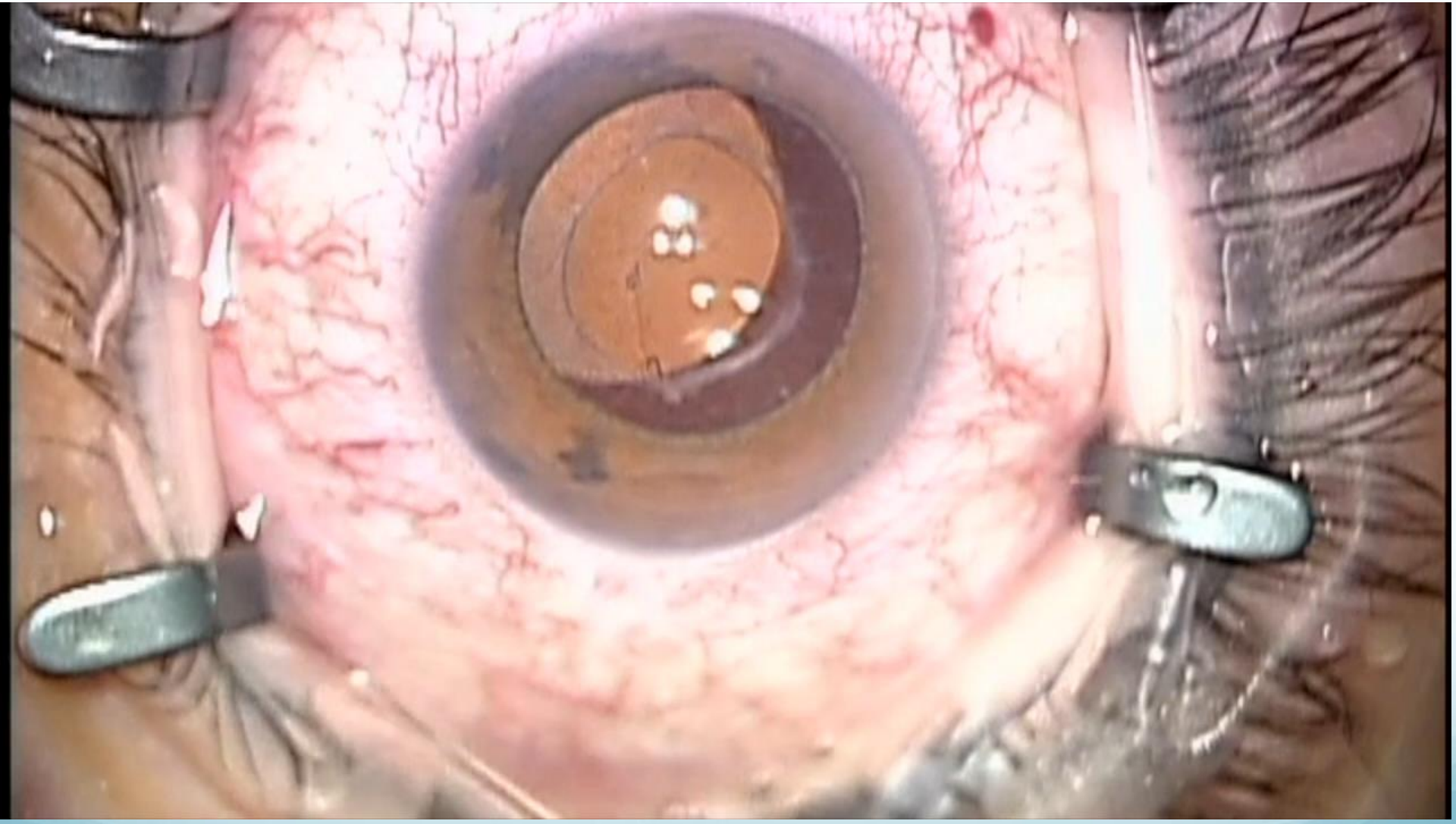
Pt. very stressed about left eye. Pt discomfort has ↑ off glasses, will restart it for comfort. Cornea seems to be slowly clearing and AC Rx ↓. Tried to explain cornea and vision but pt. seems to really want IOL removed. Explained that is not indicated @ this time and would likely make things worse. Stressed that as K recover will reevaluate IOL & can reposition/replace, if it would be beneficial. Also discussed that as a temporary measure, could use glasses for OD which had been 20/20 to improve her function and ↓ her stress while attempting to improve OS. Pt. would consider this & will discuss c̄ [redacted] as well.

?

10/24/14. Called & spoke to [redacted] to update him on pt's progress. He is planning on seeing her next week & will let me know it condition.

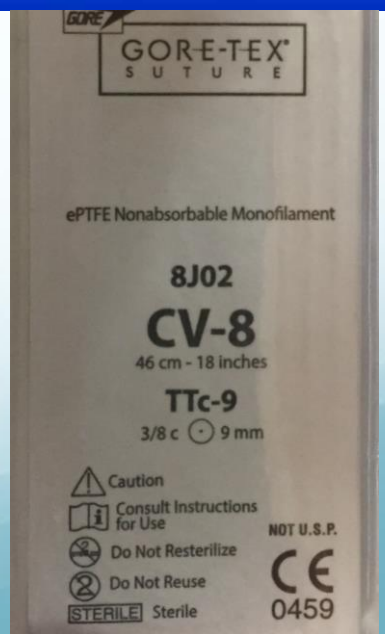
How many times did he want me to come. It was always the same "Take eye drops and see you in 2 wks." When I asked Haghund for viable prognosis it was same as he didn't [illegible]

What do you tell patient?



Discussion points

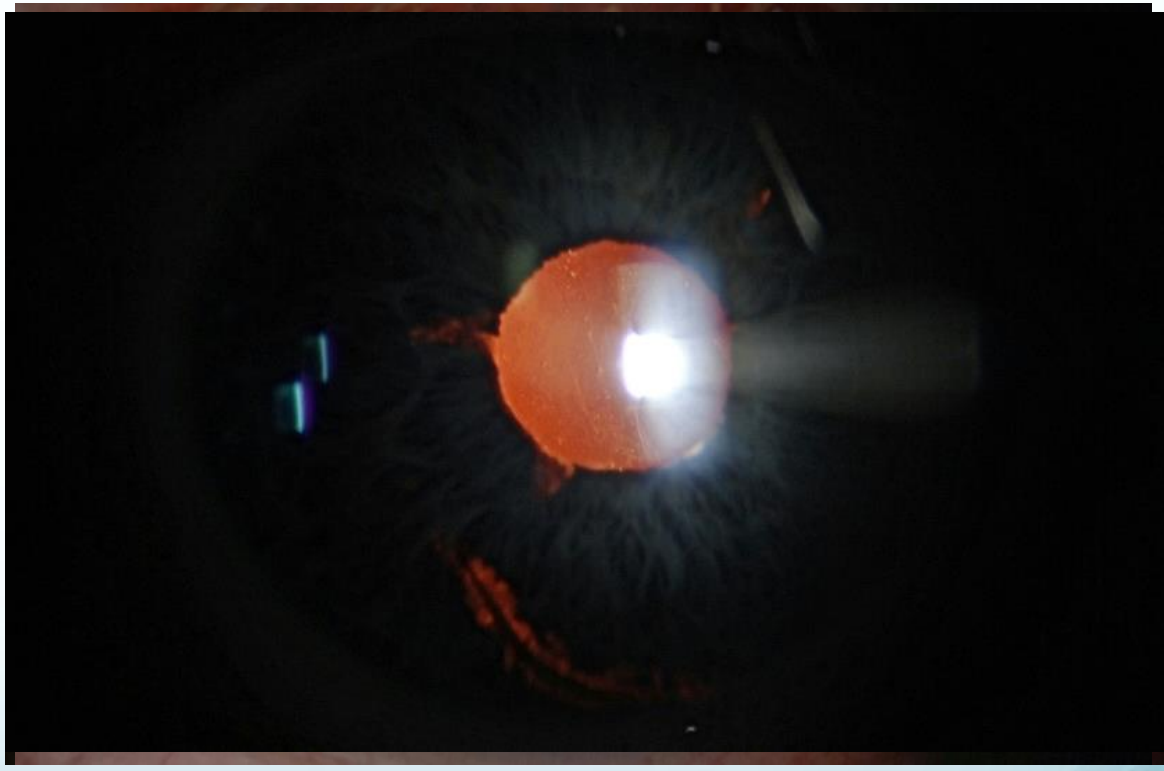
- Patient expectations: higher risk of PC tear, vitreous loss, endothelial cell loss, CME
- Importance of viscodissection: needle or pele cannula
- Generous use of OVD
- Removal of IOL: MST forceps/scissors
- Assessment of capsular support



