



DR KHALED A. KHALIFA
MD, FRCS
EGYPT



EXPERTS EYE
C E N T E R

Phacoemulsification strategy in hard rock cataract

Financial disclosure

- Alcon speaker.
- BVI speaker.
- VSY speaker.
- Biotic speaker.

Surgical challenges

Dense nucleus

Small pupil

poor visibility



low red reflex

Shallow AC.

High energy

Risks and ocular hazards

Intraoperative

A

Zonular stress or dehiscence

B

**Posterior capsular rupture
(PCR)**

C

Corneal endothelial trauma

D

Thermal injury at incision site

E

**Intraocular pressure spikes
due to fluid mismanagement**

Risks and ocular hazards

Postoperative

A

Cystoid macular edema

B

**Corneal edema/bullous
keratopathy**

C

**Posterior capsular
opacification (PCO)**

D

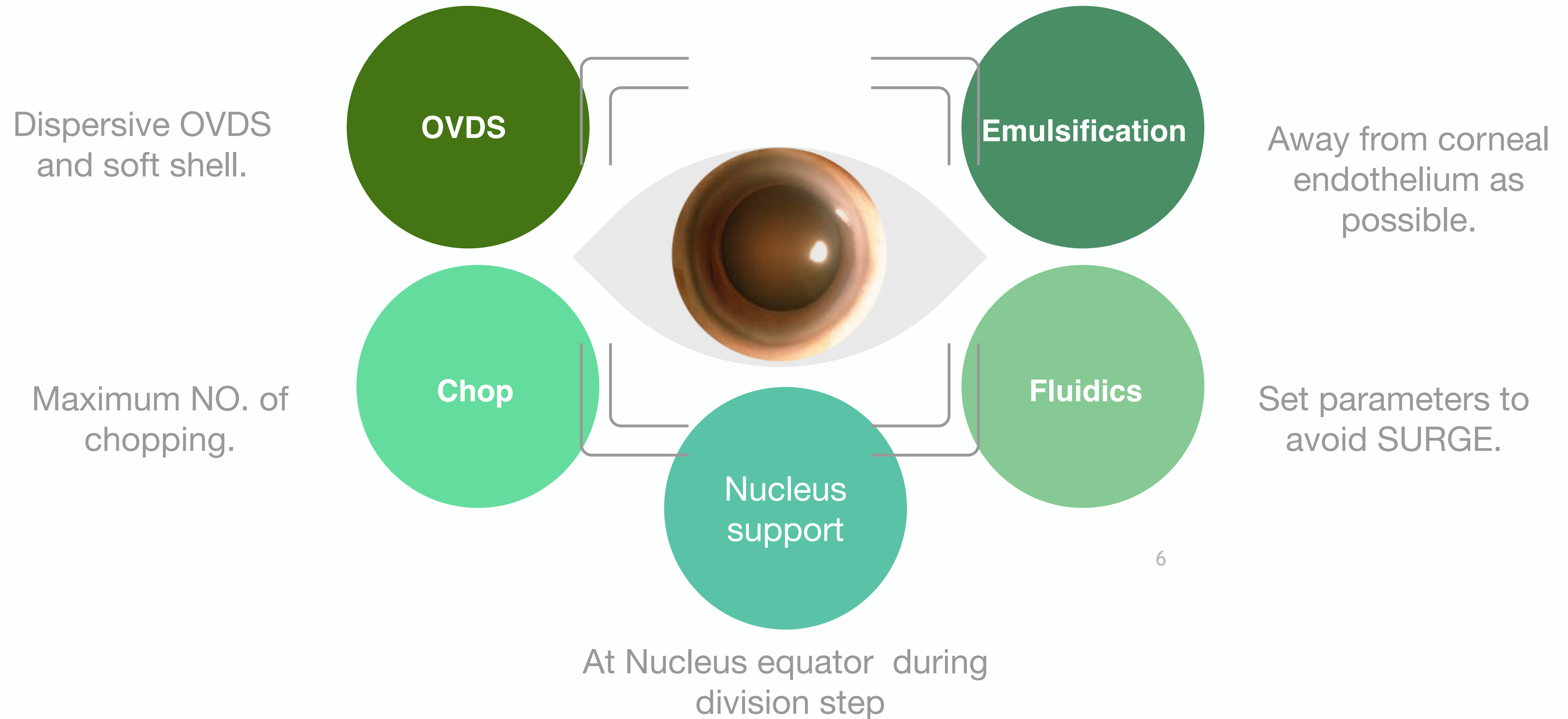
Delayed visual recovery

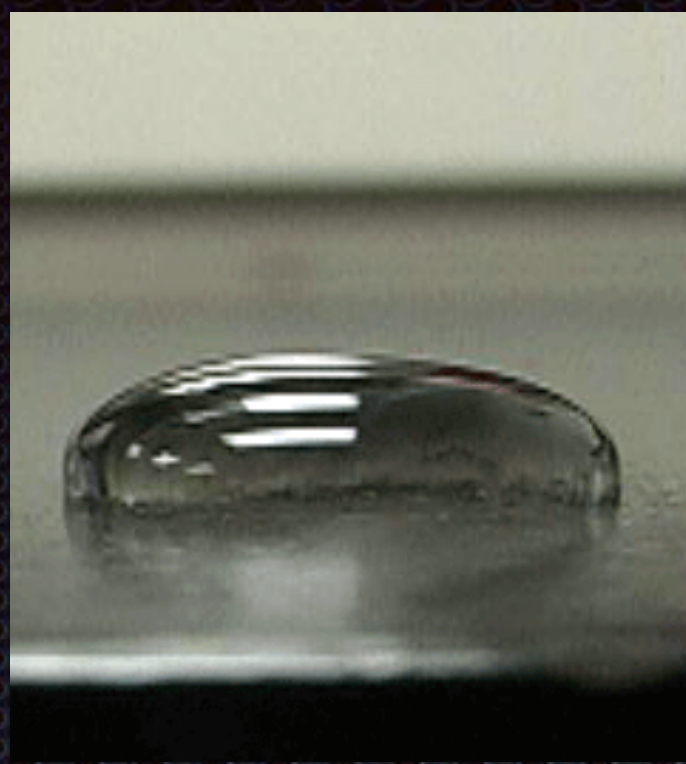
E

**Wound leakage and or high
astigmatism**

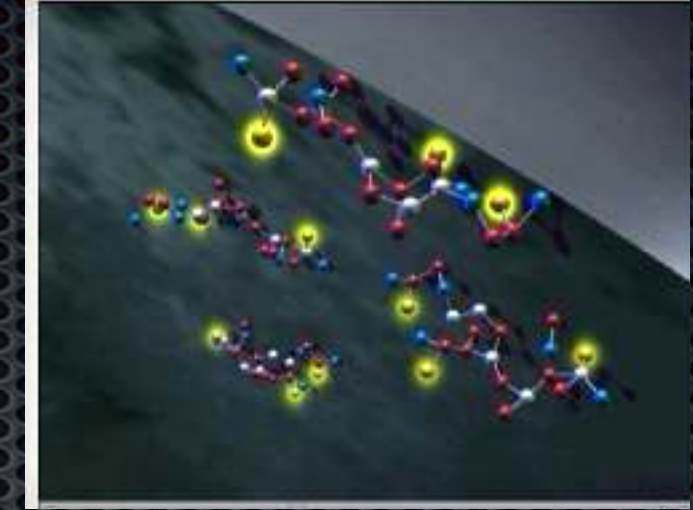
Surgical strategy

Surgical strategy is tricky as we need to preserve corneal endothelium, avoiding too much energy, PCR, and to prevent too much fluctuation of AC with no surge.





