

Vitrectomy basics & principles

Basic steps and instruments of vitrectomy: Tarek Mamoun, MD

Macular hole surgery: Magdy Tawokol, MD

Management of PVR: Mohamed Farouk

Giant break. Ayman El Kawwas, MD

Vitrectomy for ocular trauma: Mahmoud Farouk, MD

Complications of vitrectomy: Abdel Rahman Gaber, MD



Basic steps & Instruments of Vitrectomy

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Financial disclosure

I have no financial interest in any of the materials that are presented in this presentation

Vitrectomy is done when all the vitreous has gone !!

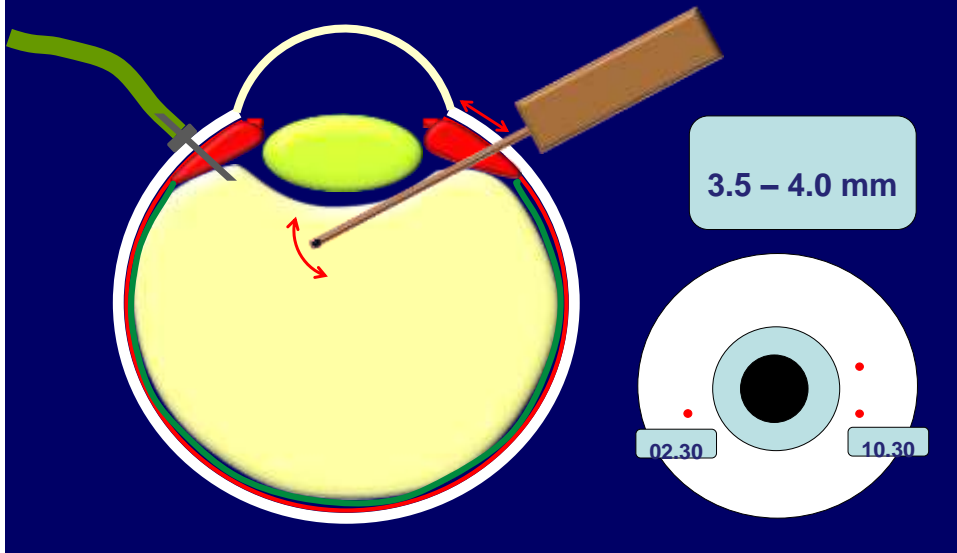
Basic tasks done in almost every case

1. Opening of the 3 ports & fixation of infusion cannula.
2. Core vitrectomy.
3. Injection of TAA.
4. Detachment of the posterior hyaloid.
5. Shaving of the vitreous base.
6. Maintaining good visualization.
7. Using endo-diathermy.
8. Using the flute needle & fluid / air exchange.

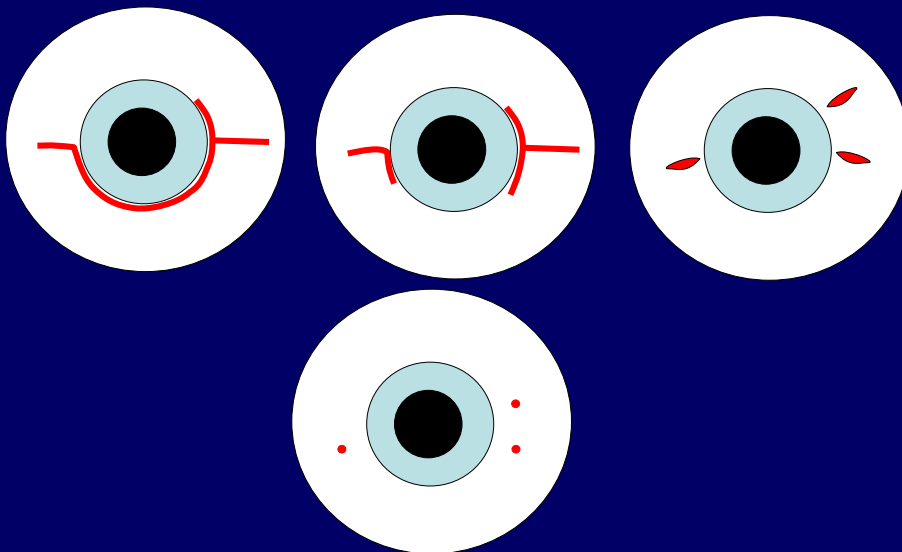
Basic tasks done in almost every case (cont.)

9. The drainage retinotomy.
10. Injection of PFCL.
11. Injection of silicon in air filled eye.
12. PFCL / silicon exchange.
13. Filling the eye with long acting gas.
14. Endo-laser.
15. Check the retinal periphery especially at the sites of sclerotomy.
16. Closure of the 3 ports.