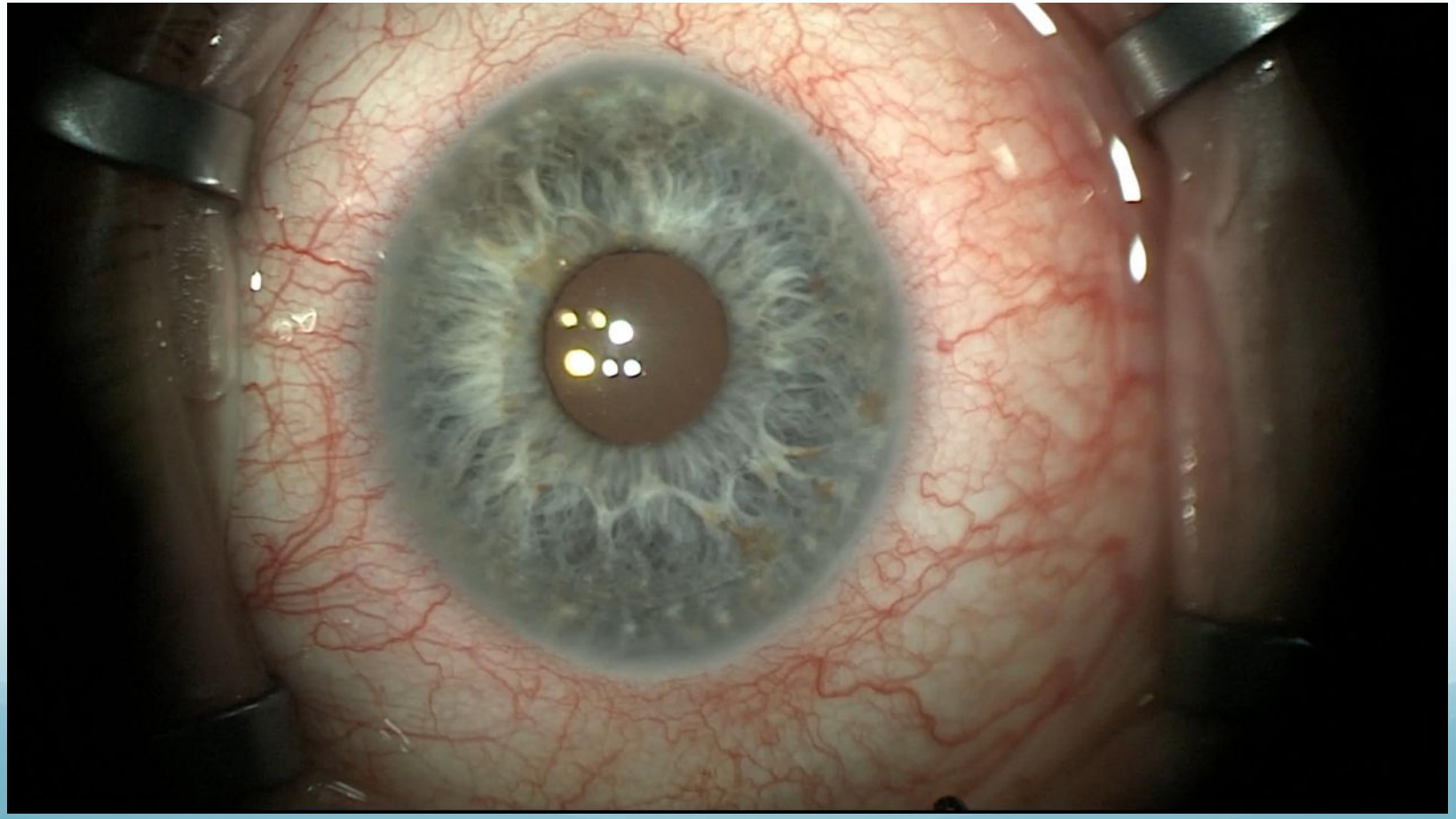
Never a One Piece in the Sulcus - UGH

Reported complications:

- Lens decentration
- Edge glare
- Pigment dispersion syndrome
- Secondary glaucoma
- Recurrent iridocyclitis
- Recurrent microhyphemas
- Iris chafing w/ transillumination defects
- Cystoid macular edema



Sulcus with Posterior Optic Capture



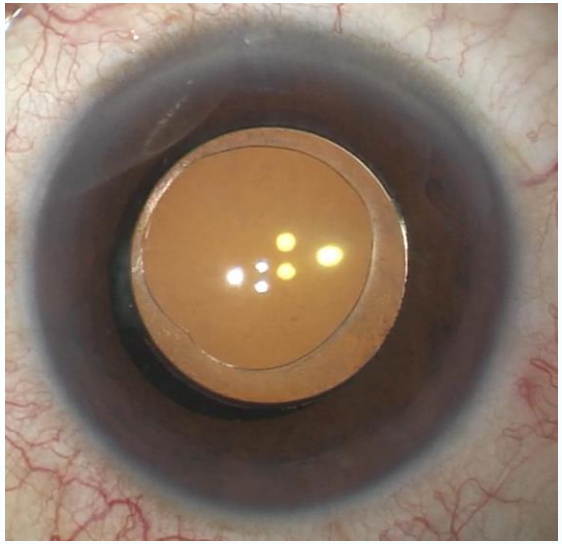
Case

- 70 y/o M presents several months following uneventful CE/IOL OS complaining of ***dark shadow in his temporal vision, only in his left eye***
- Began 3-4 days after surgery and is constant since
- Vision is overall good but he is very bothered
- This shadow has not changed in size, shape, or darkness since its onset.
- Denies flashes, floaters, or metamorphopsia, etc.

Examination

	OD	OS
VA sc:	20/20-2	20/20
Mrx	-0.25 sph	-0.50 + 0.50 x 125
	20/20	20/20+
IOP	15	16
EOM	Full	Full
Pupils	No rAPD OU	