Adhesive (dispersive)



🌱 How well the
Viscoelastic
Solution
adheres or
sticks to
ocular tissue,
e.g. cornea



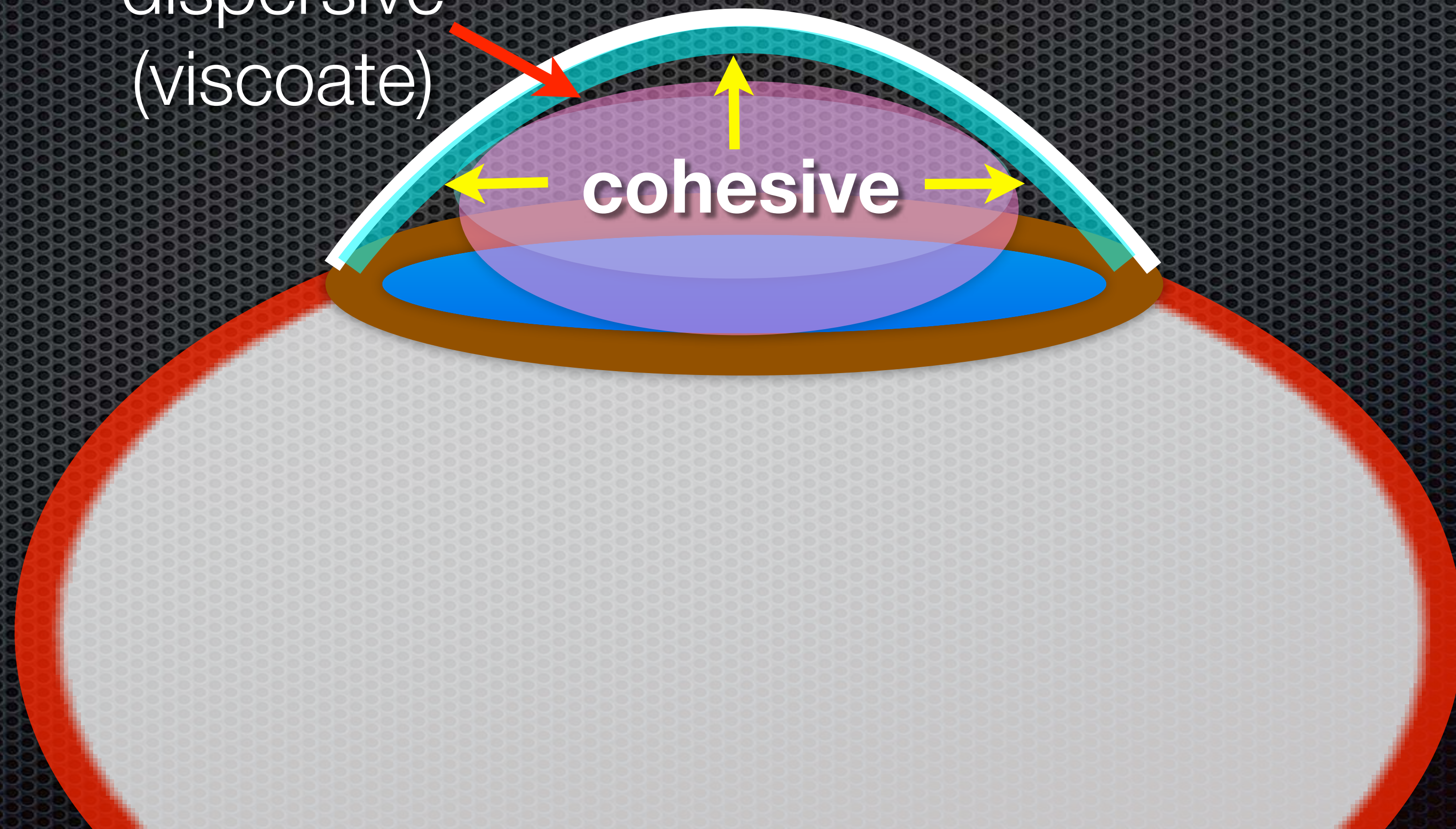
viscoate



Soft shell

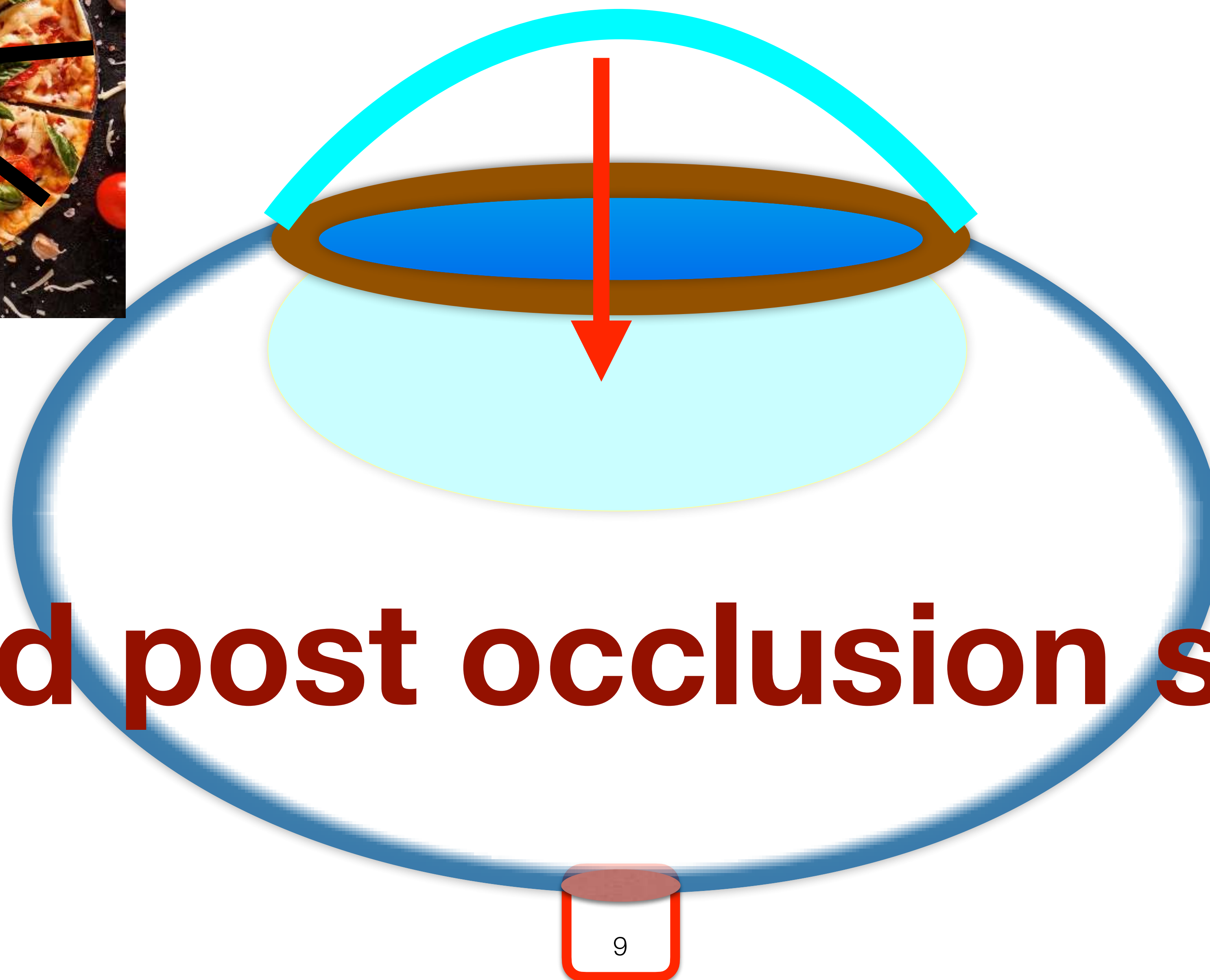
dispersive
(viscoelastic)

cohesive





The Golden Pearl !!!



