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Yamane Technique for the Pediatric Eye: The fundamentals



Original Yamane



The ideal patient to start with

- Has low visual potential (not very common in pediatric age group): Corneal scar – Scheduled for late PKP
- Moderate pupil size
 - Too large pupil → insufficient support for IOL
 - Too small pupil → difficult manipulations and visualization
- Relatively clear visual axis especially in the lower part of the cornea
- Avoid cases with PHPV and trauma with limbal and anterior scleral rupture → risk of retinal detachment

BE PREPARED

- Always have a PLAN B
 - You don't want to leave the OR and tell the parents **"I was not able to implant the IOL"**
-

Ingredients



Ingredients

The original
ingredient

The replacement
in case the original
did not work
(HAPPENS A LOT)

1- Intraocular Lens

The ideal IOL



- Optic:
 - Large optic to minimize and lessen the effect of decentration
- Haptic
 - Flexible with high memory and resistant to deformation and kinking
 - C loop design rather than J loop for easier feeding and better centration
- Strong haptic/optic junction to avoid dislocation of haptic

The standard

- The standard recommended IOLs are those with **polyvinylidene fluoride (PVDF)** monofilament haptics
 - **CT LUCIA 602 (Zeiss IOL)**
 - **X-70 (Santen)**
 - **PN6A (Kowa)**
- Have good memory and resistant to deformation

The available

- Other 3-piece intraocular lenses are made from **60% polymethylmethacrylate (PMMA)**
 - **Sensar AR40**
 - **Technis ZA9003**
 - **Acrysof MA60**
- Less flexible and poorer memory

J & J Lenses

Zeiss
Lucia 602



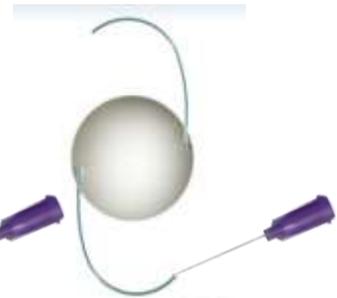
Sensar
AR40



Technis
ZA9003



Alcon
MA60



The replacement

- 2 IOLs for Yamane technique (**you will break and deform a few!**)
- Another alternative for IOL implantation if Yamane technique failed (Ideally should be an iris-claw lens).
- Other techniques of scleral fixation are very hard to perform after the globe was opened for IOL implantation

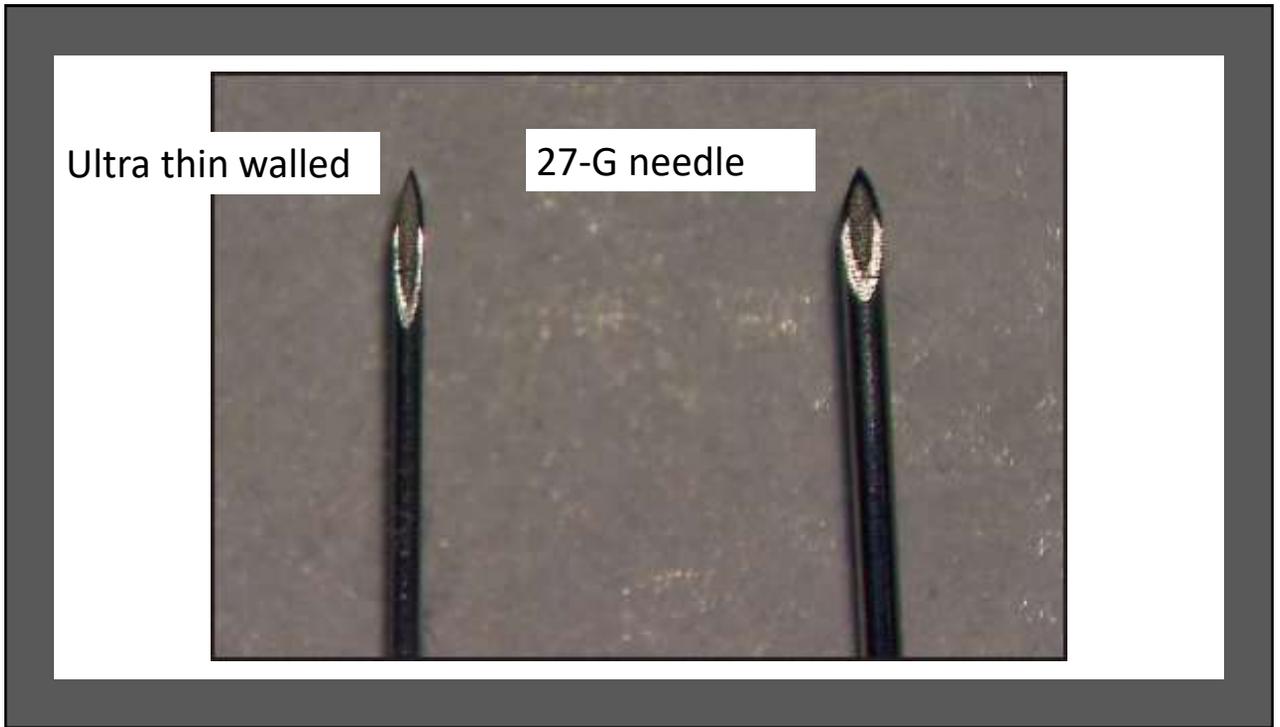
2- The needle for extrusion

The ideal needle

- **Long enough (12 mm or more)** to allow extrusion from the globe if needed
- **Wide inner lumen** to allow the haptic to be engaged in it without being stuck or kinked
- **Small outer diameter** to leave a small opening in the sclera to avoid the haptic retracting inside the globe

What are the sizes of needles?