Slit Lamp Exam



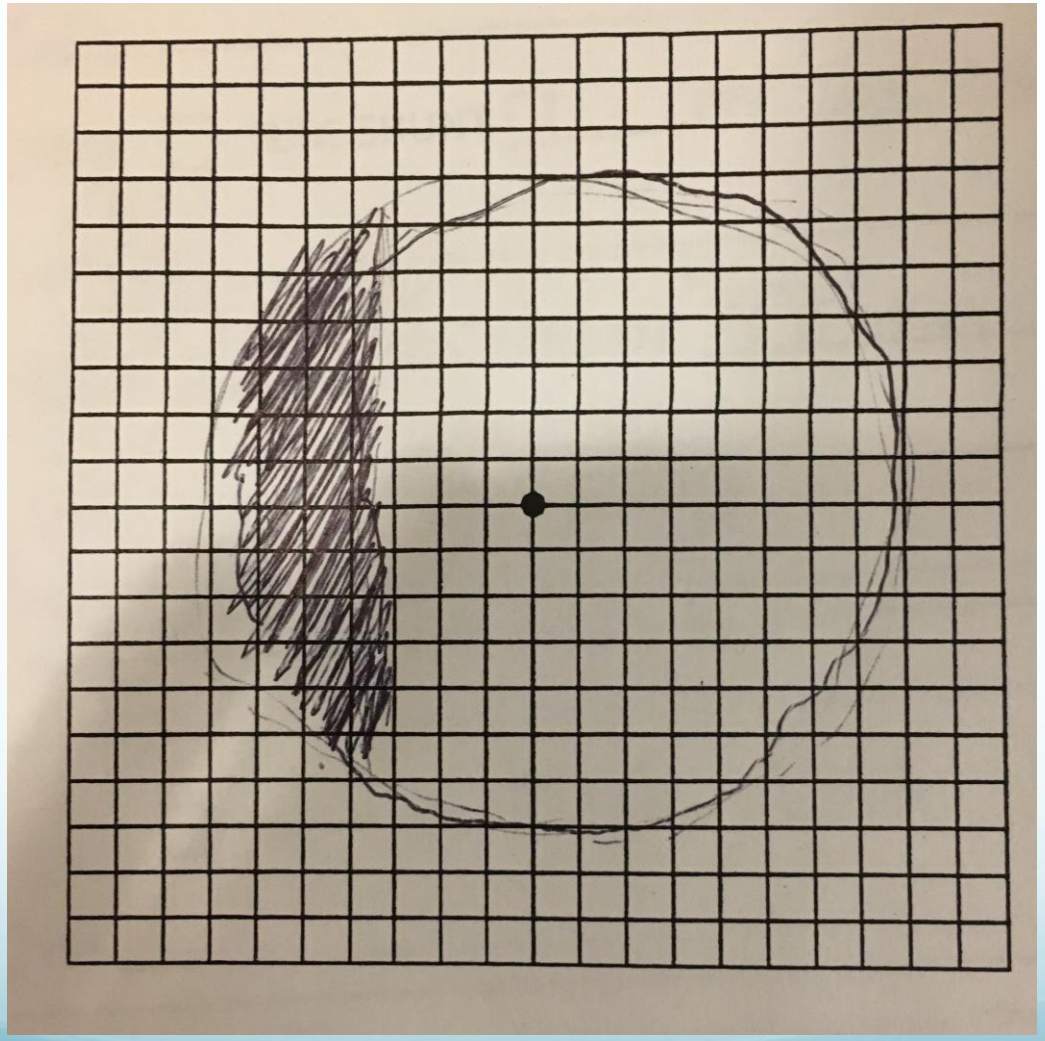
SLE:

L/L: Mild MGD both eyes
C/S: White and quiet both eyes
K: Clear, no edema both eyes
AC: Deep & quiet both eyes
Iris: Flat, wnl no NVI both eyes, no TIDs

Lens:
OD: 1-2+ NSC, 1+ ACC
OS: PCIOL, well centered with clear visual axis, good capsule overlap without phimosis

DFE OU - Unremarkable

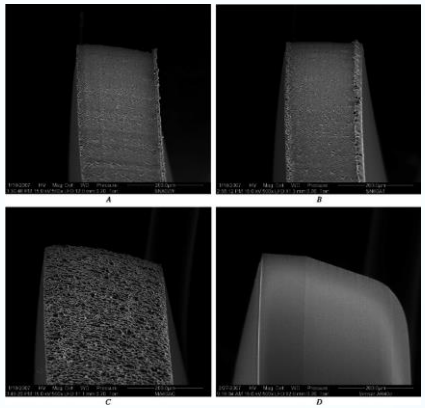
Subjective Complaint
Left eye



Negative Dysphotopsia

- First described more than a decade ago by Davison
- Manifests as a ***dark shadow in the temporal visual field*** that is perceived by the patient in a manner similar to a retinal detachment or vascular occlusion
- The incidence reported to range from ***2% to 15.2% immediately following cataract surgery***
- This decreases over the following months, leaving about ***one fifth of the originally affected patients*** with permanent dysphotopic symptoms

Negative Dysphotopsia

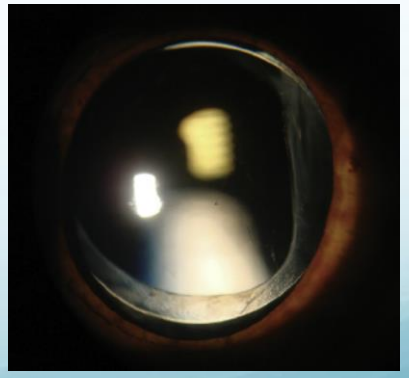


Etiology

- Several theories have been presented
  - ***High-refractive-index acrylic IOLs with square edge design***
  - Rays that hit the posterior sharp IOL edge are refracted more posterior than the rays that pass through the IOL's surface immediately adjacent to the edge.
- However, a variety of IOLs, including those with rounded edges and those made of silicone were also noted to induce symptoms
- Pupil size had been thought to determine the severity of negative dysphotopsia symptoms.
- Holladay et al used a ray-tracing modeling to demonstrate that the shadow is easier to perceive with constricted pupils
  - Holladay JT, Zhao H, Reisin CR. Negative dysphotopsia: the enigmatic penumbra. J Cataract Refract Surg 2012; 38:1251–1265