Avoid post occlusion surge



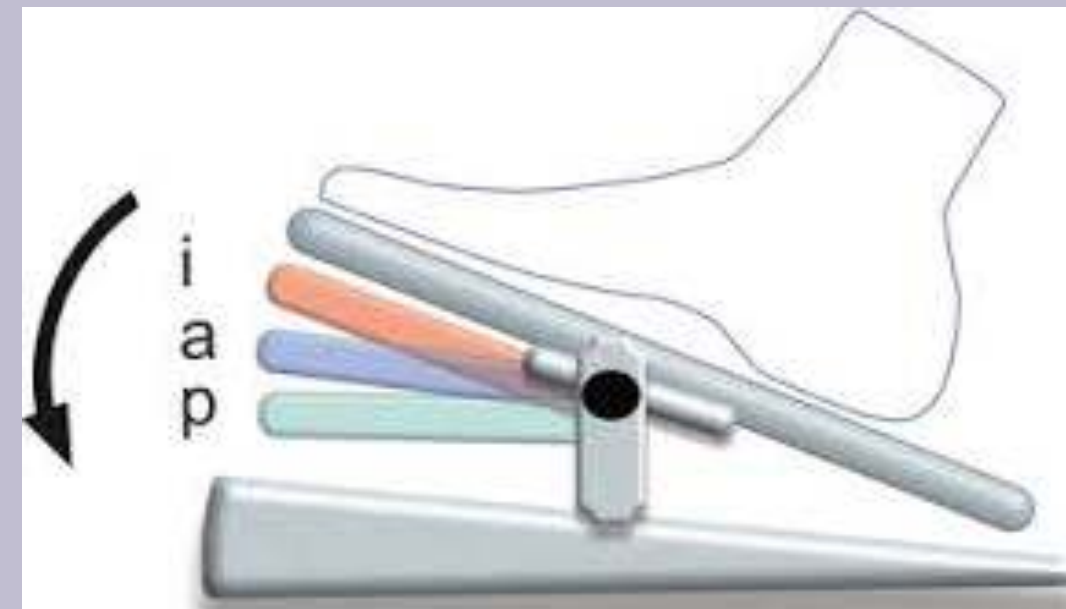
Chopping (multislice horizontal chops)

Perfection of the chop is the key for success in hard cataract



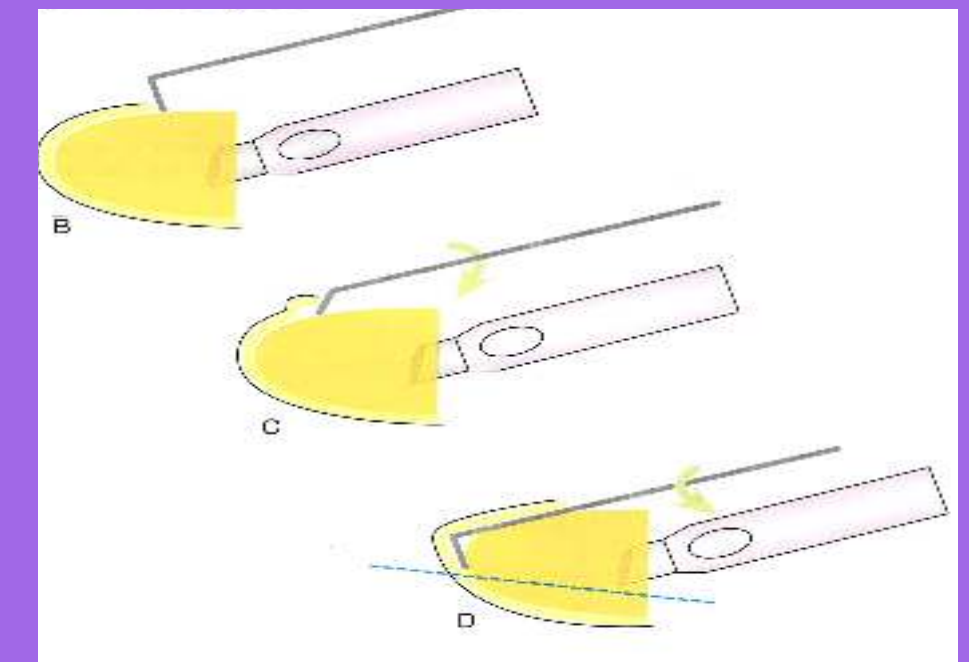
Chop

As many as possible chops using a horizontal chopper.



Fluidics

All fluidics parameters are fixed as well as US (same foot switch press).

