Management of Capsular Contraction Syndrome

Hatem Ammar (MD,PhD)

Professor of Ophthalmology

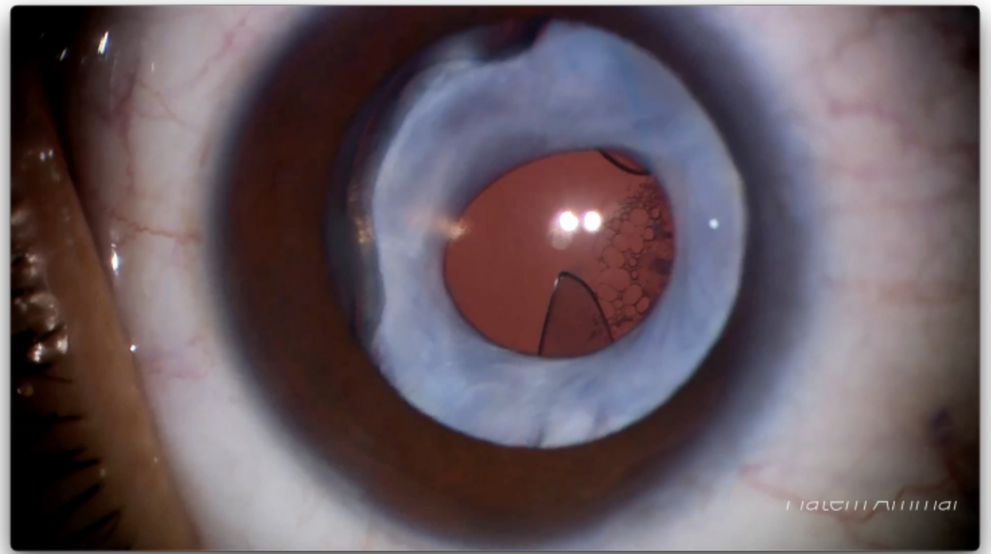
Vice Dean for Postgraduate Studies & Researches

Sohag University

Board Member of the EOS, ESOIRS

Secretary General of the DEOSS

Egypt



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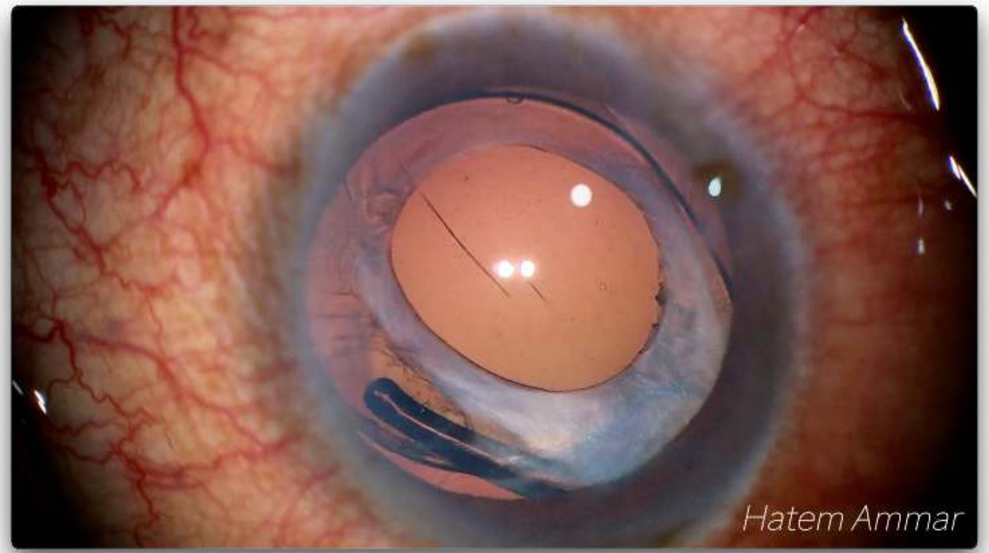

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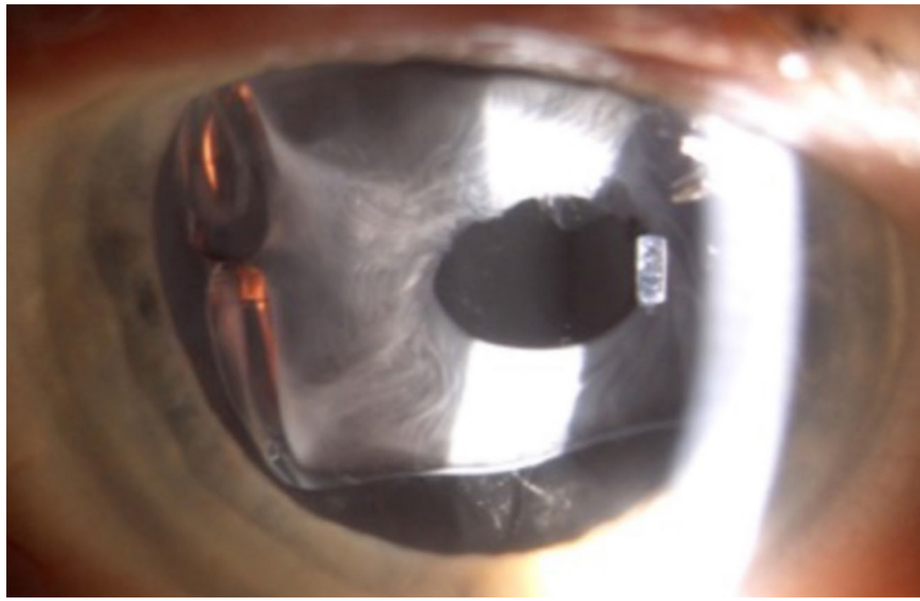
Capsular Contraction Syndrome

-It results from scarring and contraction of the capsulorhexis diameter.

-CCS is strongly associated with several ocular and systemic factors which either increase inflammatory component in the anterior chamber or lead to instability of the blood-aqueous barrier .



