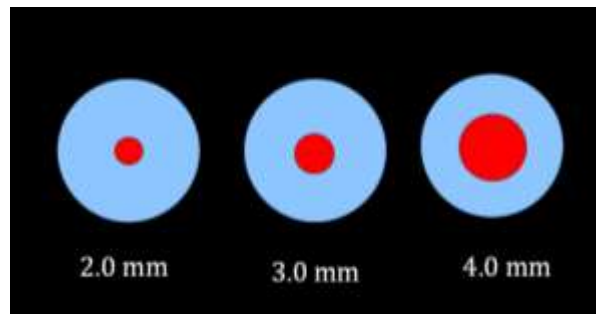


# Narrow Pupil

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## Critical Pupil Size



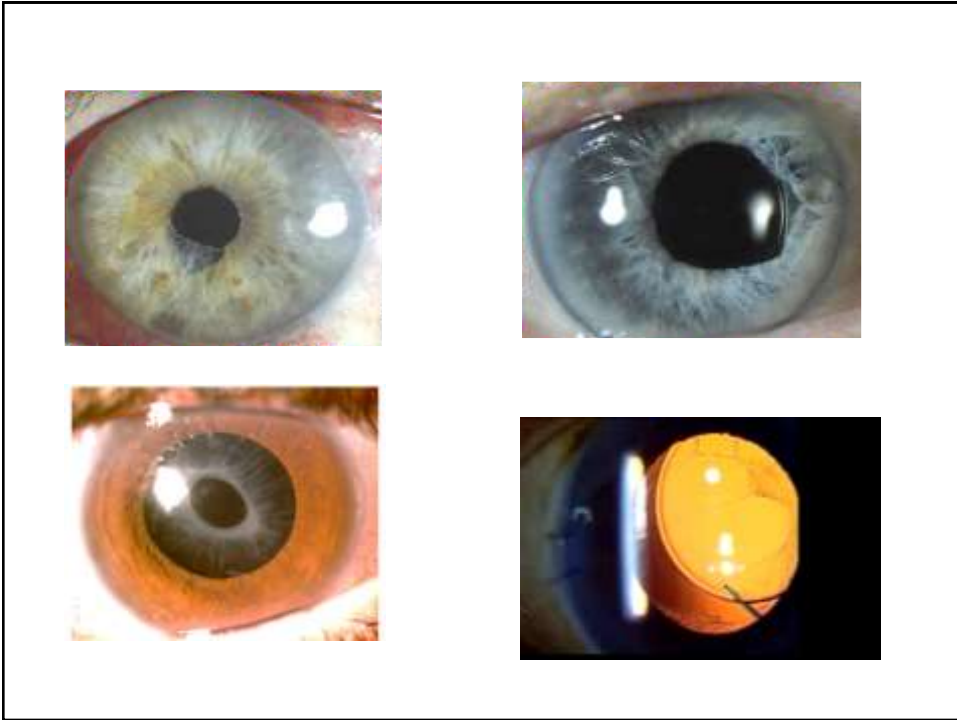
## Causes Of Narrow Pupil

- Age related
- Diabetes
- Trauma
- PEX
- Posterior synechiae
- Frequent use of miotic eye drops
- IFIS



## Challenges Due To Small Pupil

- Reduced red reflex
- Small capsulorhexis size → phimosis
- Increased risk of Iris injury
- Incomplete cortical cleaning
- Improper alignment of toric IOL



**How to manage?**



Pharmacologic

Mechanical

## (I) Pharmacologic

Intracameral **1 ml epinephrine hydrochloride(Adrenaline) 0.001%**  
for 1 minute after corneal incision.

- It does not work in all cases.
- IFIS (overcome action of  $\alpha$ 1 blockers).
- Can be mixed with lidocaine 1%.



**Omidria**

(phenylephrine 1% + ketorolac 3%)



## (II) Mechanical Visco-dilation

### Highly cohesive OVD (**Healon 5**)

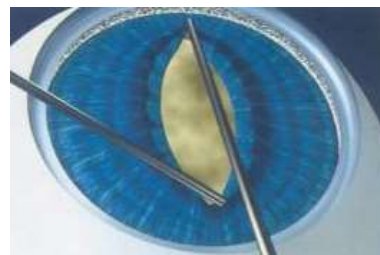
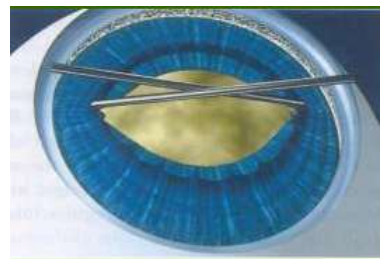
- Low fluidics to ensure slow wash out of it
- Can be re-injected if pupil becomes narrow.
- Can be combined with intracameral epinephrine.



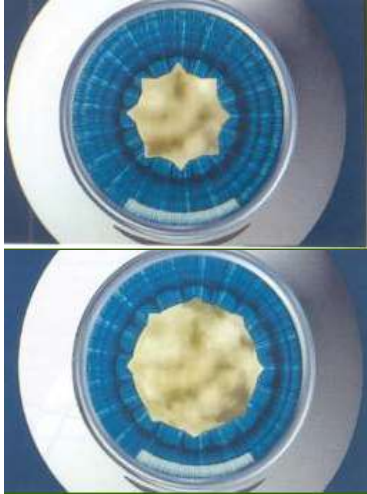
## Pupil Stretching

### Koglen hooks

- Used in:
  - ✓ Thick irides.
  - ✓ Post uveitic.
- It breaks the fibrotic ring **BUT**,
  - ✓ Gentle to avoid iris tear
  - ✓ Avoid with IFIS
  - ✓ Release PGs.