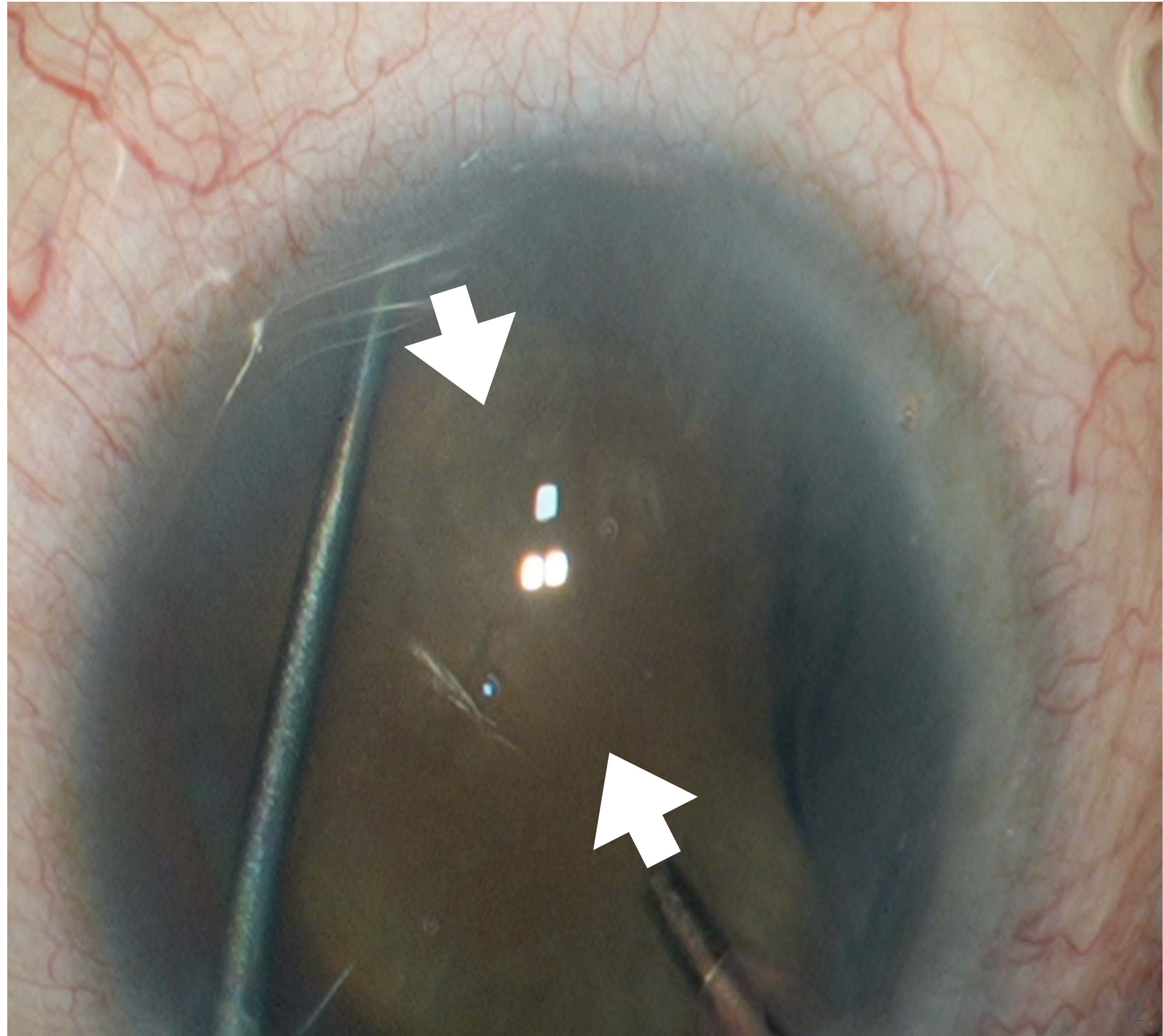


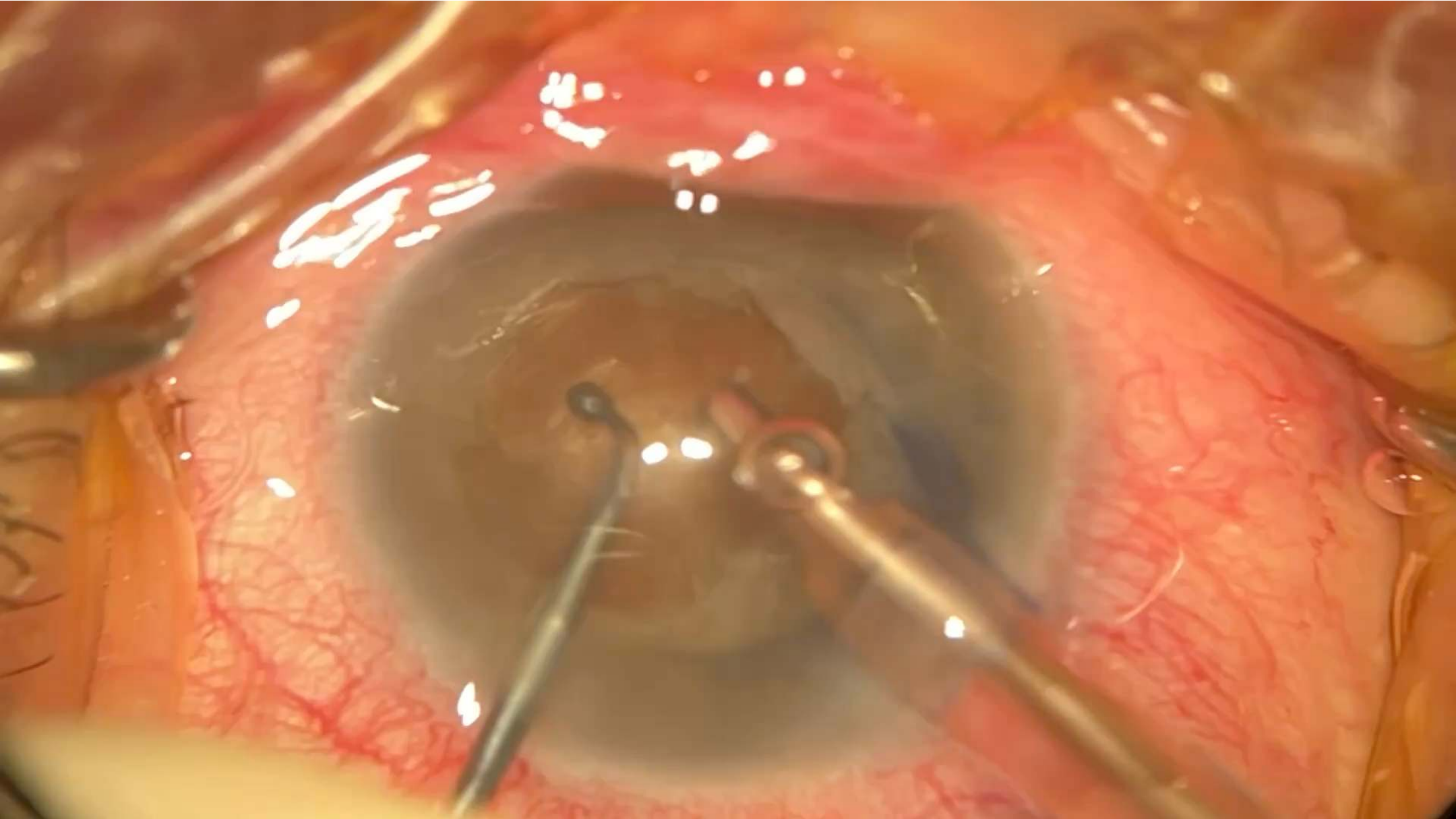
Chopper

Keeping the chopper inside the bag most of the time.