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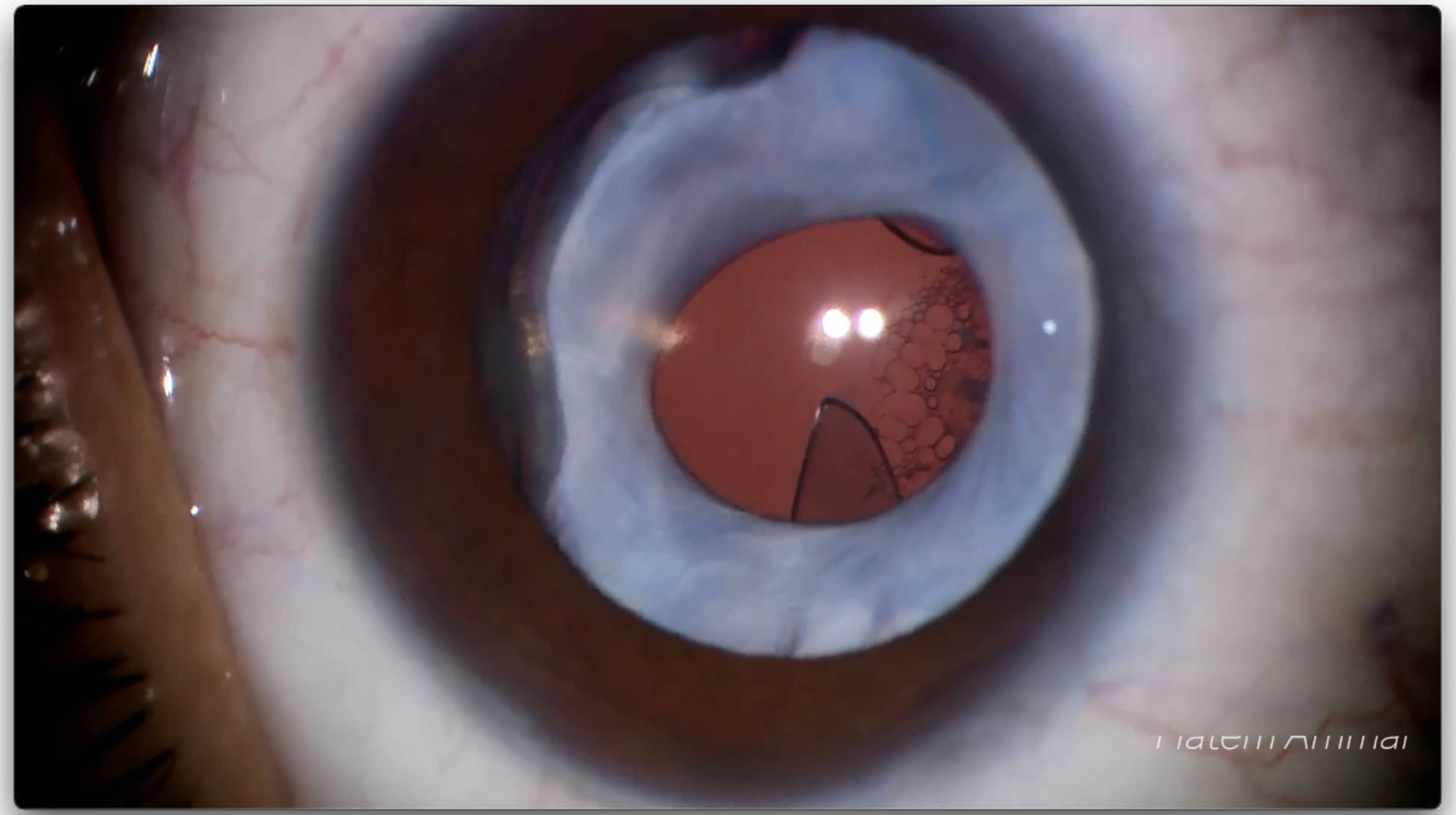
Commonly Associated with:

- Pseudoexfoliation,
- Uveitis,
- Myotonic dystrophy,
- Retinitis pigmentosa,
- Diabetic retinopathy,
- High myopia,
- Marfan’s syndrome.



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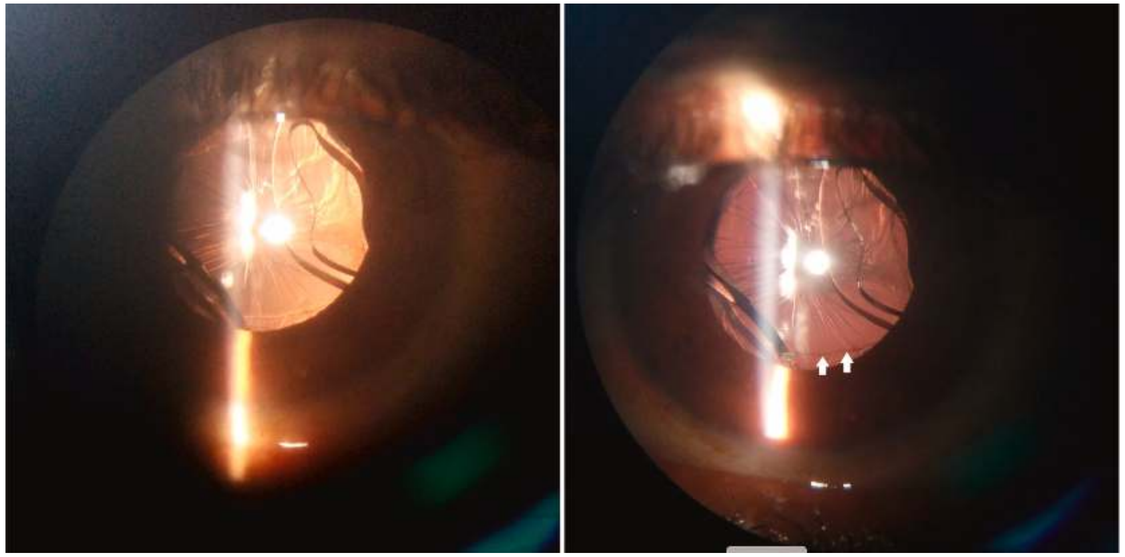
Surgical risk factors such as :

- Small capsulorhexis size
- Insufficient aspiration of residual lens epithelial cells
- IOL design and material play an important role in the pathogenesis of CCS.