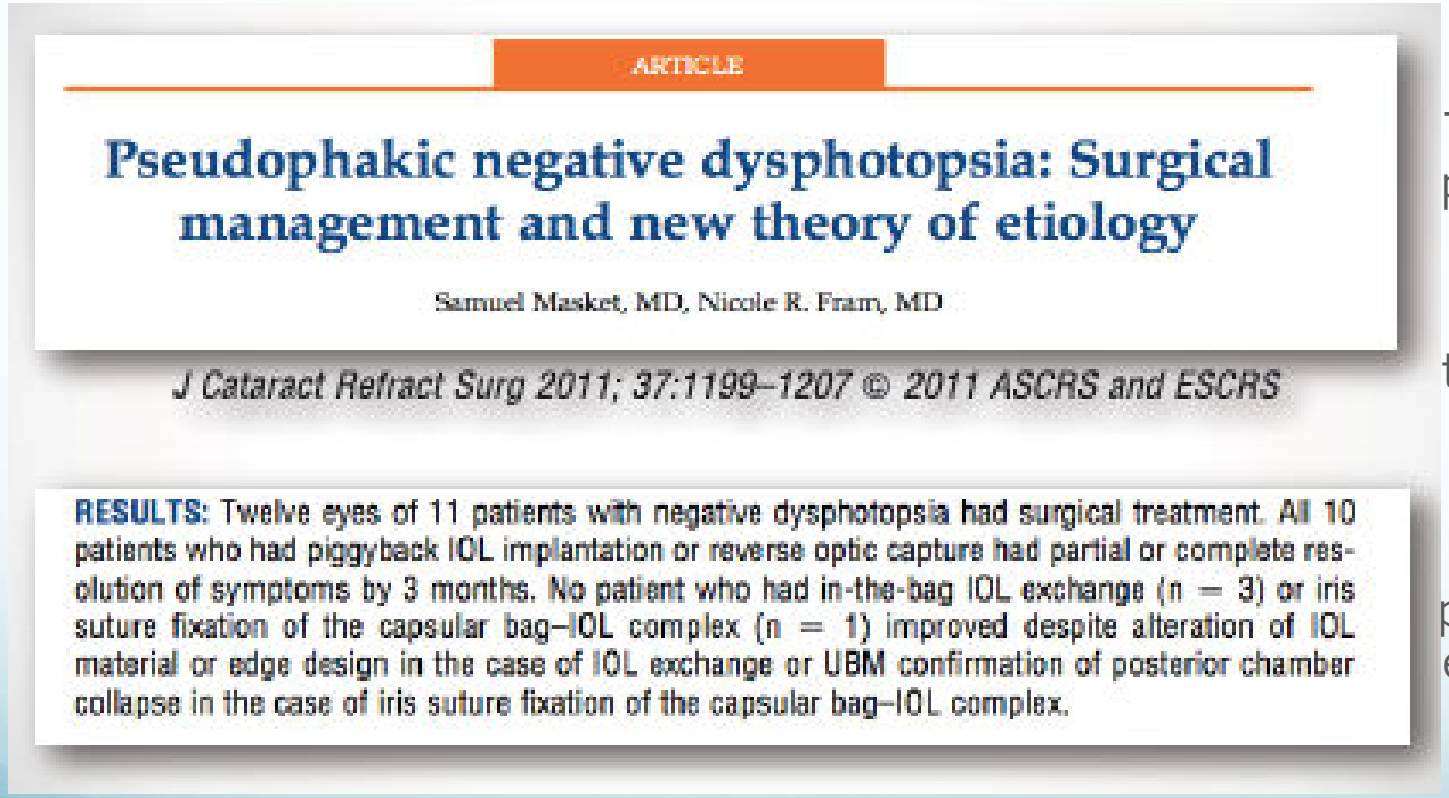
Negative Dysphotopsia

- A case series reported by Masket and Fram suggested that negative dysphotopsia could arise from ***interaction between the anterior capsulotomy and the anterior surface of the IOL.***
  - "a reflection of the anterior capsulotomy edge projected onto the nasal peripheral retina."
    - Masket S, Fram NR. Pseudophakic negative dysphotopsia:surgical management and new theory of etiology. J Cataract Refract Surg 2011; 37:1199–1207



Negative Dysphotopsia

Treatment Options



ARTICLE

Pseudophakic negative dysphotopsia: Surgical management and new theory of etiology

Samuel Masket, MD, Nicole R. Fram, MD

J Cataract Refract Surg 2011; 37:1199–1207 © 2011 ASCRS and ESCRS

RESULTS: Twelve eyes of 11 patients with negative dysphotopsia had surgical treatment. All 10 patients who had piggyback IOL implantation or reverse optic capture had partial or complete resolution of symptoms by 3 months. No patient who had in-the-bag IOL exchange (n = 3) or iris suture fixation of the capsular bag–IOL complex (n = 1) improved despite alteration of IOL material or edge design in the case of IOL exchange or UBM confirmation of posterior chamber collapse in the case of iris suture fixation of the capsular bag–IOL complex.

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ARTICLE

Surgical management of negative dysphotopsia

Samuel Masket, MD, Nicole R. Fram, MD, Andrew Cho, BS, Isaac Park, BA, Don Pham, BS

Purpose: To evaluate curative and preventative surgical strategies for negative dysphotopsia.

Setting: Private practice, Los Angeles, California, USA.

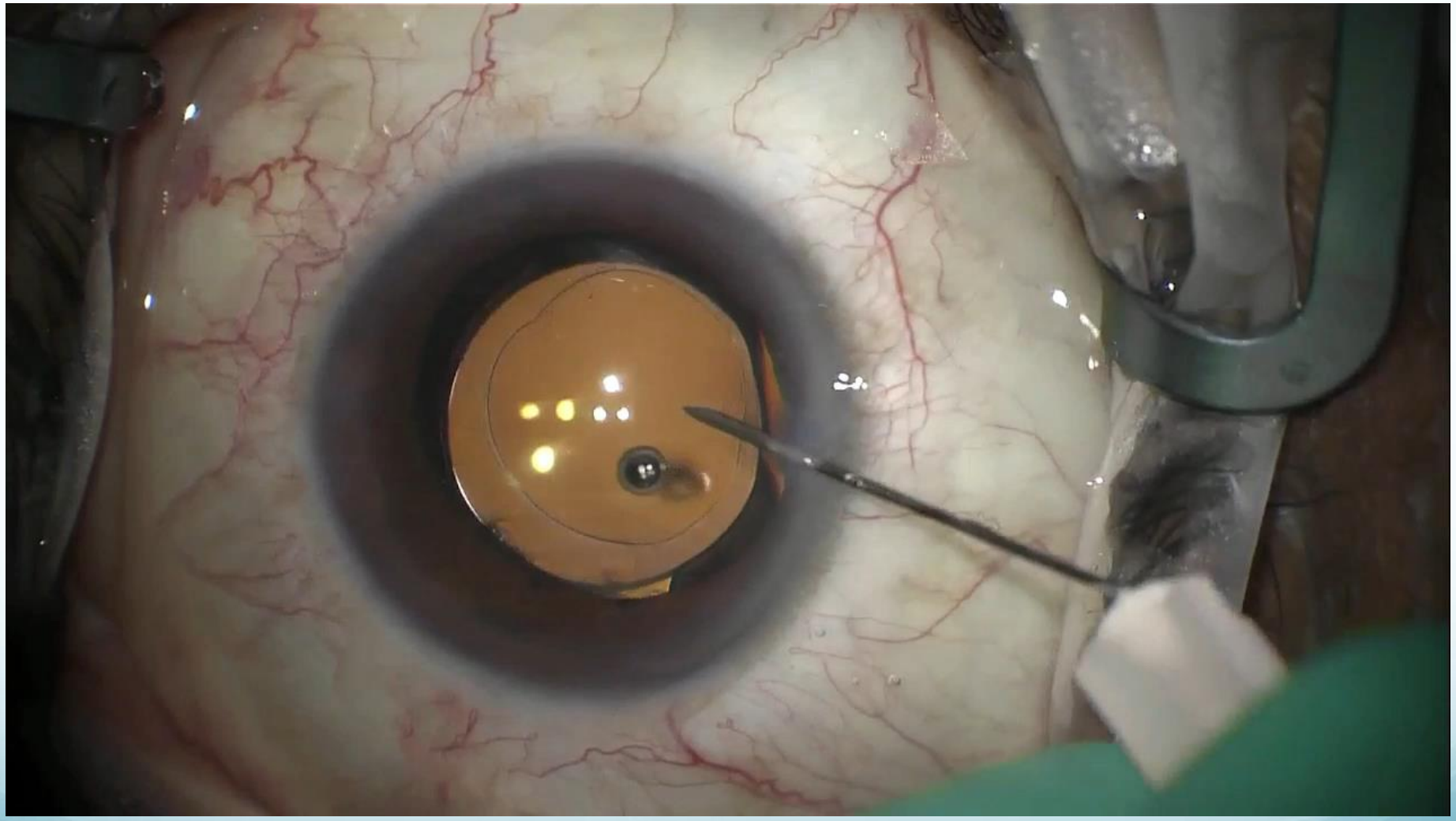
Design: Retrospective case series.

Methods: Patients with self-reported chronic negative dysphotopsia had corrective surgery as the therapeutic group. Second eye surgery, in cases with negative dysphotopsia in the previously operated eye, comprised the preventative group. Chronologically, several surgical strategies were used, including bag-to-bag intraocular lens (IOL) exchange, reducing posterior chamber depth, piggyback secondary IOL placement, bag-to-sulcus IOL exchange, and reverse optic capture. The primary outcome measure was improvement of negative dysphotopsia by 3 months postoperatively.

Results: The therapeutic group comprised 40 eyes of 37 patients; 76.6% of causative IOLs were acrylic and 23.4% were silicone and all were bag-fixated. There were 21 eyes in the preventative group of which 11 were second eyes from the therapeutic group; the remaining 10 did not require surgery for the symptomatic eye. Successful outcomes for each surgical strategy were as follows: bag-to-bag IOL exchange (0/5), a reduction in posterior chamber depth with iris suture fixation of the bag–haptic complex (0/1), piggyback secondary IOL (8/11), secondary reverse optic capture (21/22), ciliary sulcus posterior chamber IOL exchange (7/8), and primary reverse optic capture (21/21).

