CONGENITAL CATARACT OPERATION USING BIL (BAG-IN-THE-LENS) TECHNIQUE

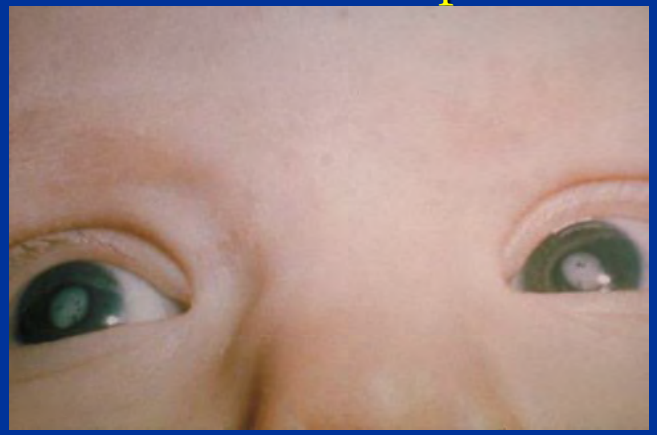
Andreea Ciubotaru

INFOSAN OPHTHALMOLOGY HOSPITAL

Bucharest

Congenital/Infantile cataract – Signs/Symptoms

- An opacity in the lens which run a spectrum from easily visible in the undilated state and apparent to the parents or pediatrician, to much more subtle changes requiring dilation and careful examination with a slit lamp. The red reflex is an extremely useful part of the exam (retinoscopy) giving an estimate of size and location within the visual axis, even in an uncooperative child.



- Cataracts may be a part of another disease or syndrome, and are sometimes the initial finding that leads to the diagnosis. A cataract may be accompanied by additional noticeable ocular abnormalities such as microcornea, megalocornea, coloboma of the iris, aniridia, and zonular dehiscence.

Congenital cataract – when do we operate?

- Not all pediatric cataracts require surgery. A small, partial or paracentral cataract can be managed by observation.

Pharmacologic pupillary dilation with tropicamide+part-time occlusion of contralateral eye

- Unilateral cataracts (central opacity and more than 3 mm in diameter) : in the first 3 months
- Bilateral cataracts (total lens opacity): in the first 3-4 months (quickly , before the appearance of nystagmus!)

IOL implantation is safe and acceptable in children as young as 3 months.

How to calculate the dioptric power of the IOL in children?

We measure under general anesthesia :

- ultrasound axial length of the eye (echo B)
- corneal refraction (portable keratometer)

! In children over 2-3 years: optical biometry

Formulas used: SRK -T or Hoffer Q

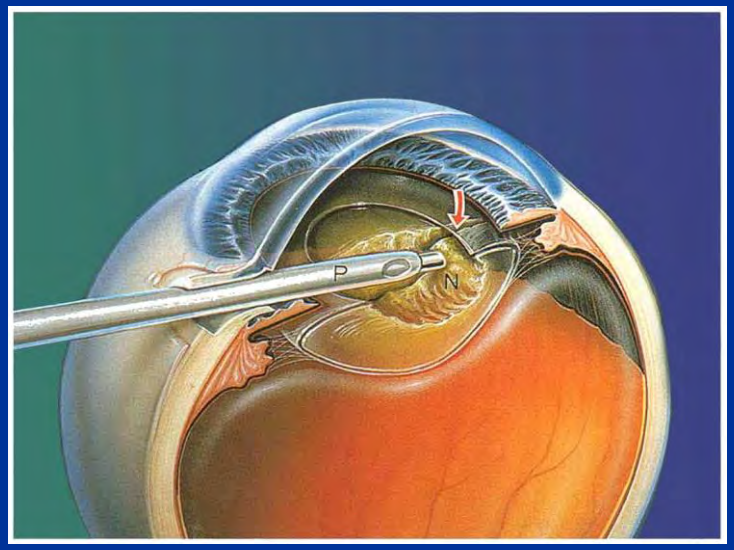
Axial length increase from 16.8 mm to 23.6 mm from child to adult.