- The standard 30 G (beige/yellow)
 - **Outer diameter: 0.3 (ideal)**
 - Inner lumen 0.14 (too small)
- The standard 27 G (light gray)
 - Outer diameter: 0.4 (too large)
 - **Inner lumen: 0.2 (ideal)**
- The combination of both is **ultrathin walled 30 G needle**
 - **Outer diameter: 0.3 (ideal)**
 - **Inner lumen: 0.2 (ideal)**



Standby

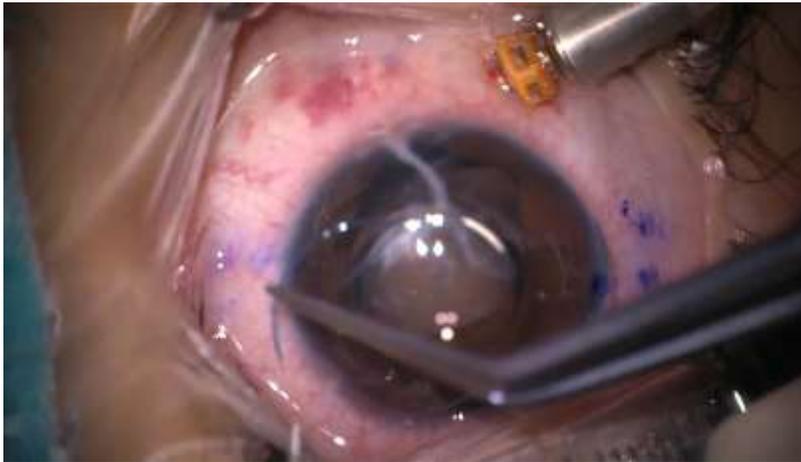
- Sometimes with repeated trials, the haptic get kinked and the end of the haptic gets large enough that you cannot feed the haptic into the lumen of 27 or 30 G needle
- 25 G needle standby (red or orange)
 - Outer diameter: 0.5
 - Inner lumen: 0.3
 - Easier to feed but you need to create a very large knob!

Preparing Needles

- Testing
- Bending
- Priming

Preparing Needles

Testing



Preparing Needles

Bending

Both Needles

- Bent so that the opening in the needle is facing
 - Up (towards the ceiling)
 - Slightly superiorly (towards the superior corneal incision)

Left needle is bent at the junction of proximal $\frac{1}{4}$ and distal $\frac{3}{4}$

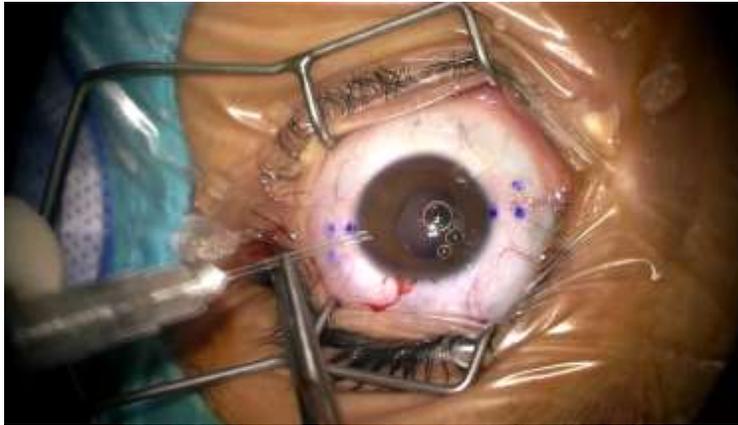


Left Needle



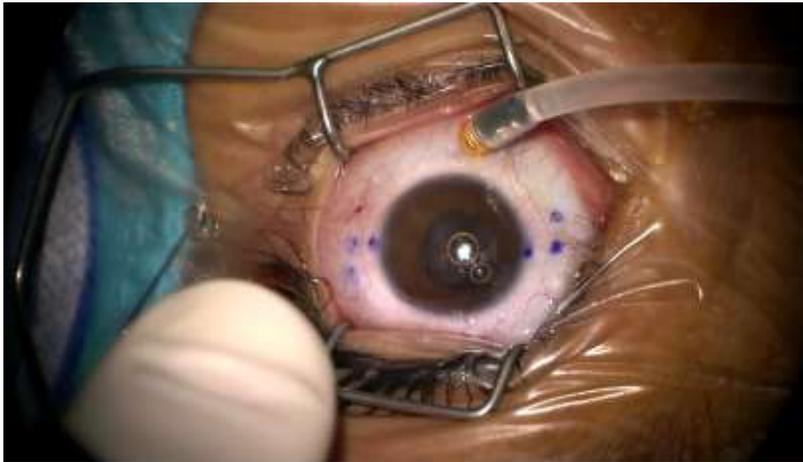
Right needle is bent close to the start of the needle to keep the needle long if you want to extrude it from the main wound