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Intra-operatively, excessive manipulation leading to zonular dehiscence with subsequent phimosis

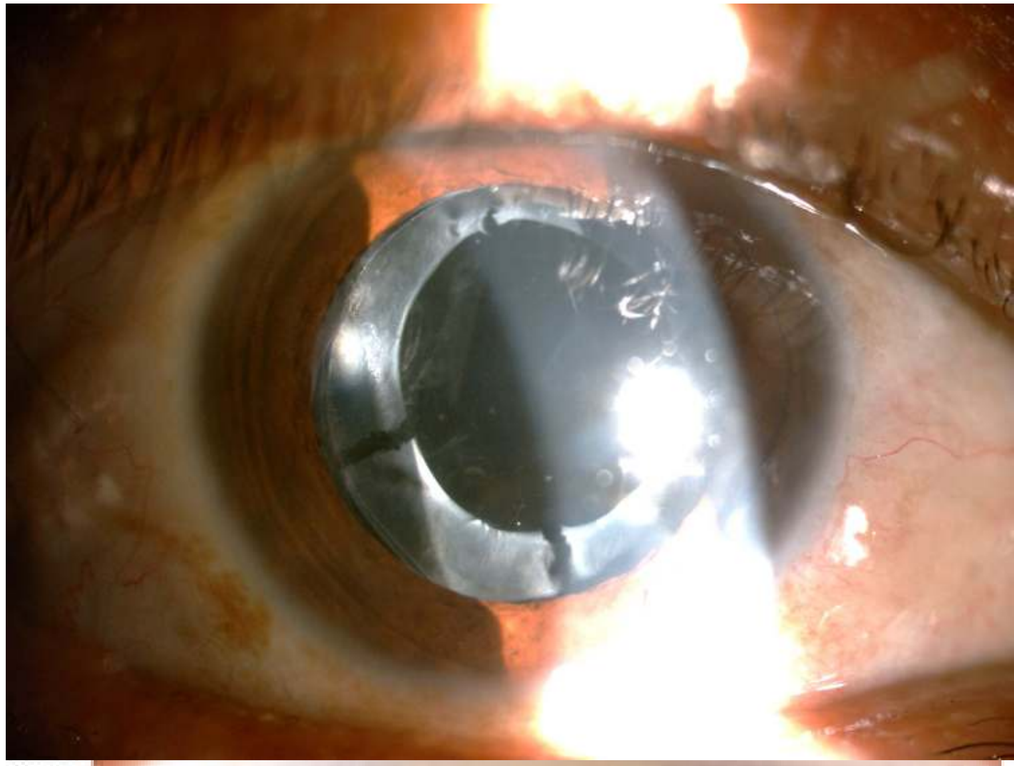
Capsular-tension ring (CTR) insertion might maintain the integrity and shape of the capsular bag and protect against the development of CCS

Treatment

- Depends on the degree and progression of the contraction

In mild to moderate cases

Nd:YAG laser anterior capsulotomy provides one of the simplest mode of management.



Nd-YAG capsulotomy aimed radially at the level of the anterior capsule to disrupt the centripetal contraction forces may obviate the need for surgery

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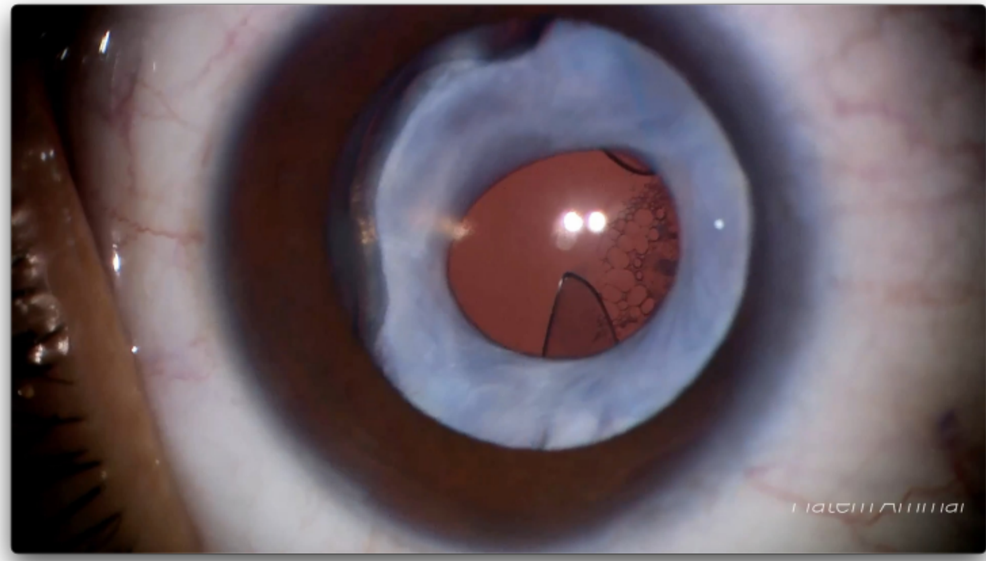
In severe cases

-The fibrotic membrane may need to be excised either by a vitrector or micro-scissors

-Depending of the stability of the IOL and the integrity of the remnant capsular bag, the surgeon would have to take a call of haptic repositioning versus IOL explantation and alternative refractive corrections like scleral-fixated or iris-claw IOL.



