MSICS

The Practical Approach

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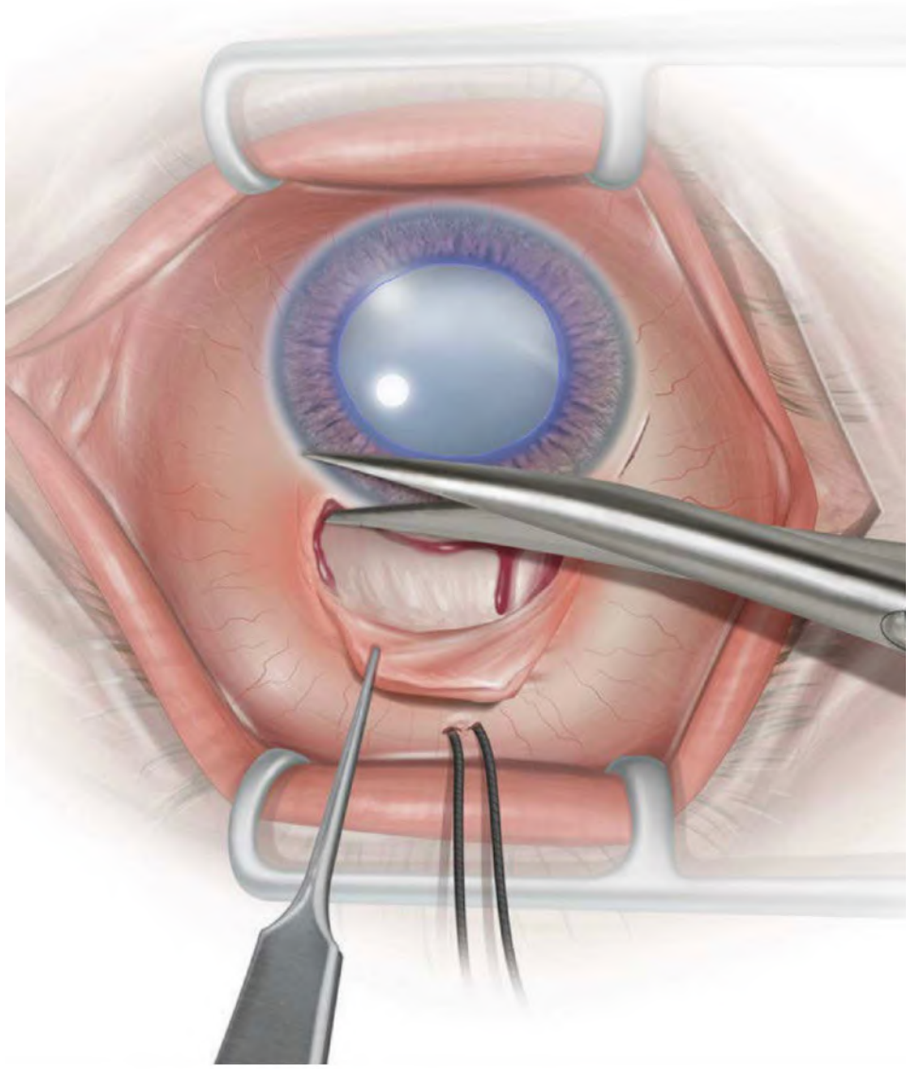


see international

Why Small Incision Surgery?

- Safe, predictable in volume surgeries
- Economically viable
- Better than ECCE with sutures
- Less post operative visits
- No suture related complications
- Easy to learn
- Easier in hard cataracts
- Safer in decompensated corneas

see international

Starting Out- Surgically

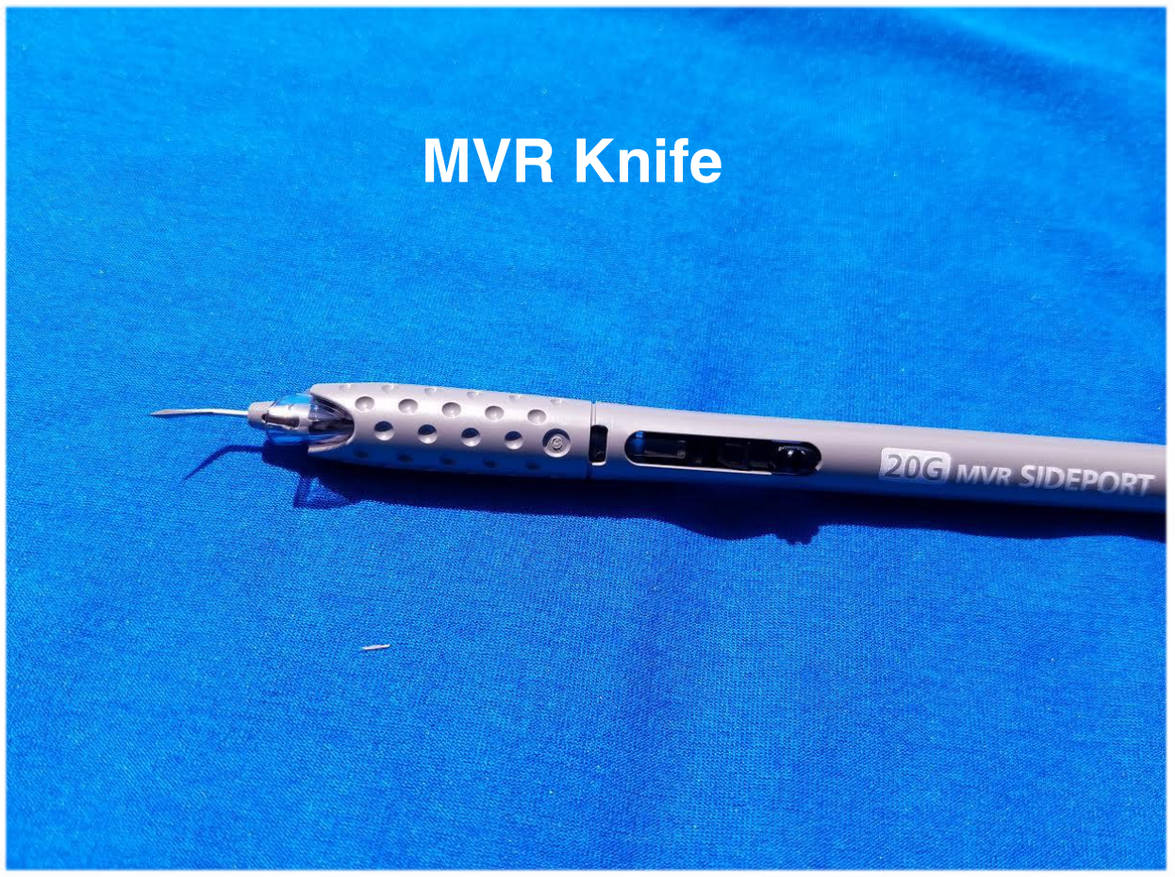
- Pick your patients carefully
- Avoid traumatic and subluxated cataracts
- Deep set eyes
- Prominent brows
- PXE
- Vision blue is great
- Sharp blades are much easier
- Great block peribulbar preferred
- Always remain in your comfort zone
- Do not hesitate to call for help

see international

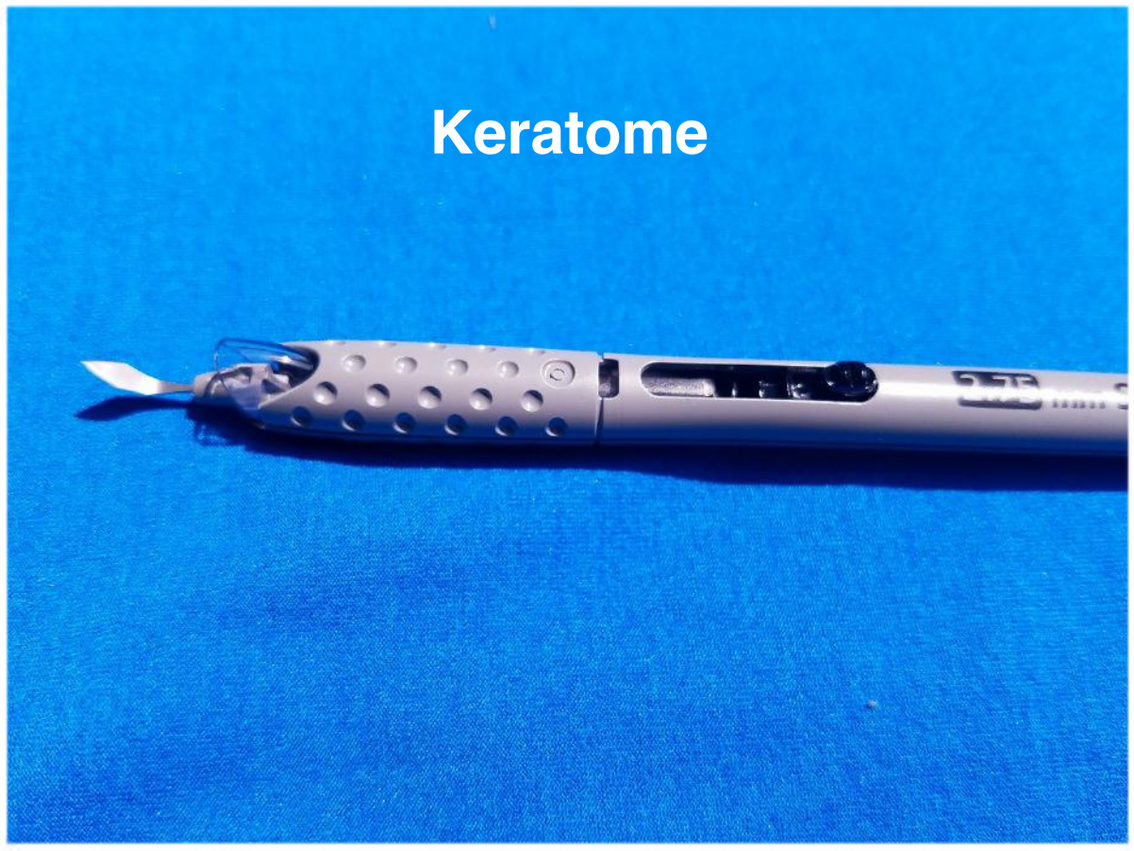
Instruments Required

- Always carry your preferred instruments
- Most of the instruments required are used in phaco
- The ones which differ are:
  - # 15 blades of 300 microns, guarded blades
  - The crescent knife
  - MVR knife
  - AC maintainer
  - The aspirator

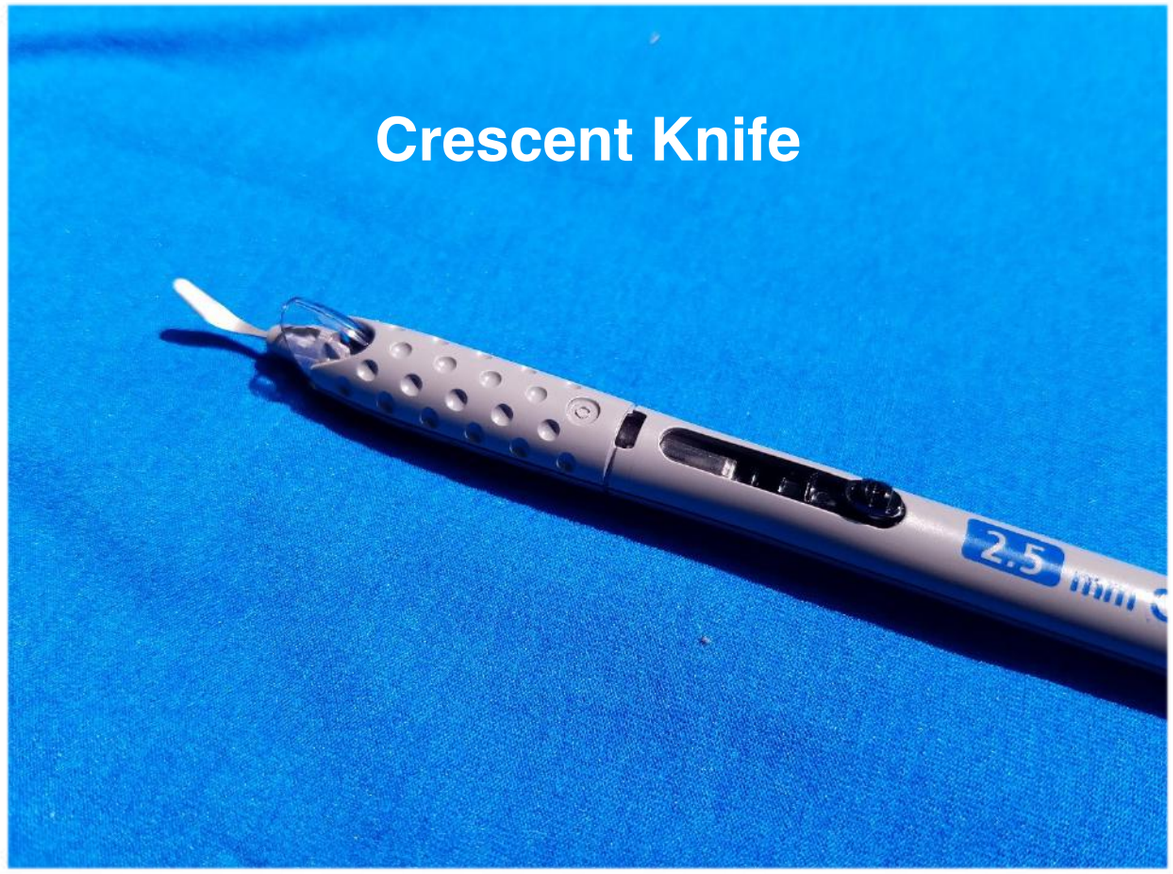
MVR Knife



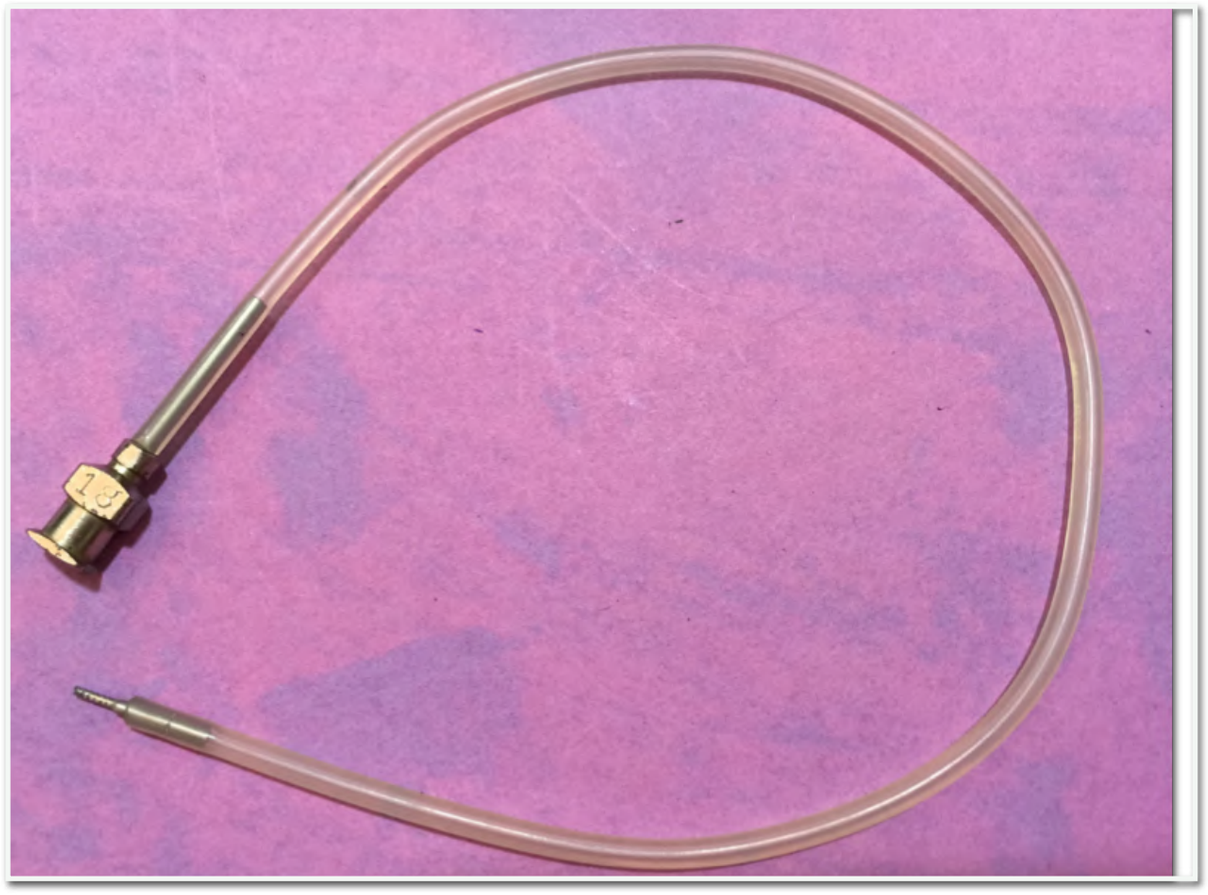
Keratome

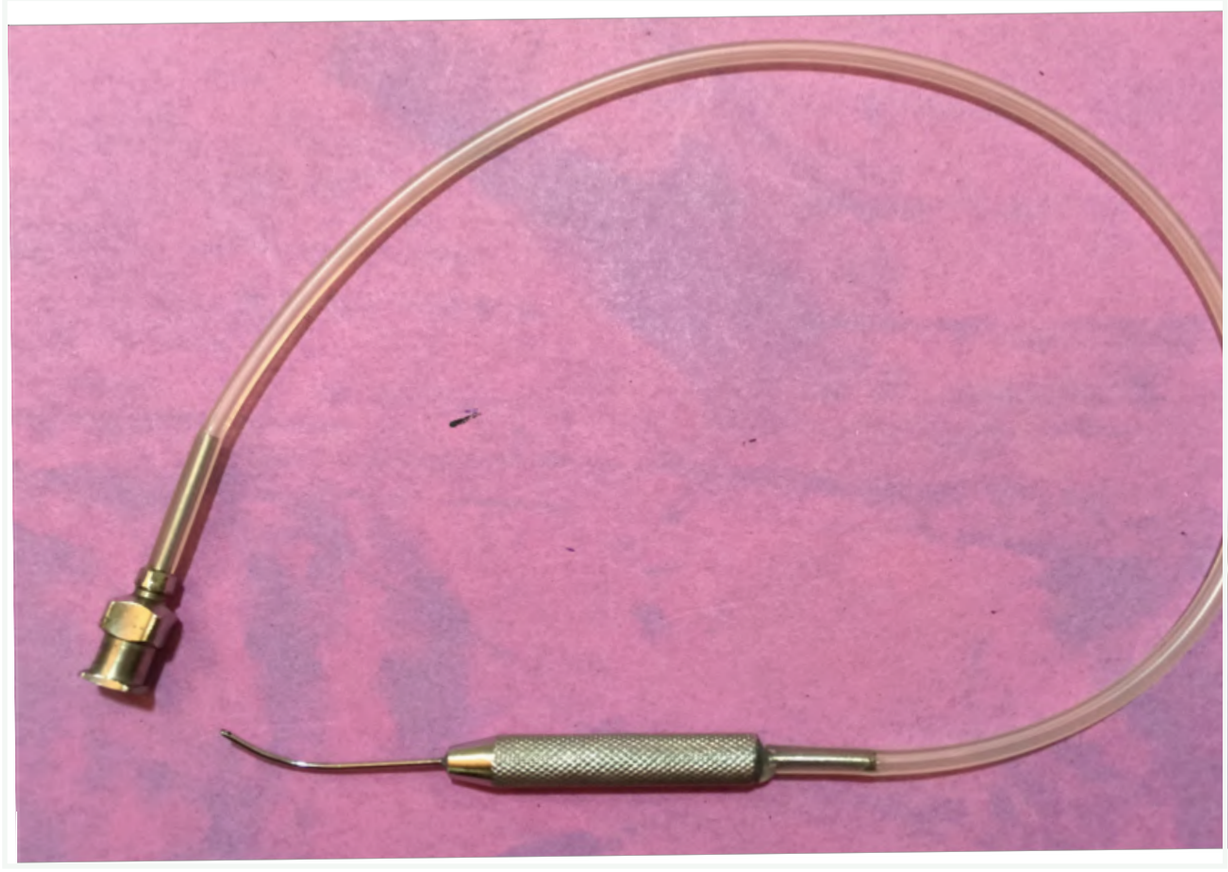


Crescent Knife



AC Maintainer & Aspirator





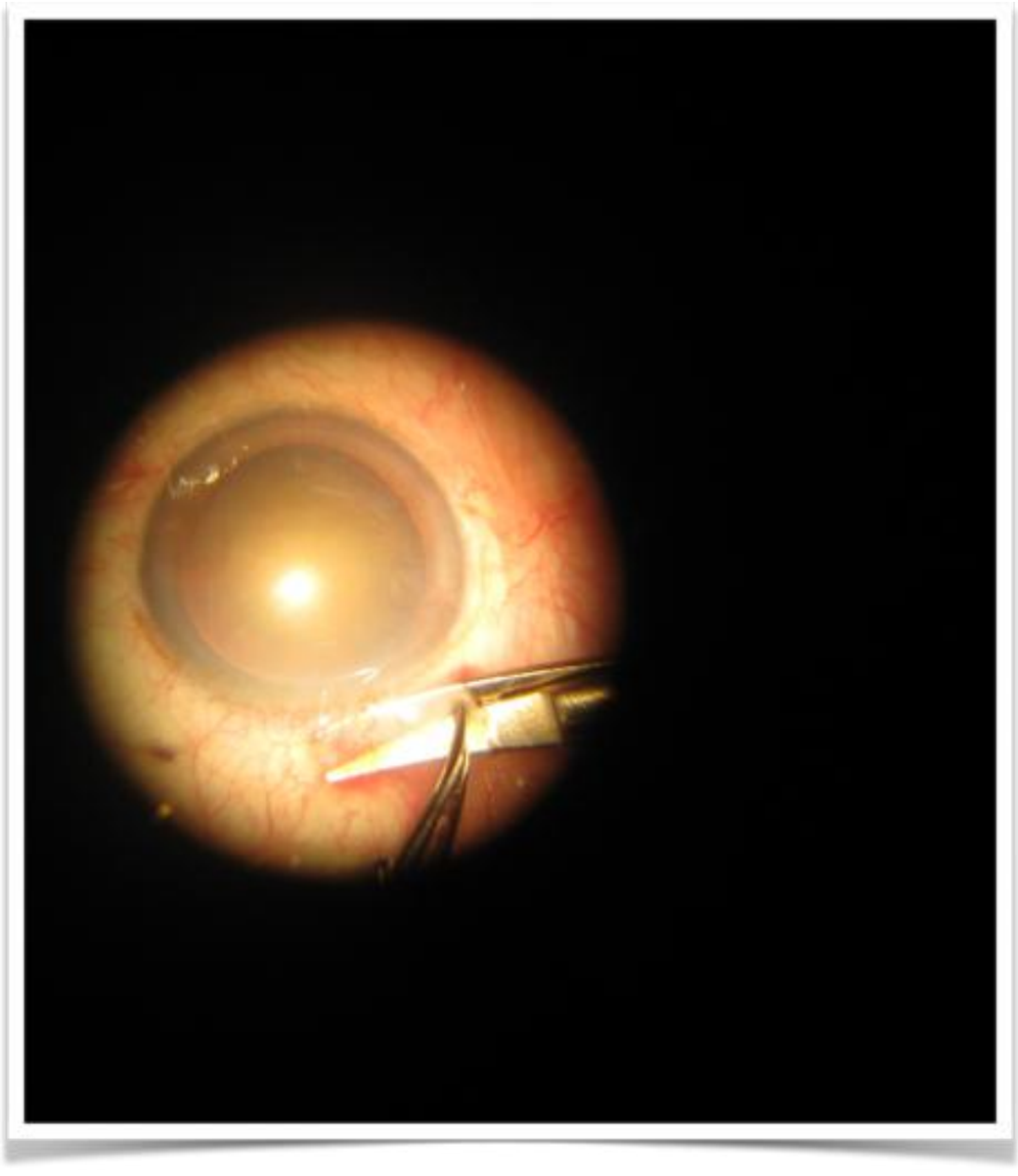
Steps In MSICS

- Dissecting the conjunctiva & cautery
- Scleral incision
- Tunnel construction - scleral and inner-lip
- Side port
- Maintaining the anterior chamber with BSS or viscoelastic
- Capsulorhexis
- Hydrodissection with nucleus prolapse
- Nucleus expression
- Cortical cleanup
- IOL implantation
- Wound closure