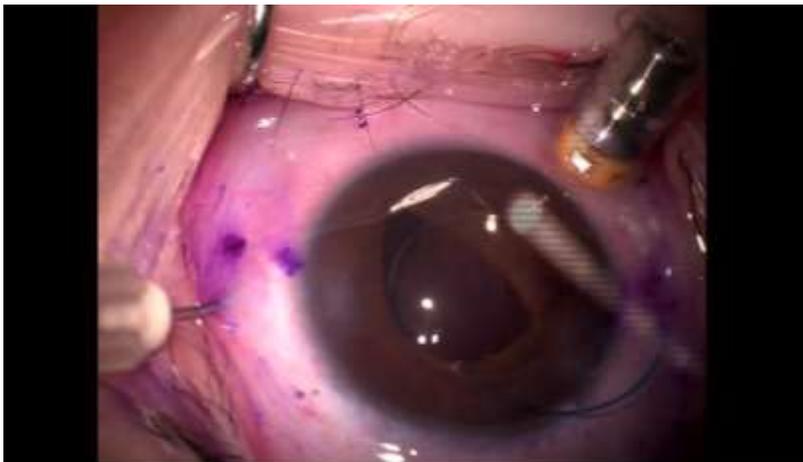


Preparing Needles

Priming



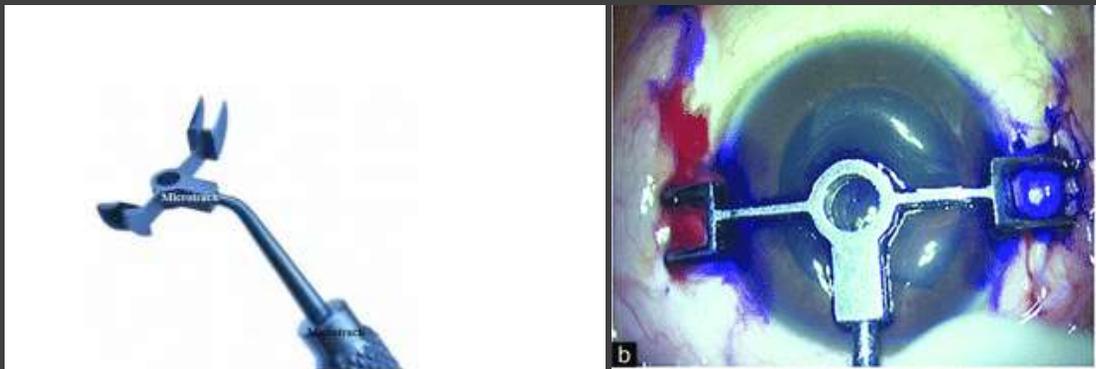
Why Priming?



3- The marker

The ideal marker is the marker for glued IOL

- 180 degrees
- Marks 2 points for the start and end of scleral tunnel

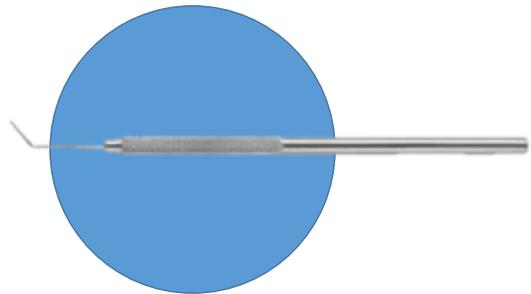


But any marker should do the job

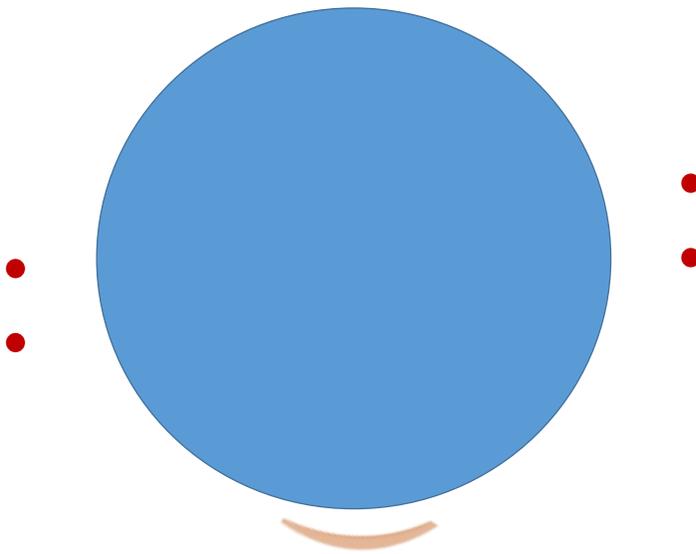


Standby

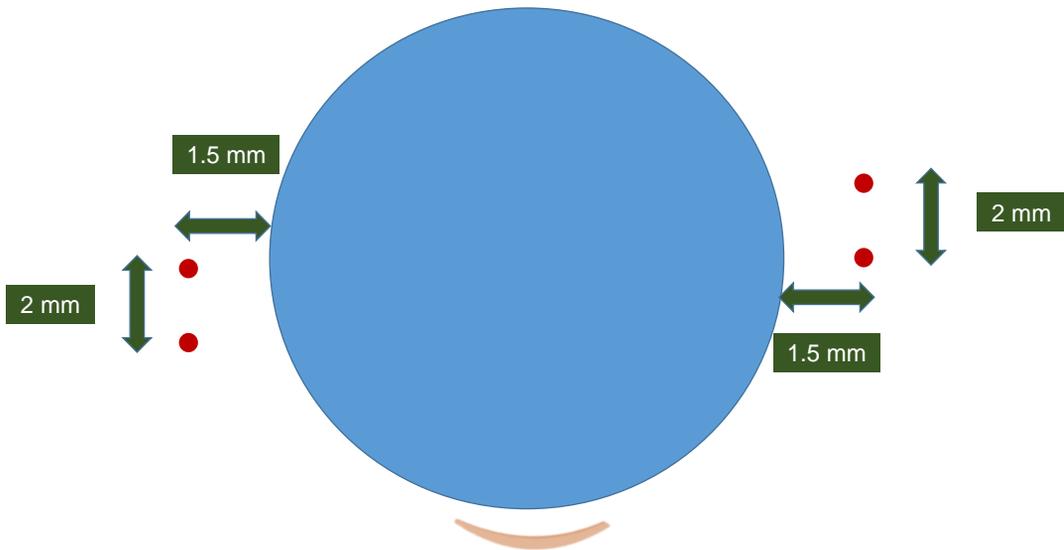
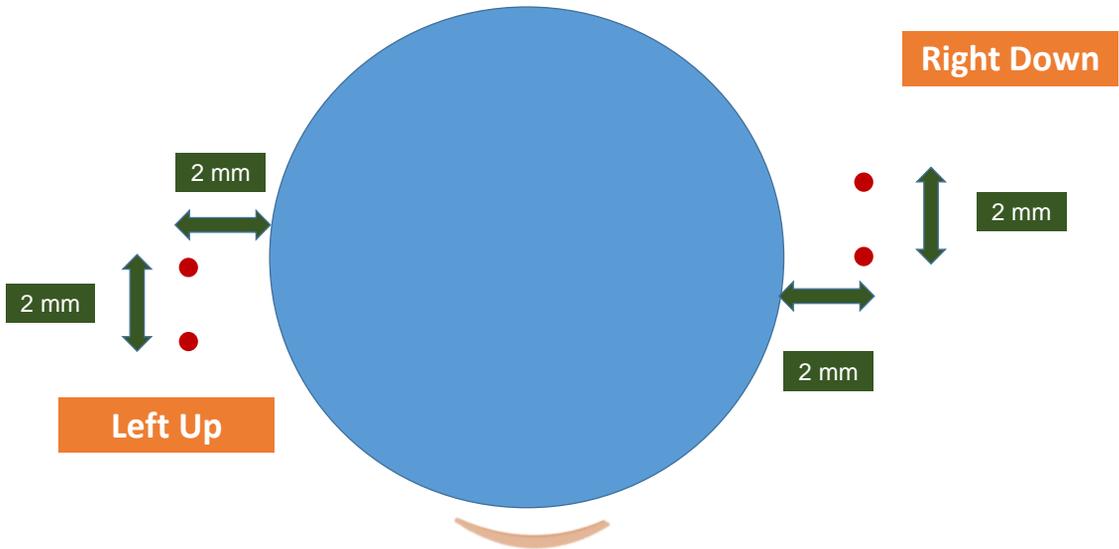
- A regular Sinoski hook with proper centration to mark the horizontal meridian