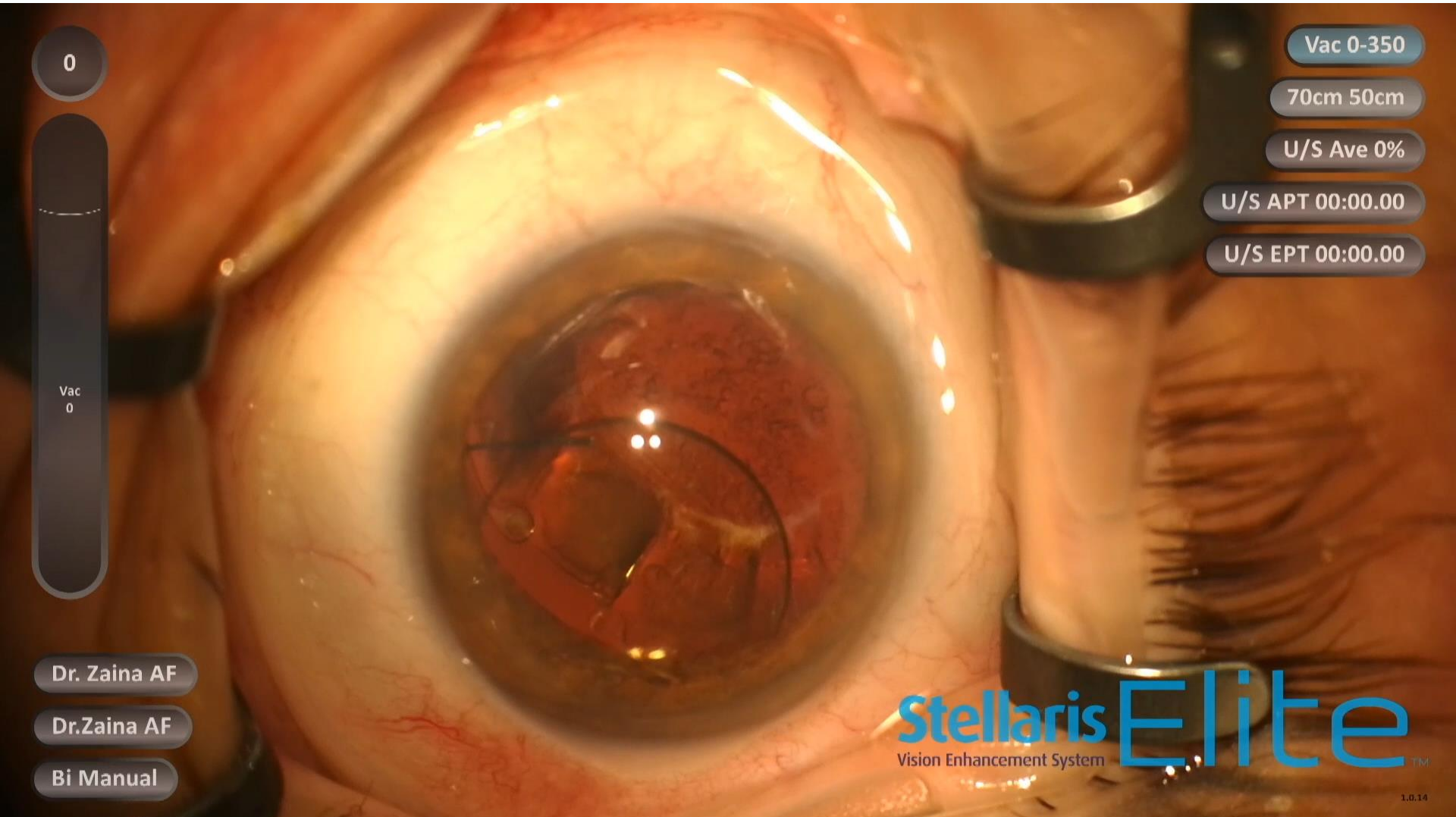
Conclusions: Negative dysphotopsia was associated with acrylic or silicone IOLs of either square- or round-edge design. Negative dysphotopsia was reduced, eliminated, or prevented when the IOL optic overlaid the anterior capsulotomy rather than when the capsule edge overlaid the optic. Bag-to-sulcus IOL exchange and reverse optic capture were highly successful in managing or preventing negative dysphotopsia.

J Cataract Refract Surg 2018; 44:6–16 © 2018 Published by Elsevier Inc. on behalf of ASCRS and ESCRS.



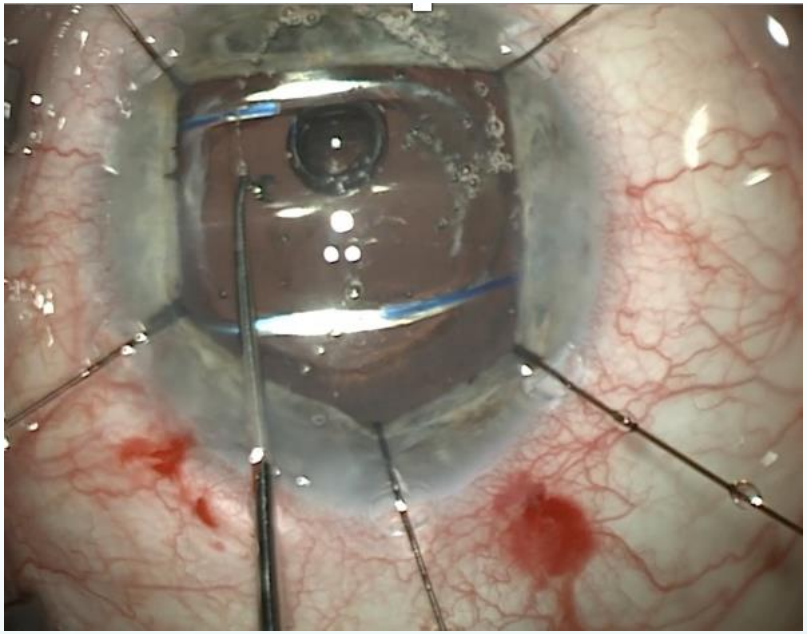
Courtesy of Josh Duncan, MD

Scleral Fixation



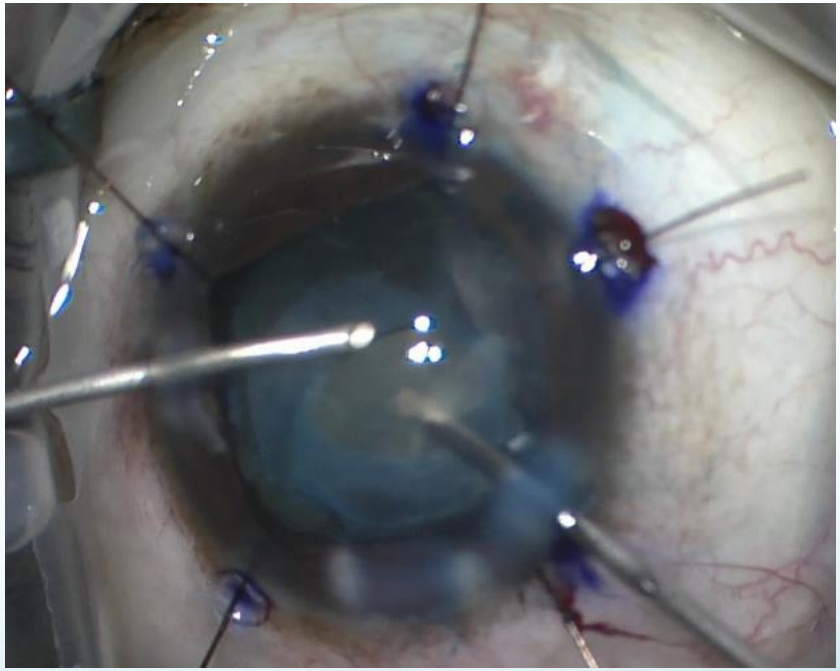
Reasons to Keep the Capsule

- Young patient
- Formed vitreous not liquified
- Can optic capture (anteriorly or posteriorly)
- Surgeon Preference