see international

Dissecting the Conjunctiva

- Dissect from limbus to limbus
- Leave a rim of 1mm of conjunctiva: this would serve to manipulate the eyeball & also the limbal stem cells are preserved so less post-op dryness
- Try to clear the bed of tenon's
- Cauterize the vessels to prevent post-op hyphaema



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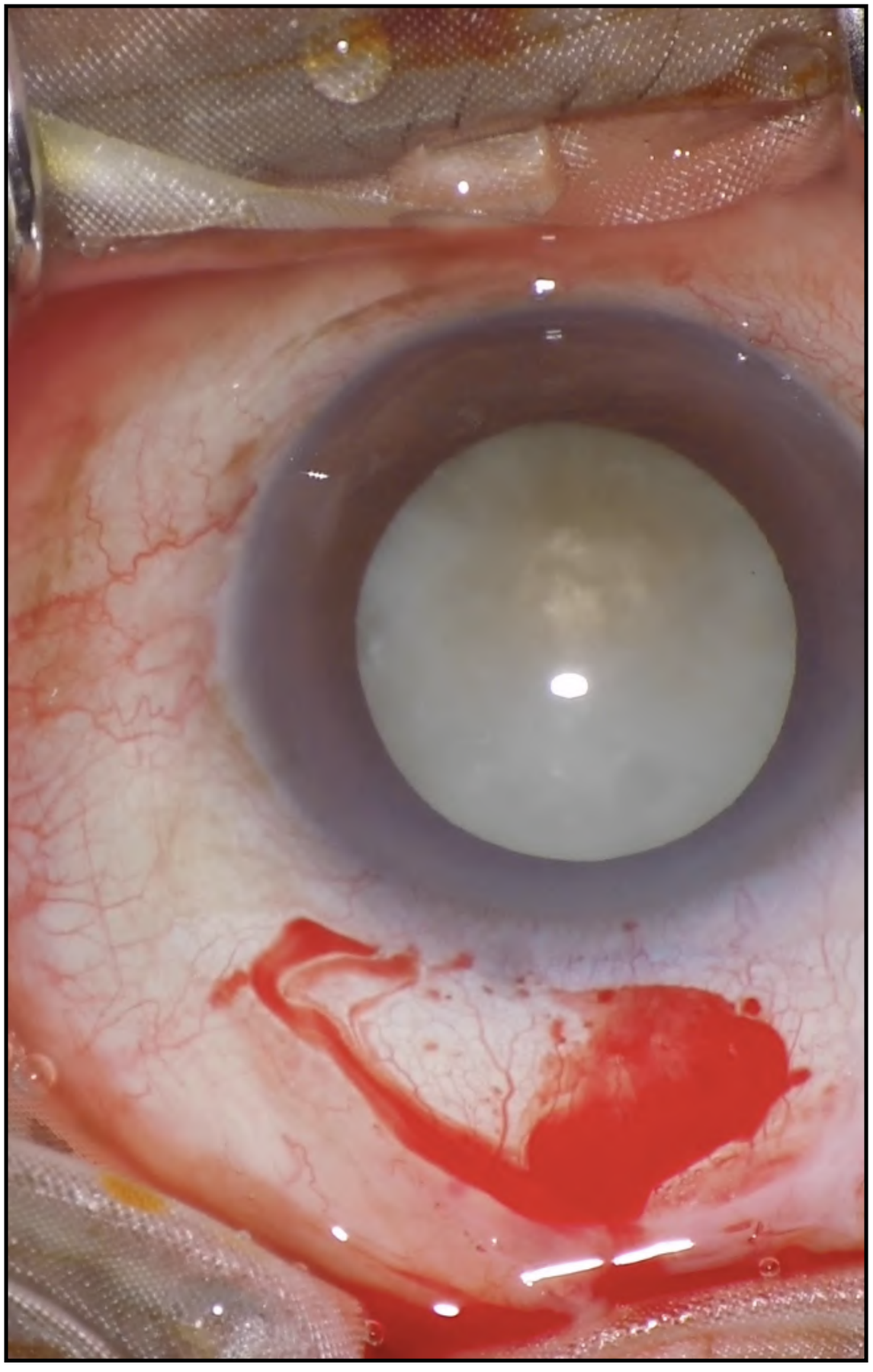
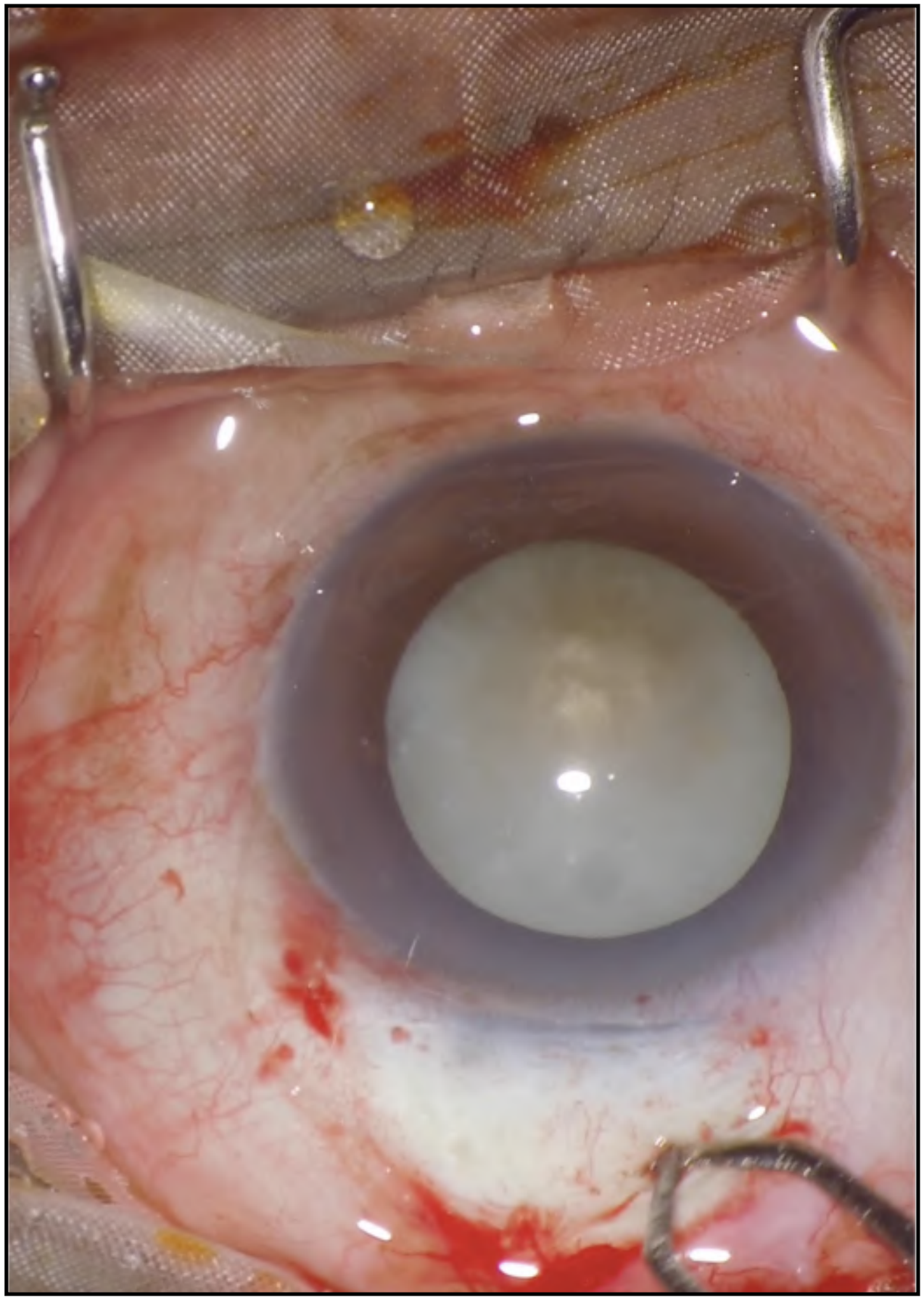
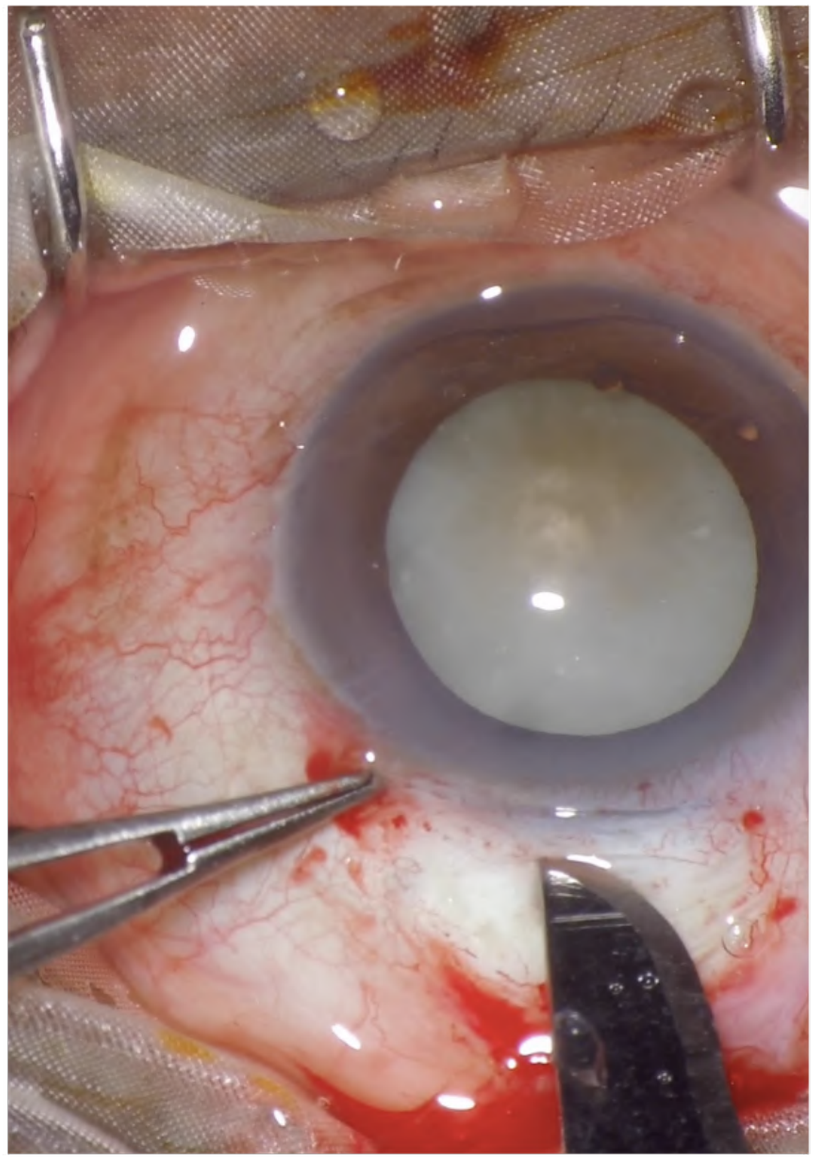
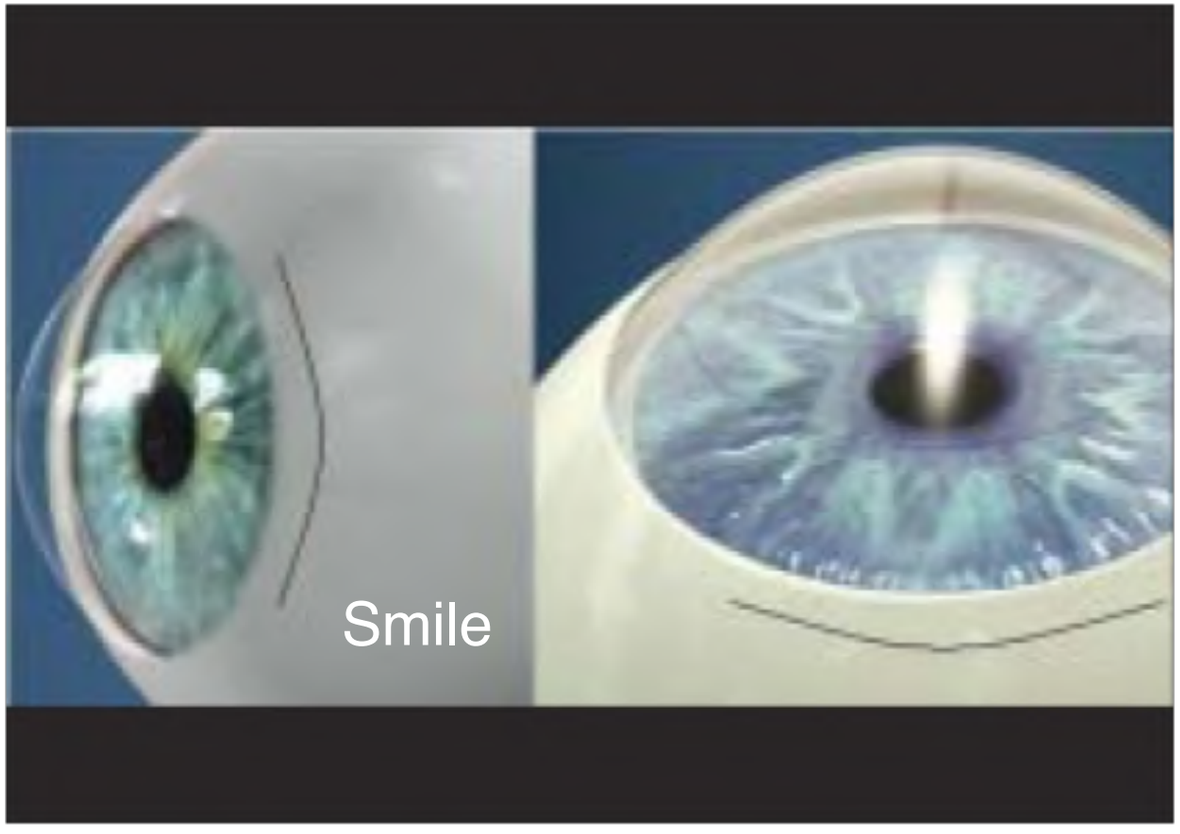