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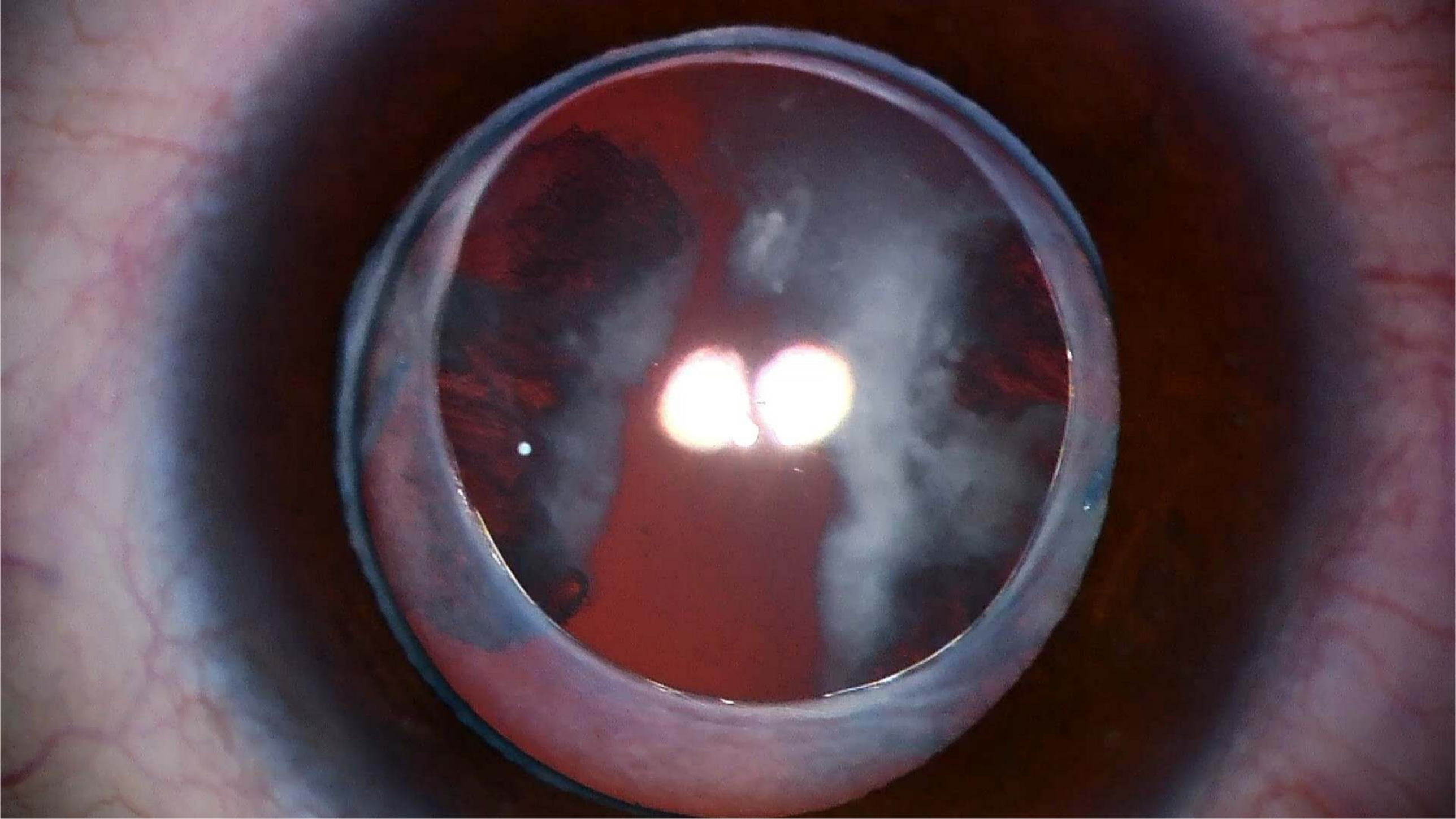