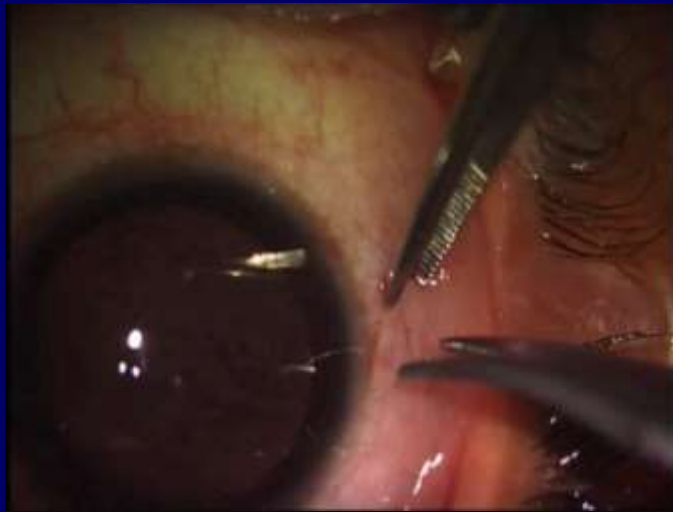
1. Opening the 3 ports & fixation of the infusion cannula



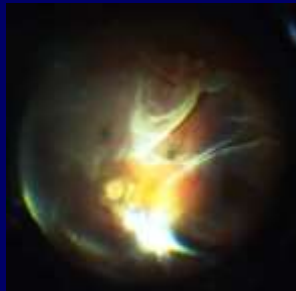
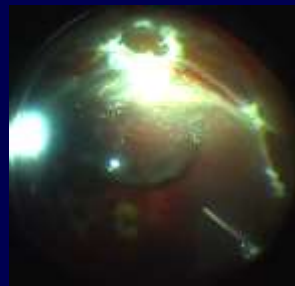
How to open the conjunctiva



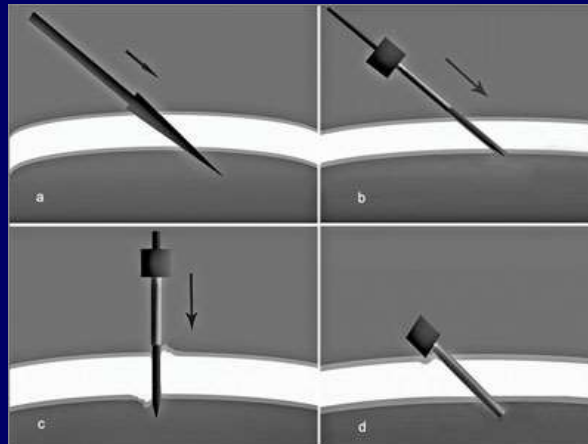
The standard sclerotomies



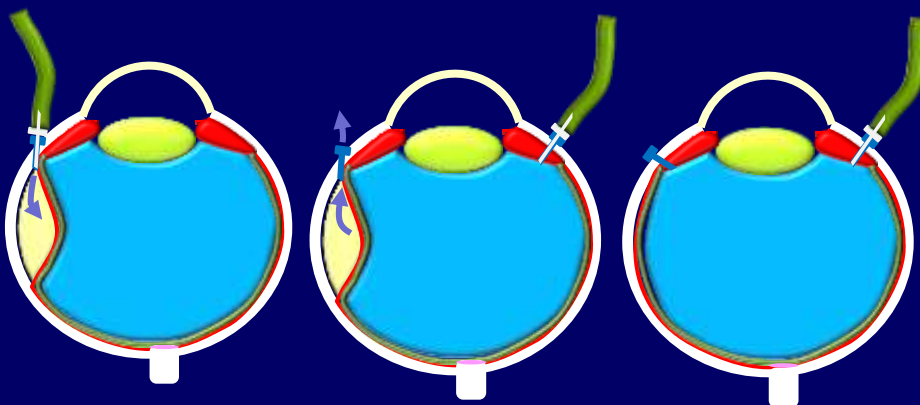
Check the infusion cannula before opening the saline



The cannula system



Suprachoroidal infusion while using the trocar system

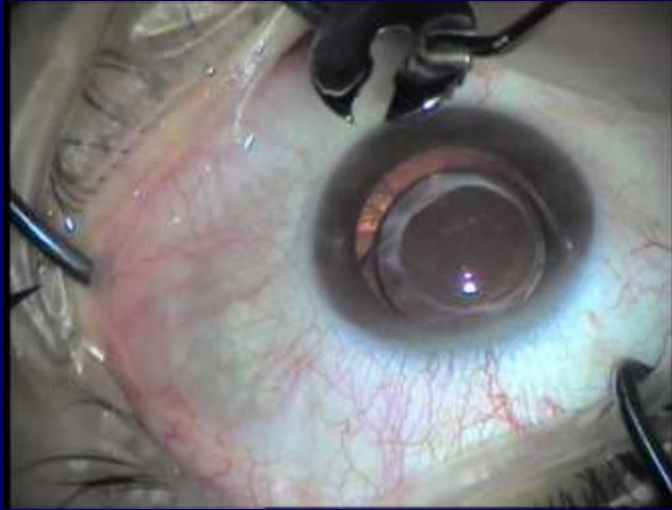


Early diagnosis
of the problem

1. Insert a correct
infusion
2. Leave the first trocar
to drain the fluid

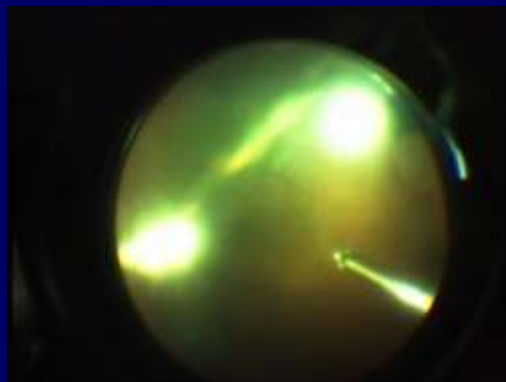
3. Correct the position
of the trocar after
evacuating the
suprachoroidal fluid