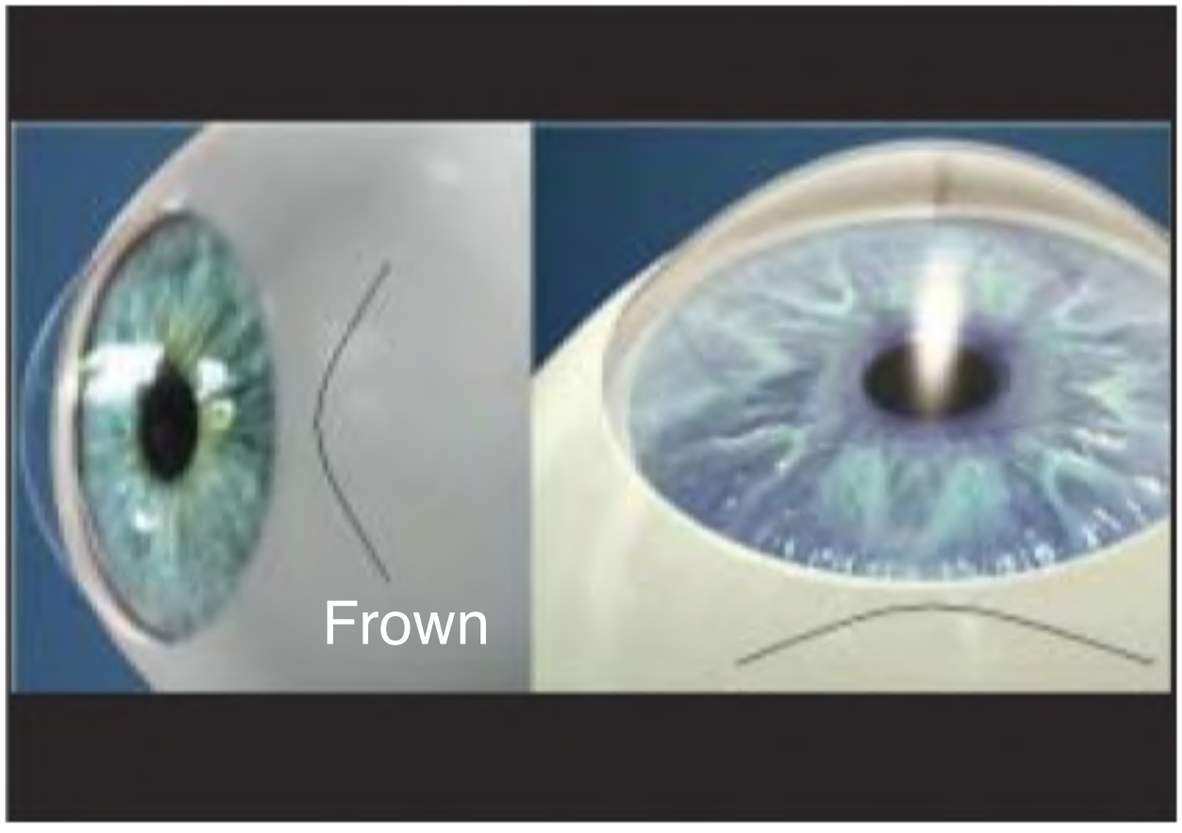


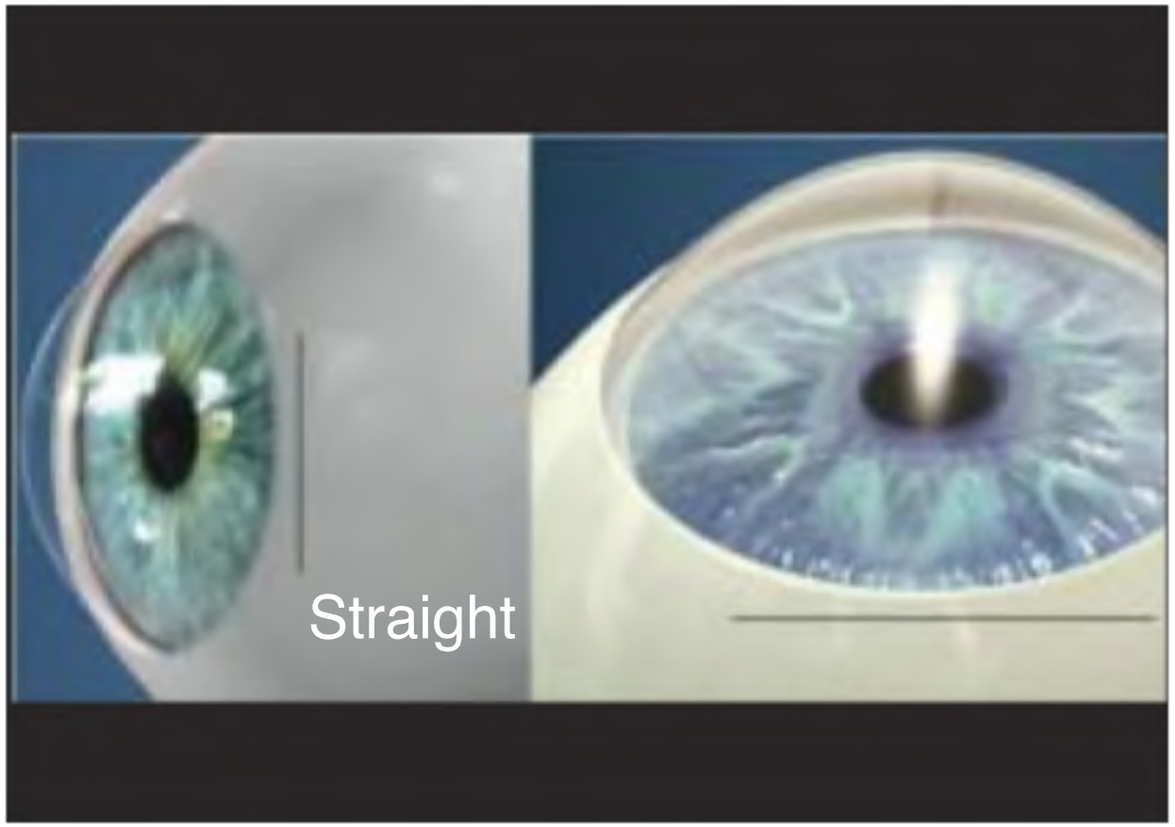
Scleral Incision

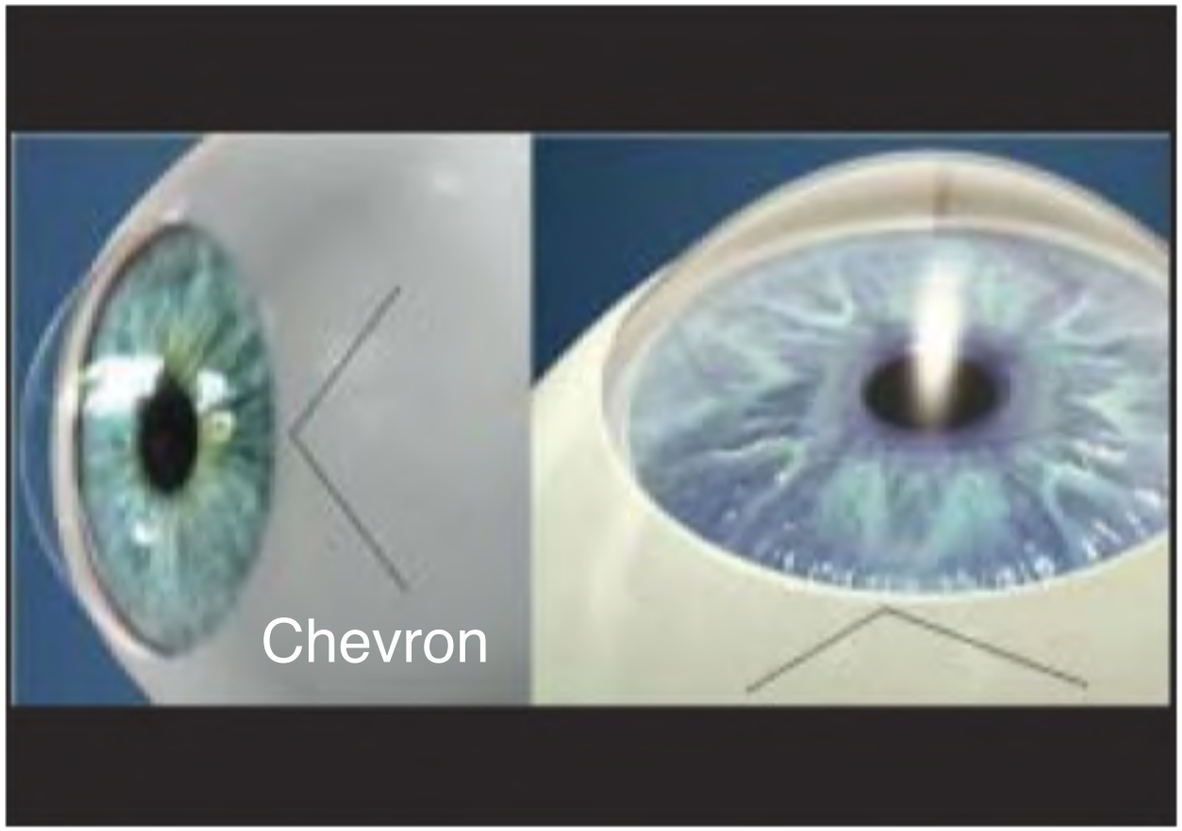
- Initial scleral groove taken 2 mm behind the limbus
- Done with a # 15 blade on BP handle
- Diamond knives, 300 microns can also be used
- Shape can be
    1. straight
    2. frown
    3. smile
    4. chevron
- Length 5-8 mm depending upon the size and density of the nucleus




Smile

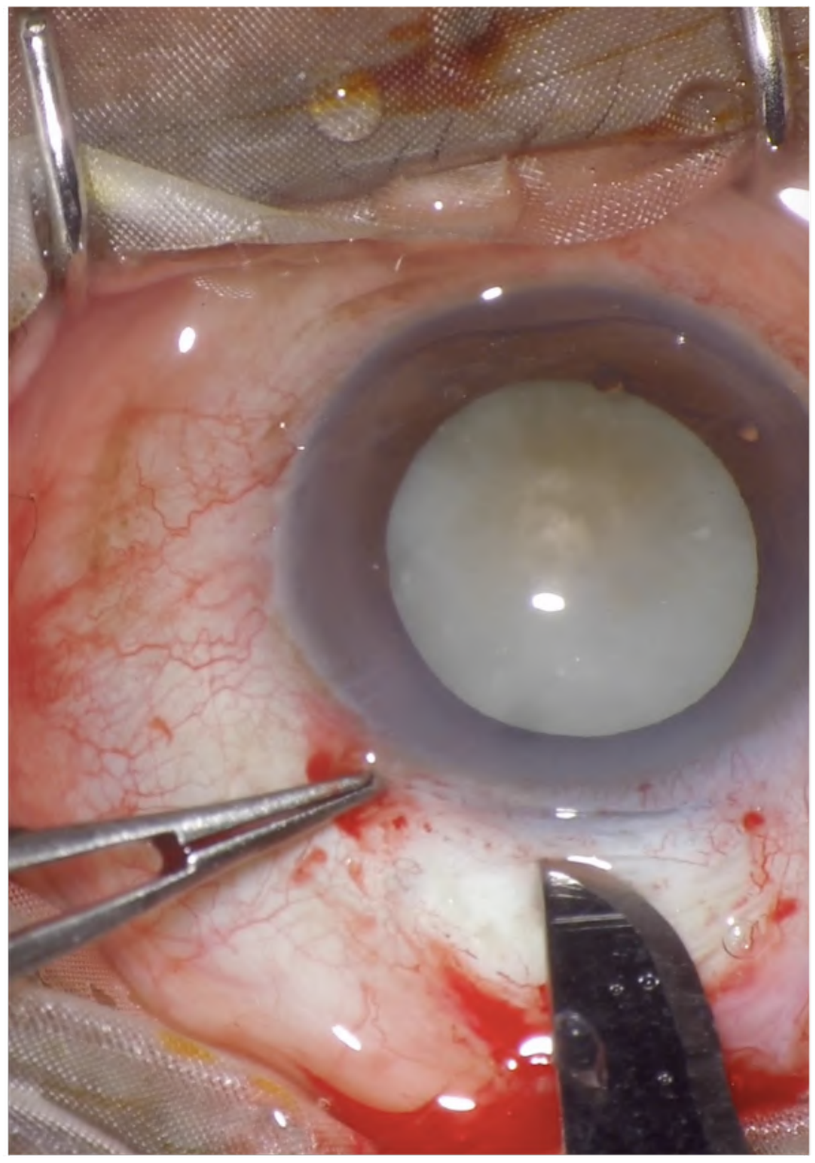

Frown


Straight


Chevron

Depth of the Scleral Groove

- This is a very important step
- Depth should be around 0.3mm
- 1/2-1/3 rd thickness of sclera at the limbus



- Imp-tip stabilize the sclera with a toothed instrument like lims' forceps
- Do not hold the tunnel flap to prevent damage or tunnel leakage

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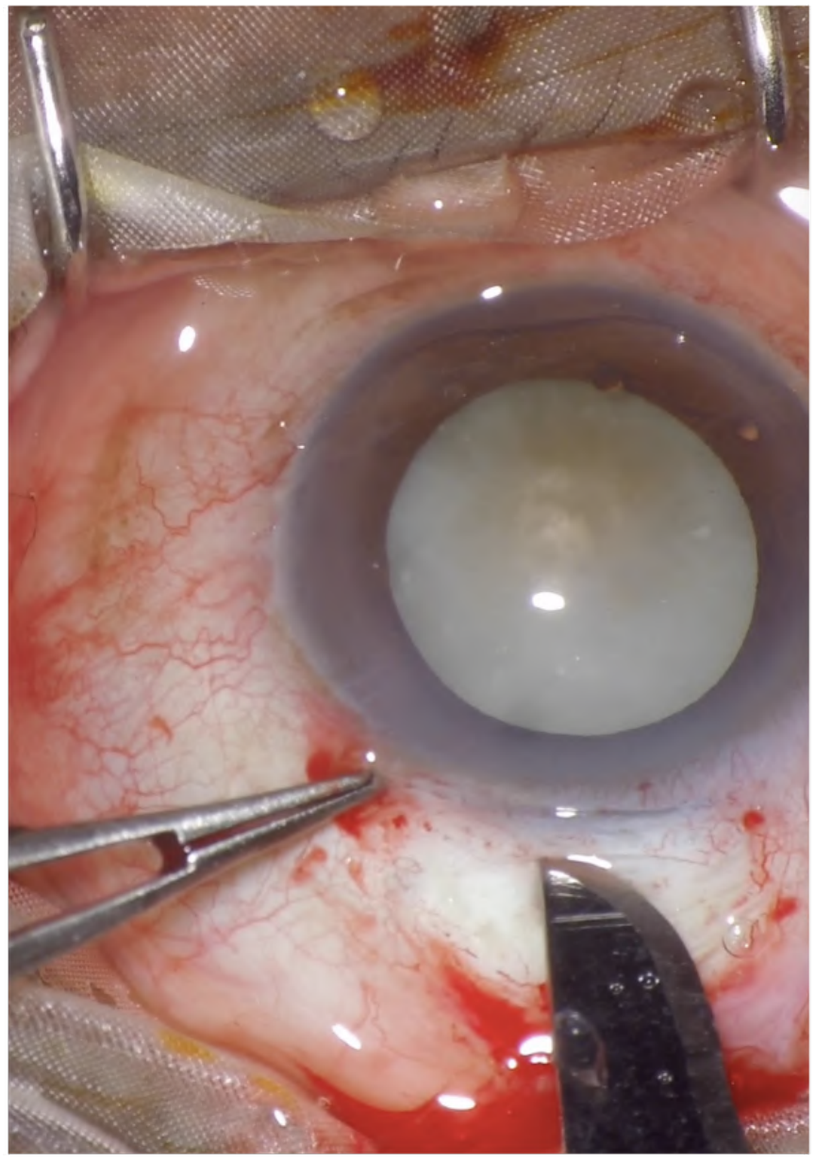
Tunneling - Key to Success

- Done with angled crescent knife
- Scleral flap should be neither too thin or too thick
- Depth can be assessed depending if you can clearly see the crescent blade
- If seen clearly, flap is too thin, might cause a buttonhole
- If not seen at all, the flap is too thick, might cause a direct entry and damage the angle structures
- The blade should be just visible under the scleral flap; indicates the appropriate thickness of the flap



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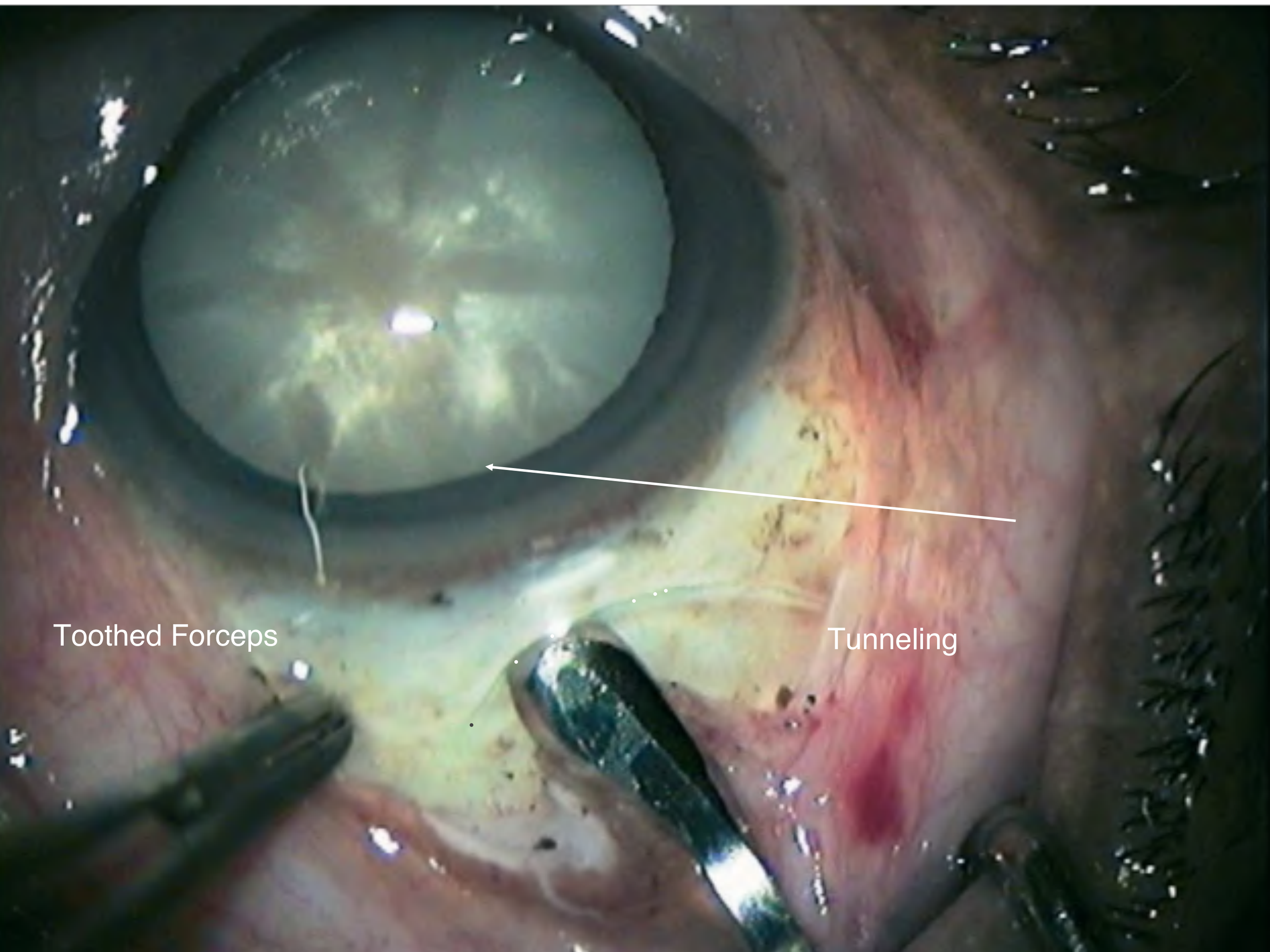
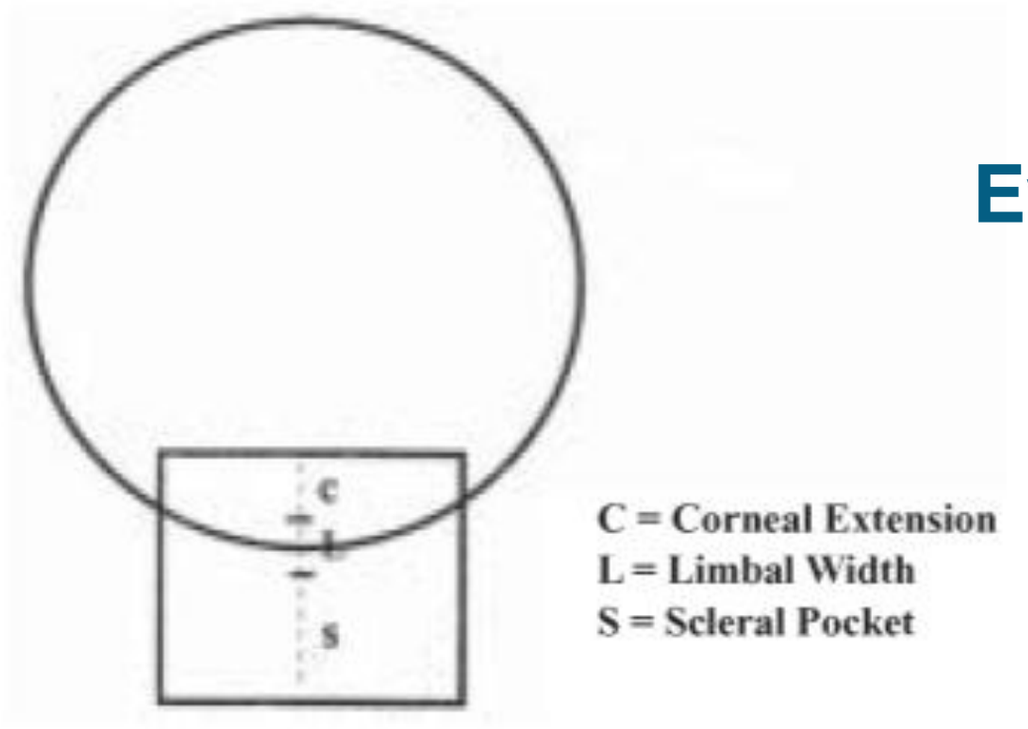

Toothed Forceps
Tunneling

How to Make a Self Sealing Tunnel



C = Corneal Extension
L = Limbal Width
S = Scleral Pocket

Even large tunnels can be self sealing
The length of the tunnel should be equal to or greater than width

C+L+S=3.5-4.0mm

see international

Direction of Crescent Blade

- The crescent blade is propagated anteriorly and forward until it engages the limbal tissue
- It should move in the upward and forward direction
- Remaining parallel to sclero corneal plane
- The lateral end of the tunnels are continued as scleral pockets, making a funnel shaped tunnel
- The tunnel is also continued 1mm into the clear cornea