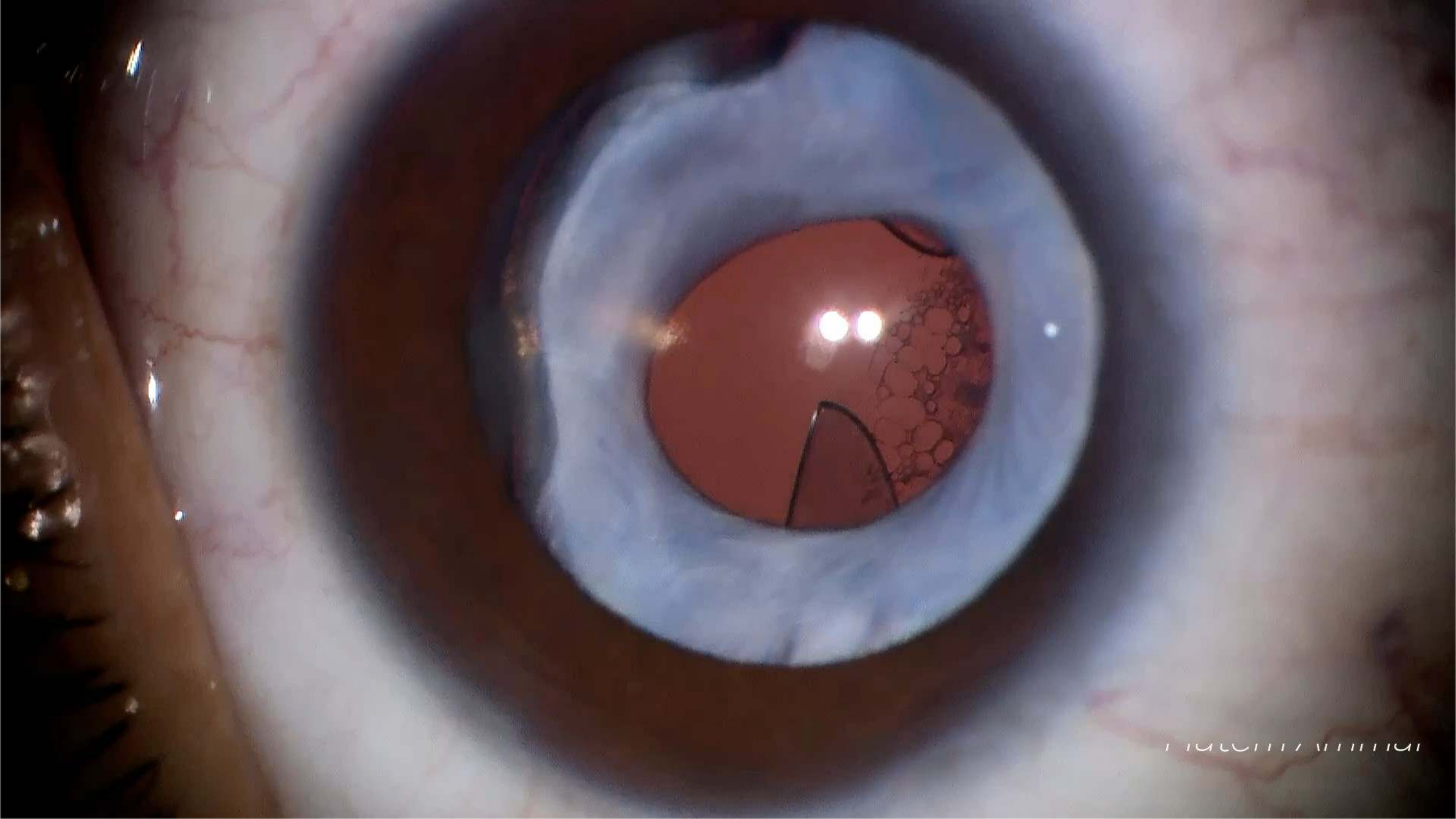

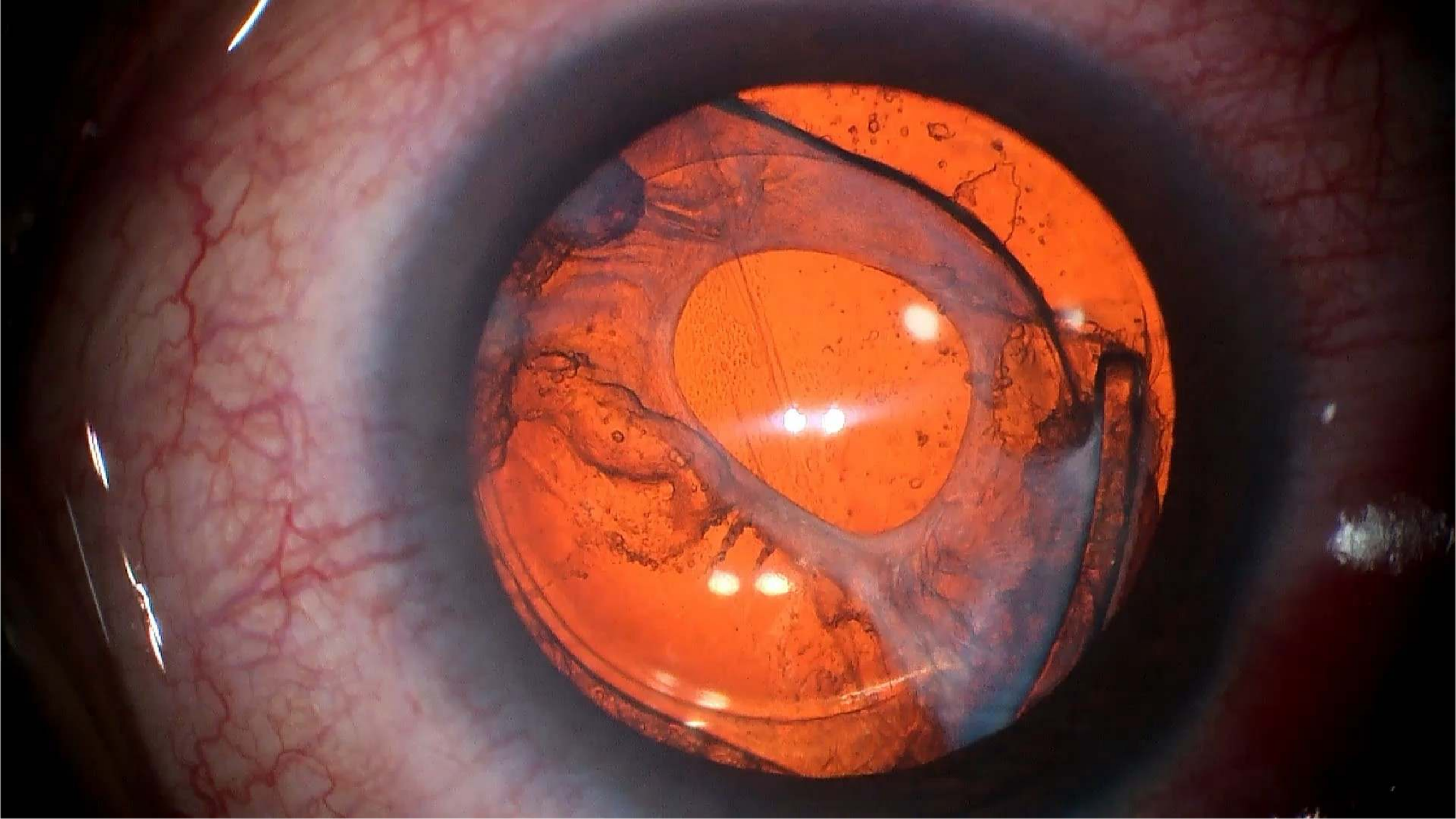

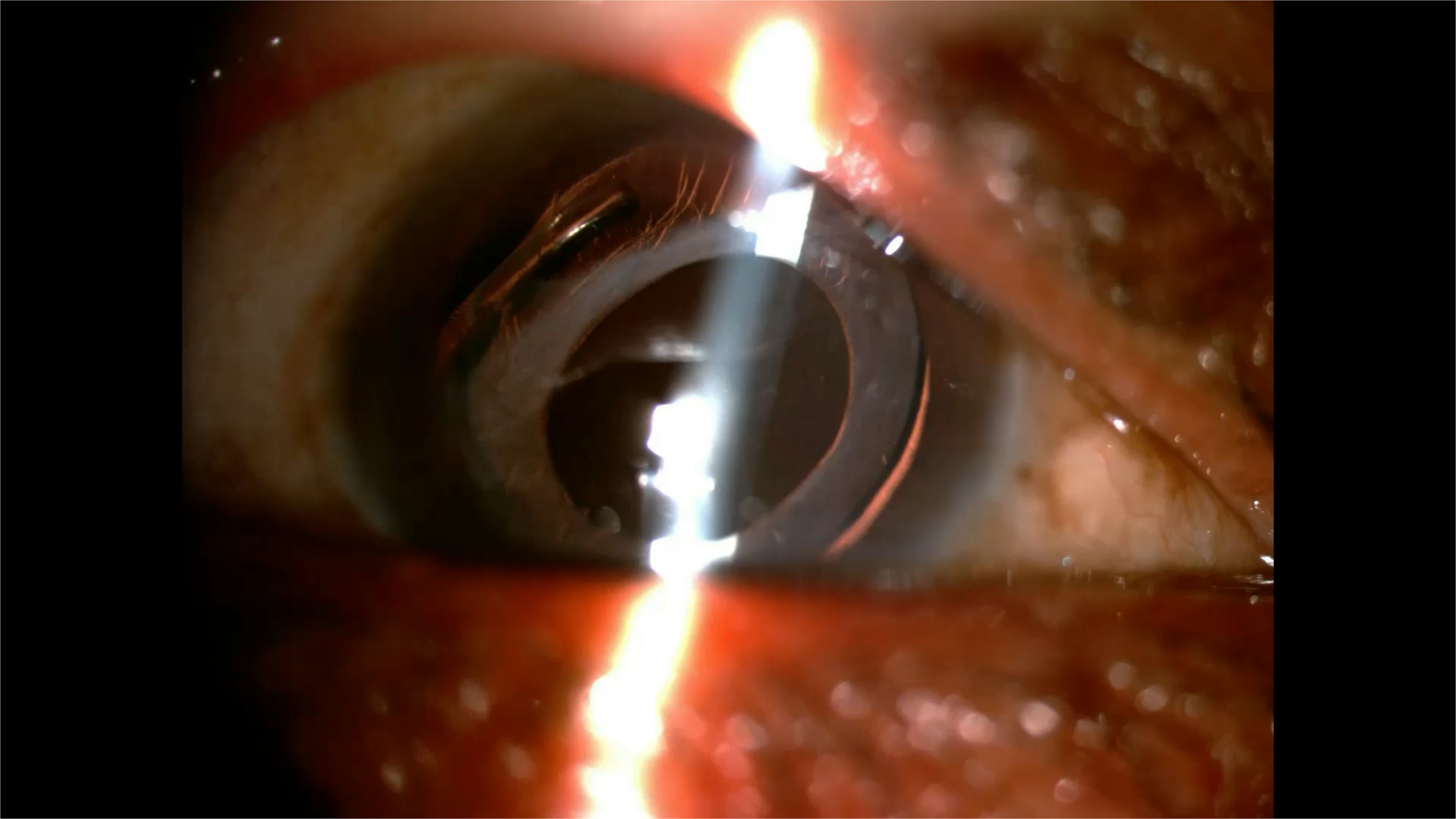

Femtosecond laser–assisted intraocular lens exchange

Nicole R. Fram, MD, Samuel Masket, MD, Hasan Alsetri, BS, Don Pham, BS

Intraocular lens (IOL) exchange in patients with anterior capsule contraction resulting from phimosis can complicate IOL exchange as the fibrotic anterior capsule must be cut to gain access to the IOL. Maintaining curvilinear capsulotomy is particularly important when the desired outcome is bag-to-bag IOL exchange. Similarly, when the posterior capsule is open, properly sized curvilinear anterior capsulotomy will allow for optic capture and further stability of the exchanged IOL. Secondary capsulotomy size ranged from 4.9 to 5.0 mm, and the energy was set at 4 to 10 μJ depending on diffusiveness of the anterior capsule. The femtosecond laser was adapted to create a secondary anterior capsulotomy to facilitate IOL exchange.

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Online Video

Intraocular lens (IOL) exchange remains more than an occasional necessity. Common indications include wrong lens power, IOL opacification, dysphotopsia, and malpositioned IOL.[1–3] In addition, patient intolerance to diffractive optic IOLs may require exchange for a monofocal IOL if the quality of vision falls short of the patient's needs or expectations.

Late single-piece IOL exchange may be surgically challenging as the thickened support loops of single-piece IOLs tend to be tenaciously captured in fibrotic channels, and the anterior capsulotomy has a proclivity for fibrosis and contraction with phimosis secondary to fibrometaplasia of the residual anterior subcapsular lens epithelial cells (Figure 1).[4] The resulting phimosis may make it difficult to free the optic from the capsule bag, and the associated surgical maneuvers may damage the lens capsule or zonular fibers.[5,6] Most typically, when facing this dilemma, surgeons may opt to create radial relaxing incisions in the anterior capsule prior to surgery with the Nd:YAG laser or at surgery with sharp microscissors.