Chop technique

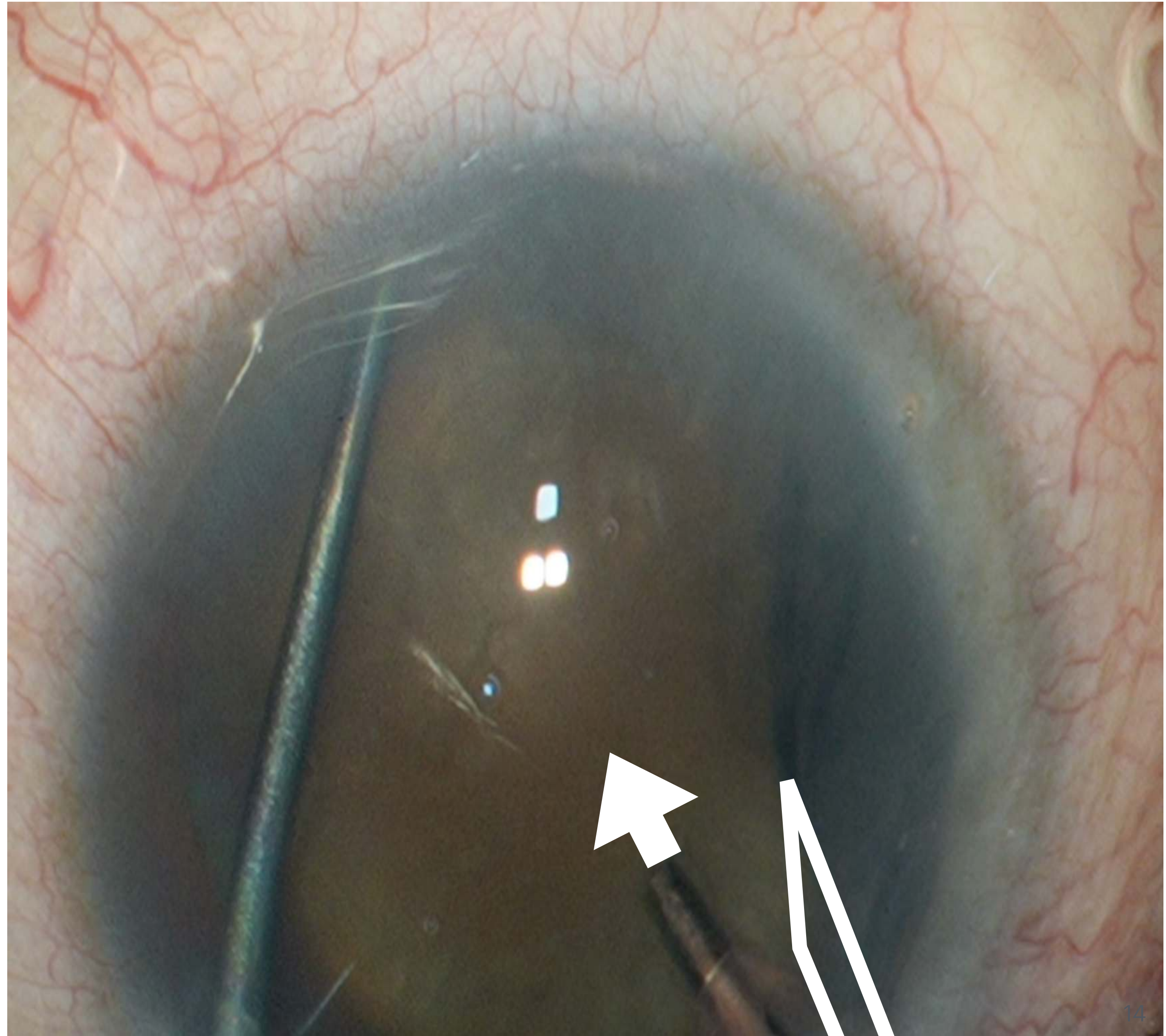
Choper knife





Chop technique

Tip knife



OS | OD



355:48:32



HDR



Emulsification(torsional and longitudinal)



1 **Parts**
Target the
connected
fragments
first.

2 **Where**
Inside the bag
emulsification.

3 **Tip**
Inside the bag
(aspiration
port).

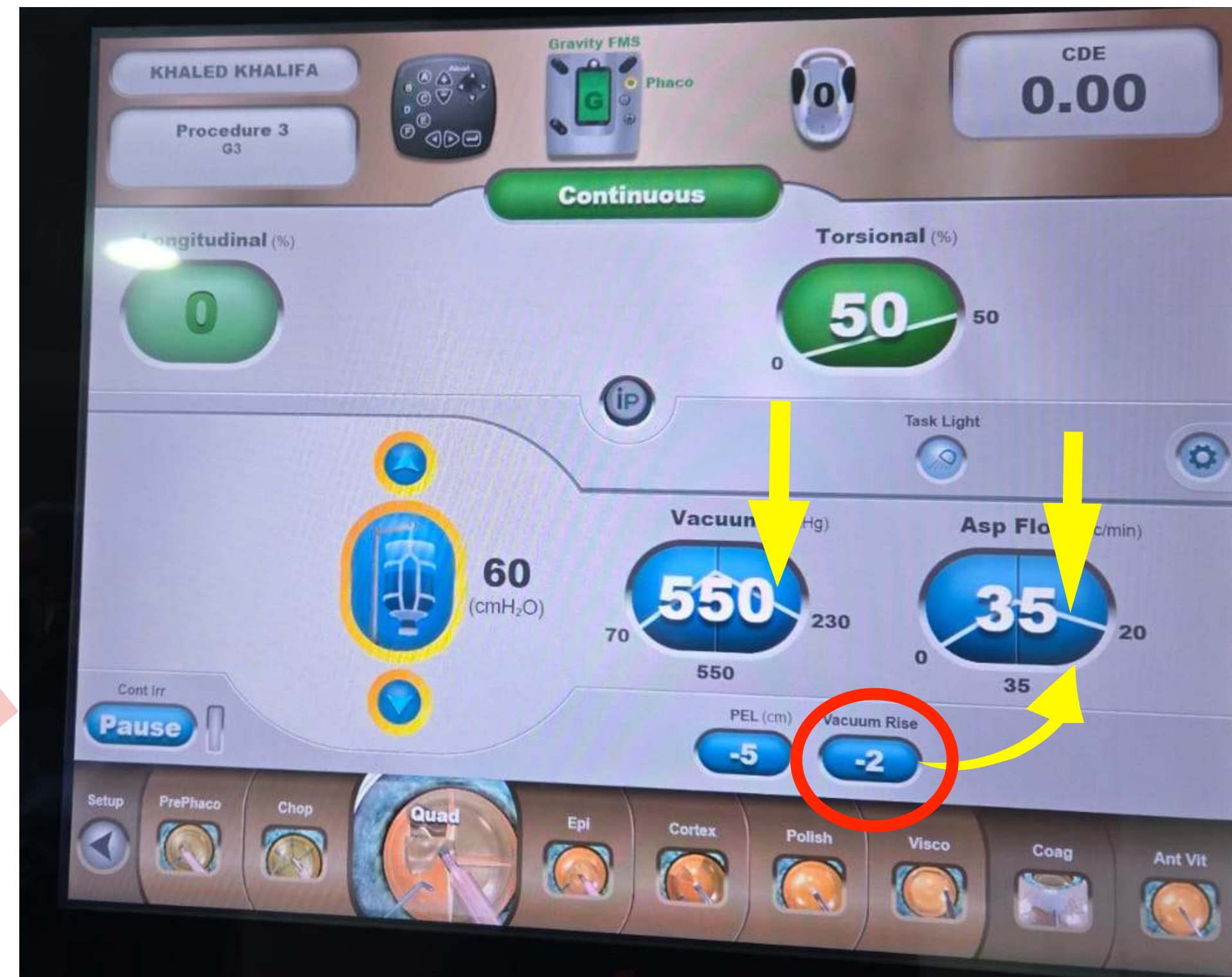
4 **US**
Tailor
ultrasound
power
according to
repulsion.

Emulsification_(no occlusion)

Torsional US can work efficiently without strong occlusion.