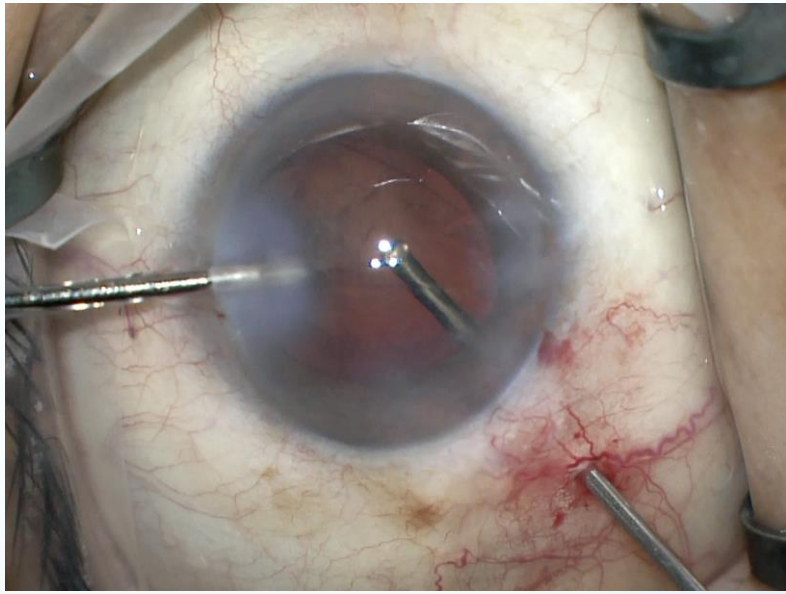
Reasons Not to Keep the Capsule

- Zonular loss?
- Avoid suturing (Gortex)
- Surgeon Preference



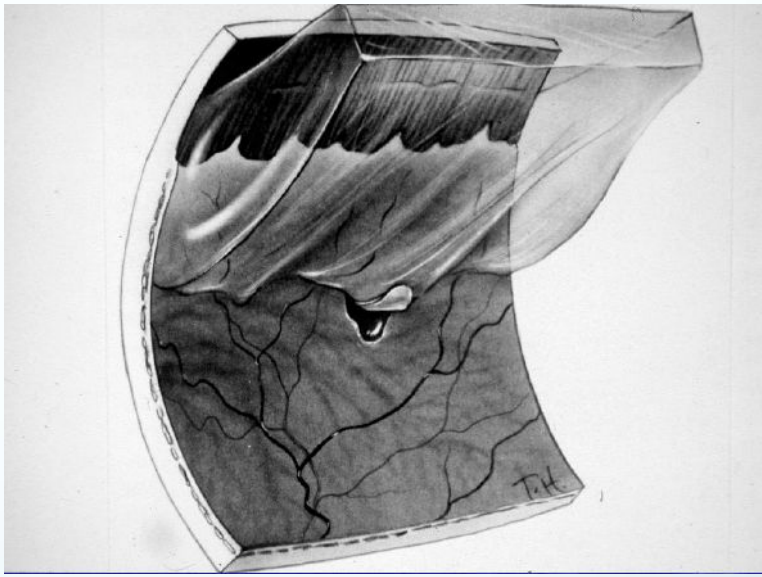
Do's of Anterior Vitrectomy

- Bimanual– separate irrigation and cutting
- Optimize settings:
  - Highest cut rate for vitreous
  - Lowest vacuum/flow rate that still results in vitreous removal
- Prevent intraoperative and post-operative traction
- Protect tissue (cornea, iris, capsule) from iatrogenic damage