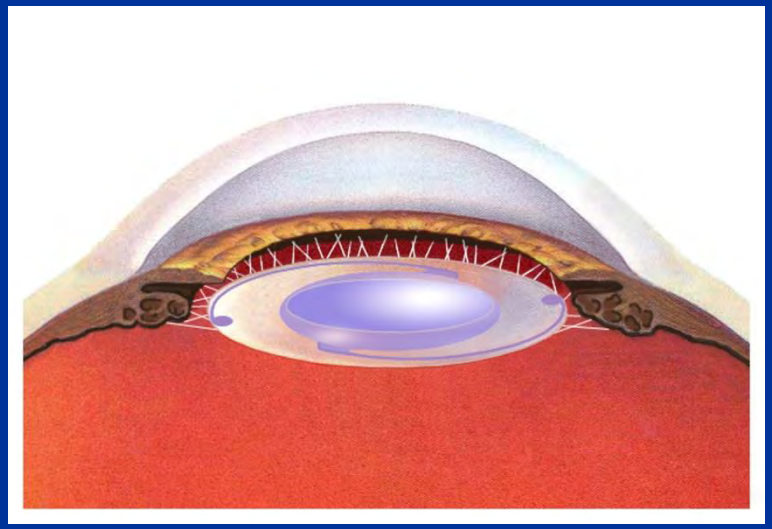
K value decreases from 51.2 D to 43.5 D.

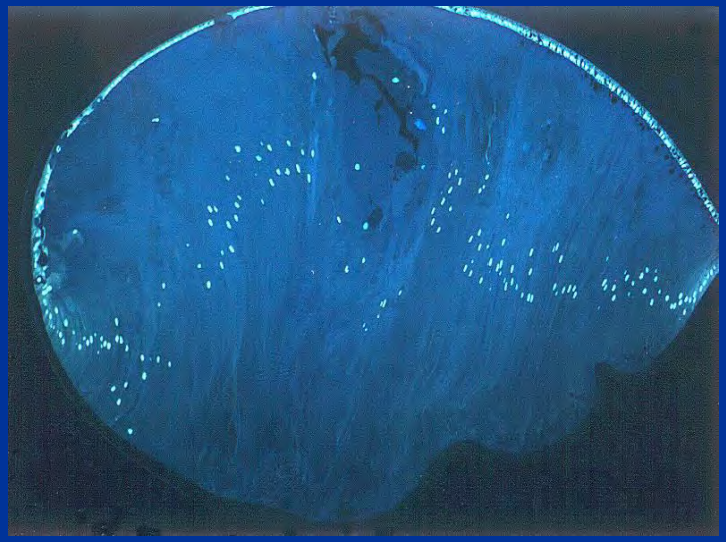
Child age	IOL Calculation	Target refraction
1-2 years	IOL formula-20%	+4.00D
2-4 years	IOL formula-15%	+3.00D
4-8 years	IOL formula-10%	+2.00D
>8 years	IOL formula	+1.00D

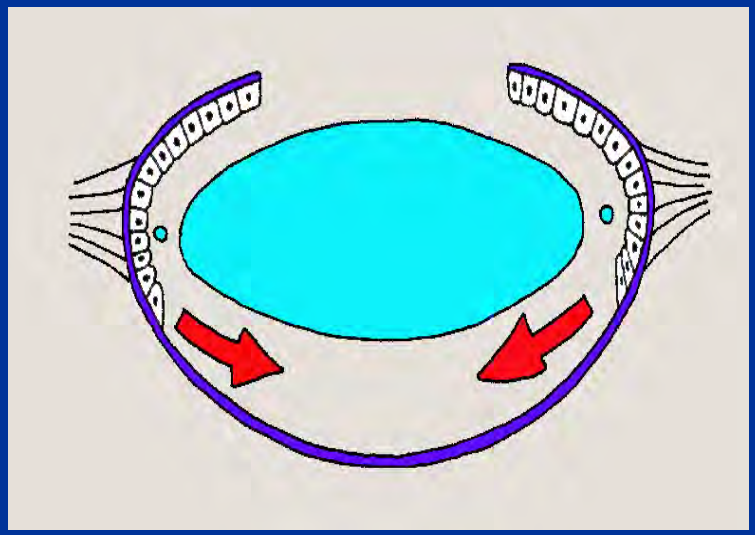
Axial length of the eye	IOL power
17 mm	28 D
18 mm	27 D
19 mm	26 D
20 mm	24 D
21 mm	22 D