The cannula system



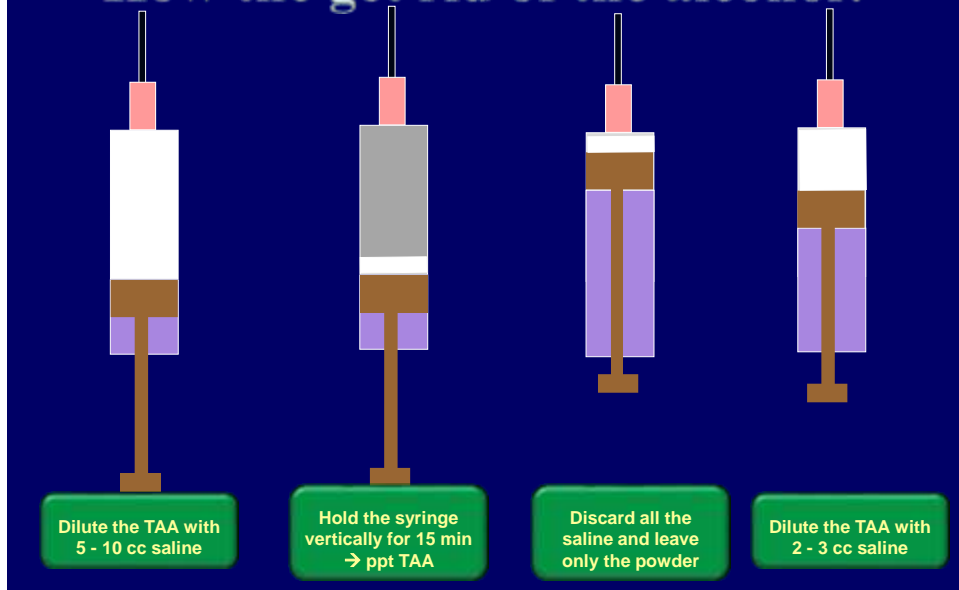
2. Core vitrectomy

- Moderate vacuum
 - 20 G: 150 mm-Hg.
 - 23 & 25 G: 400-500 mm-Hg.
- High flow rate if using the peristaltic pump (12-15 ml/min).
- High cutting rate.
- Biased opened duty cycle.



3. Staining the ghost with TAA

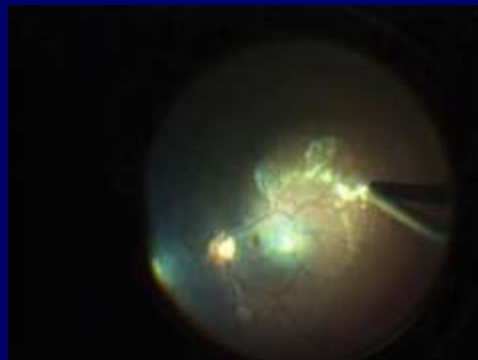
How the get rid of the alcohol?



4. Detachment of posterior hyaloid

This is where you win or lose the battle!!!

- Start at the nasal edge of the disc.
- High vacuum:
 - 20G: 200 - 300 mm-Hg.
 - 23G: 400 - 500 mm-Hg.
- High flow rate (12 ml/min).
- **NO cutting.**
- Pull slowly towards the cornea then gradually towards the periphery.
- **Move slowly → see the advancing wave of PVD.**
- Iatrogenic breaks are common

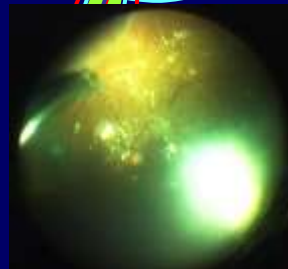
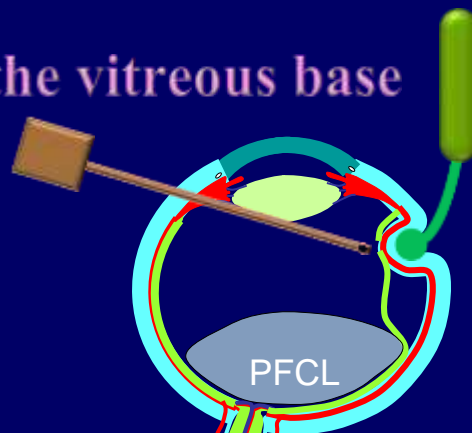


4. Detachment of strongly adherent posterior hyaloid by forceps



5. Shaving of the vitreous base

- PFCL to prevent excessive retinal mobility.
- High indentation.
- **Very high cutting rate (5000 - 8000).**
- **Low vacuum & AFR.**
- Duty cycle biased closed.