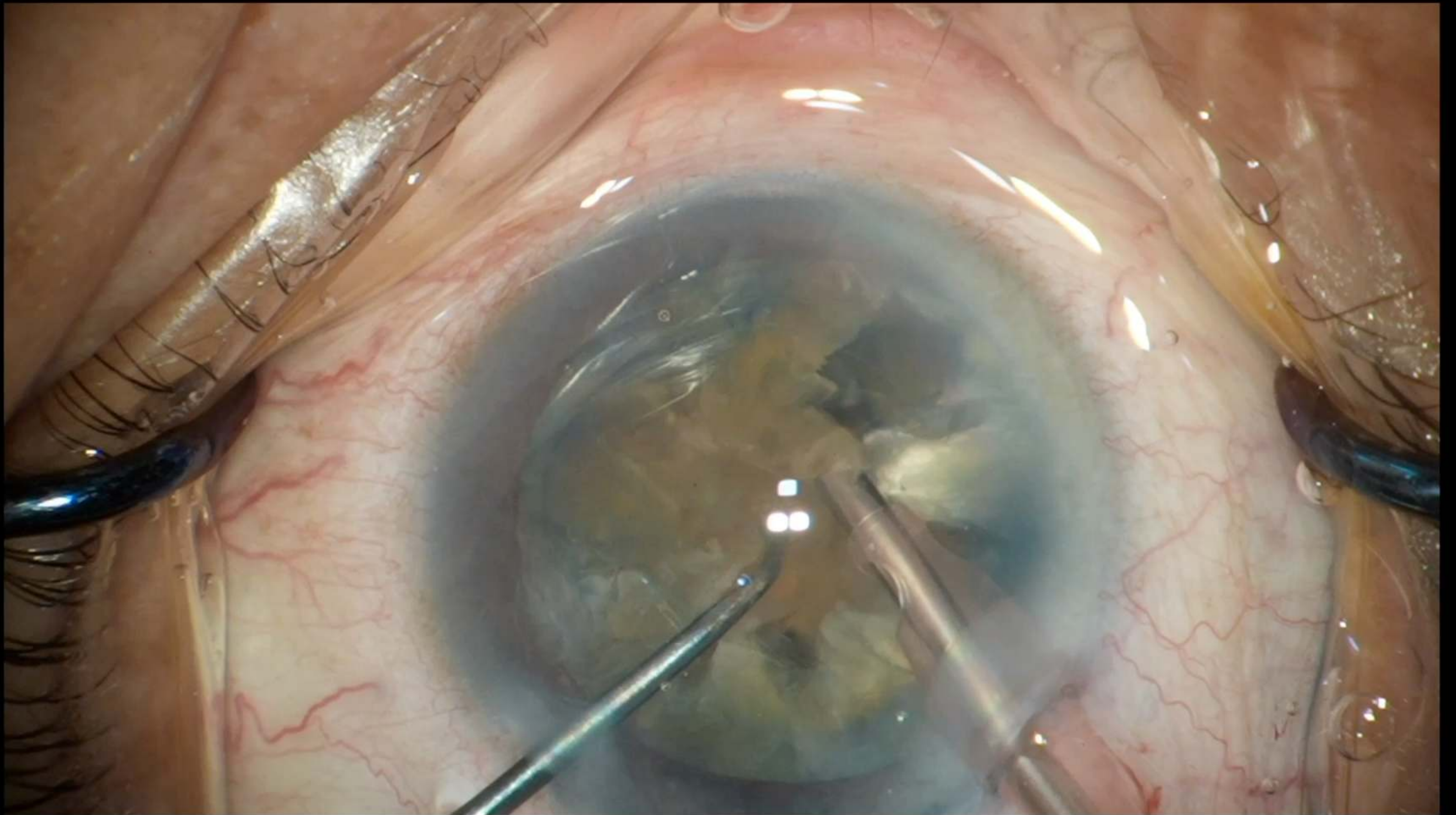
Reducing the level of vacuum (mmhg) in aspiration line, no strong occlusion.
- Direct and indirect.

Descending vacuum in foot position 3.



Descending FR in foot position 3.
OR

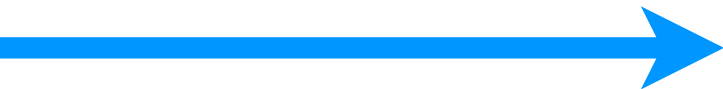
-ve vacuum rise—— more drop of FR—— before occlusion —— lesss vacuum building.



Stellaris Elite

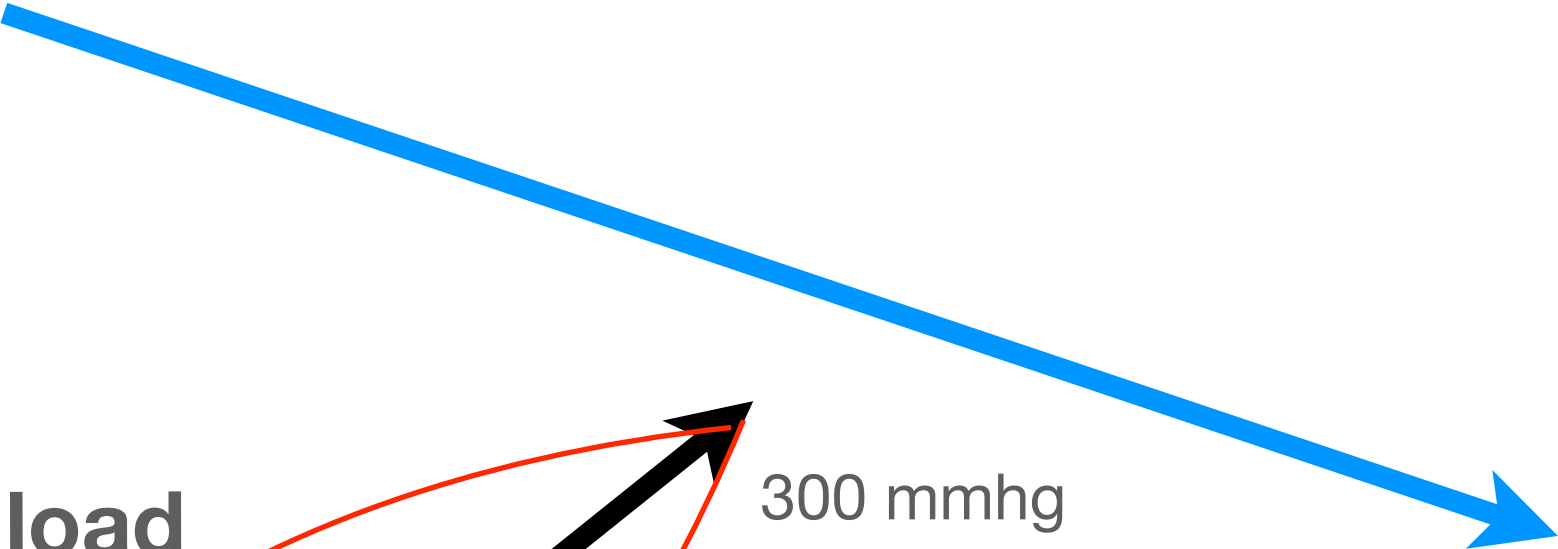
Fast and stable

- Faster surgery. (Foot pedal control)