[7] However, both these options tend to preclude maintenance of continuous circular anterior capsulotomy, vital for in-the-bag IOL implantation; this may be very significant, should the desired new IOL be of single-piece design, given the need for in-the-bag fixation with that IOL style.[8] Hence, there is need for a method to recreate the anterior capsulotomy to its approximate original size to facilitate IOL exchange while maintaining the integrity of the capsule bag for proper fixation of the new IOL.

Accordingly, we describe a new technique to aid IOL exchange in patients with anterior capsule contraction resulting from phimosis. To resolve the challenge, we adapted the femtosecond (FS) laser to create a secondary anterior capsulotomy to facilitate IOL removal. This application of the FS laser was inspired by a video at the 2014 ASCRS film festival by Basti and Grewal, "Tackling Challenges During Femtosecond Laser–Assisted Cataract Surgery," where a fibrotic anterior capsule remnant was lasered to assist in the sulcus placement of an IOL with optic capture in an aphakic patient.[A] Although the method has been reported as useful for managing capsule contraction with retention of the IOL, we are not aware of previous reports for use of the FS laser to facilitate IOL exchange.[9–12]

SURGICAL TECHNIQUE

A retrospective case series of 6 patients who underwent FS laser–assisted posterior chamber IOL (PCIOL) exchange with concomitant capsule contraction (<4 mm) or phimosis from 2015 to 2017 was performed. Patients were not age matched, and the follow-up period ranged from 6 to 27 months. Secondary capsulotomy size ranged from 4.8 to 5.0 mm, and the energy was set at 4 to 10 μJ depending on density and thickness of the anterior capsule (Figure 2). Off-label settings for the Catalys laser are described in Table 1 and Figure 3. Note that the posterior lens settings on the Catalys were set to a default of 2500 μm to disable the error message that occurs when the posterior fits of the IOL are not in range. LenSx settings for secondary capsulotomy ranged