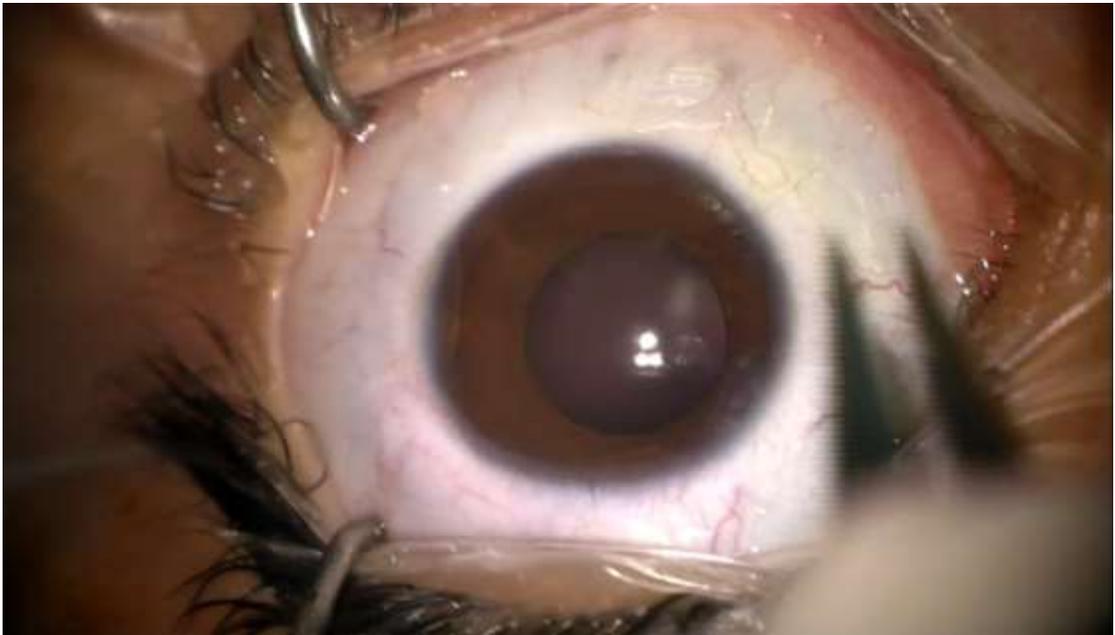


Marking the incisions



The 2 sites for extruding the haptics should be EXACTLY 180 degrees from each other





4- Intraocular forceps

The ideal
forceps

- **Smooth blades** – not serrated to avoid injury to the haptics
- **23 G** to allow more delicate manipulations within a closed anterior chamber
- **Straight forceps** not curved
- **Anterior segment forceps** not a vitreoretinal forceps as it is shorter and easier to use in the anterior segment



Practically

- Any forceps would work
 - 20 or 23 G forceps
 - Straight or curved
 - Serrated or non-serrated
 - Short or long



The
replacement:
No forceps

- Feed the leading haptic directly from the injector to the extruding needle
- Difficult – need experience



5- Cautery

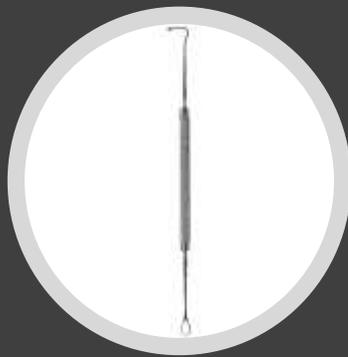
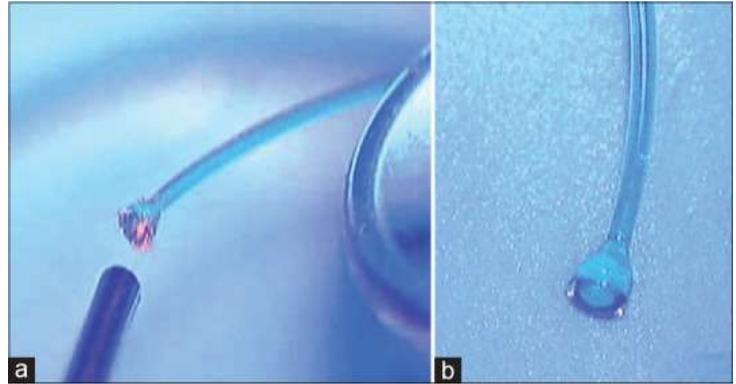
Cautery

- Low temperature disposable cautery



The
replacement:

Endolaser probe

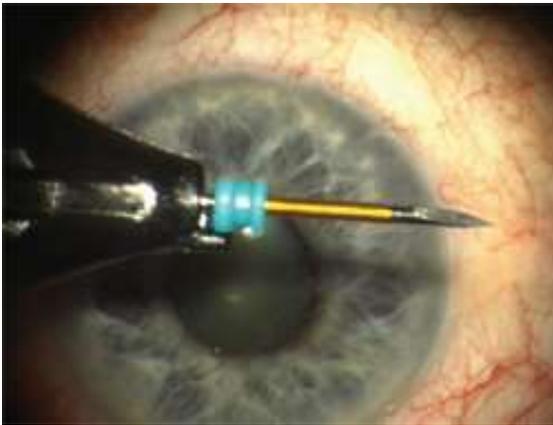


The replacement

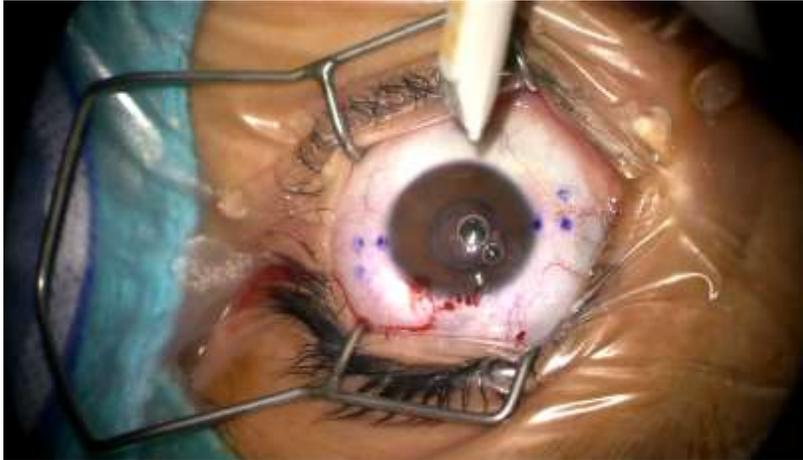
Spirit lamp and a needle

6- Infusion Cannula

The standard



Best placed at 7 or 8 O-Clock



When must the infusion cannula be open?

During anterior vitrectomy

During creating the scleral tunnel with the needle

During capturing the haptic and feeding it to the needle

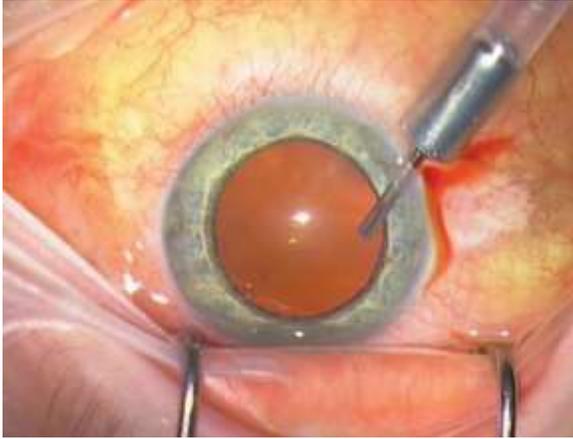
When “may” the infusion cannula be closed?

- When injecting viscoelastics in the anterior chamber to create space before
 - Injecting the IOL
 - Introducing the forceps inside the eye

Watch the infusion cannula!!!!

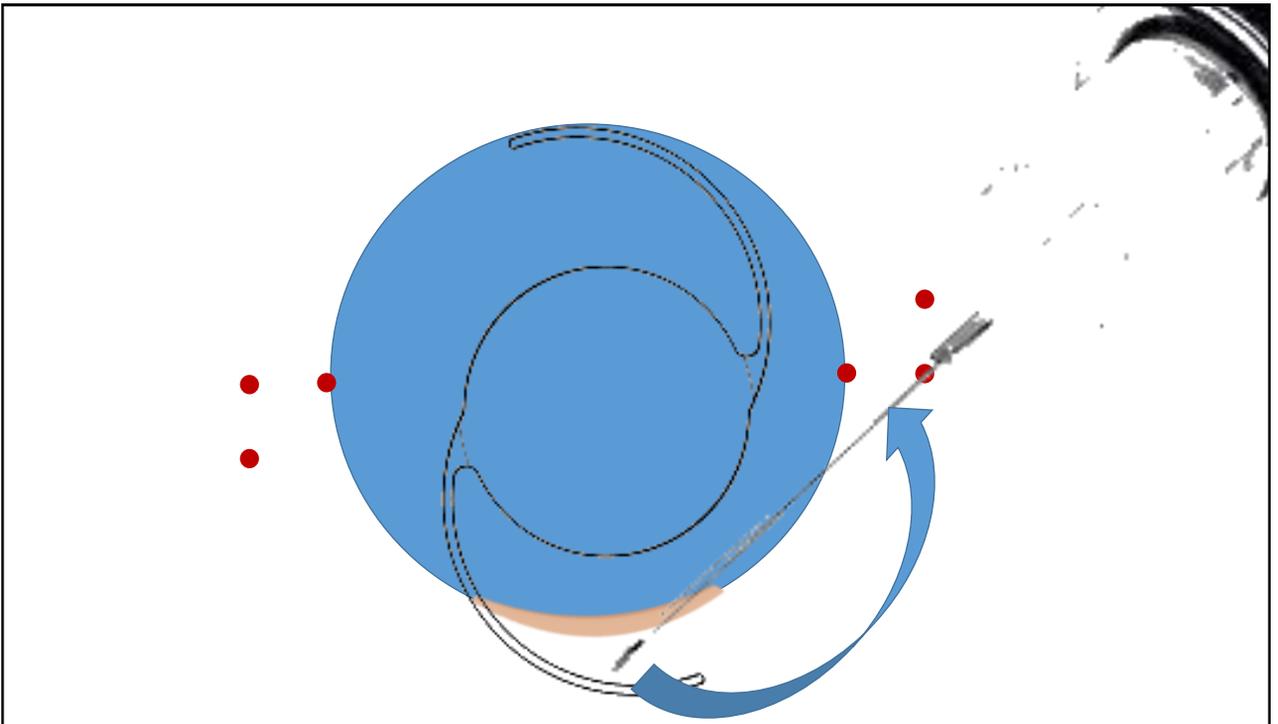
- It can be dislodged easily during moving the globe for creating the scleral tunnels or pulling the needles (**the critical steps**)
- ALWAYS ask the nurse to push on the infusion cannula during these maneuvers