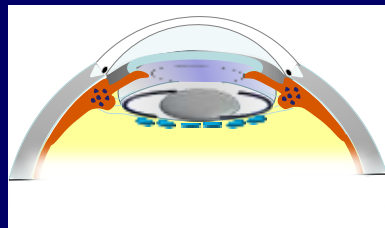
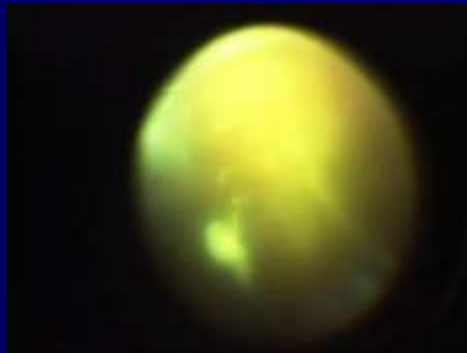


5. Shaving the vitreous base



6. Maintaining good visualization

- Avoid undue injury of cornea by betadine, trauma, benox & phenylephrine.
- Wetting of the cornea & methyl cellulose.
- Fine AC bleeding.
- Water vapor on the posterior surface of IOL during air filling.

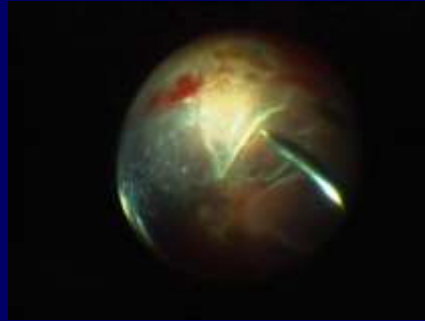


7. Using the endo-diathermy

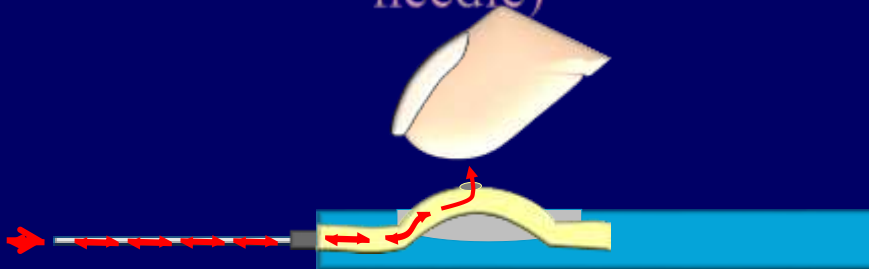
1. To mark retinal breaks.
2. To coagulate bleeders.
3. To open drainage retinotomy.
4. Relaxing retinectomy.

Avoid:

1. Diathermy at the disc.
2. Vascular occlusion.
3. Perforation of retina.
4. Shrinkage of retina.



8. The flute needle (back-flush needle)

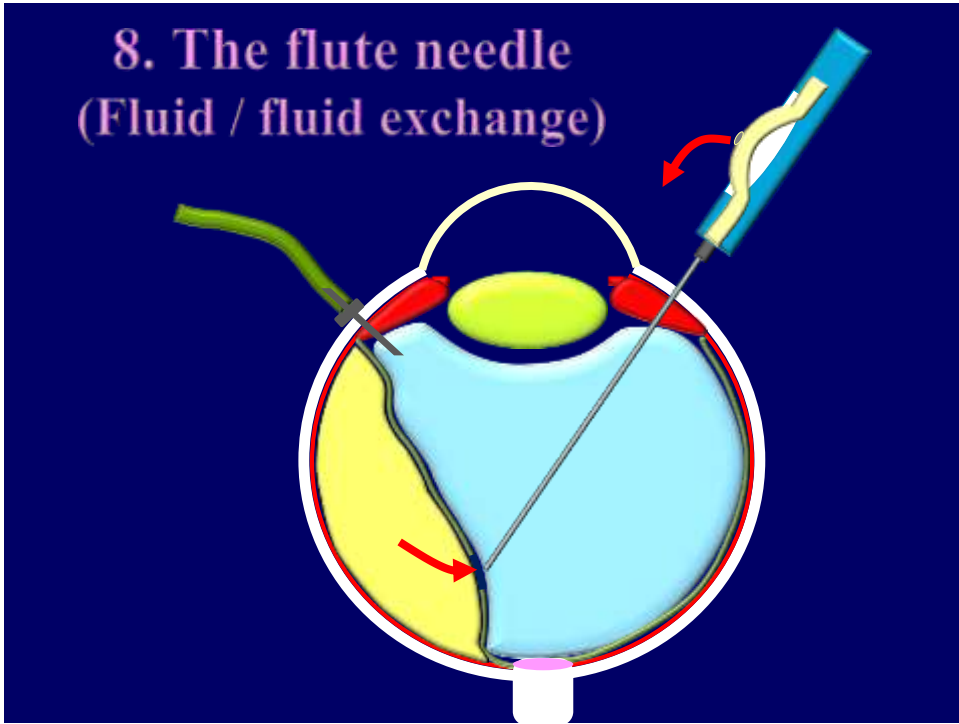


Hard metal tip

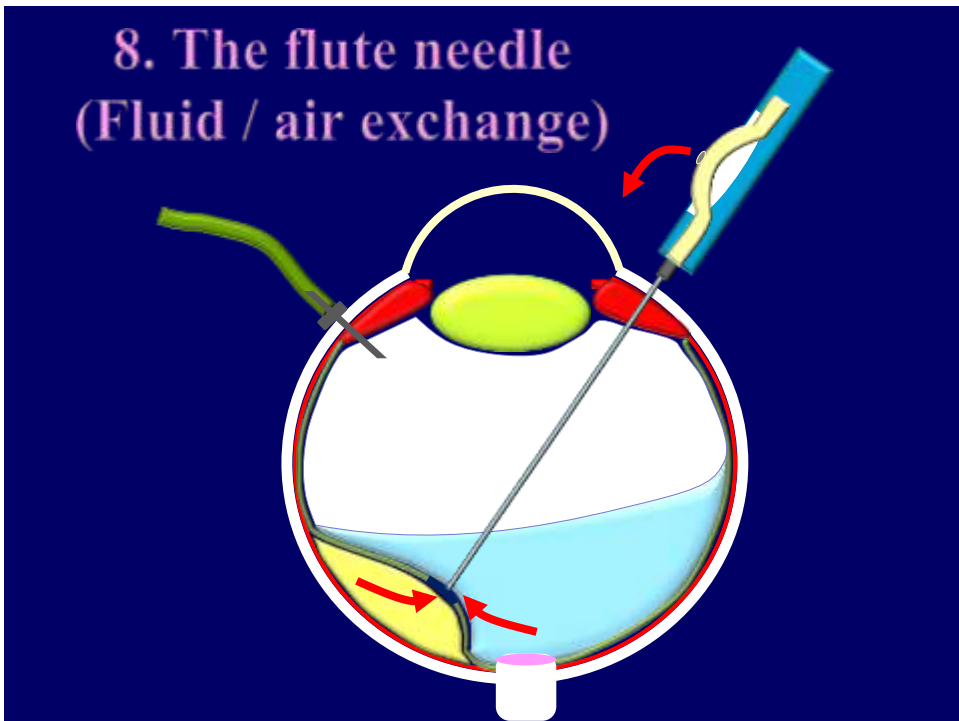


Soft silicon tip

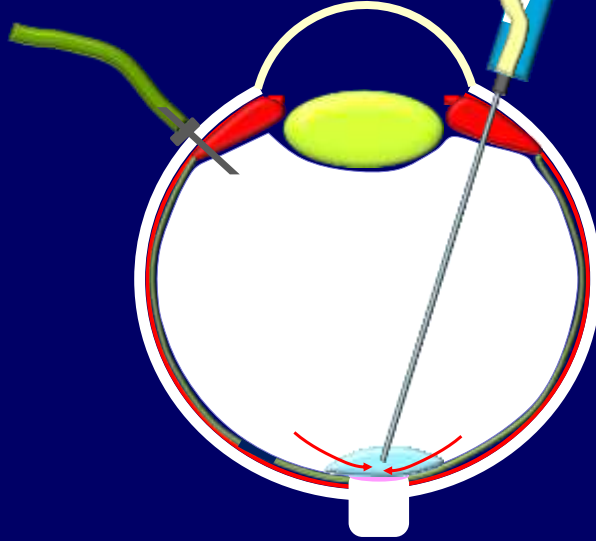
8. The flute needle (Fluid / fluid exchange)



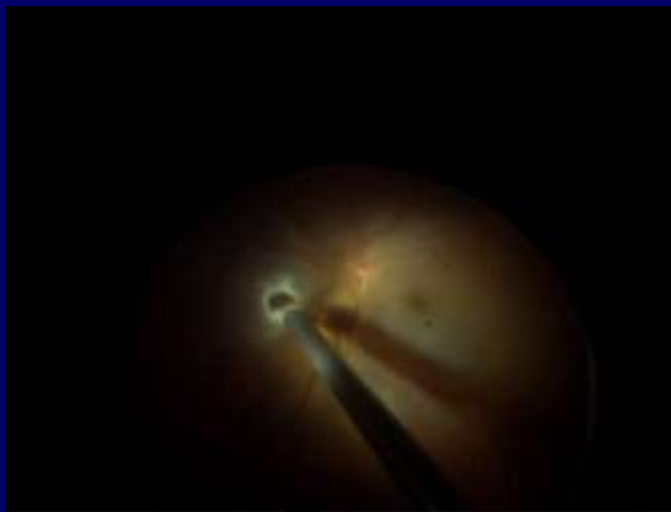
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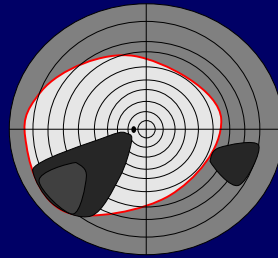
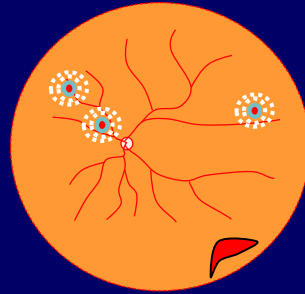