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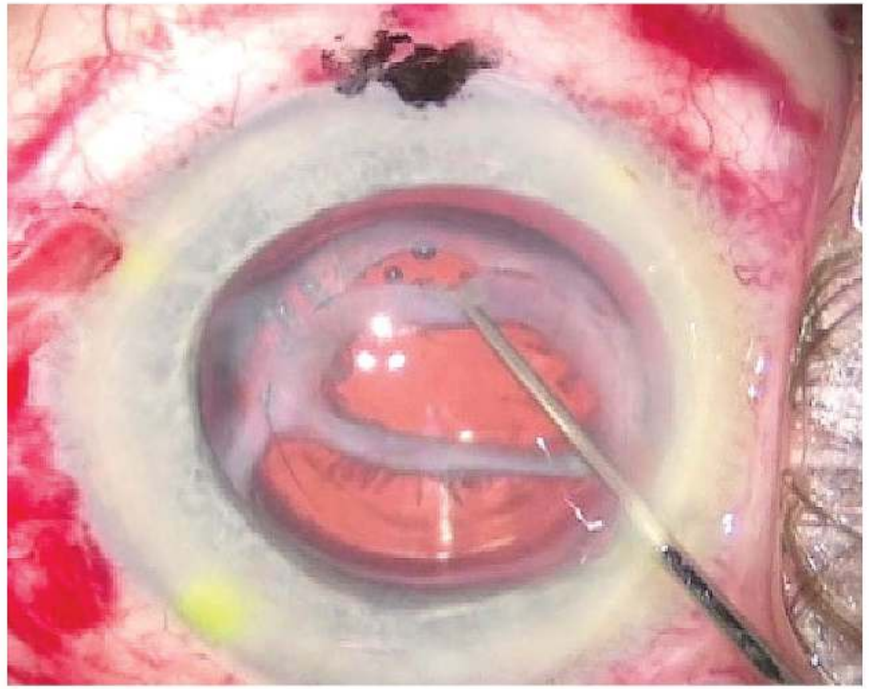
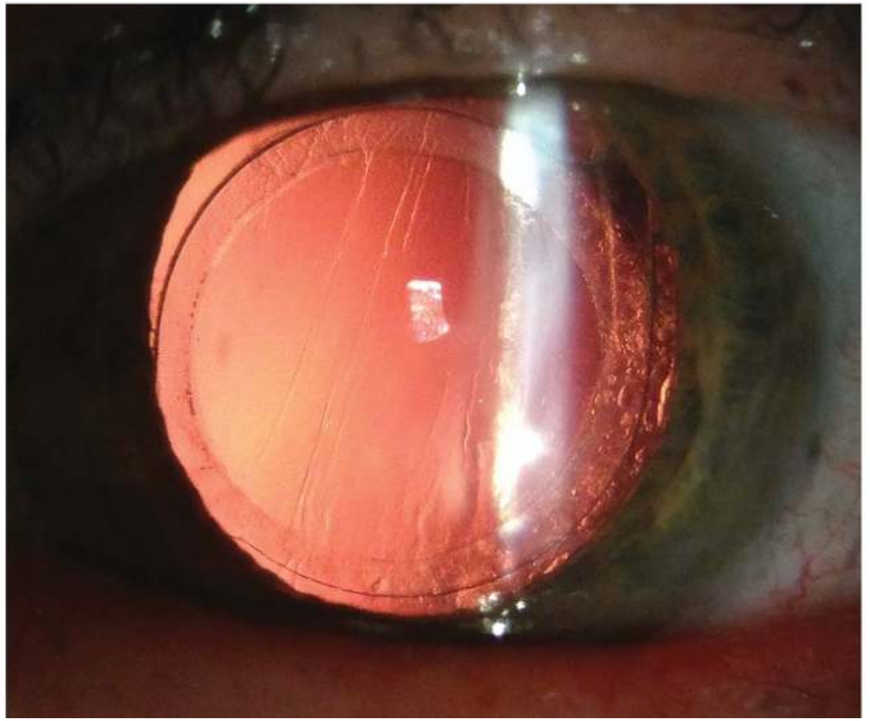
From the Advanced Vision Care, Los Angeles, California (Fram, Masket, Alsetri, Pham); Stein Eye Institute, David Geffen School of Medicine, UCLA, Los Angeles, California





Take Home message

- Better to prevent than to treat
- Early YAG much easier than late surgical interference
- Different plans for every case

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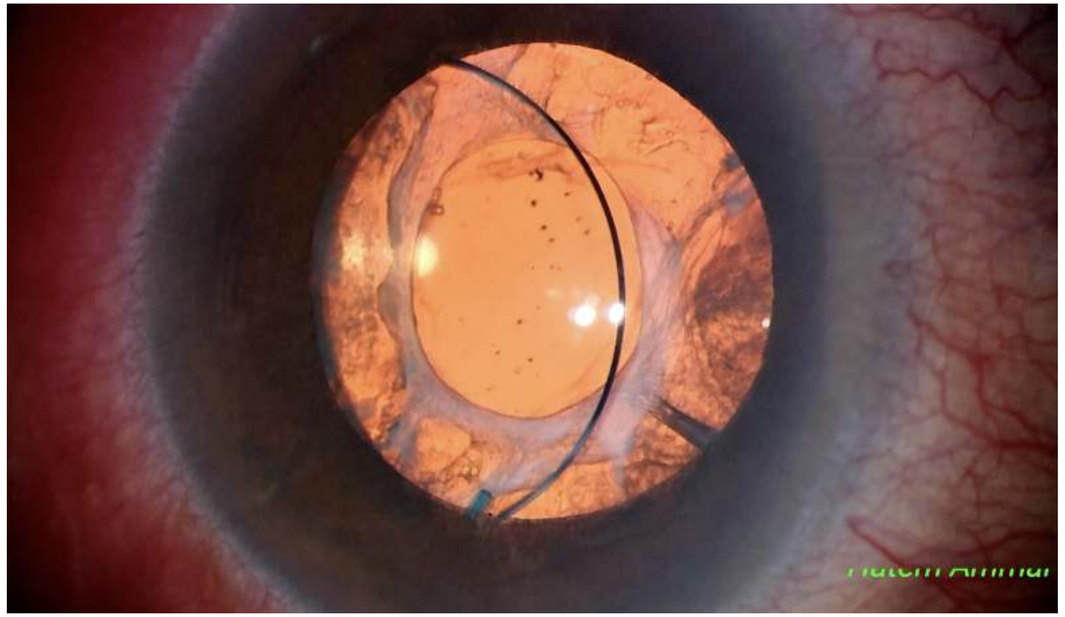