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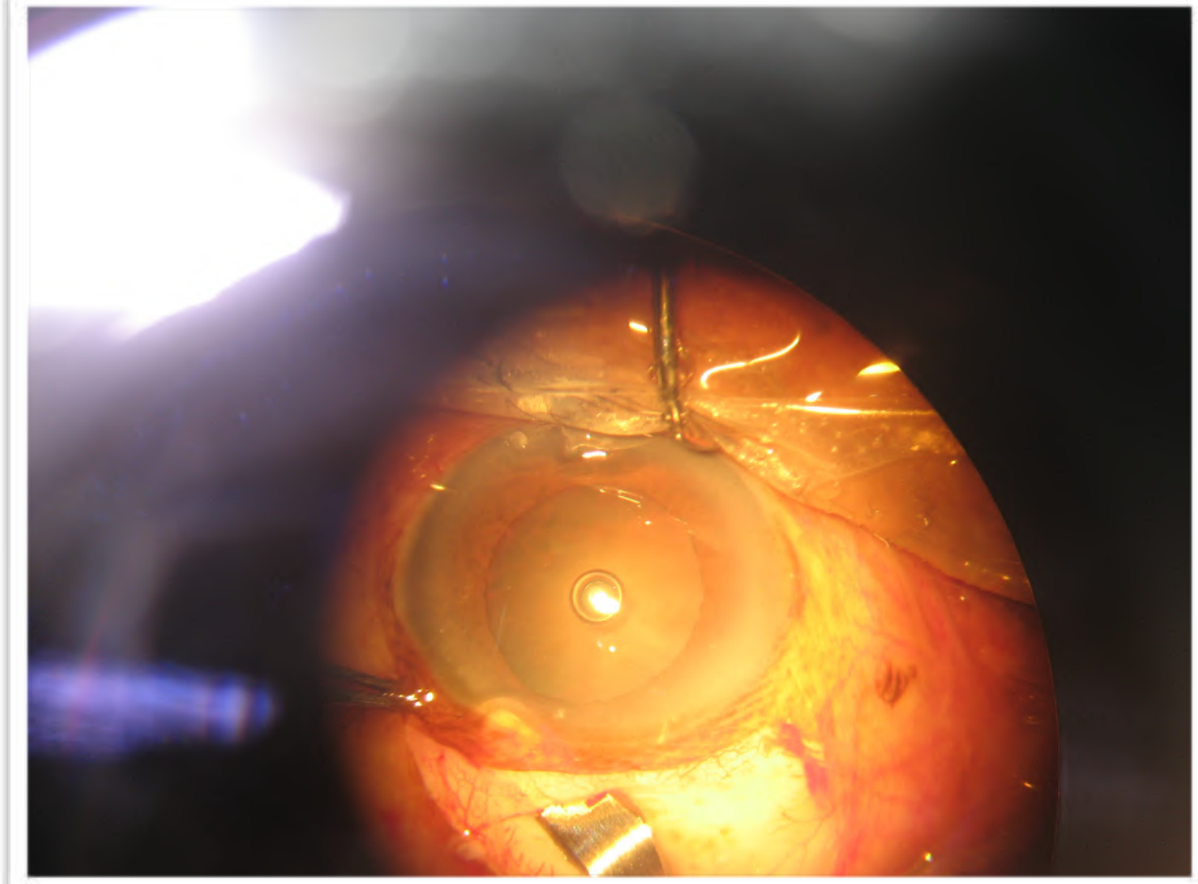
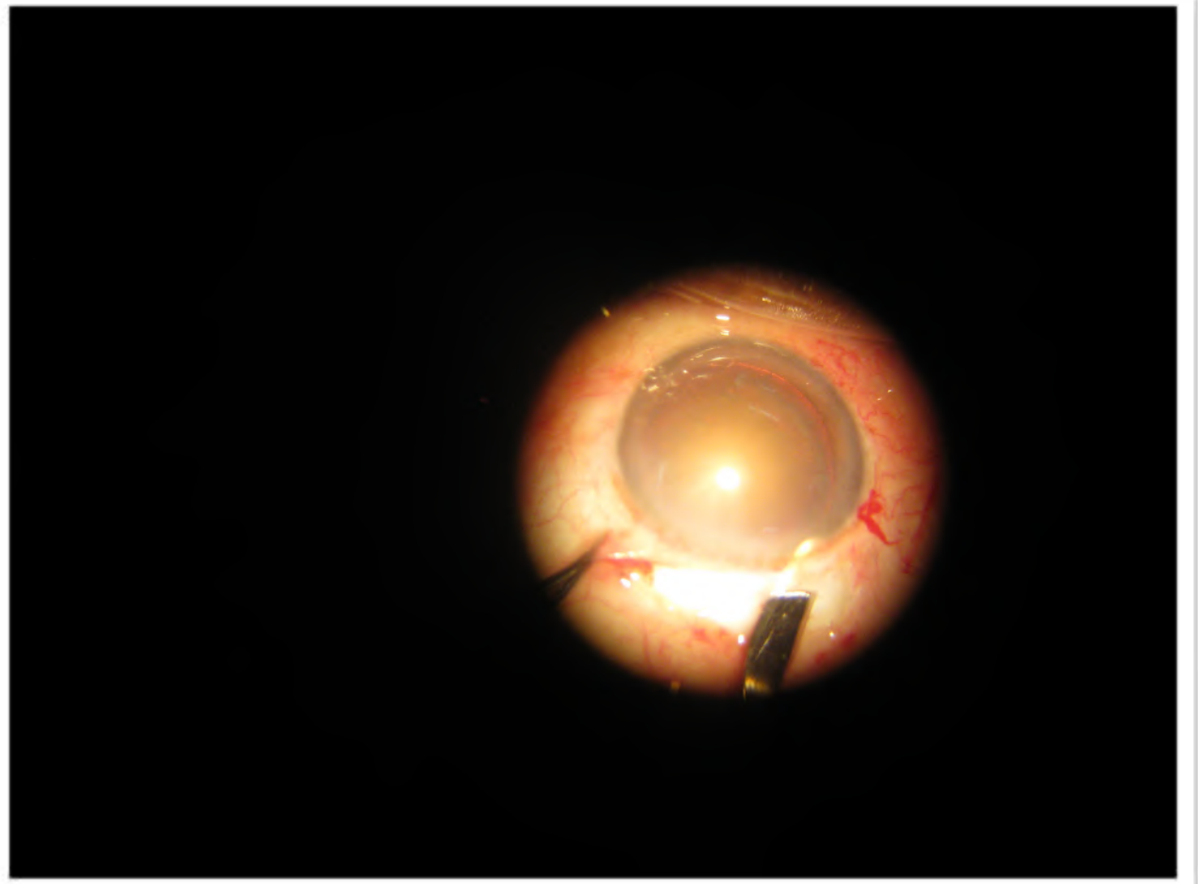
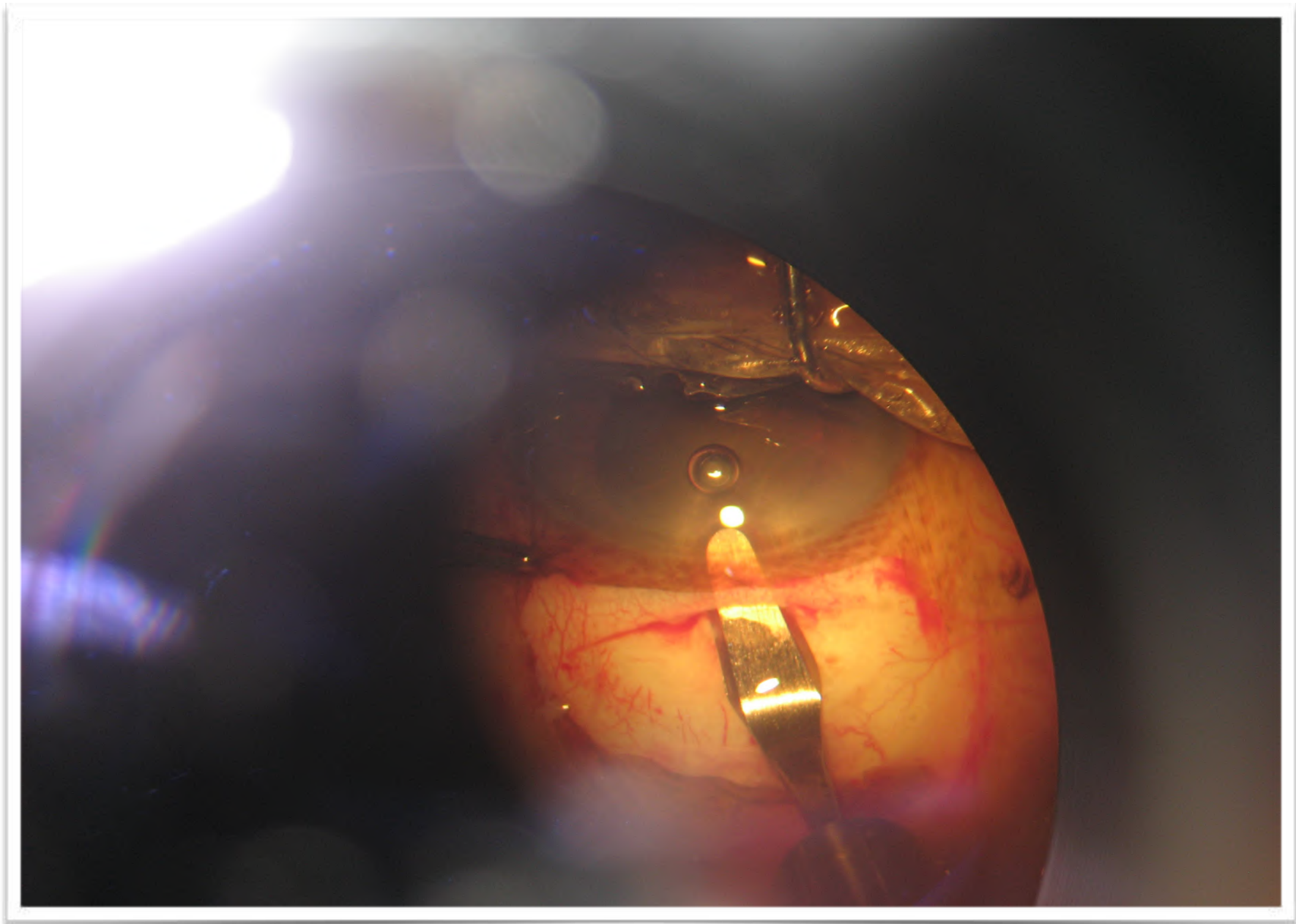
Making Scleral Pockets

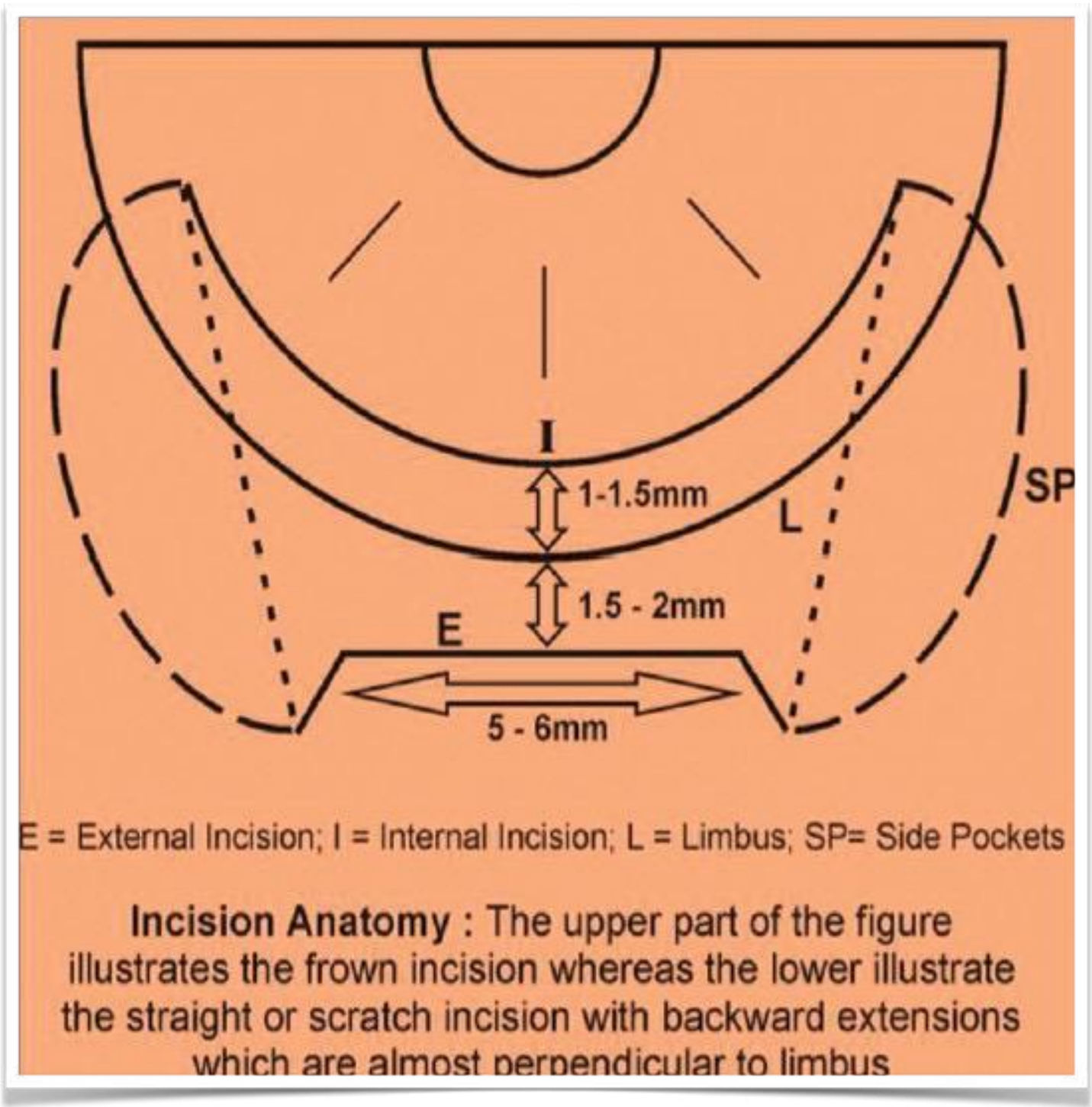




Tip Has Entered the Descemet Layer



Incision anatomy



E = External Incision; I = Internal Incision; L = Limbus; SP= Side Pockets

Incision Anatomy : The upper part of the figure illustrates the frown incision whereas the lower illustrate the straight or scratch incision with backward extensions which are almost perpendicular to limbus

This ensures that it is a self sealing tunnel

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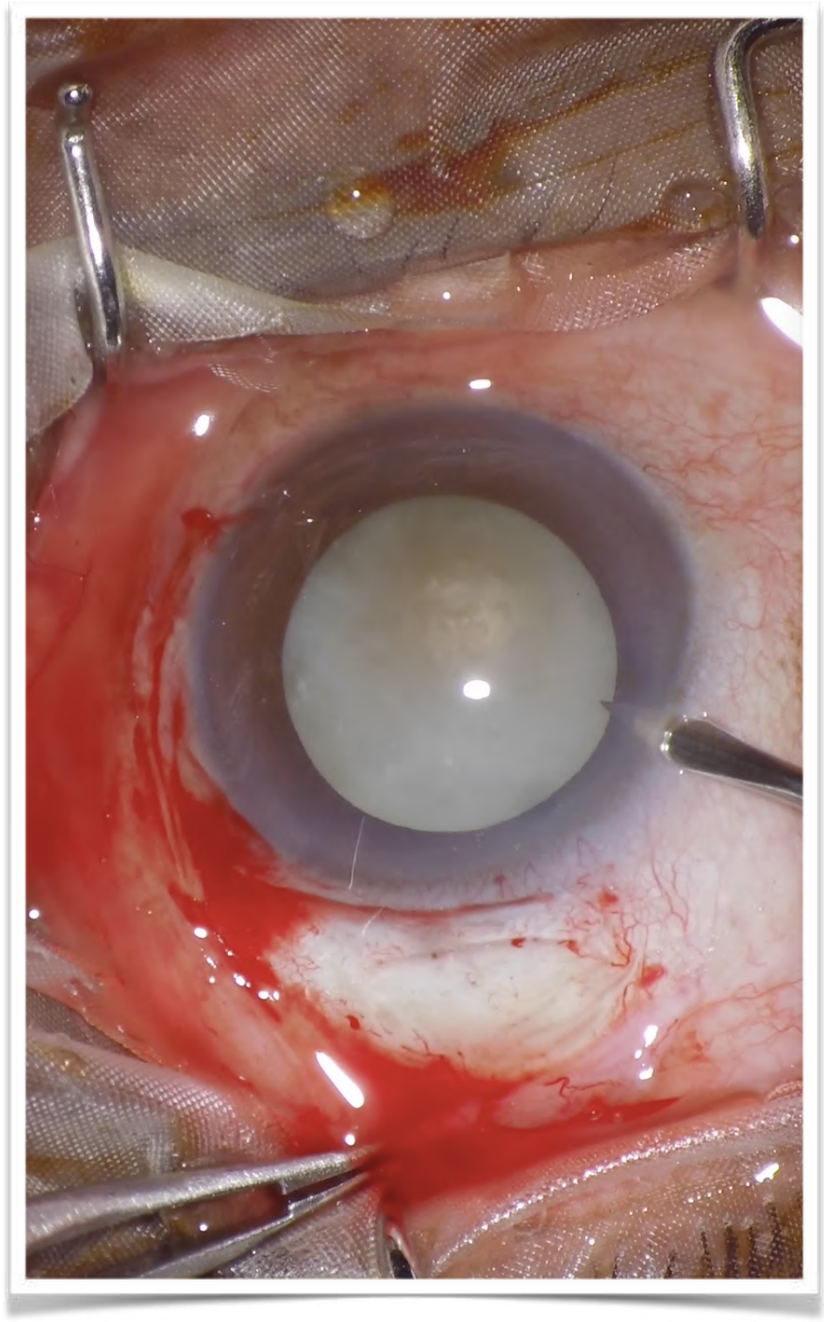
Creating Side Ports

- Use a 20 gauge MVR blade (preferred) as it holds the AC maintainer in place

- 15 degree paracentesis stab knife can also be used



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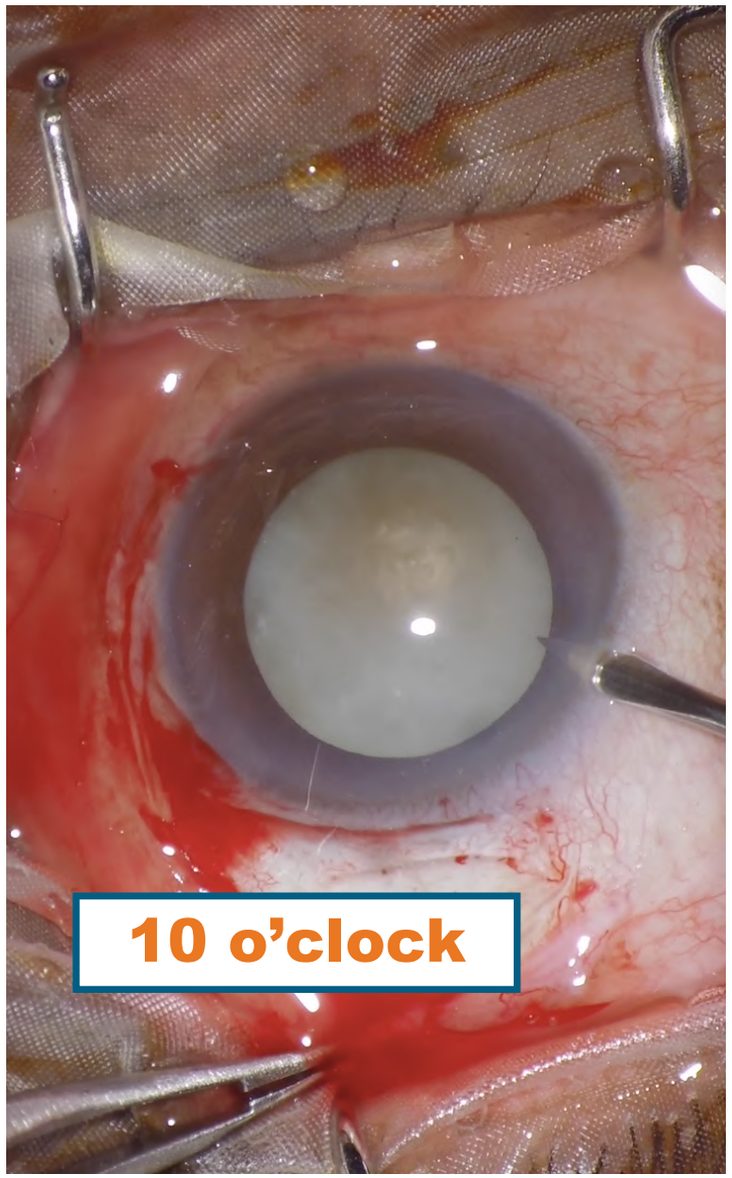
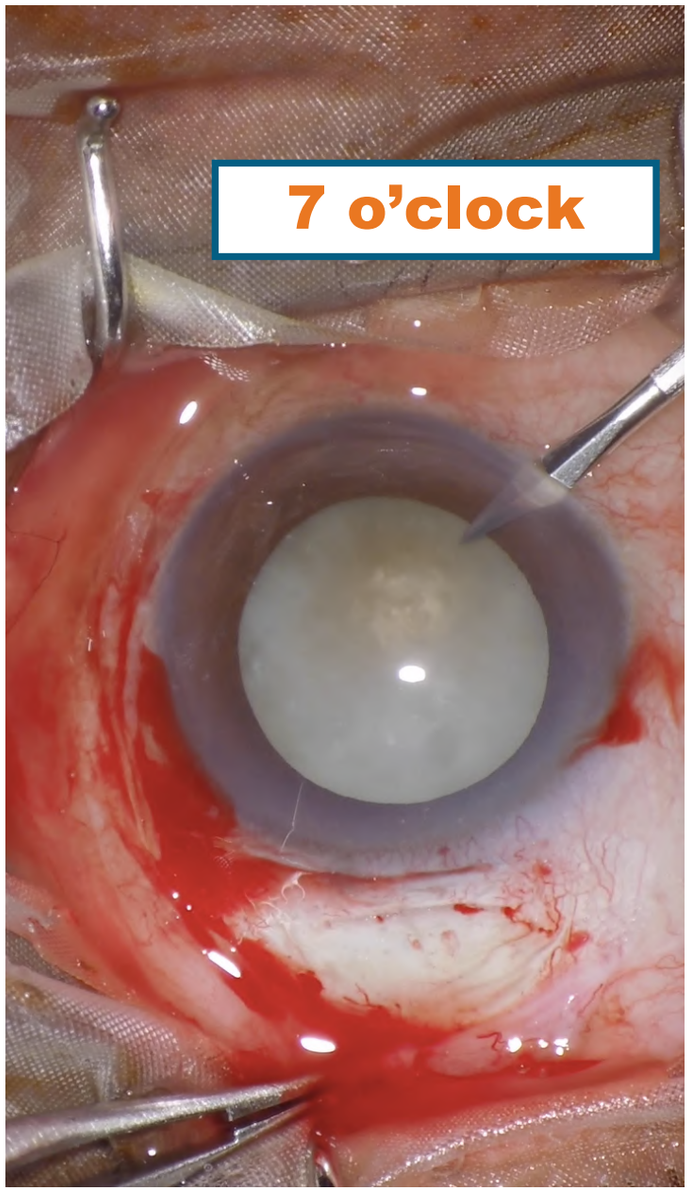
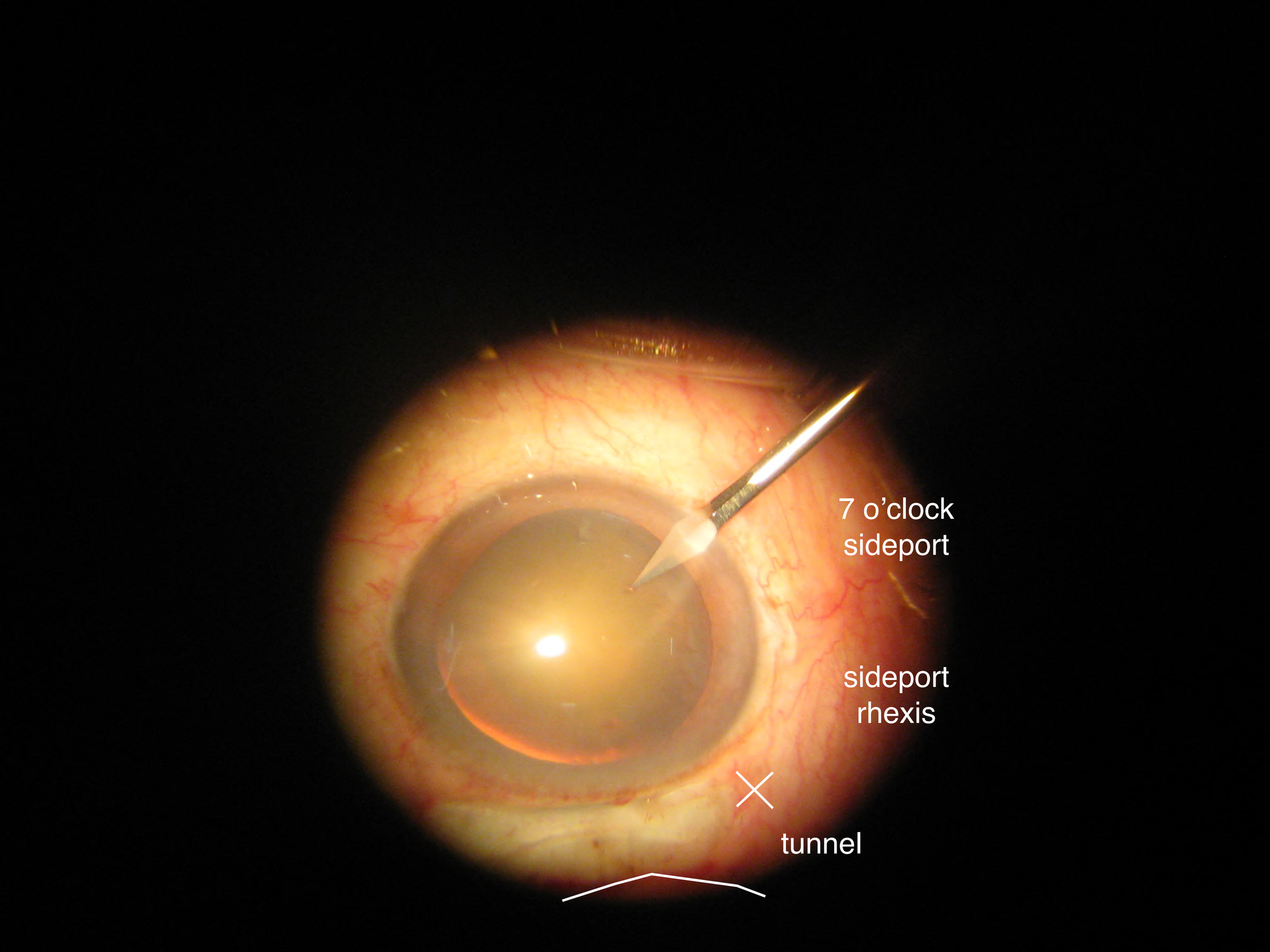
In a Right Eye & a Right Handed Person the Two Paracentesis