8. The flute needle (Fluid / air exchange through drainage retinotomy)



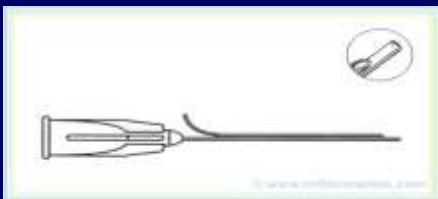
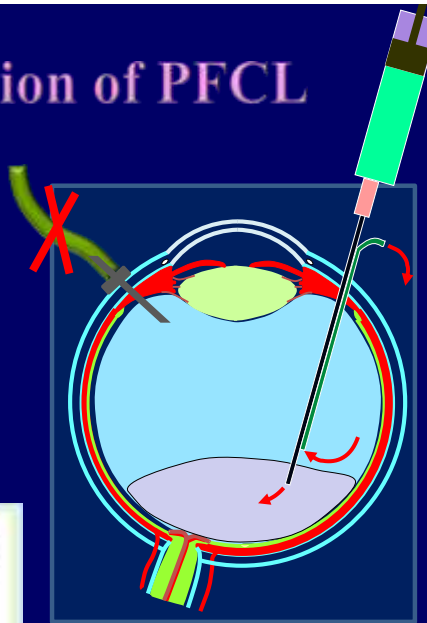
9. The drainage retinotomy; Where to do ????

- Upper, nasal & posteriorly
- **The correct drainage site:**
- Just posterior to the equator.
- Upper Temporal → lower nasal scotoma (**Upper Nasal only if the break is nasal !!!**).
- Avoid areas of failed PVD.
- Avoid large retinal BV.



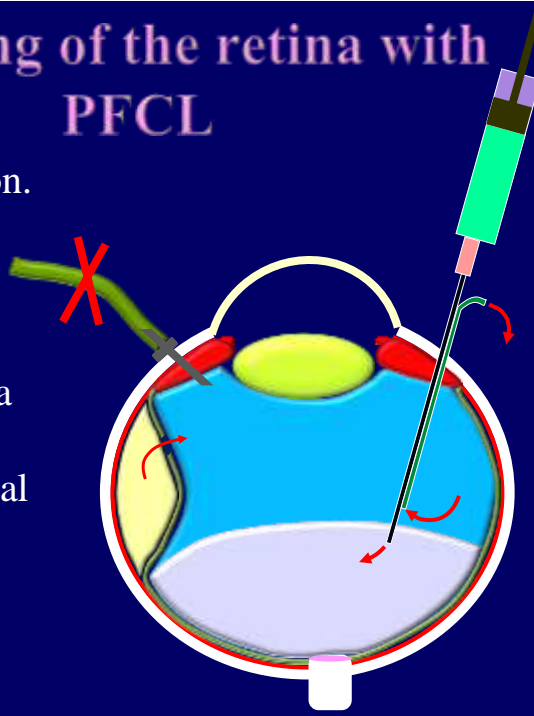
10. Injection of PFCL

- Close the infusion in order to prevent fragmenting the PFCL into small bubbles.
- Use the special double way needle to allow venting of saline.



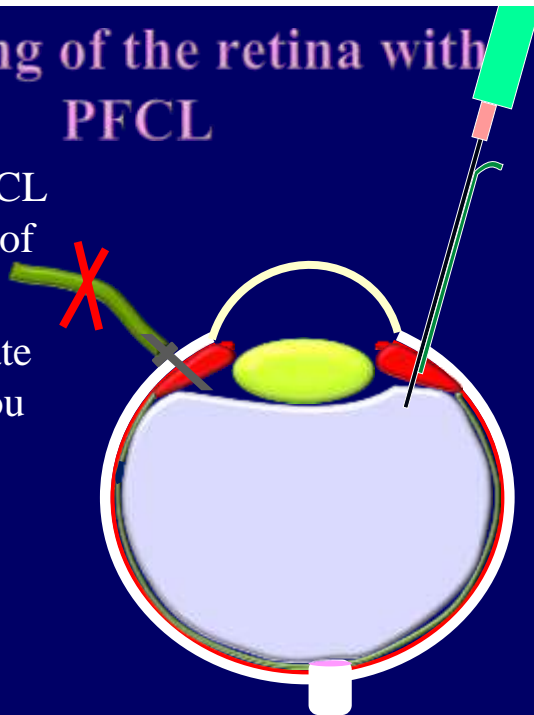
Flattening of the retina with PFCL

- Close the infusion.
- Inject PFCL slowly.
- SRF will be drained through a peripheral break (either the original one or done by a single cut by the cutter).

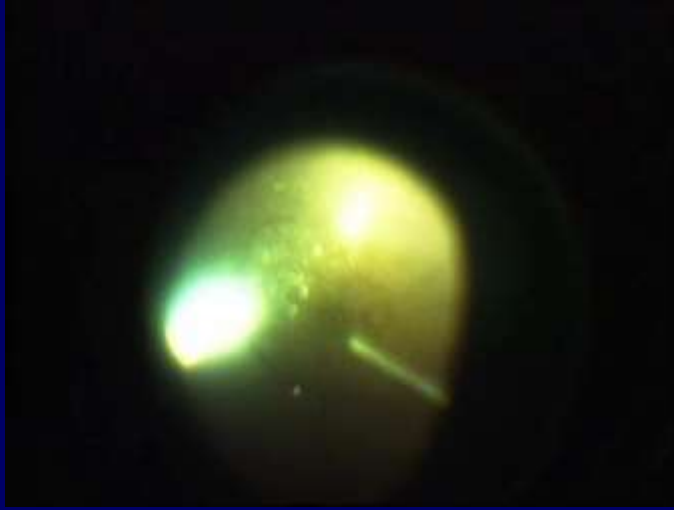


Flattening of the retina with PFCL

- Increase the PFCL above the level of the break.
- Gradually elevate the needle as you inject