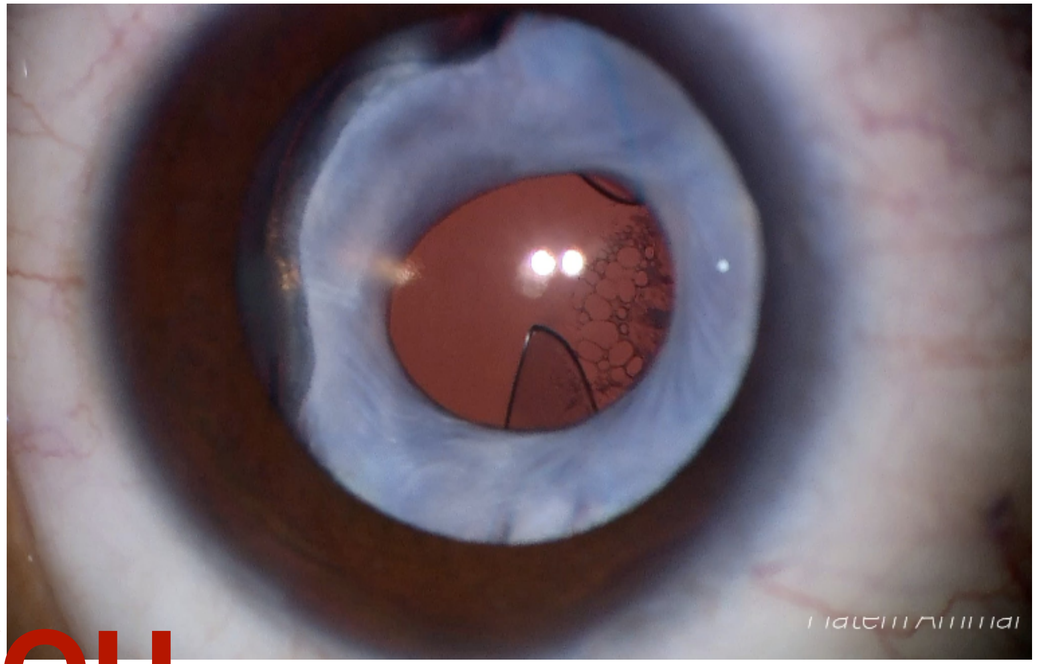

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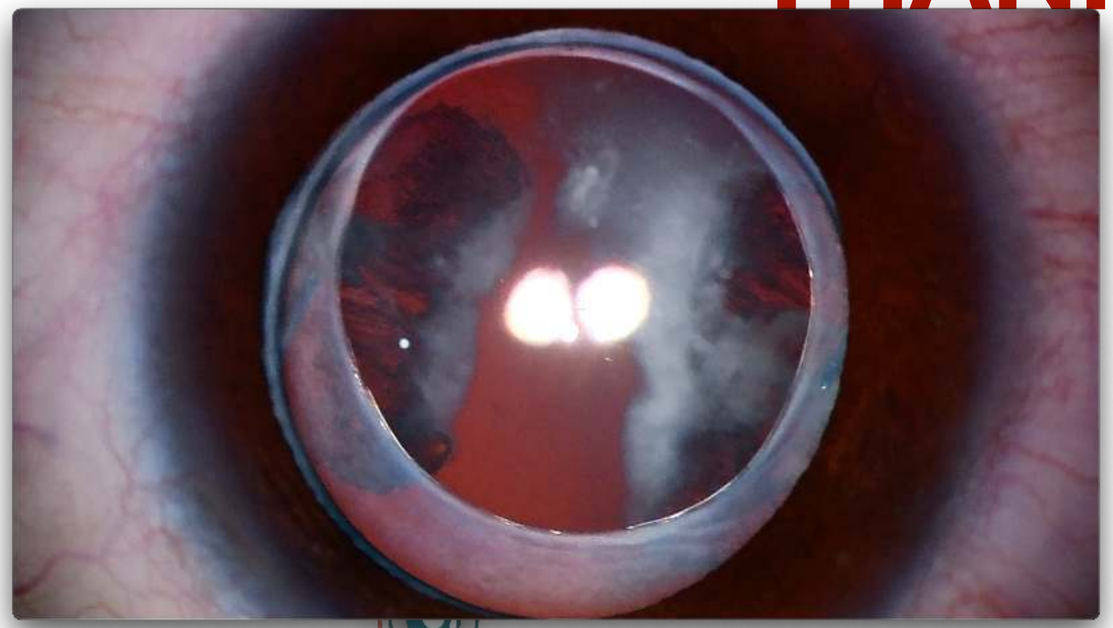

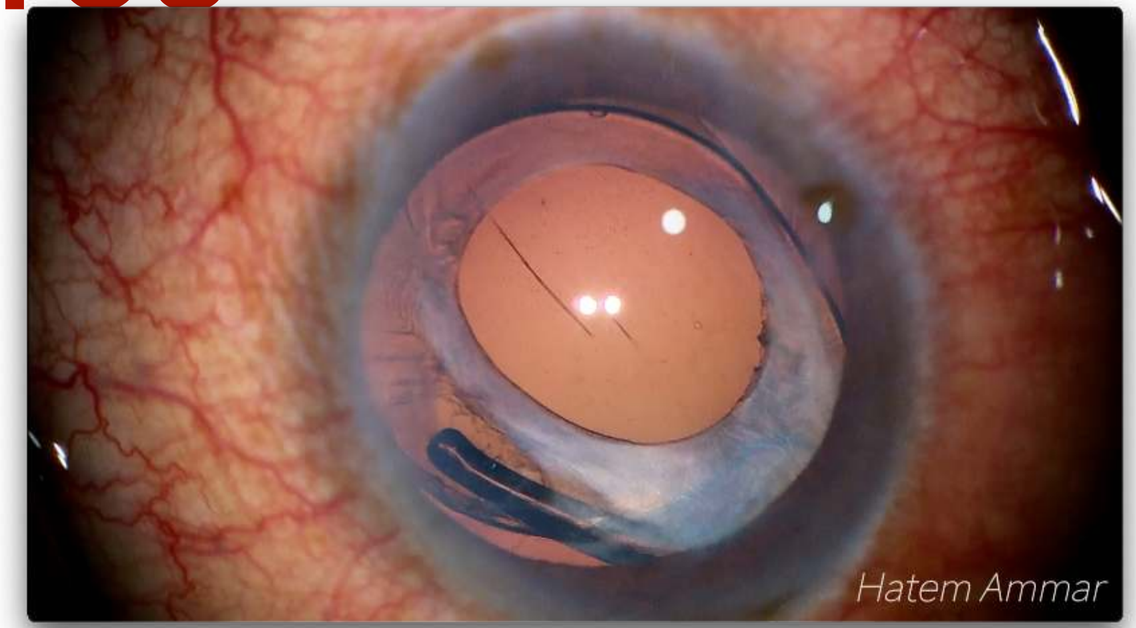

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