Cataract surgery (lens in the bag)









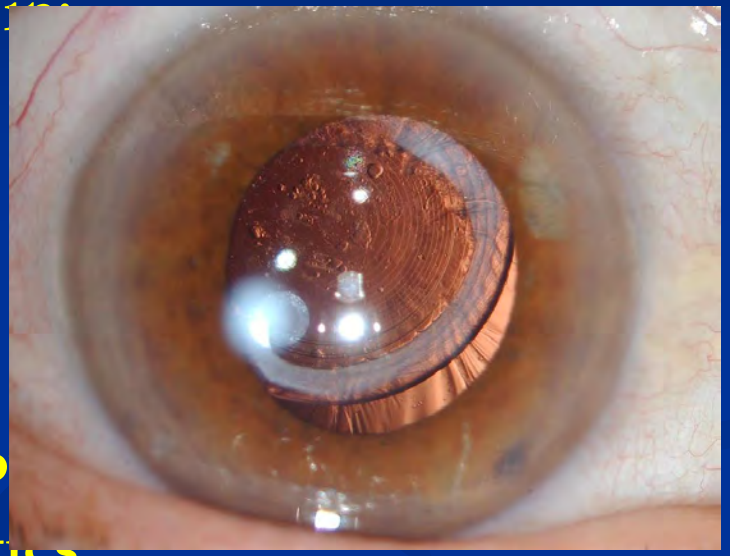
Congenital cataract surgery- different from the adult?

- The most difficult step is CCC (continuous curvilinear capsulorhexis), due to the elasticity of the pediatric capsule
- Dye can be used to stain the anterior capsule, making this step easier and safer. A 25 G vitreous end gripping forceps using push pull technique is very effective.
- Pediatric cataracts are soft and therefore phacoemusification is generally not needed. The lens cortex and nucleus can be removed with an irrigation-aspiration or vitrector hand piece.
- To reduce the risk of posterior capsule opacification most surgeons perform a posterior capsulorhexis at the time of surgery +BIL (bag in the lens).
- The sclera in children is soft and elastic and it is difficult to achieve a self-sealing incision, thus the incision should be closed using 10-0 nylon

IOL CENTRATION/ Capsular Healing

Capsular bag healing process results in:

- Capsular contraction
- Loss of capsular elasticity
- Loss of transparency (PCO)
- Stretching of zonular fibers