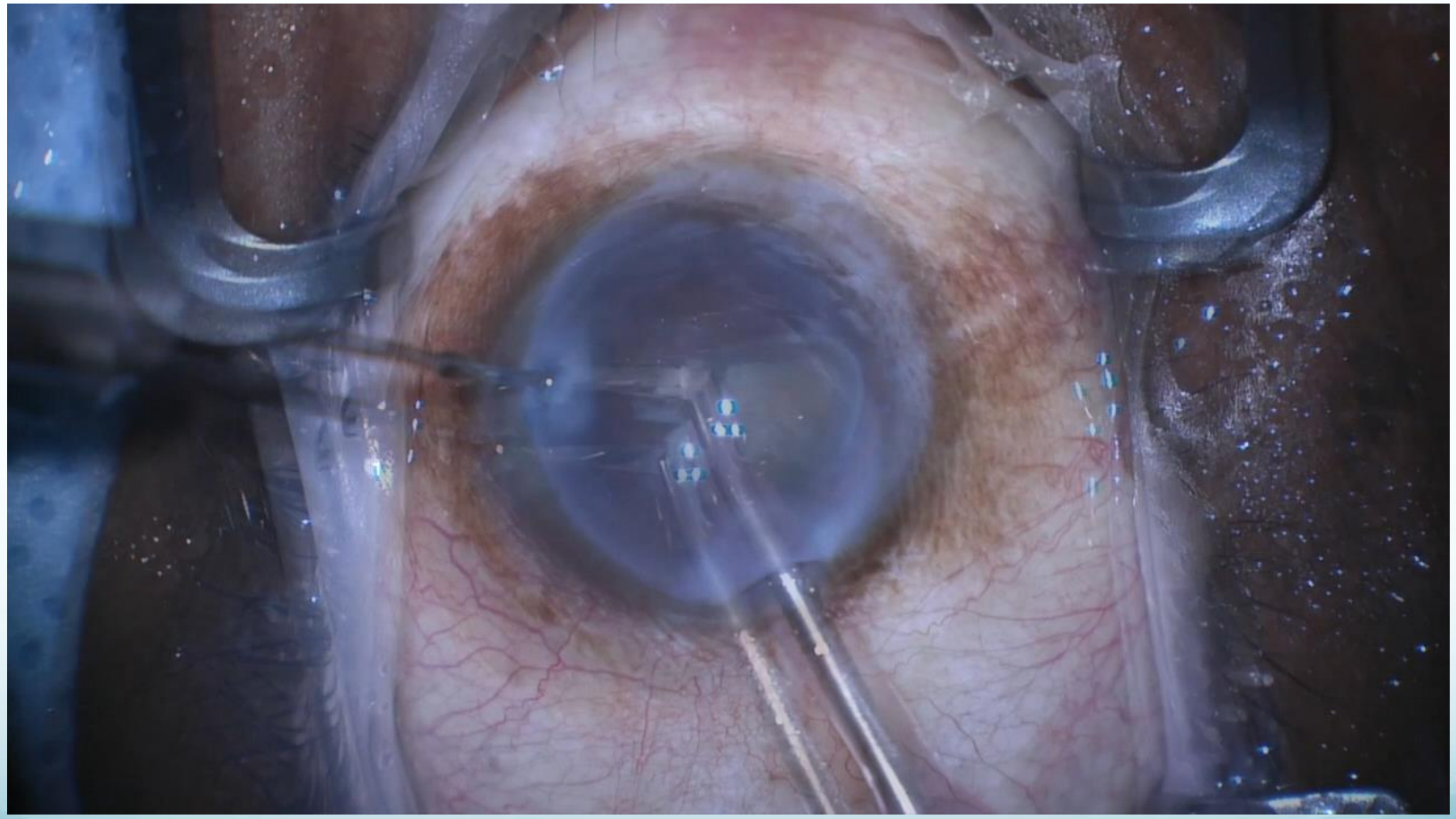


Don’ts of Anterior Vitrectomy

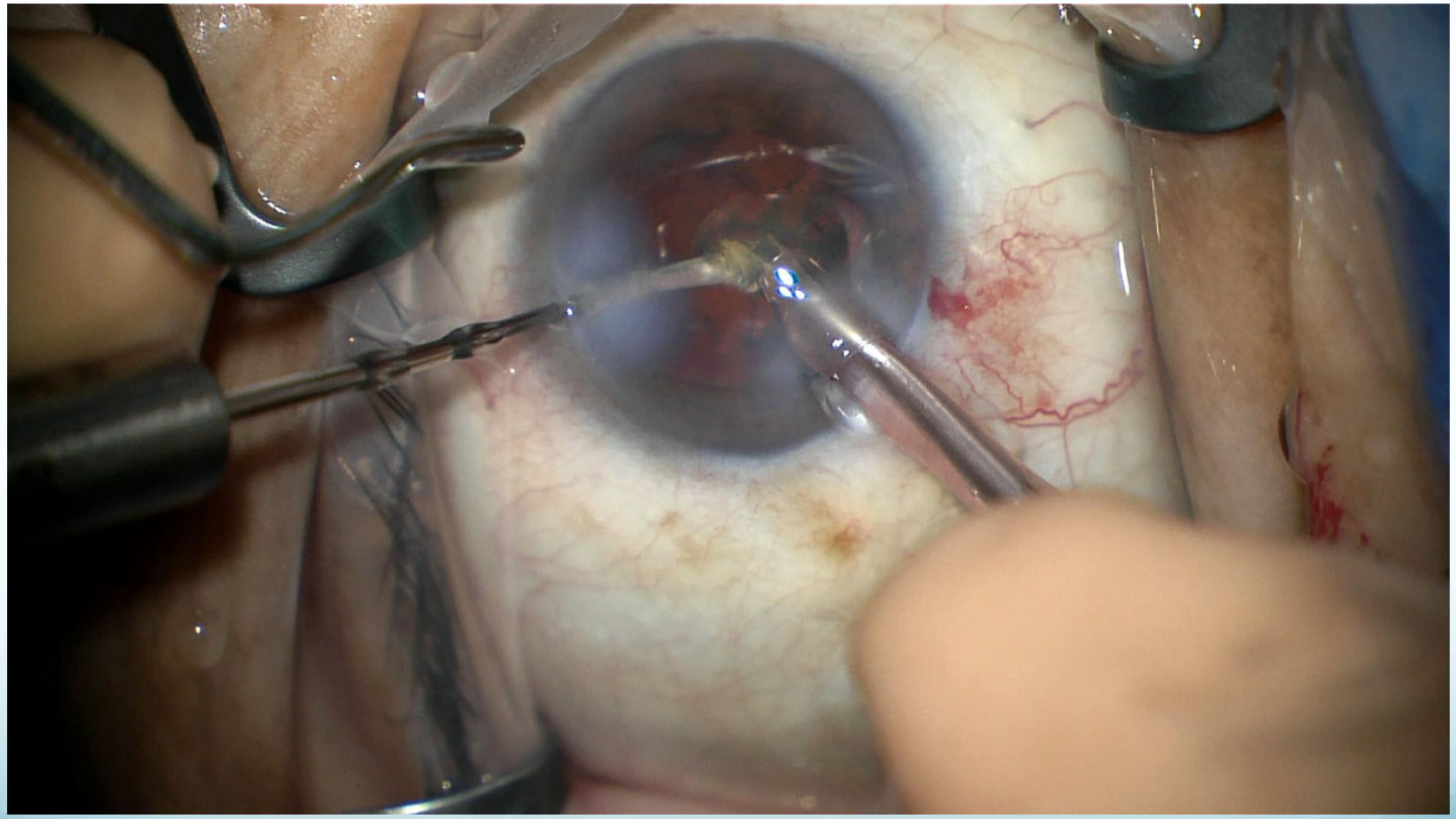
- Cut what you can’t see
- Withdraw cutter without cutting
- Follow lens fragment into posterior segment
- Cut nucleus fragment with cutter
- Traction/sweeping wound with Weck-cel



PC tear—Limbal Anterior Vitrectomy

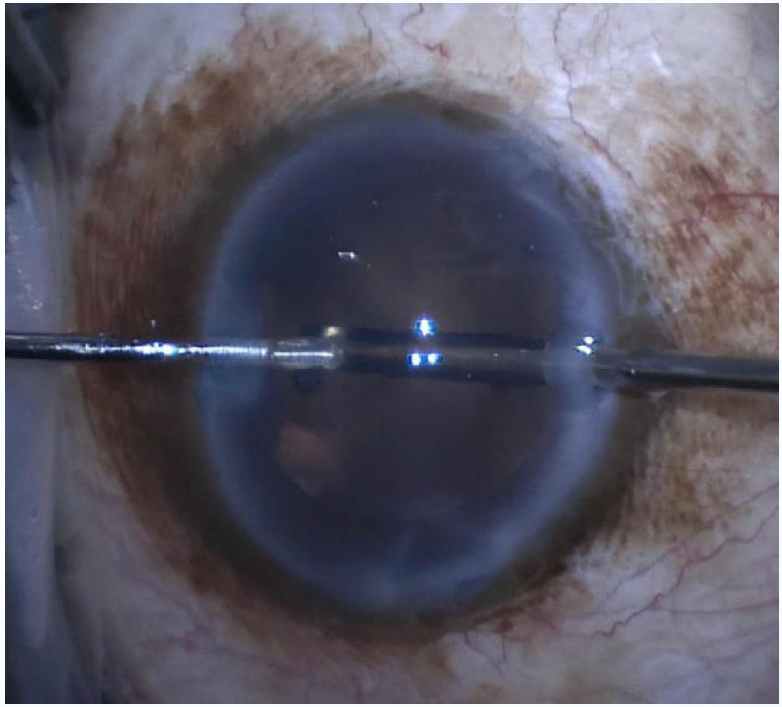


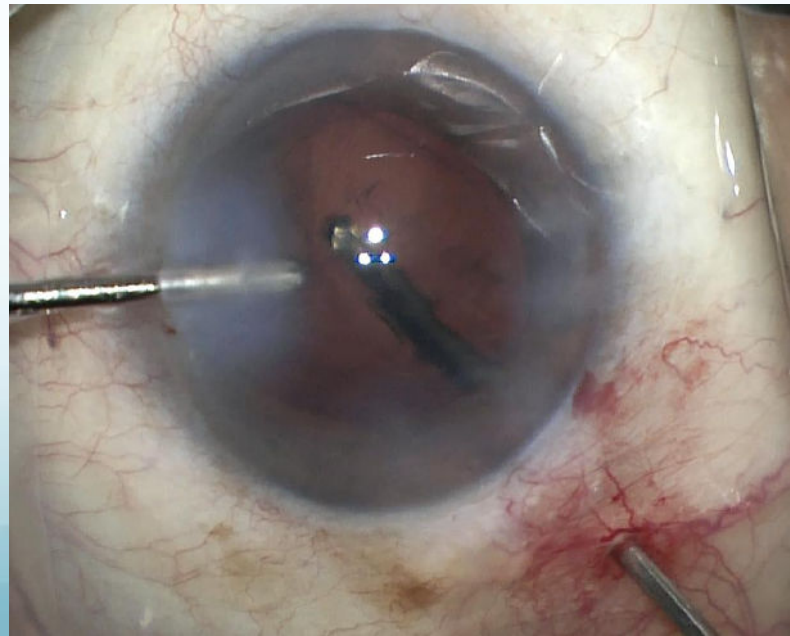
PC tear—Pars Plana Anterior Vitrectomy



Limbal vs. PP

- Limbal advantages:
  - Surgeon comport
  - No conjunctival or scleral incision
- Pars Plana:
  - Anatomically makes sense – port in vitreous
  - Anterior vitreous moves posteriorly because of anterior infusion & PP vit
  - Minimizes traction:
    - Given proximity to vitreous base
    - Facilitates amputation of vitreous in incisions without sweeping
  - More efficient especially after lens insertion