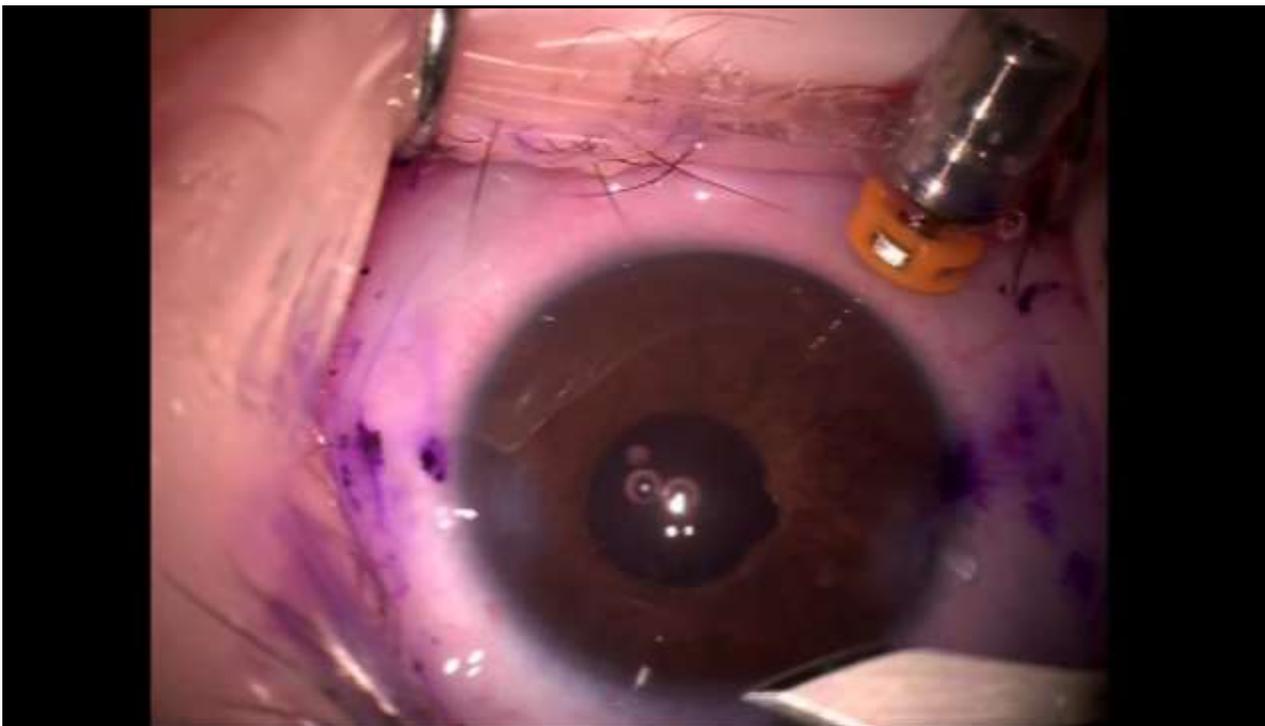
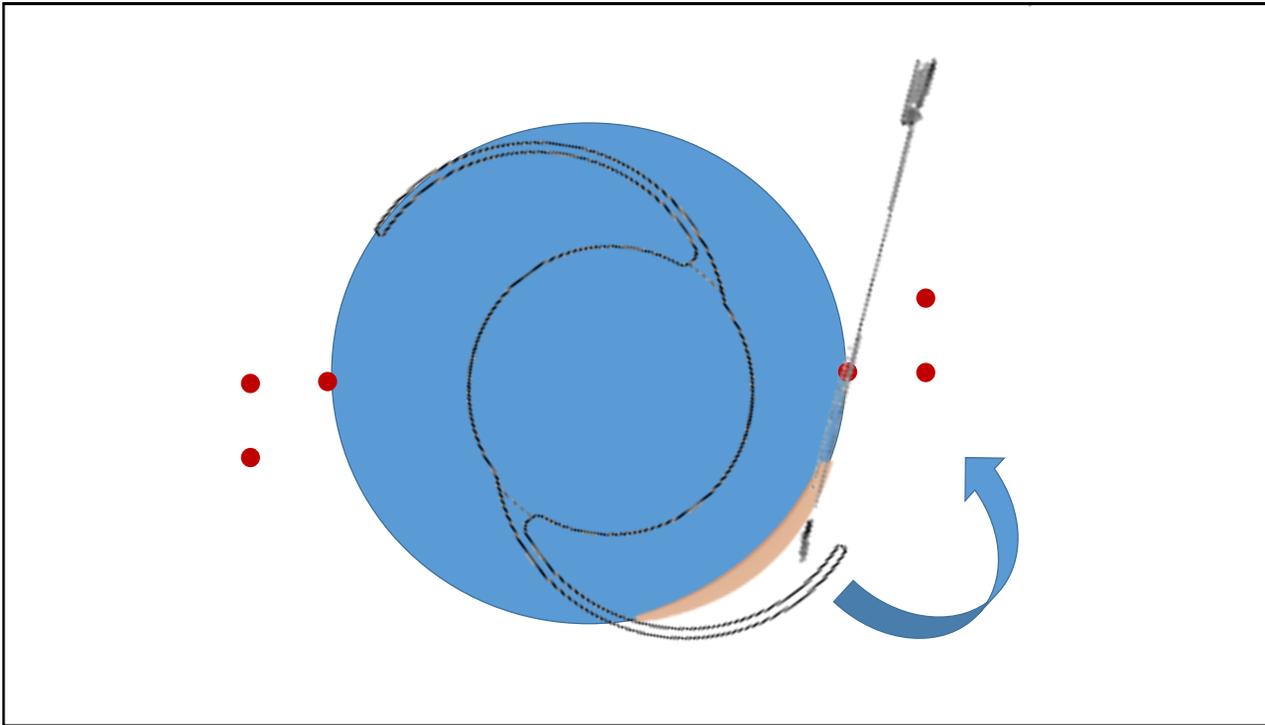
The replacement