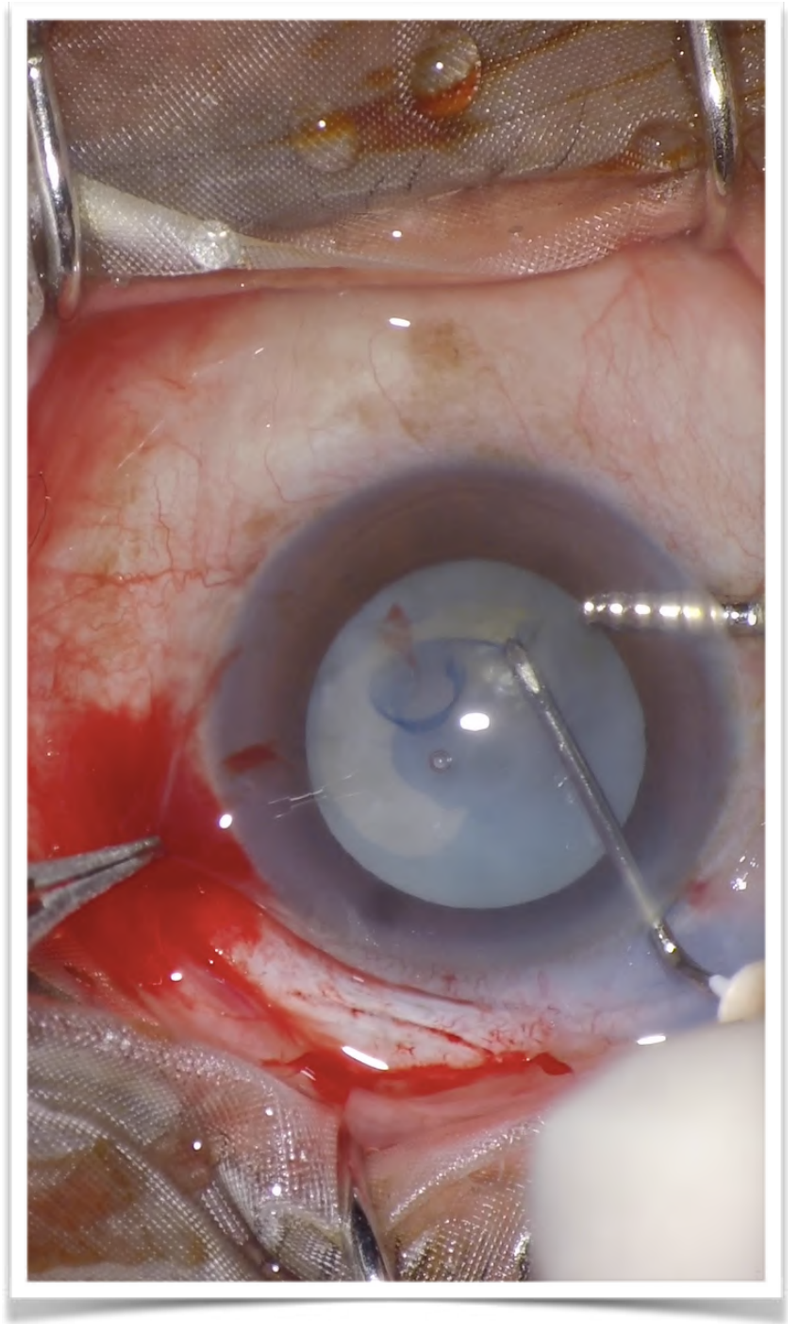


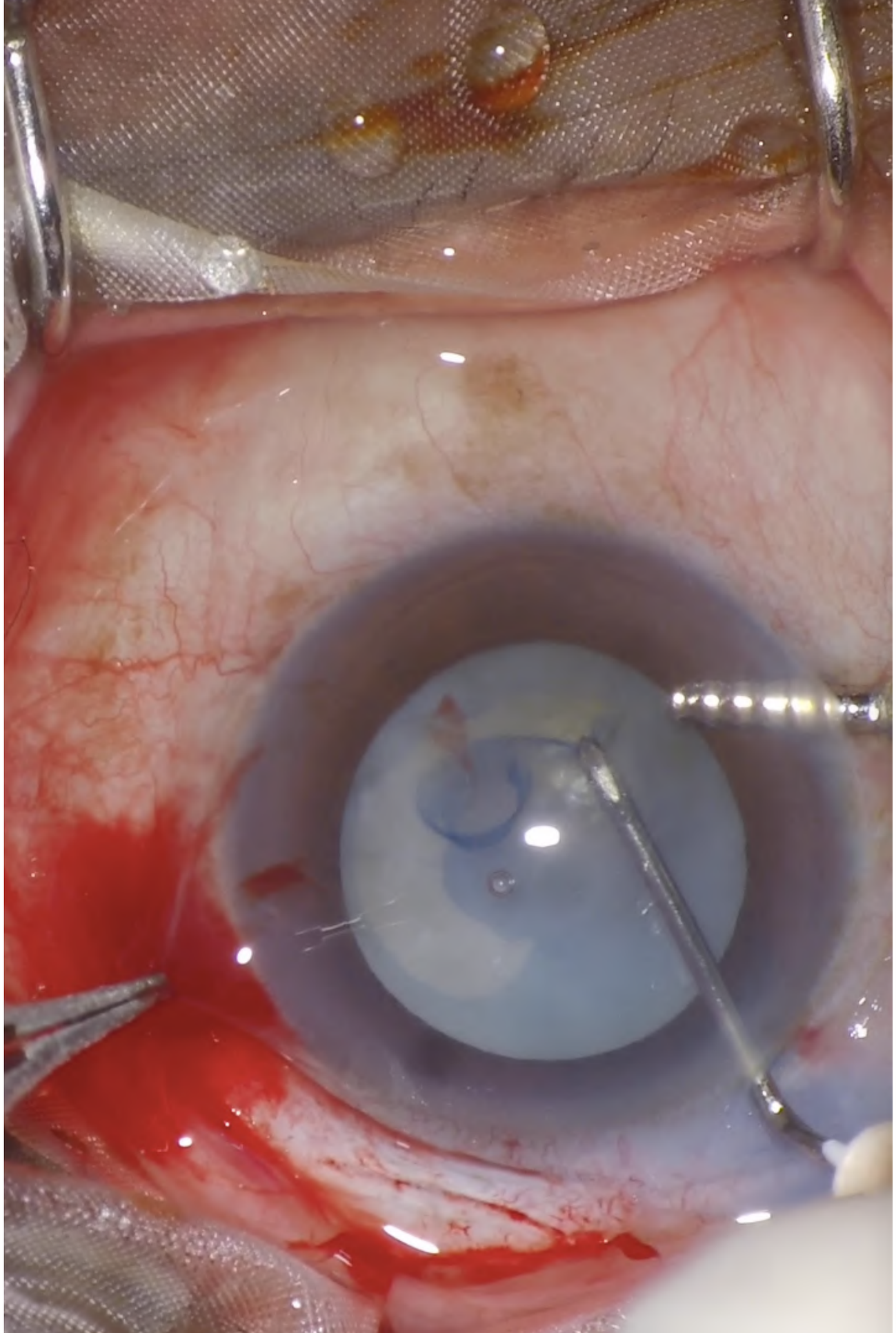
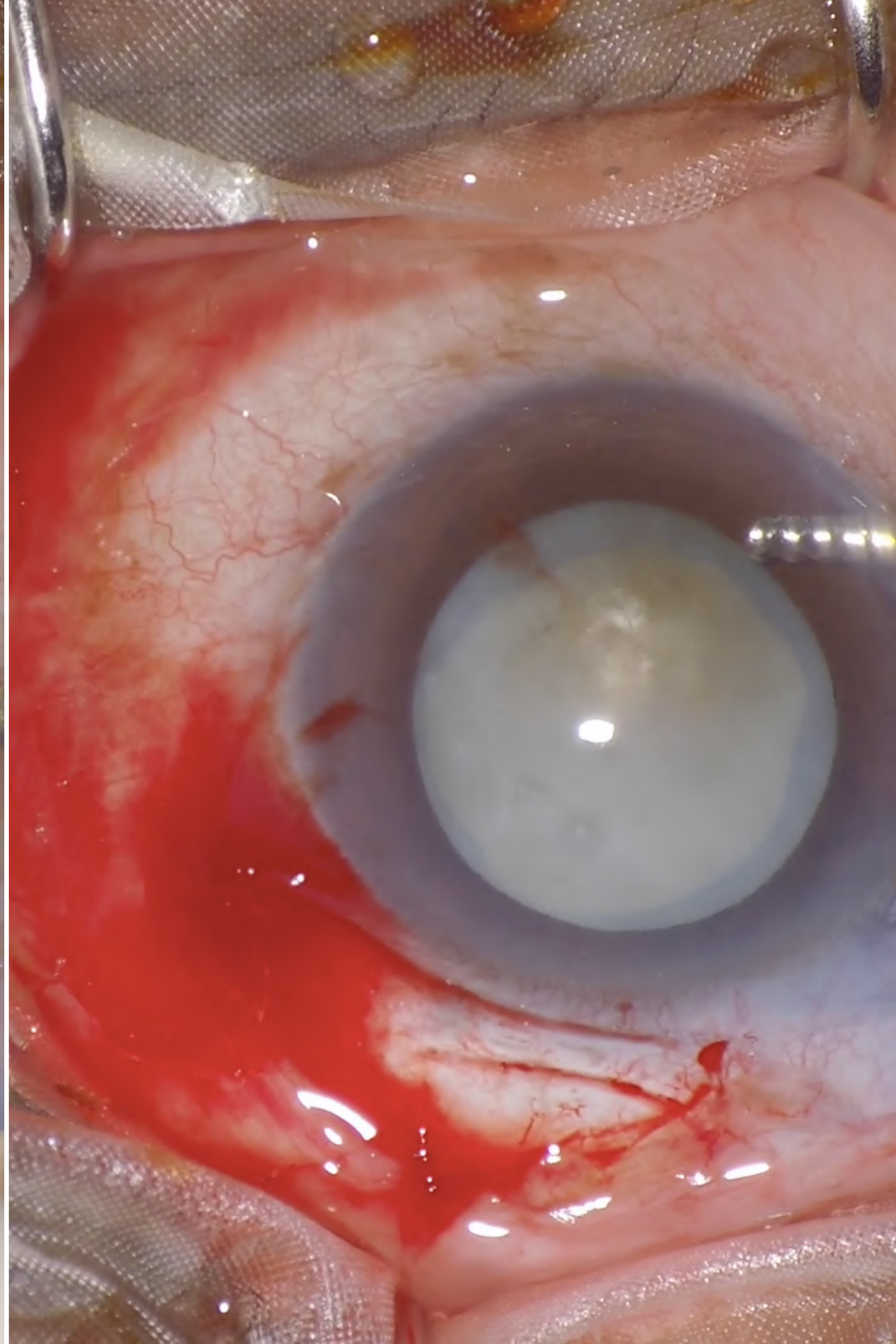



7 o’clock
sideport
sideport
rhexis
tunnel

Capsulorhexis/Capsulotomy

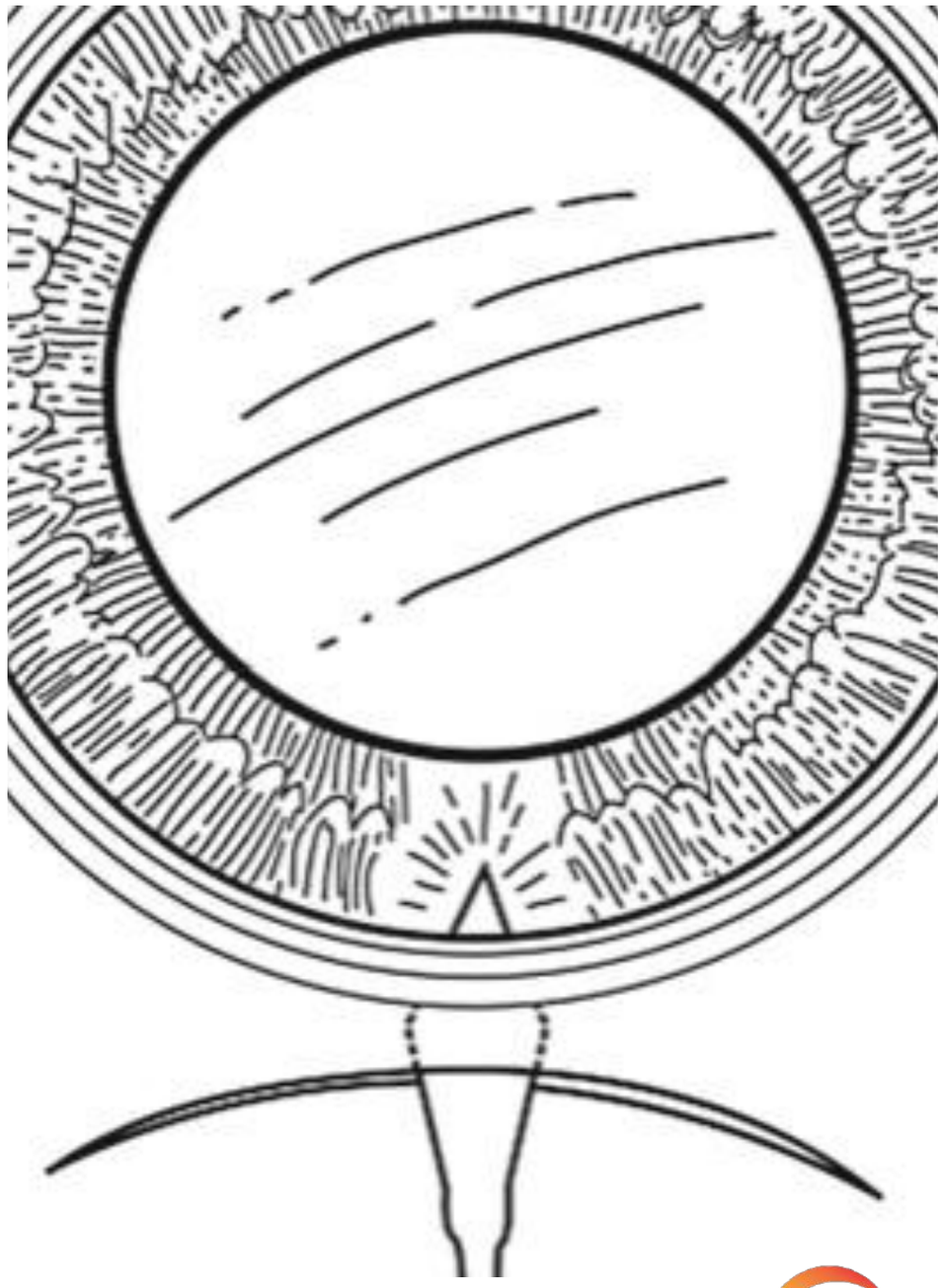
- Can be achieved by using a cystitome or capsulorhexsis forceps
- If cystitome is used side port is preferred & from the main wound, if forceps used
- Can be done in fluid ie BSS or RL or under viscoelastic
- Unlike phaco the rhexis has to be 6-6.5 mm, this is the secret to success



Anterior Chamber Entry

- Done with 3.2 or 2.8 keratome
- Introduce it in the tunnel in a oscillating movement to avoid premature entry
- Keep going until you see the tip of the keratome at the tunnel end in the clear cornea and see the dimpling
- Tilt downwards to enter the anterior chamber
- Once inside, change movement to lateral and forwards
- This extends the internal incision to extend in a curve parallel to the limbus