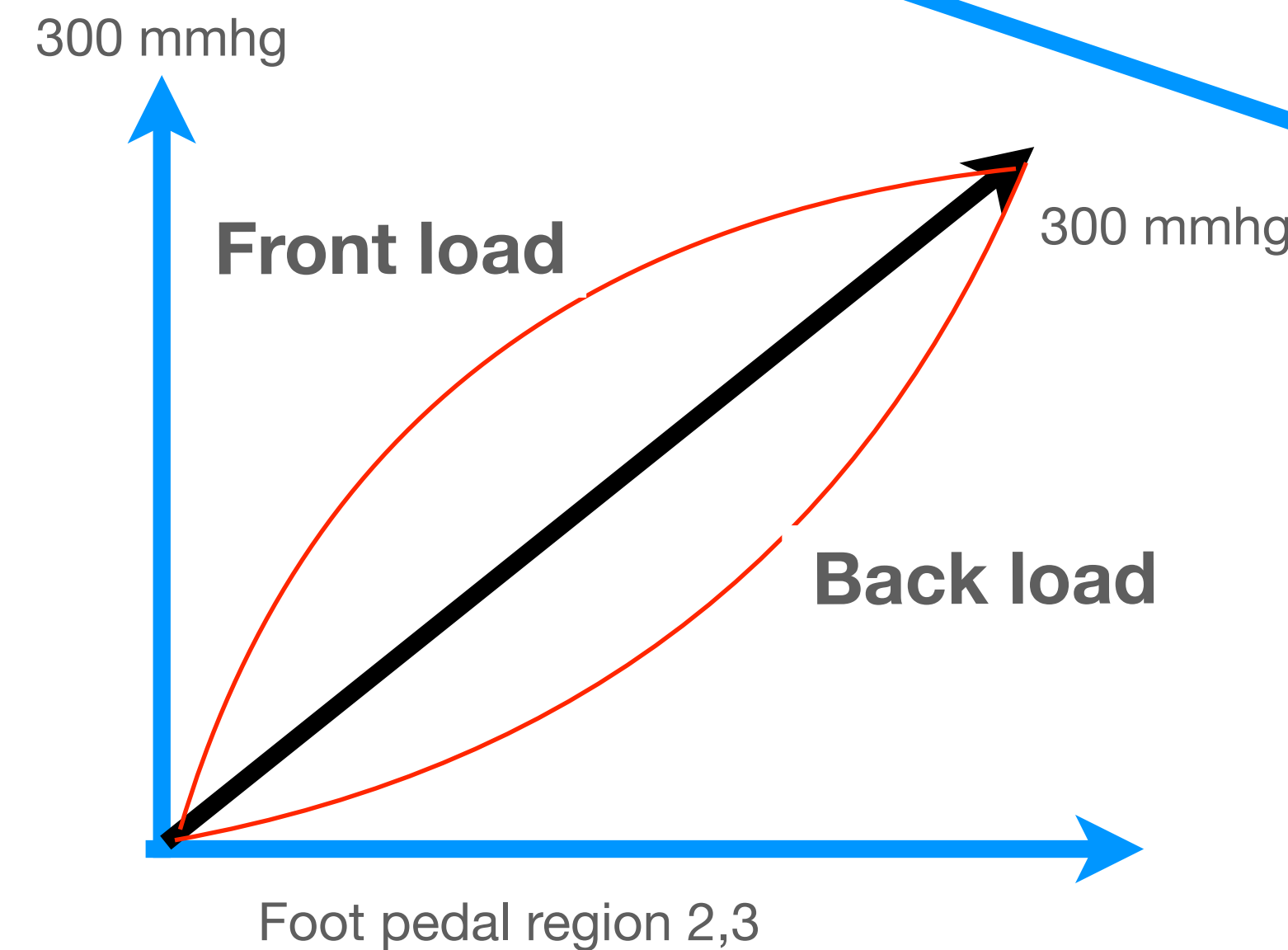


Front load , Back load

- Rise time.



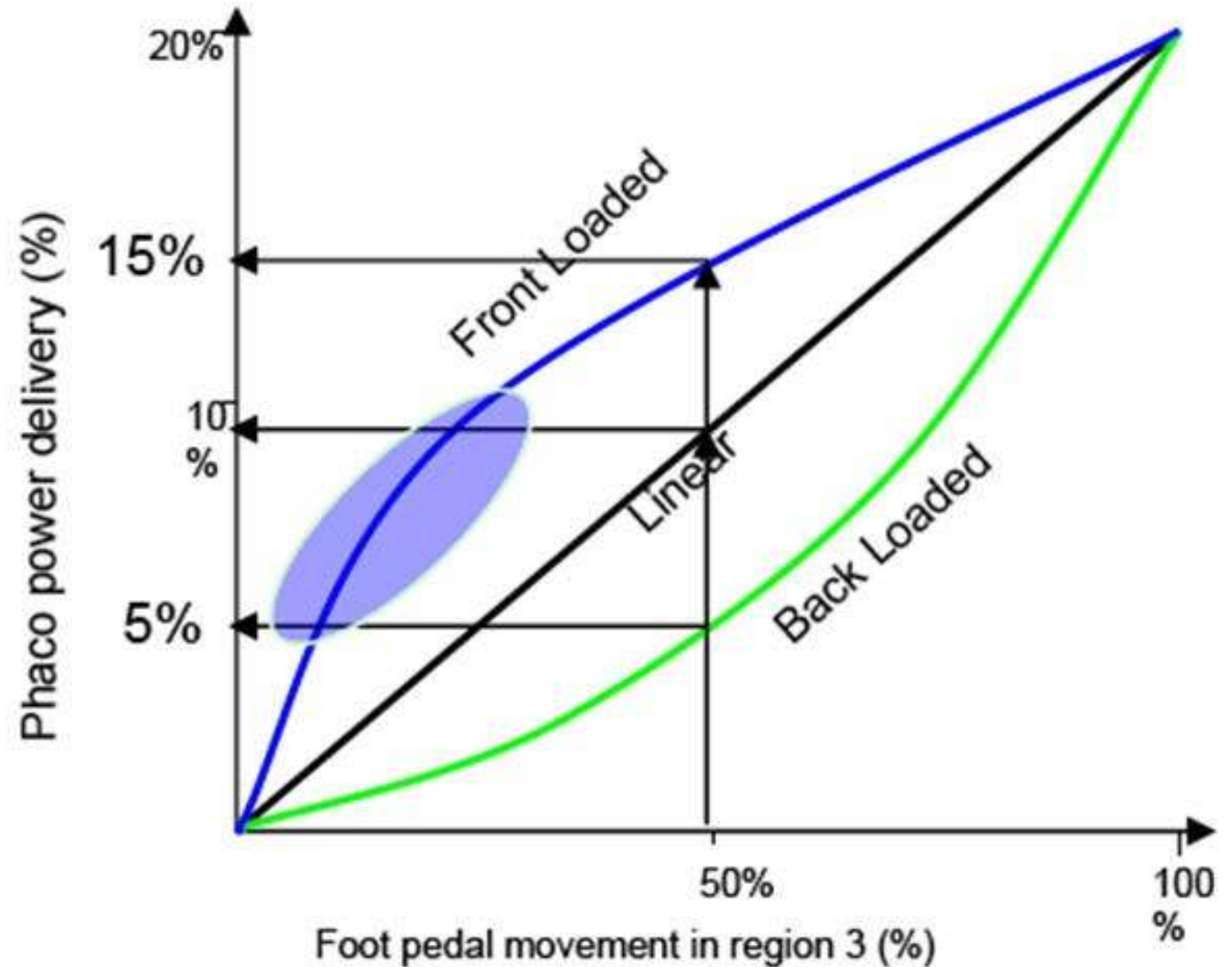
Rise time (Outflow speed)