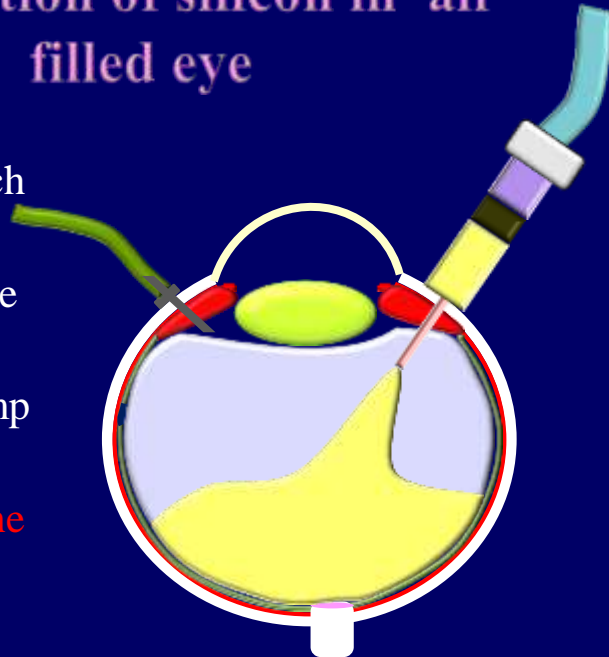


Injection of PFCL without venting of saline → small bubbles



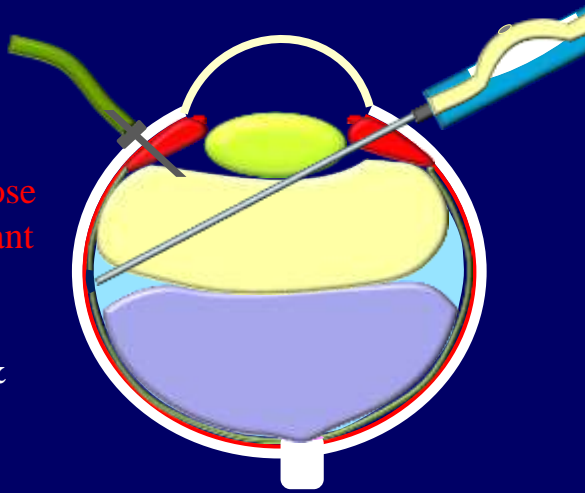
11. Injection of silicon in air filled eye

- Decrease air pressure as much as possible.
- Use a short wide needle.
- Use silicon pump or manually.
- Check IOP at the end.



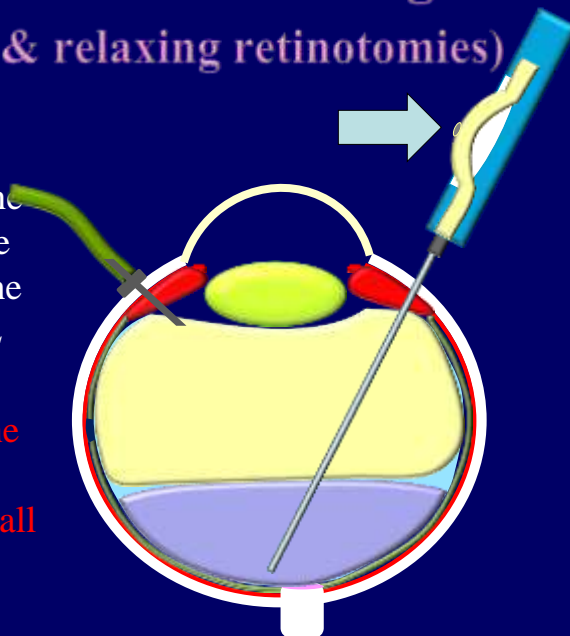
12. PFCL / Silicon exchange (giant breaks & relaxing retinotomies)

- Silicon is pumped through the infusion cannula.
- The tip of the flute needle is inserted **close to the edge of the giant break** to remove the meniscus of saline between the PFCL & silicon.



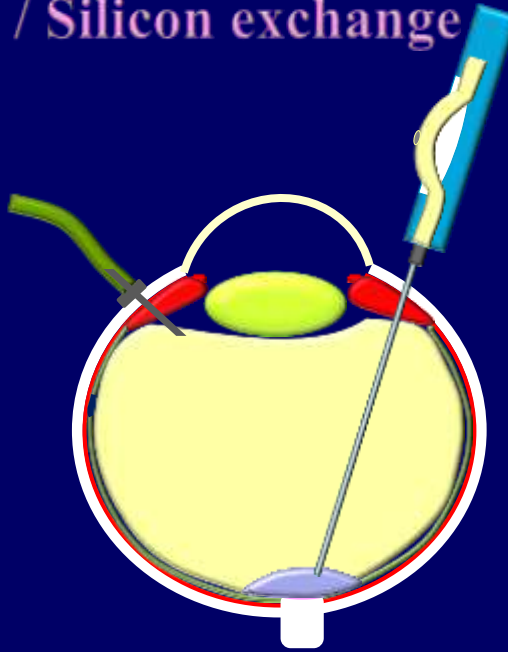
12. PFCL / Silicon exchange (giant breaks & relaxing retinotomies)