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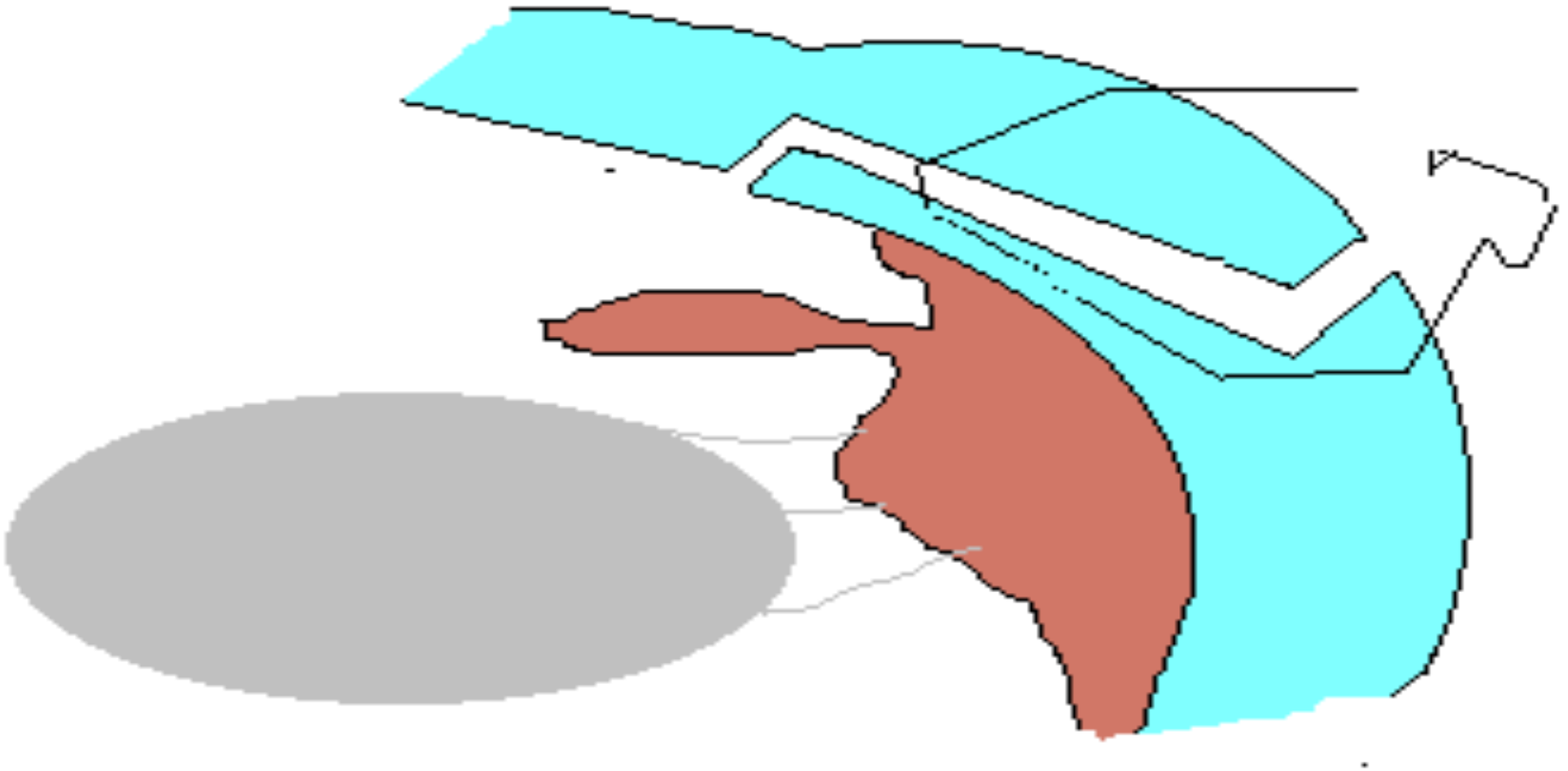
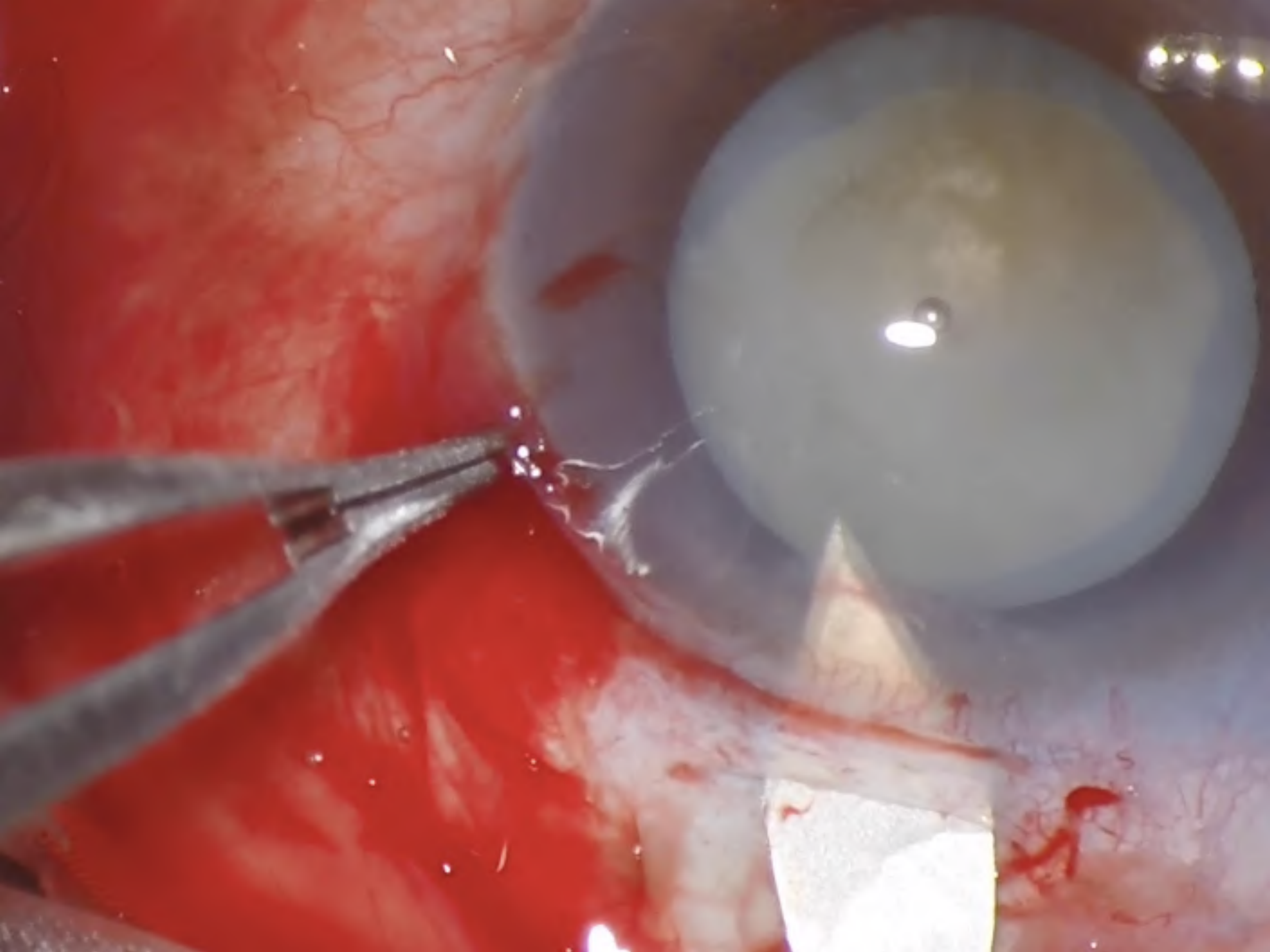
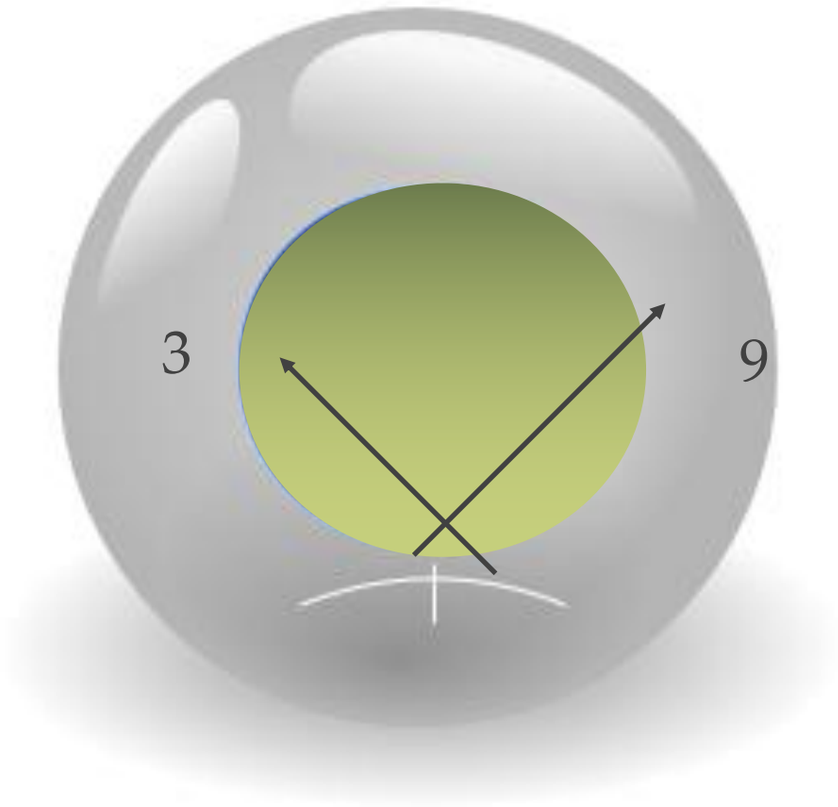
Enter the AC with angled keratome

Bi-valved Entry Into AC





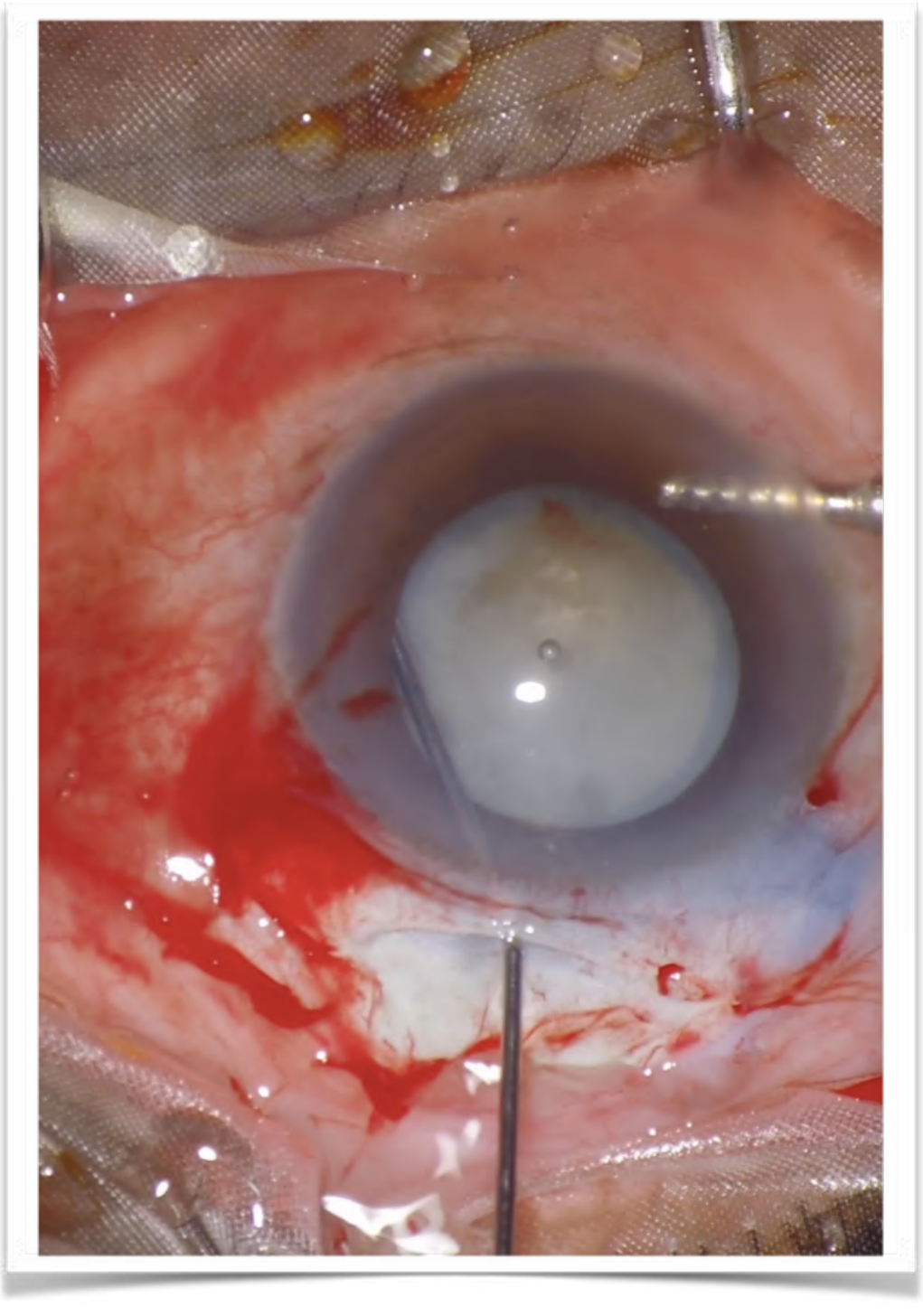
Hydro-dissection



- I normally like to use the 27 gauge cannula
- Can do it at 3 and 9 o'clock positions
- Hydro should be such that with the pressure of the fluid one edge of the nucleus should prolapse out of the capsular bag
- Hence the size of rhexis is important

see international

Hydrodissection

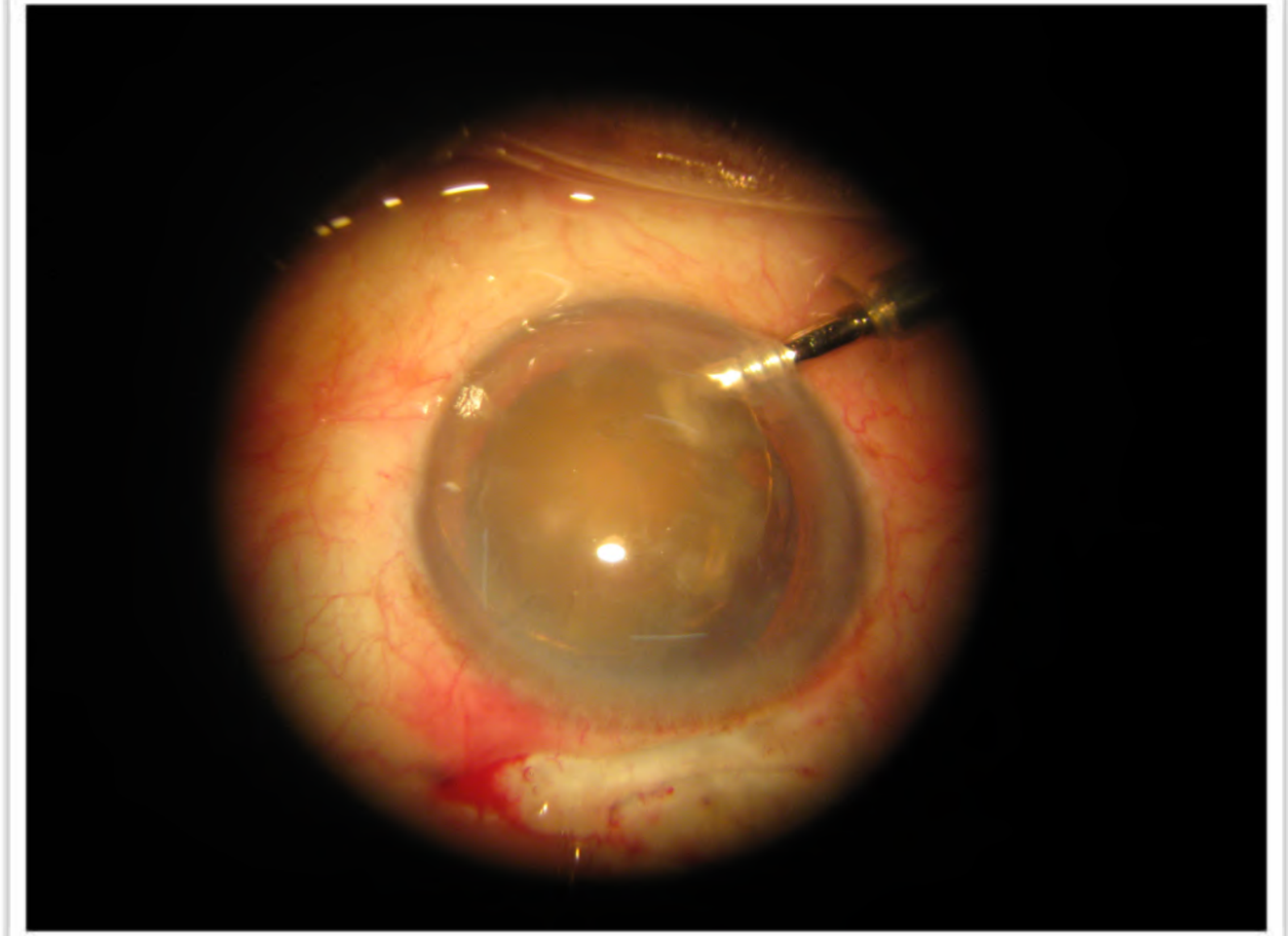


Continue with hydrodissection until one pole of the nucleus tilts from the bag

see international

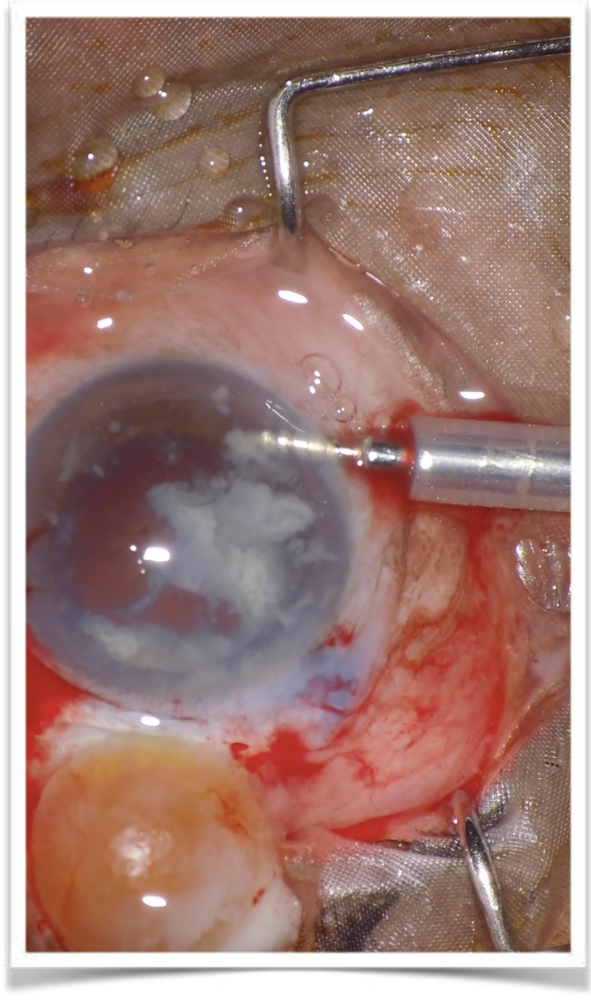
Nucleus Delivery Into The AC

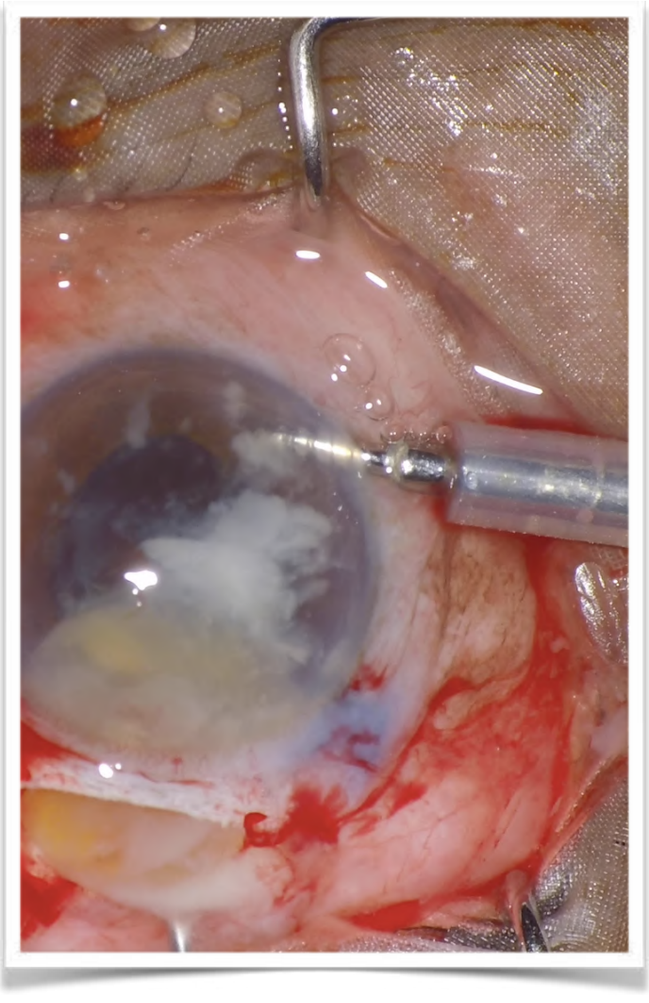
- Hydro prolapses the nucleus out of the bag
- If not, tilt the nucleus by giving pressure on one pole
- Take the dialer & dial the nucleus out of the bag
- Hence size of rhexis plays a crucial role



Conquering the Nucleus

- Once in the AC the nucleus can be delivered by irrigating vectis, visco expression with pressure, counter pressure
- Once the nucleus gets engaged in the wound the fluidics in the AC from the maintainer expresses the nucleus out of the wound