Wounds

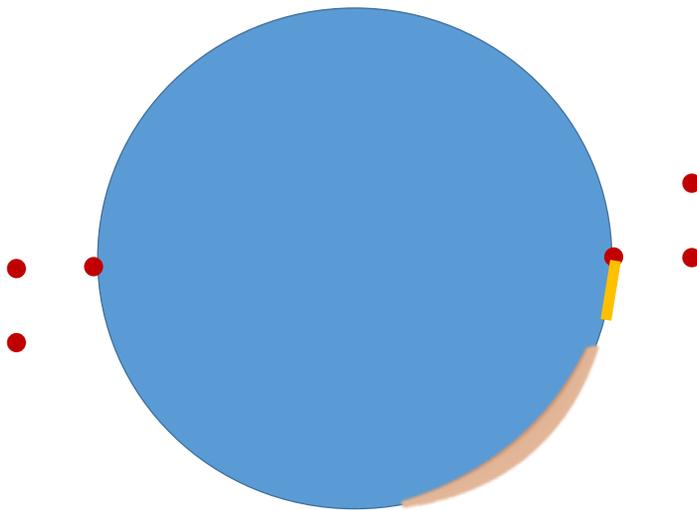
Main Wound

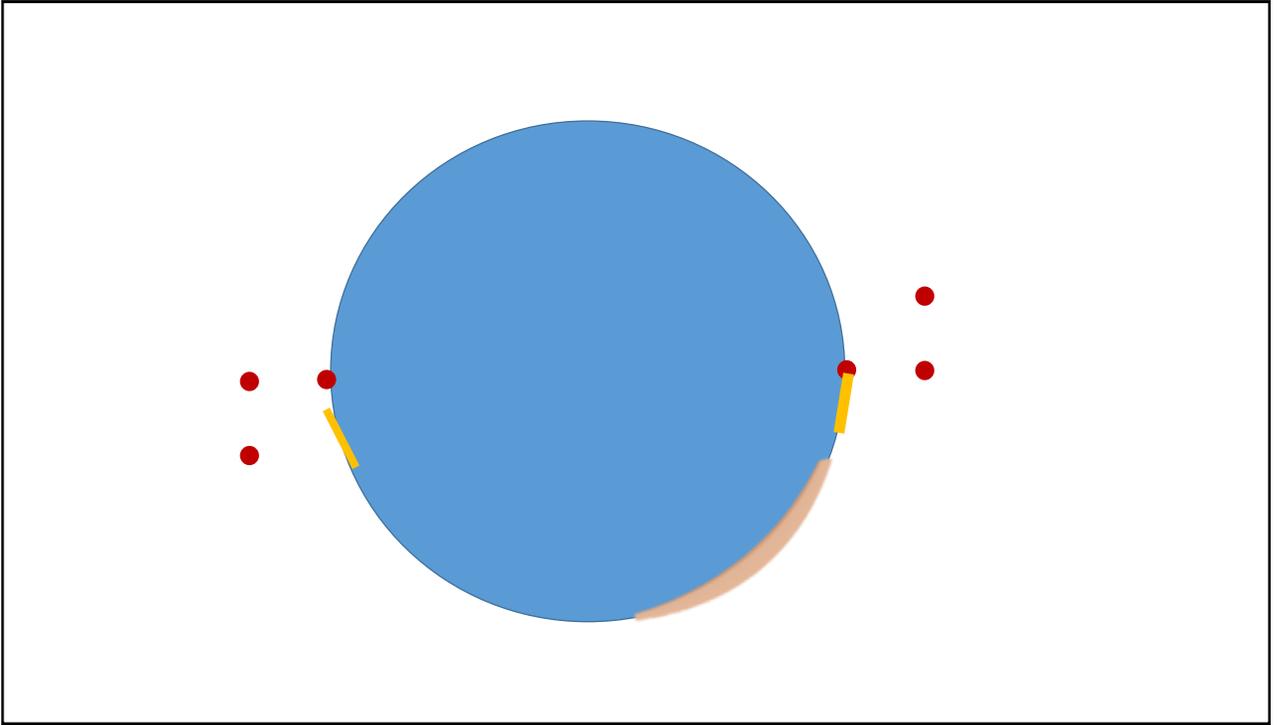




Side Port for Forceps

At Almost 9 O'Clock



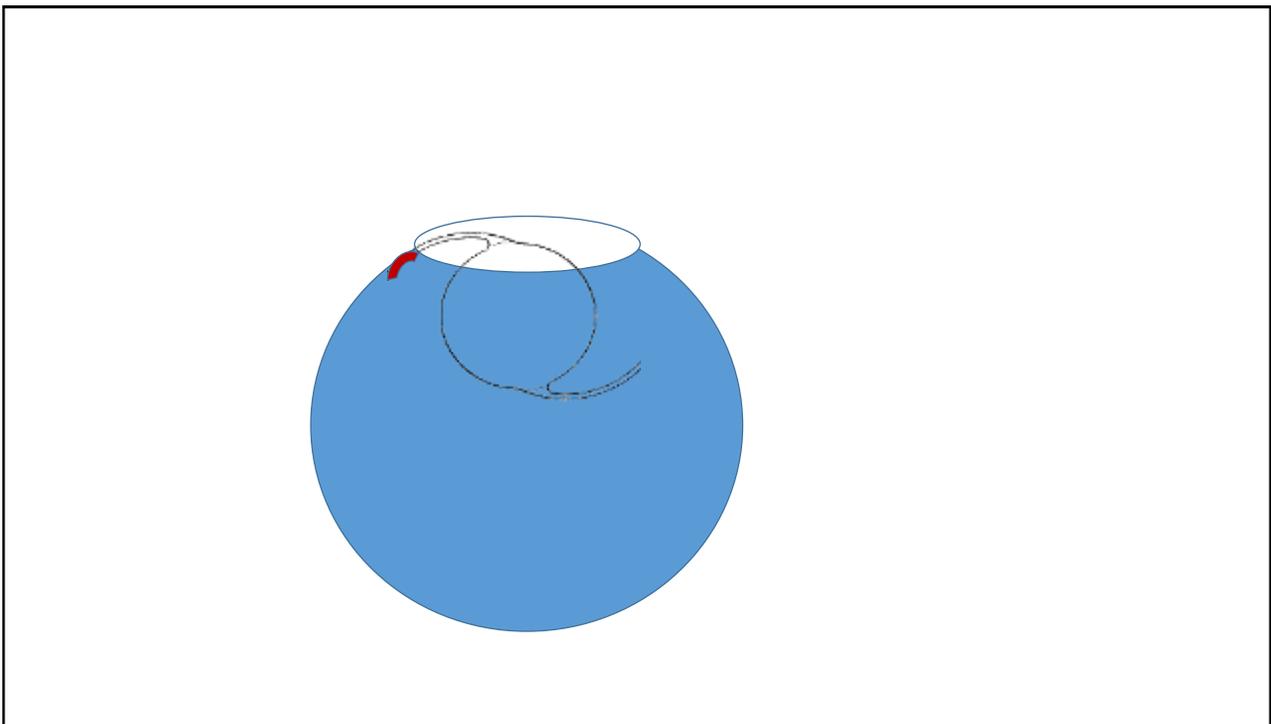
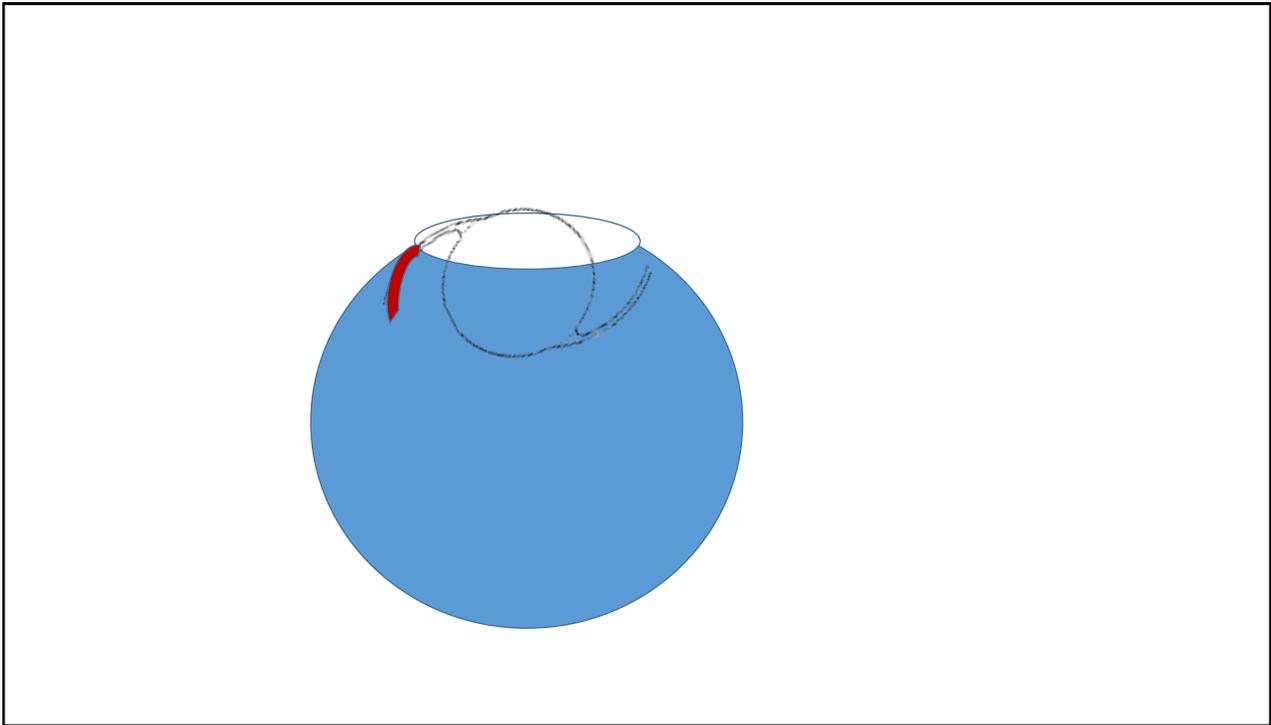


In addition to the regular
anterior segment instruments
and viscoelastics

Create space

Why do I need to create a space?