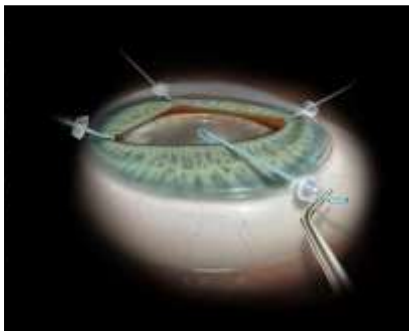
## Sphincterotomies

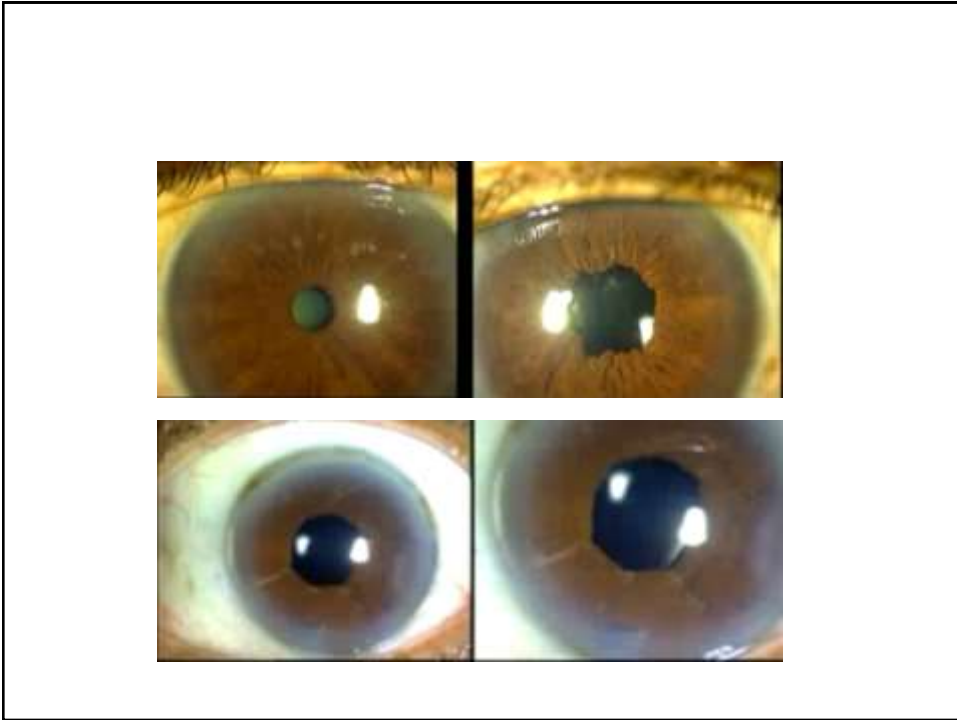


- Up to Eight in number.
- Avoid Clorettes.
- Avoid in IFIS.

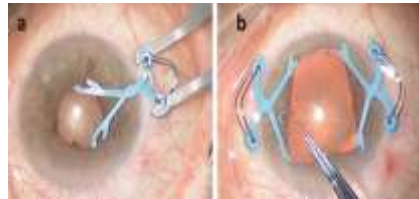
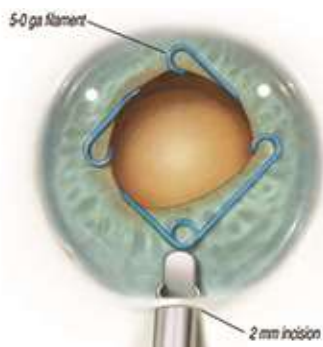
## Iris Retractors

- Four paracenteses
- Put in a diamond manner
- May slip during surgery



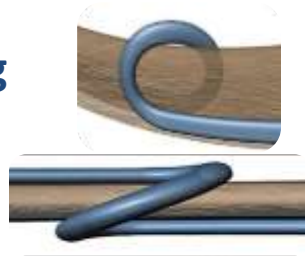


## Pupil Expander Devices



## Malyugin Ring

- Can be injected through 2 mm wound.
- Prolene 4/0 5/0 new one.
- 8 point fixation to form near circular pupil.
- 6.25 and 7 mm dilation.



### Advantages

- Less stress to the iris tissue.
- Easy implant and remove.
- Better for small eyes.



## Visitec I-Ring

- Circular uniform 360 degree.
- Polyurethane.
- 6.3 mm.
- No special manipulator.



## Assia Pupil Expander (APX)

- Ehud Assia.
- Israel.



## Surgical skills

- Use Viscoadaptive OVD (Healon ).
- Decrease Fluidic Parameters.
- Utilize Chop.
- Manipulate In The Ac Center.



## Summary

### More than 4 mm

- Adrenaline
- Visco-dilation
- Stretch pupilloplasty

### Less than 4 mm

- Pupil expanding devices
- Sphincterotomies  
(not preferred)