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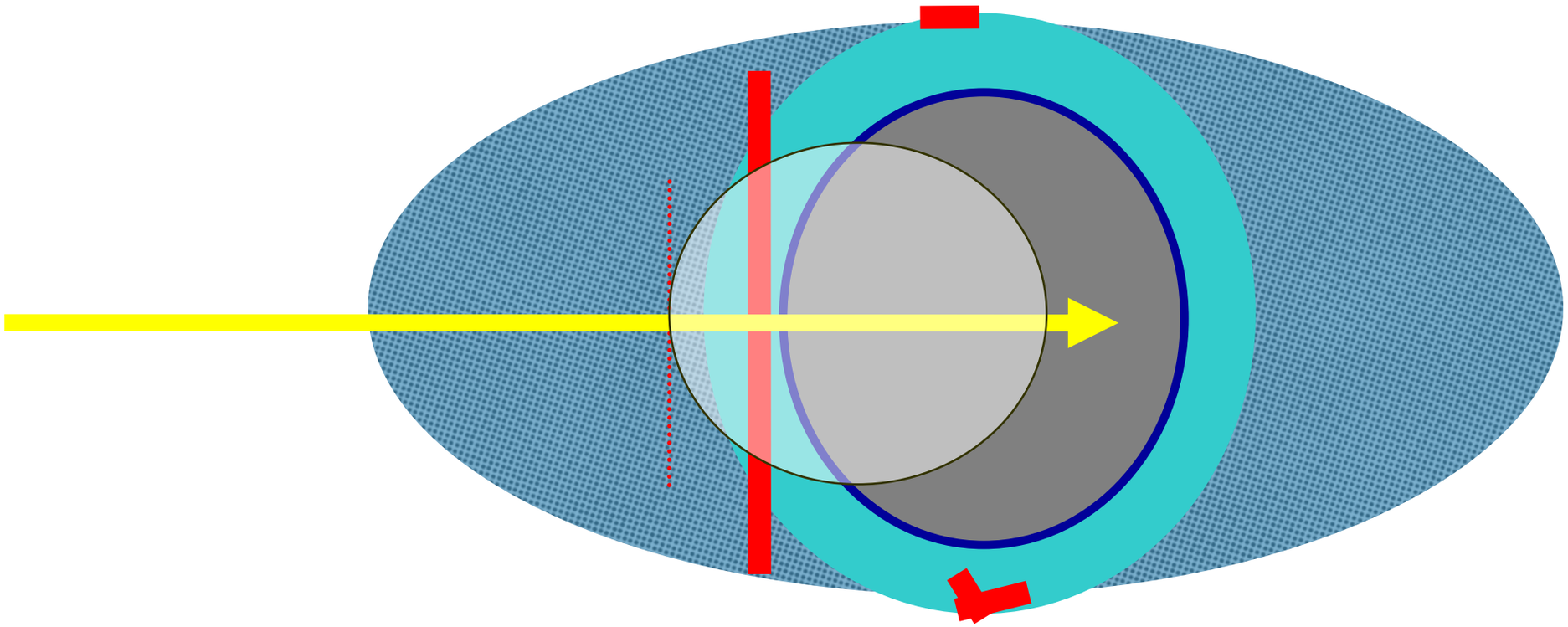
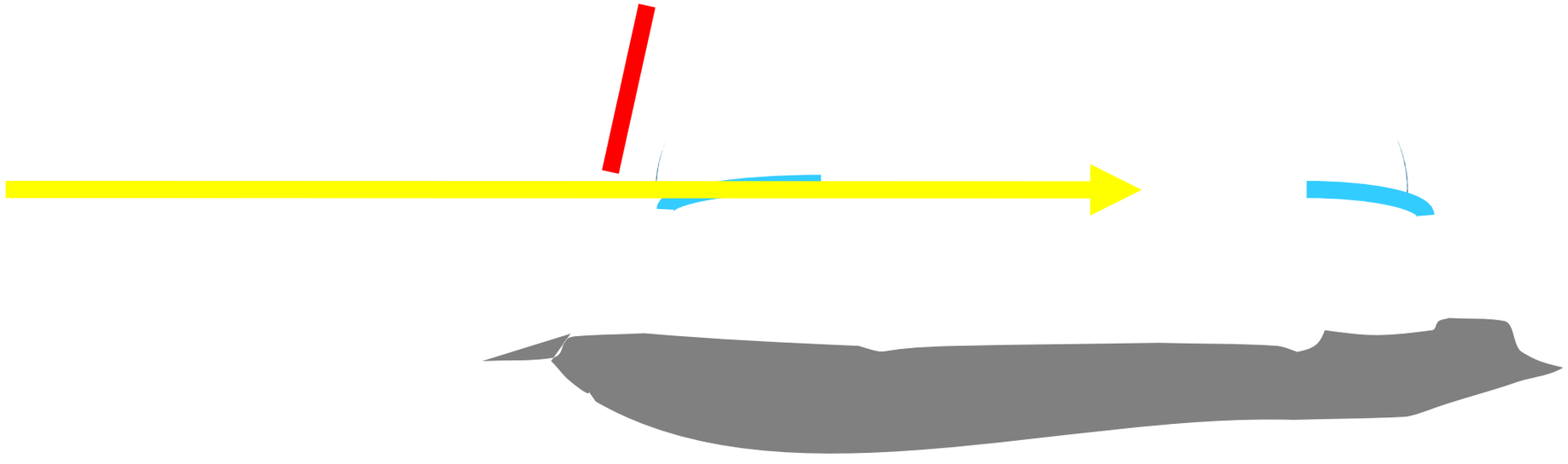
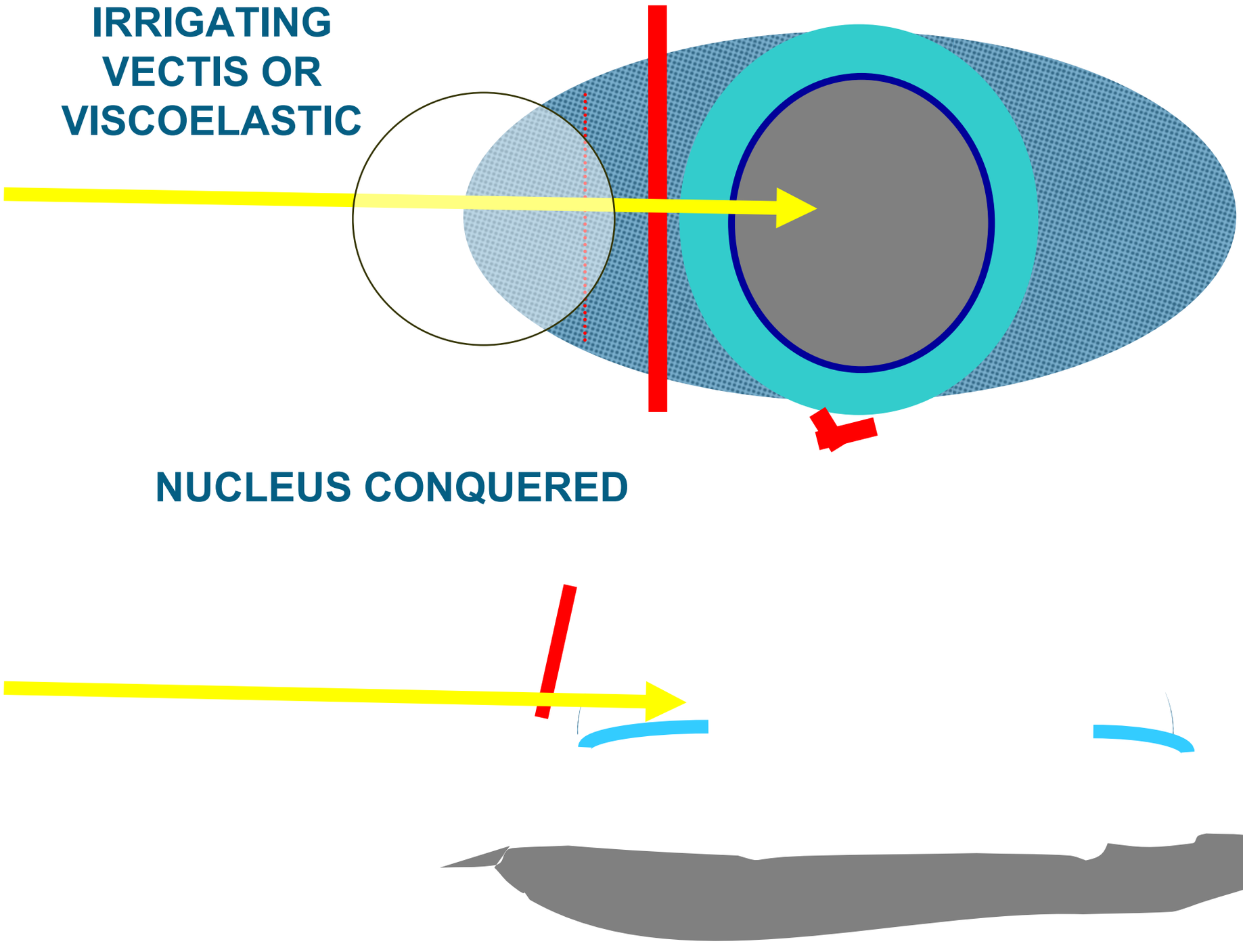
Conquering the Nucleus

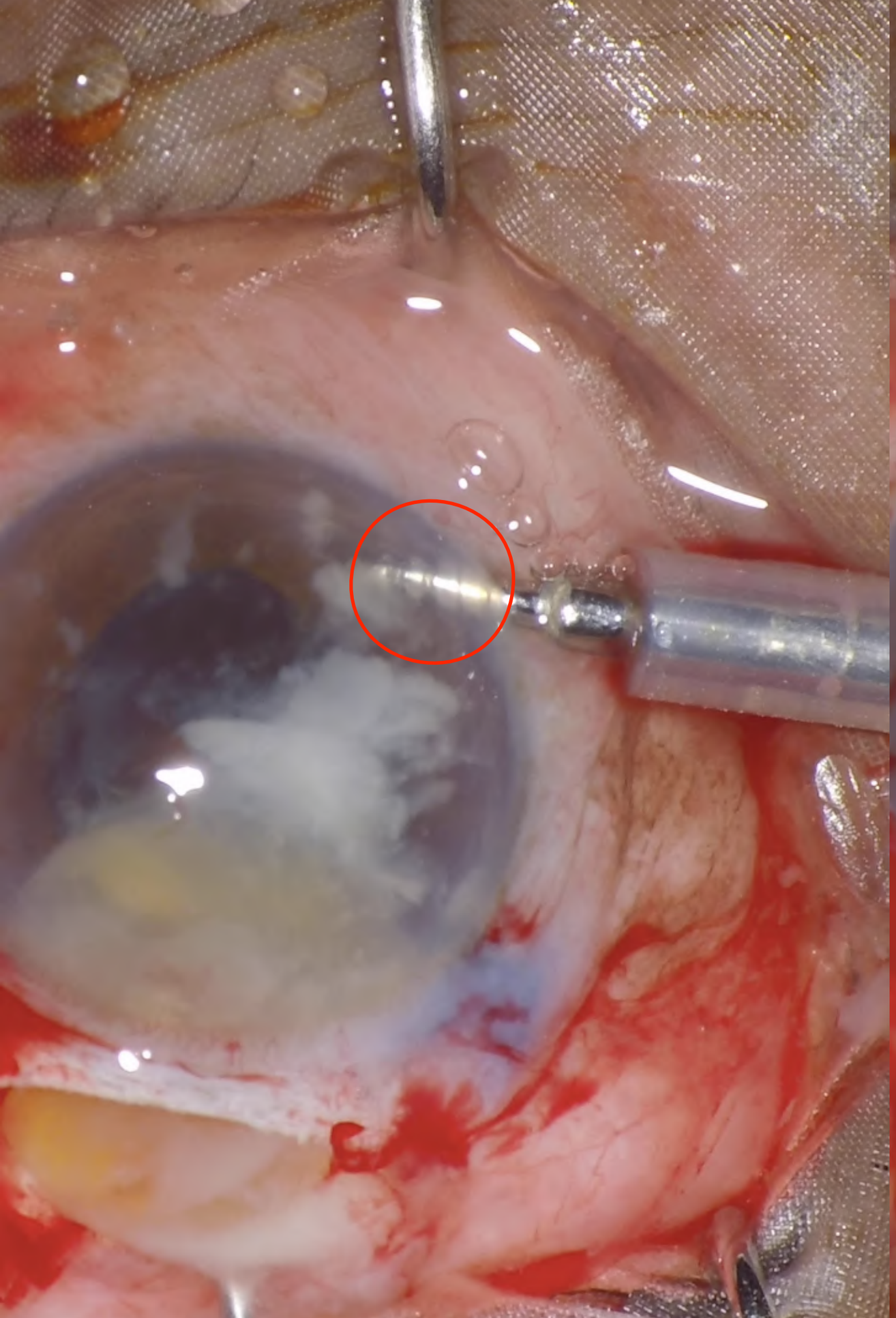


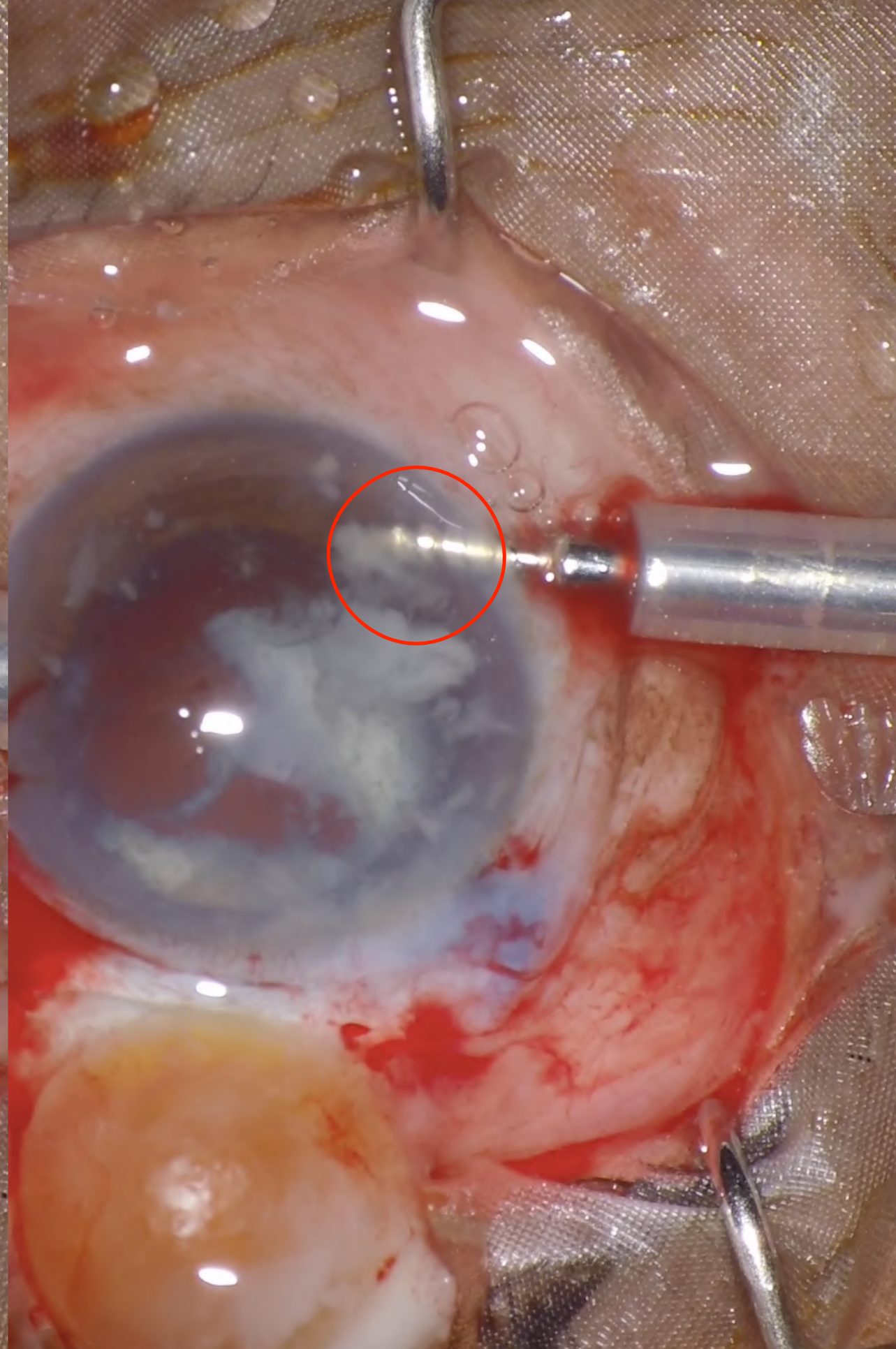
NUCLEUS GETTING ENGAGED



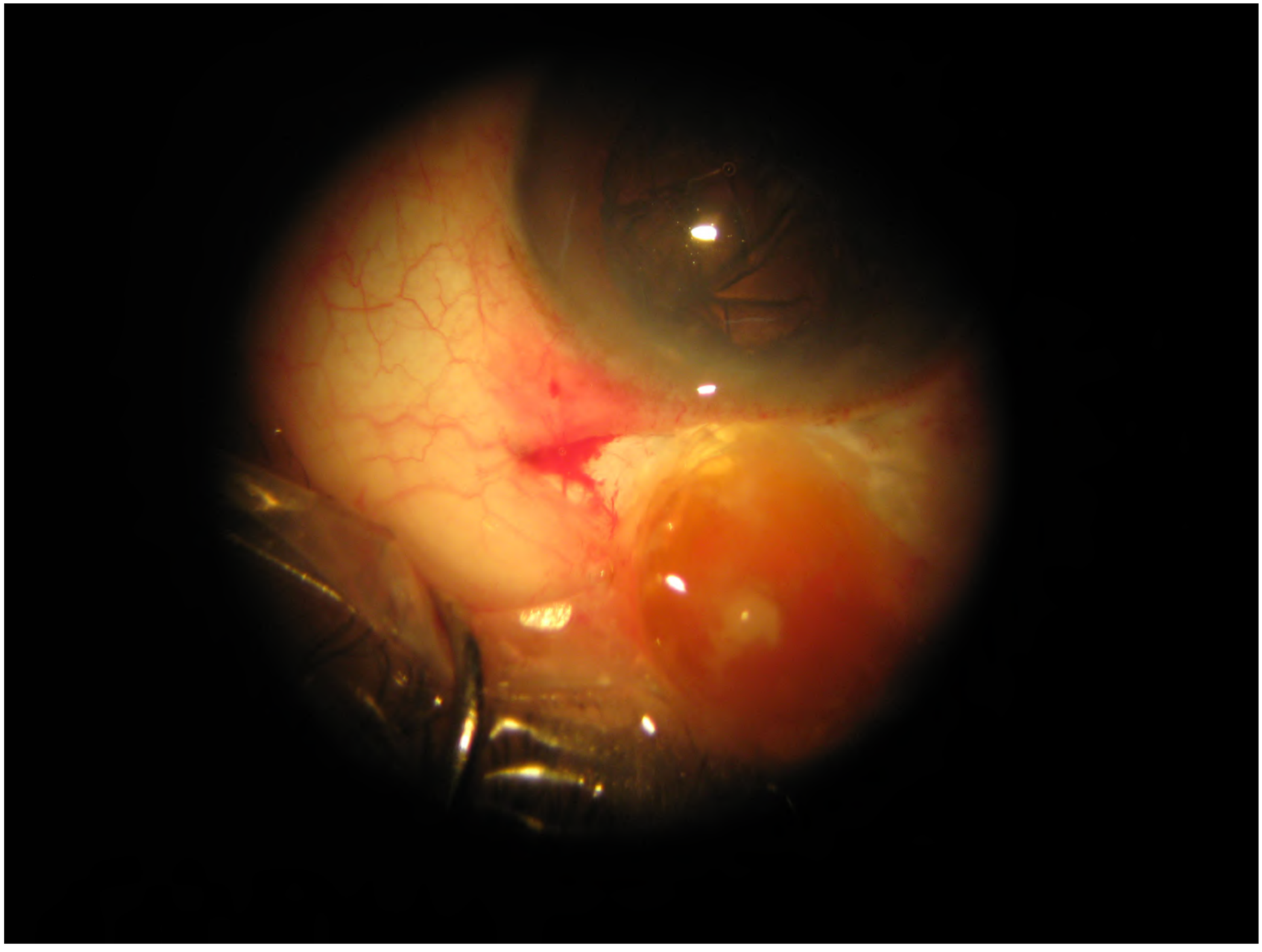
Conquering the Nucleus







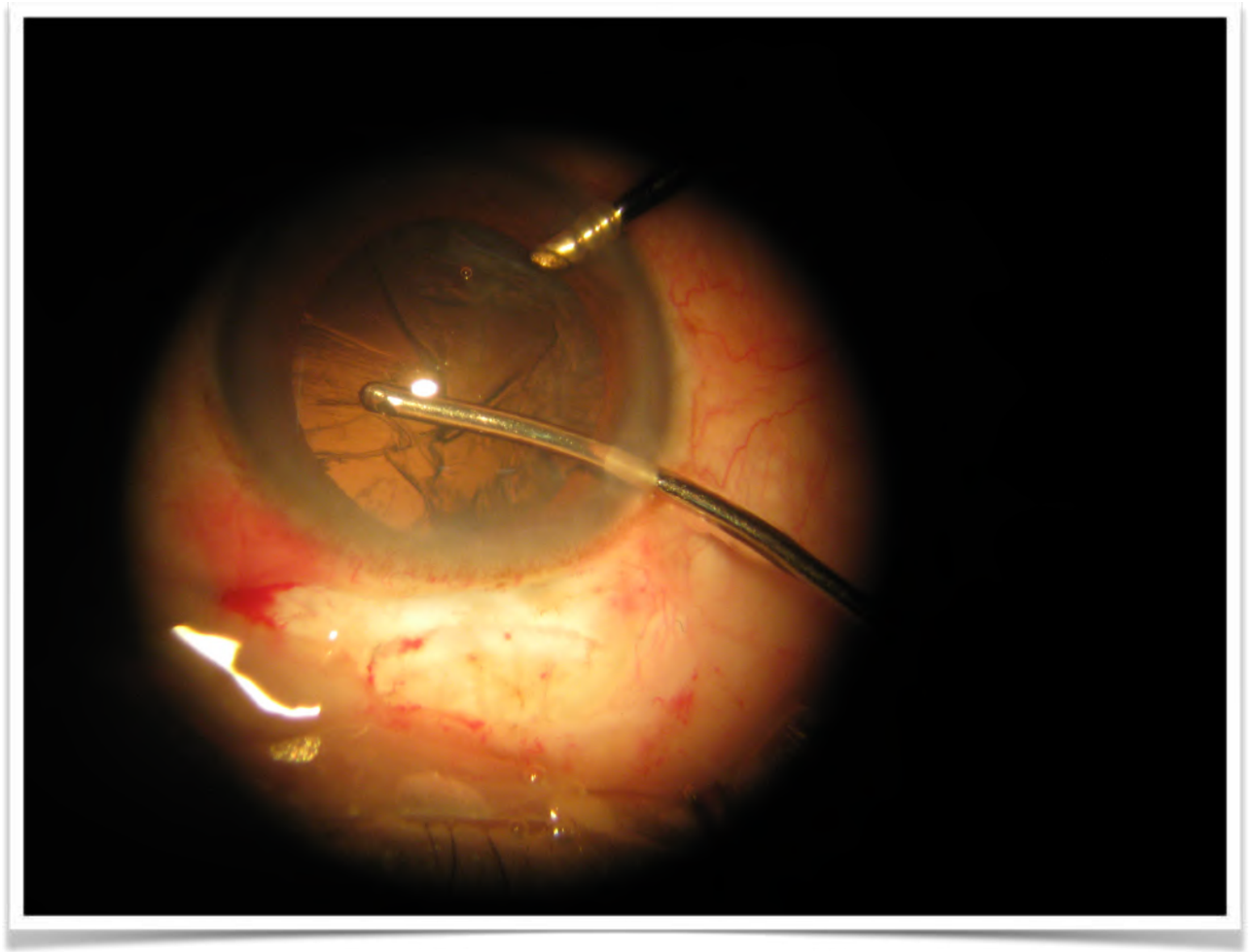
Nucleus Conquered



Conquering the Nucleus

- Can be achieved by using a 20/21 gauge aspirator preferably from the side port and this is my method of choice as the AC is well formed