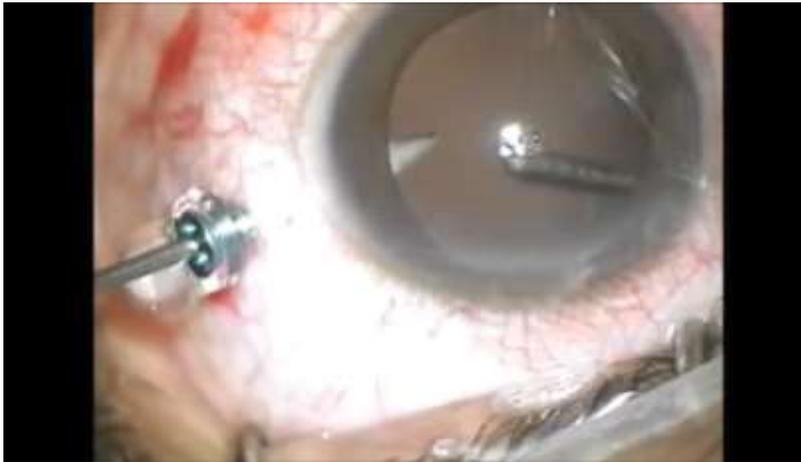


How to create this space?

- Proper anterior and core vitrectomy
- Push the optic and lens behind the iris to float in the vitreous

Anterior Vitrectomy

Should be anterior and core vitrectomy to facilitate sinking of the IOL in the vitreous



Push Optic behind the iris



Thank You