- After exceeding the edge of the tear → the tip of the flute needle is inserted close to the disc inside the PFCL bubble.
- **Avoid pressing on the rubber of the flute needle → creates small PFCL bubbles.**



12. PFCL / Silicon exchange

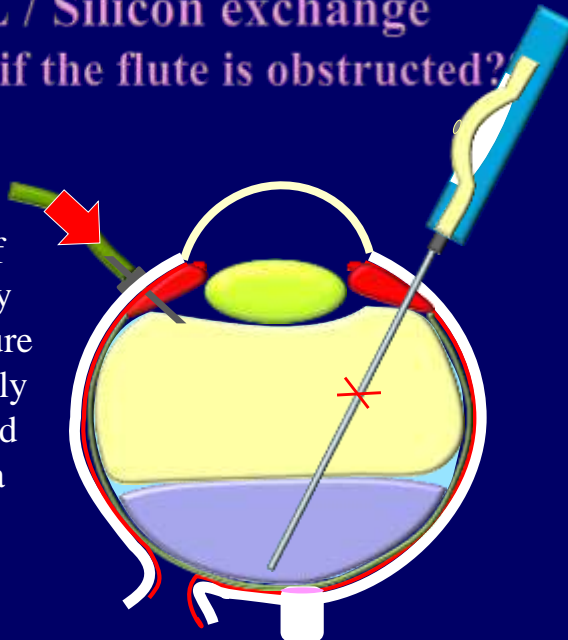
- Do not leave any bubbles of PFC.
- **Care of IOP throughout the exchange & at the end.**



12. PFCL / Silicon exchange

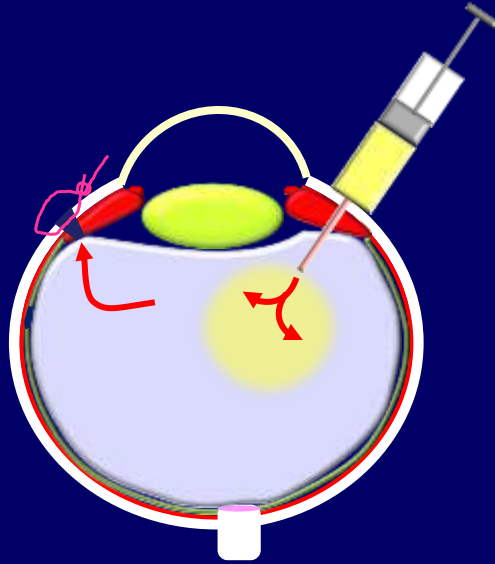
What happens if the flute is obstructed?

- The huge pressure of the silicon pump may cause posterior rupture of the globe especially with high myopia and posterior staphyloma



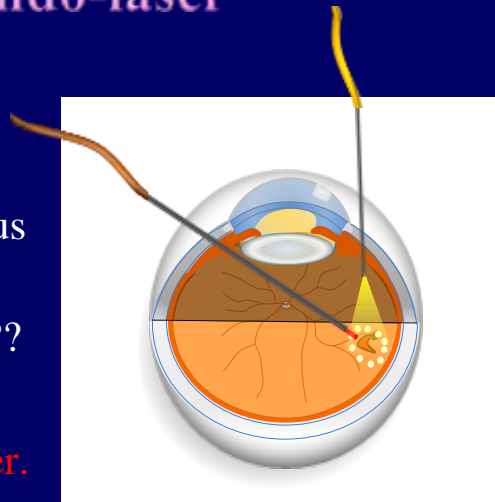
13. Filling the eye with long acting gas

- After filling the eye with air, close 2 sclerotomies.
- Keep the 3rd one ready for tightening the knot.
- Through a separate 25 gauge puncture flush the eye with 40 – 60 cc of the proper gas mixture.
- **Immediately tighten the ready knot.**



14. Endo-laser

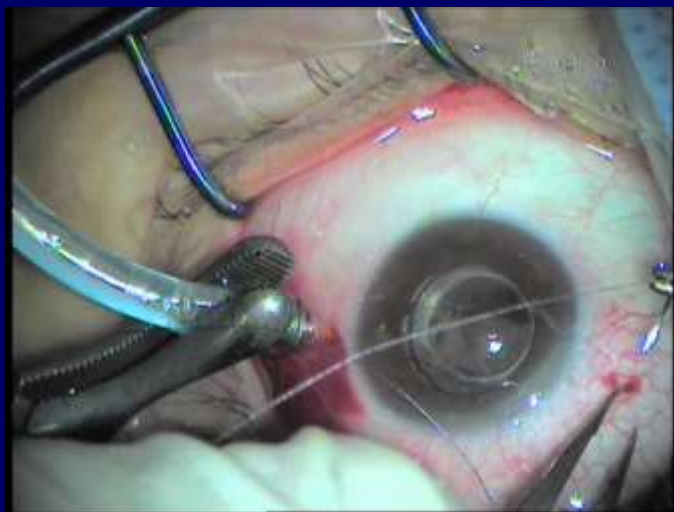
- Surround all the breaks and suspicious areas.
- 360 degrees parage??
- PRP
- **No focal or grid laser.**



15. Check the retinal periphery at the sclerotomy sites



16. Closure of the sclerotomies



Thank You