- Simcoe can also be used but then the maintainer has no role



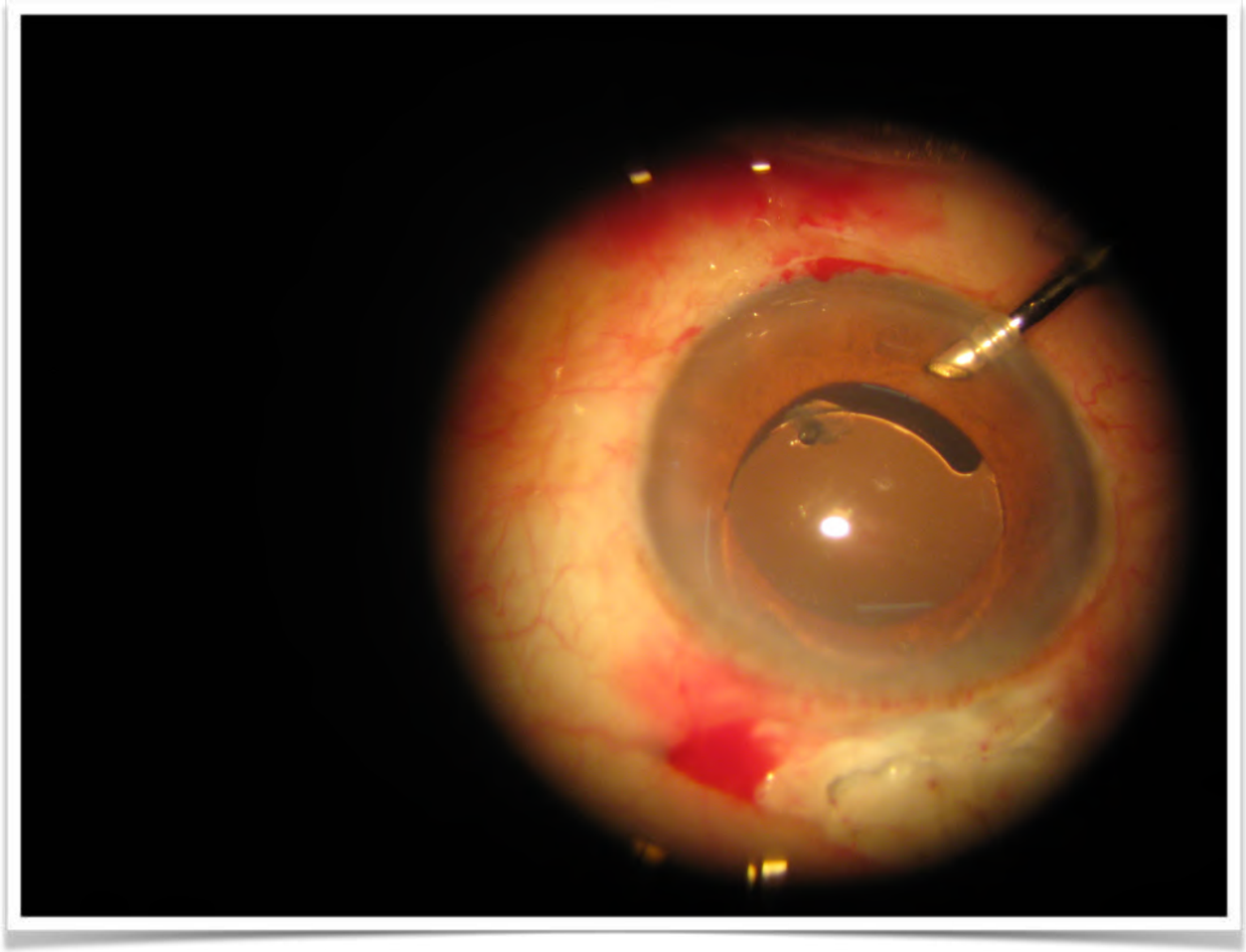
see international

Rhexsis margin

Cortical cle

Intra-ocular Lens Implantation

- Can be inserted in fluid or viscoelastic
- Can use McPherson, IOL holding forceps
- Even foldable lenses can be inserted
- Do dial the IOL to see that the IOL is in the bag



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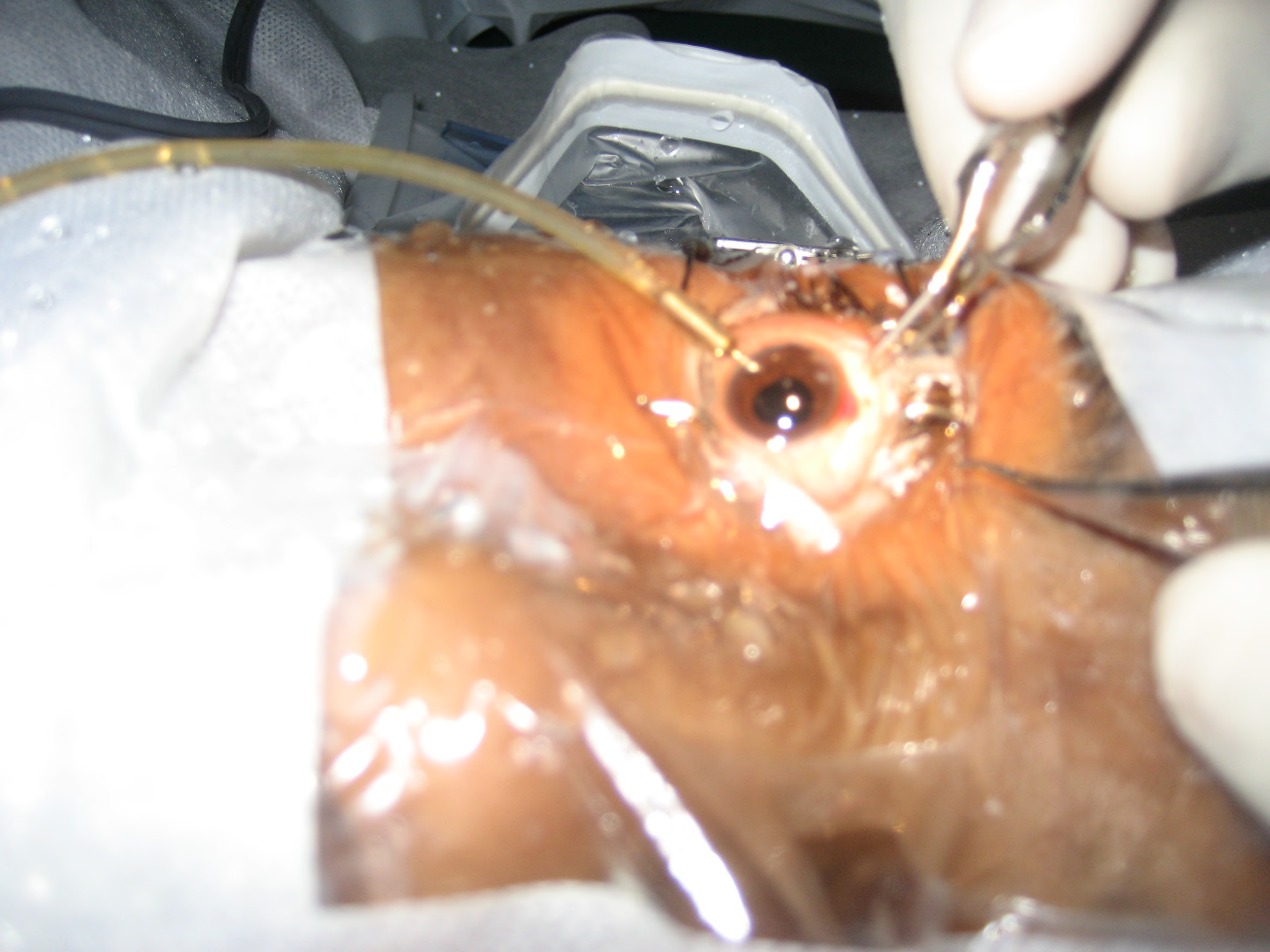
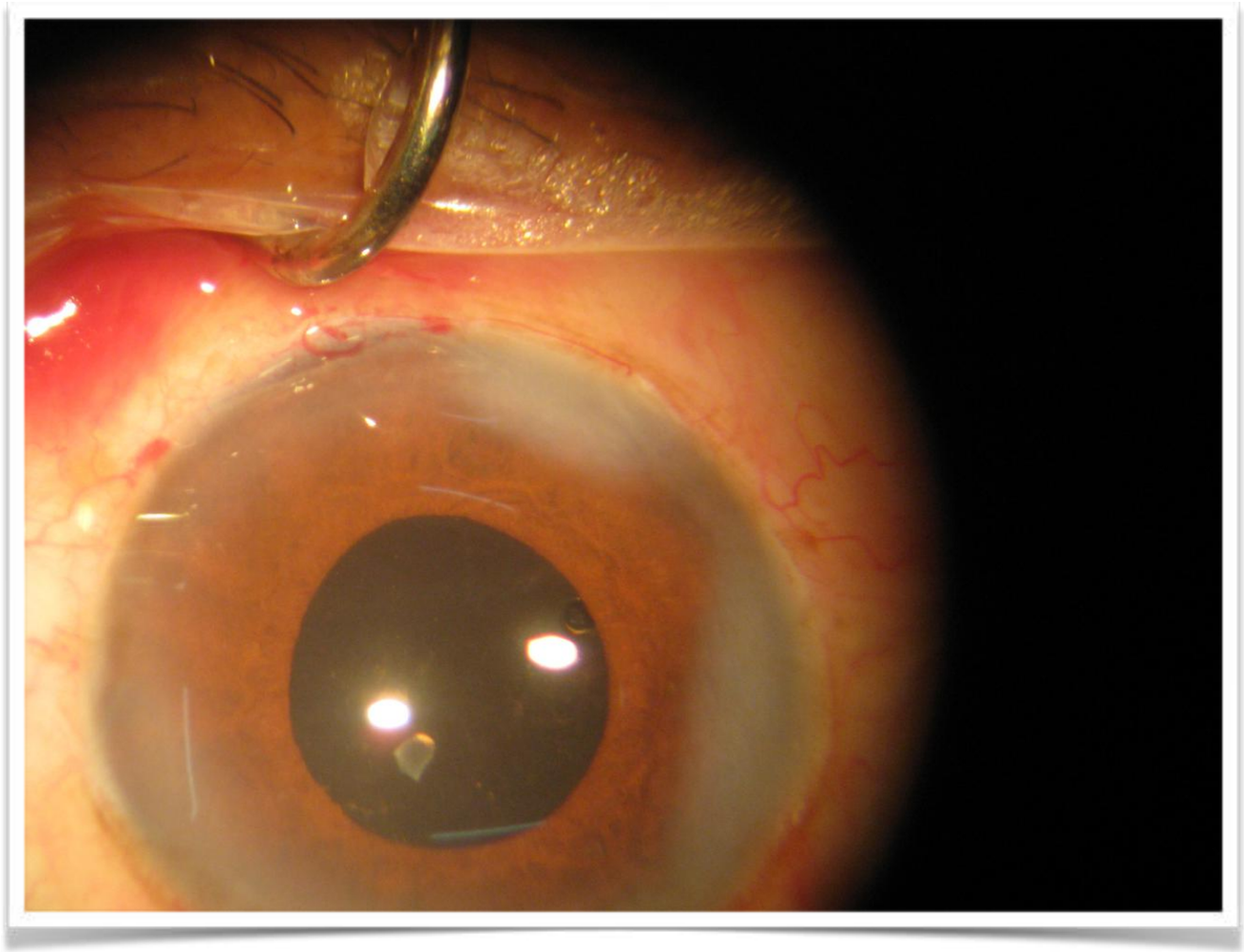


Final Step: Hydrate the Paracentesis & Reflect the Conjunctiva

- After clearing the AC of any visco all the wounds need to be sealed side port
- Can be achieved using 27/30 gauge cannula
- The conjunctiva over the wound also gives pressure on the wound thus seals it further
- Can do this by cauterizing the ends of the conjunctiva or giving sub-conj. injection of steroid-antibiotic

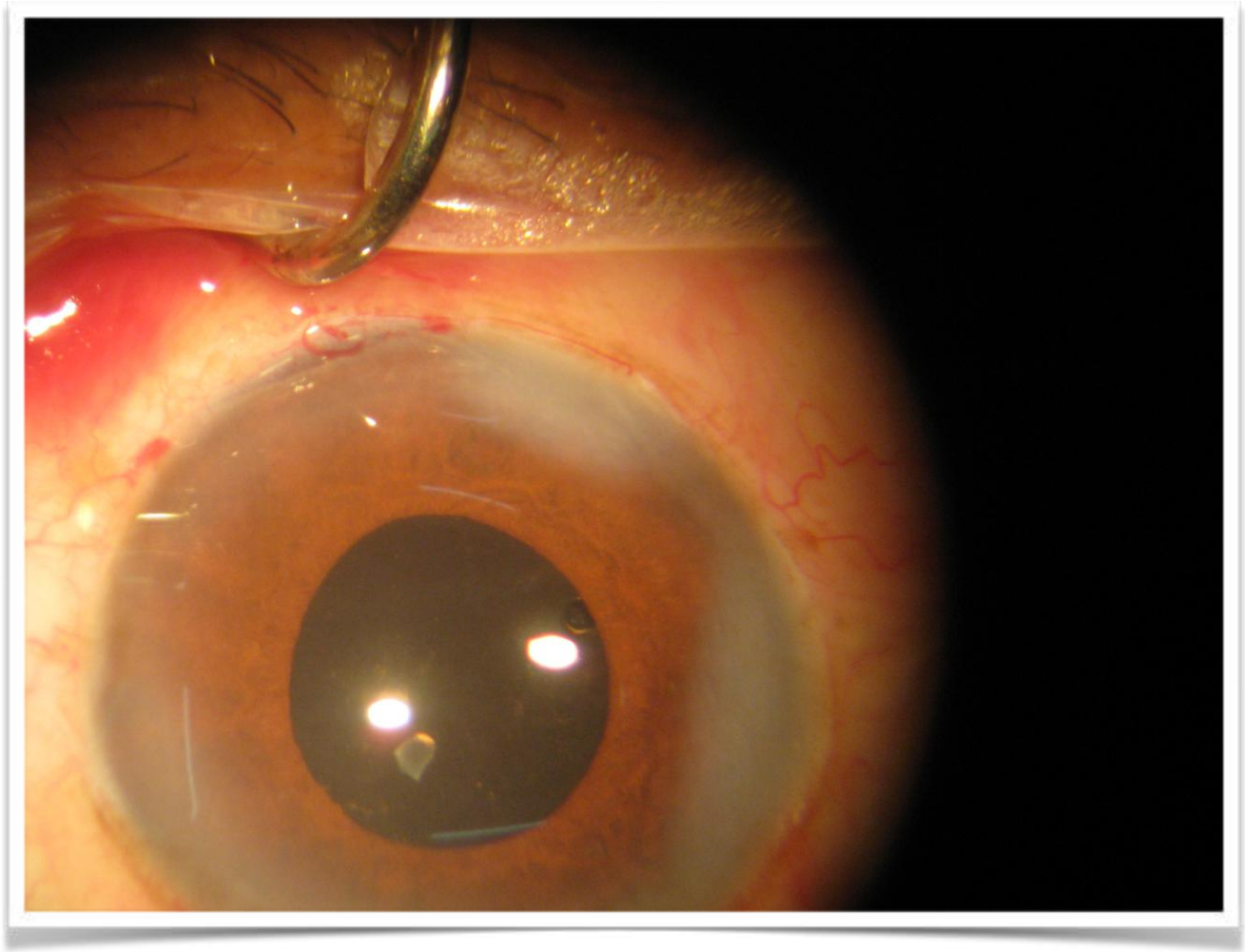


see international

Reflect the Conjunctiva & Seal the Wound

- With the conjunctiva over the wound this also gives pressure on the wound thus seals it further

- Can do this by cauterizing the ends of the conjunctiva or giving sub-conj. injection of steroid-antibiotic

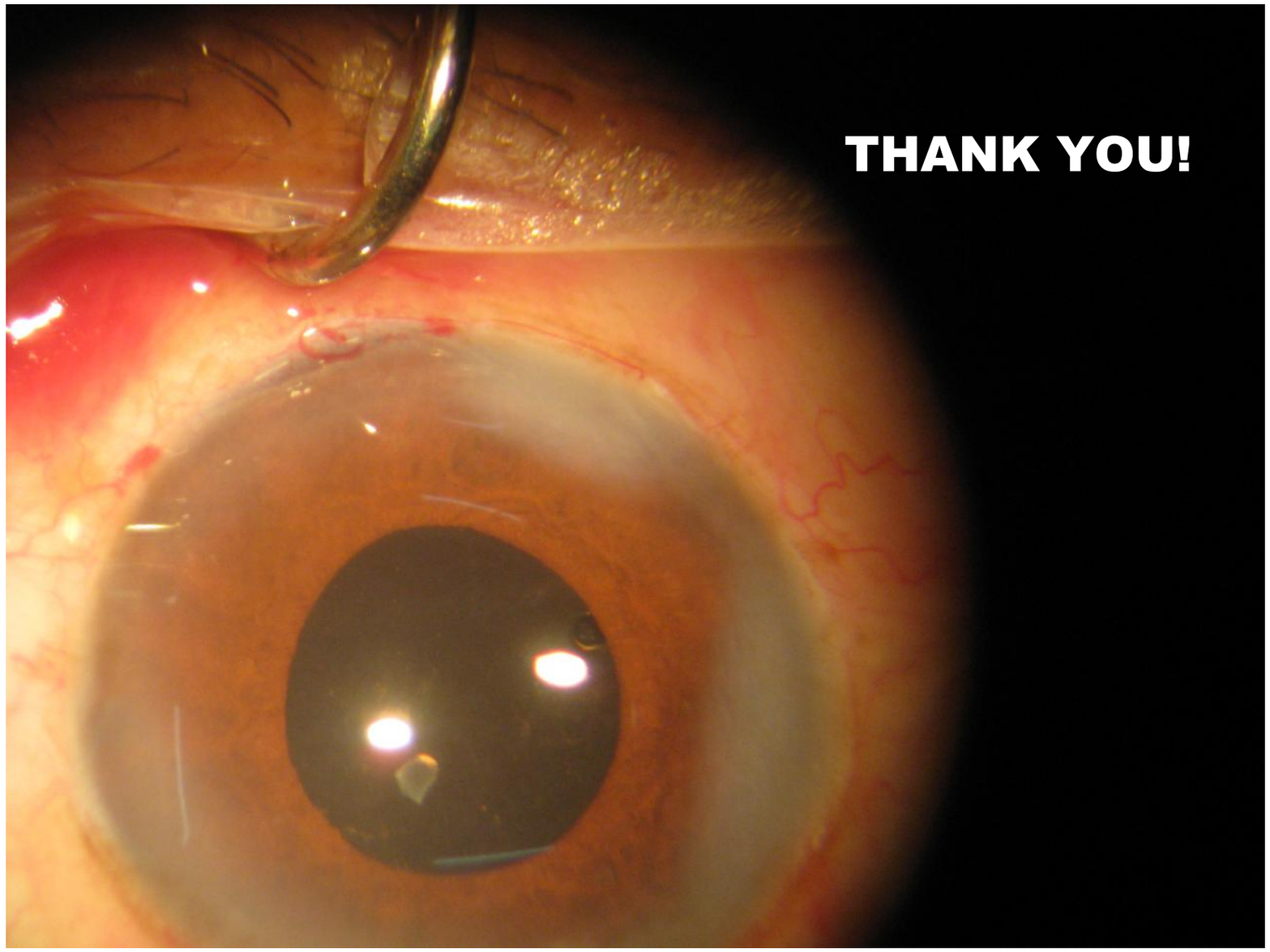


see international

Take Home Points

- Scleral groove should be 2mm behind the limbus
- Length is 5-8mm
- Depth 300 microns
- Fixation is with a toothed forceps holding the conjunctiva
- Tunneling is the key to success
- Creating a funnel shaped tunnel
- Larger rhexis around 6mm
- Good hydrodissection

Your Thoughts Play a Vital Role in Shaping Your Life



see international