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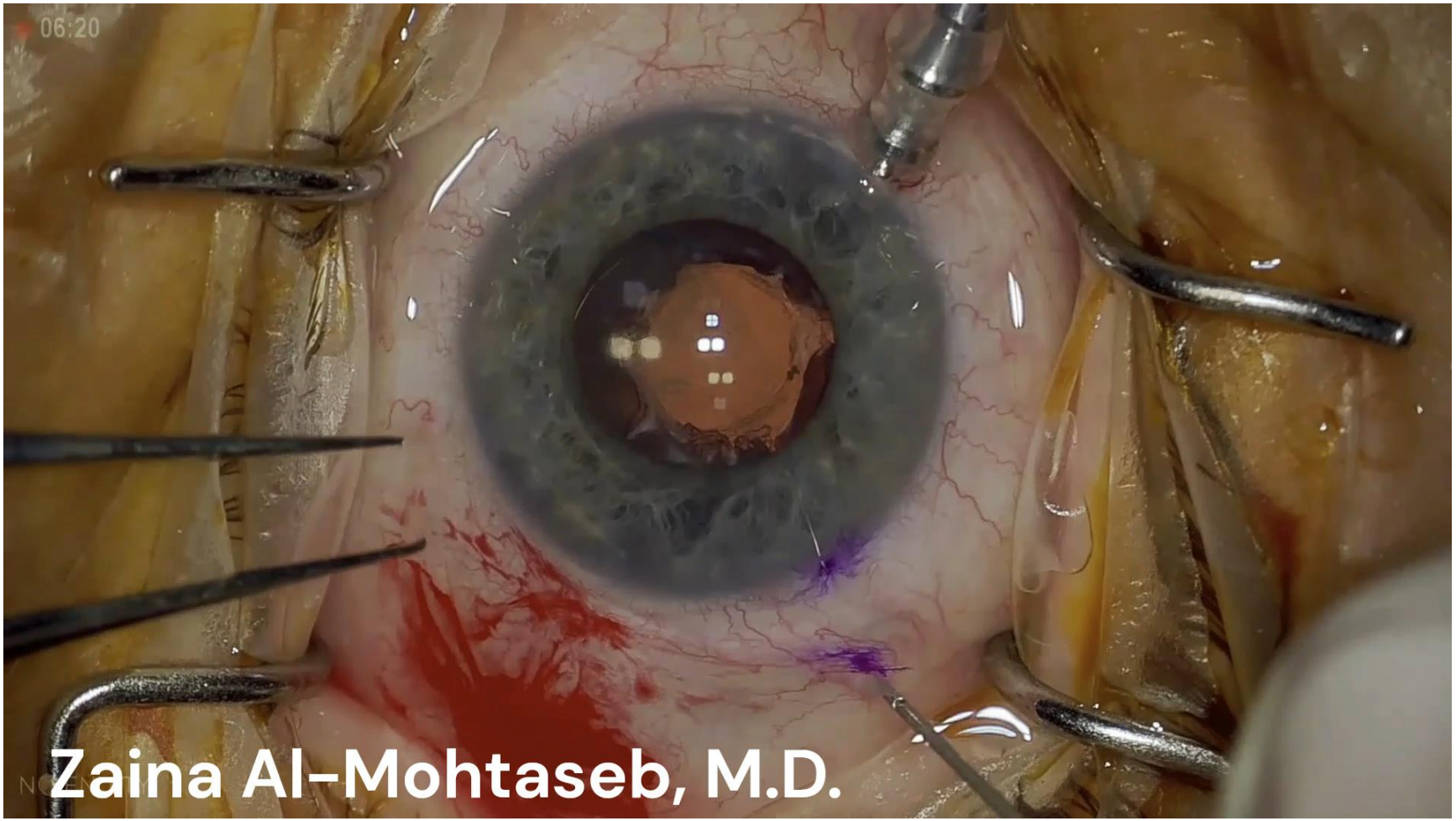

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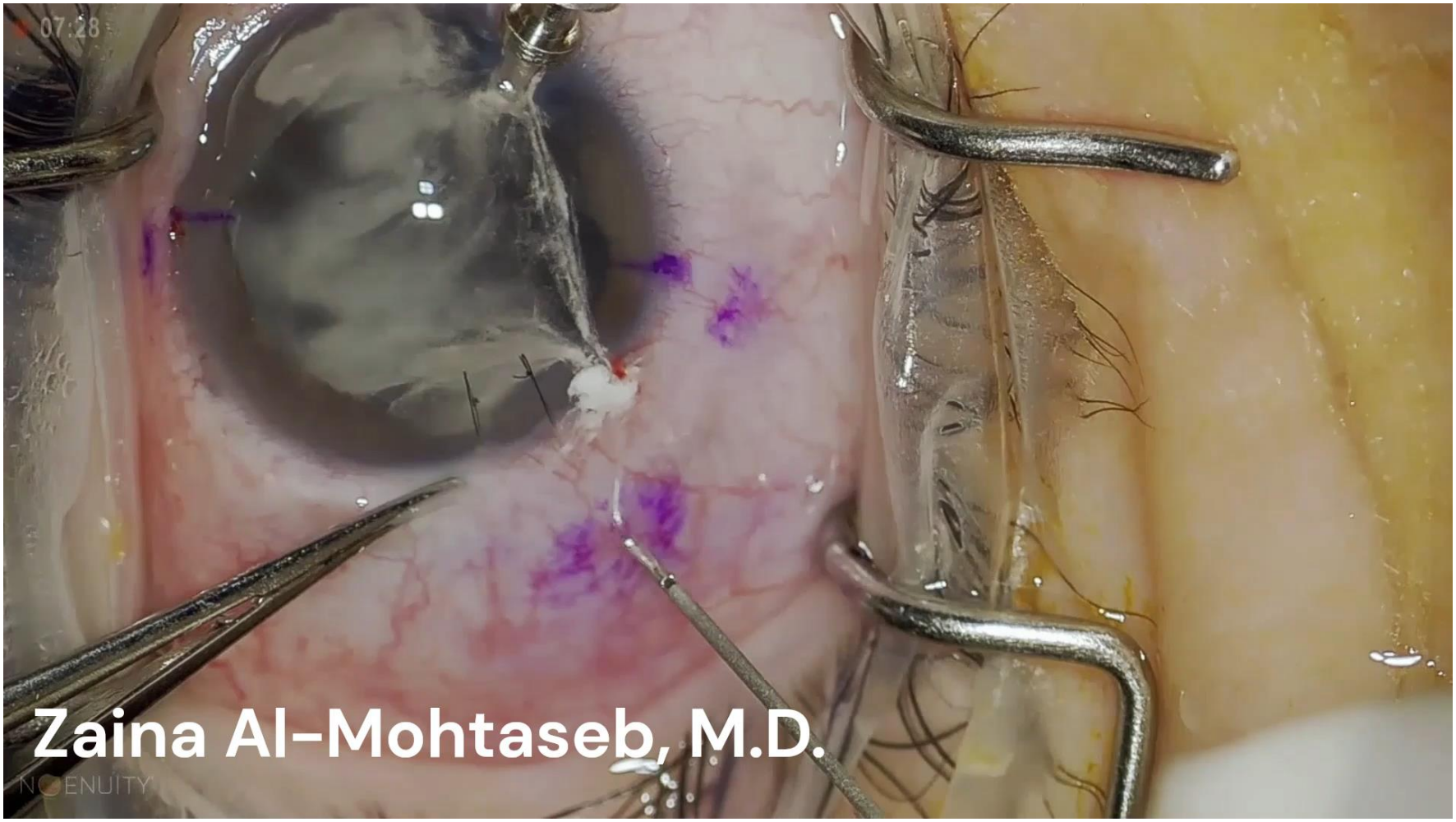

Thank you!

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