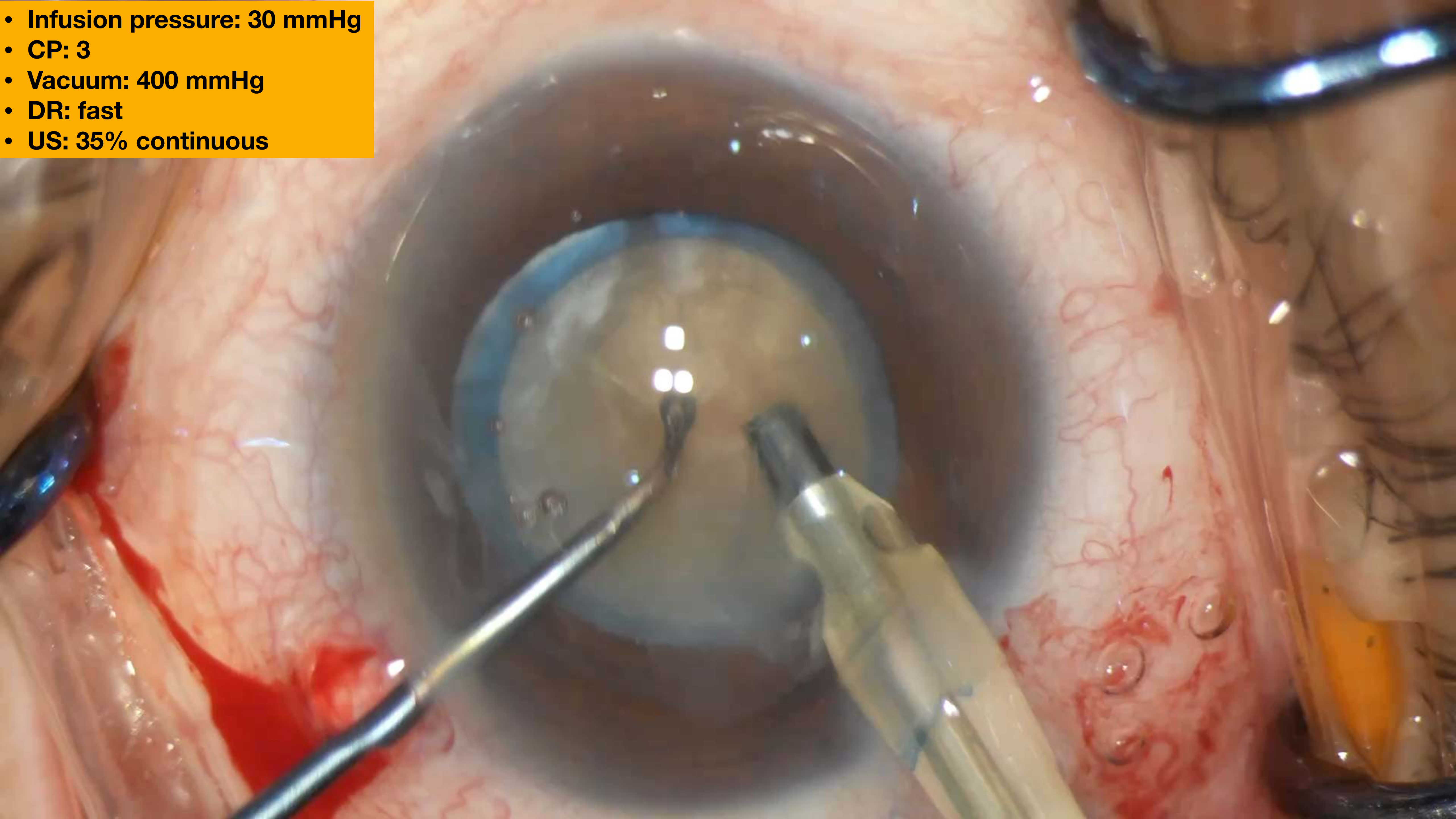
Ultrasound Load

Foot **pedal** control mapping

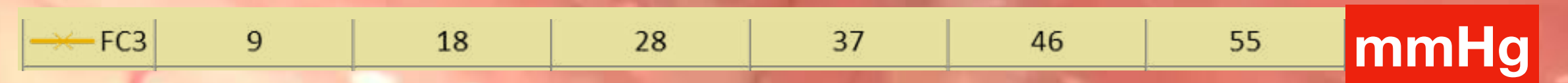
- Linear.
- Front Loaded (hard cat.).
- Back Loaded (soft cat.)



- Infusion pressure: 30 mmHg
- CP: 3
- Vacuum: 400 mmHg
- DR: fast
- US: 35% continuous

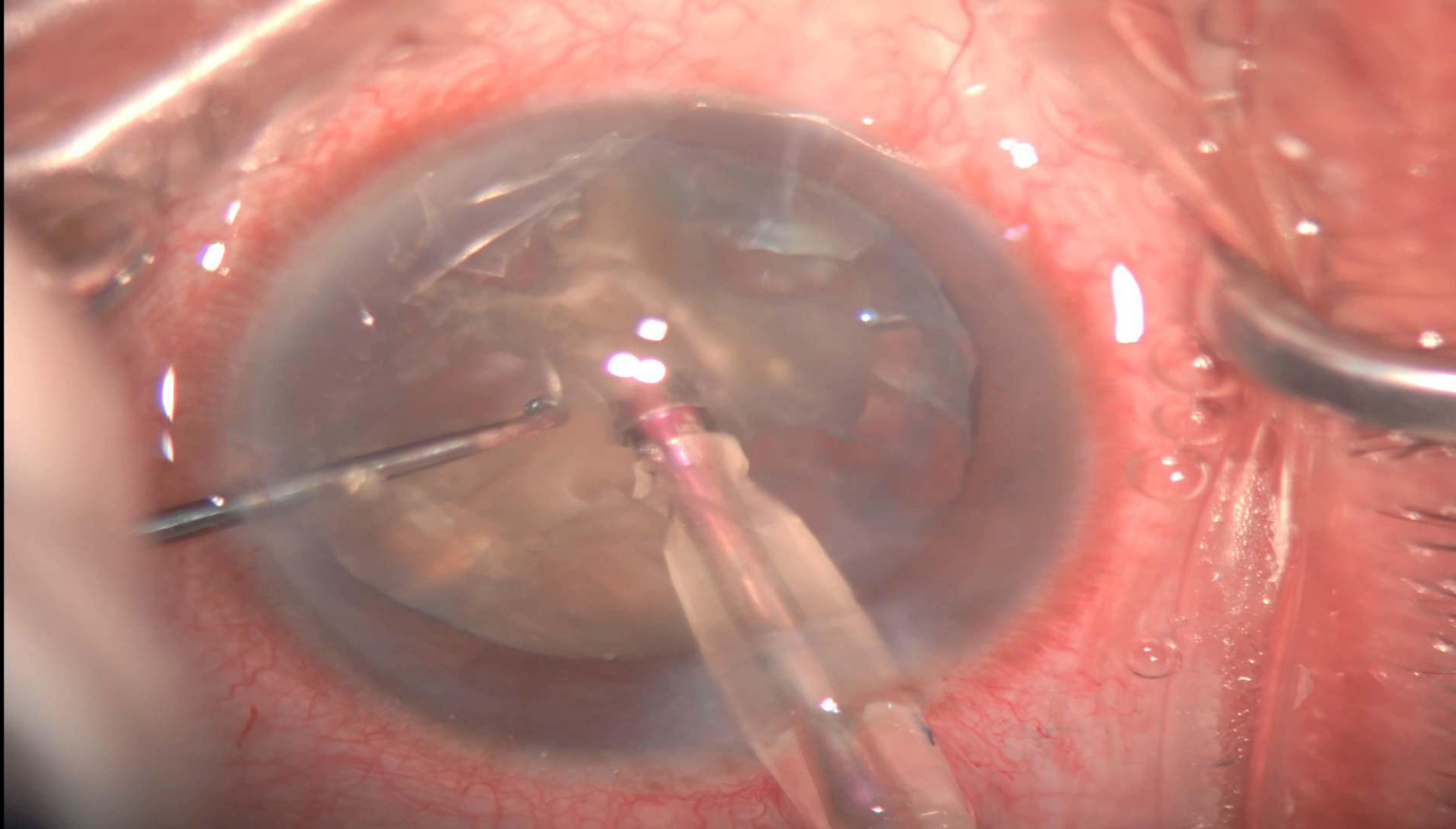


- Infusion pressure: 30 mmHg
- CP: 3
- Vacuum: 400 mmHg
- DR: fast
- US: 35% continuous



Real time speed





Thank you