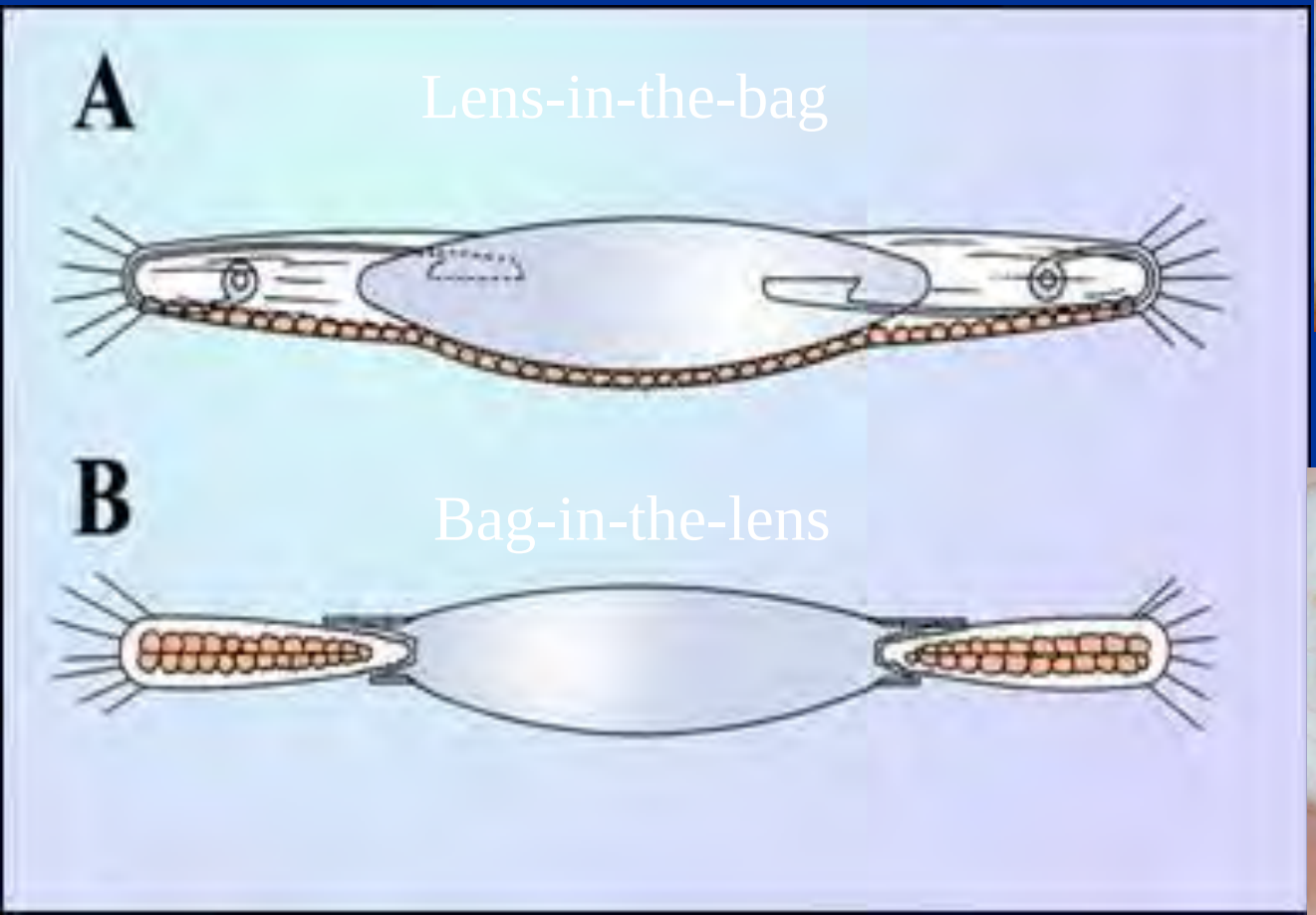


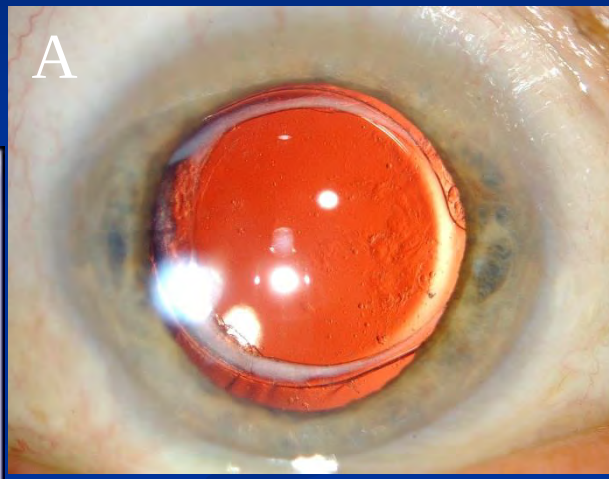
These processes may be influenced by:

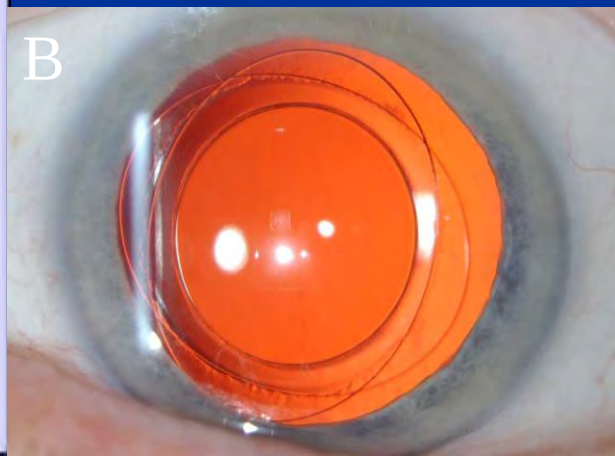
- Size and shape of the IOL haptics
- Edge of the haptics and optic zone
- Contact area of the capsular bag with the IOL
- Size of the anterior rhexis

This will define the final position of the IOL in the eye!

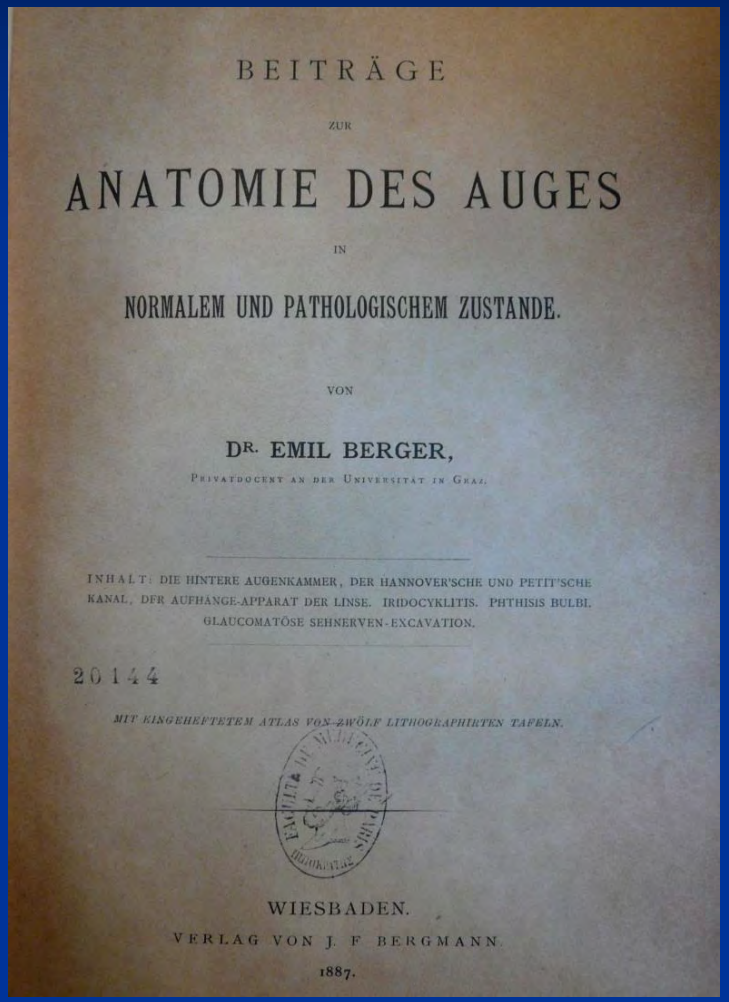
BIL versus LIB ?







The Berger space



BEITRÄGE

ZUR

ANATOMIE DES AUGES

IN

NORMALEM UND PATHOLOGISCHEM ZUSTANDE.

VON

DR. EMIL BERGER,

PRIVATDOCENT AN DER UNIVERSITÄT IN GRAZ.

INHALT: DIE HINTERE AUGENKAMMER, DER HANNOVER'SCHE UND PETIT'SCHE KANAL, DER AUFHÄNGE-APPARAT DER LINSE. IRIDOCYKLITIS. PHTHISIS BULBI. GLAUCOMATÖSE SEHNERVEN-EXCAVATION.

20144

MIT EINGEHEFTETEM ATLAS VON ZWÖLF LITHOGRAPHIRTEN TAFELN.

WIESBADEN.

VERLAG VON J. F. BERGMANN.

1887.

« Der postlenticuläre Raum »

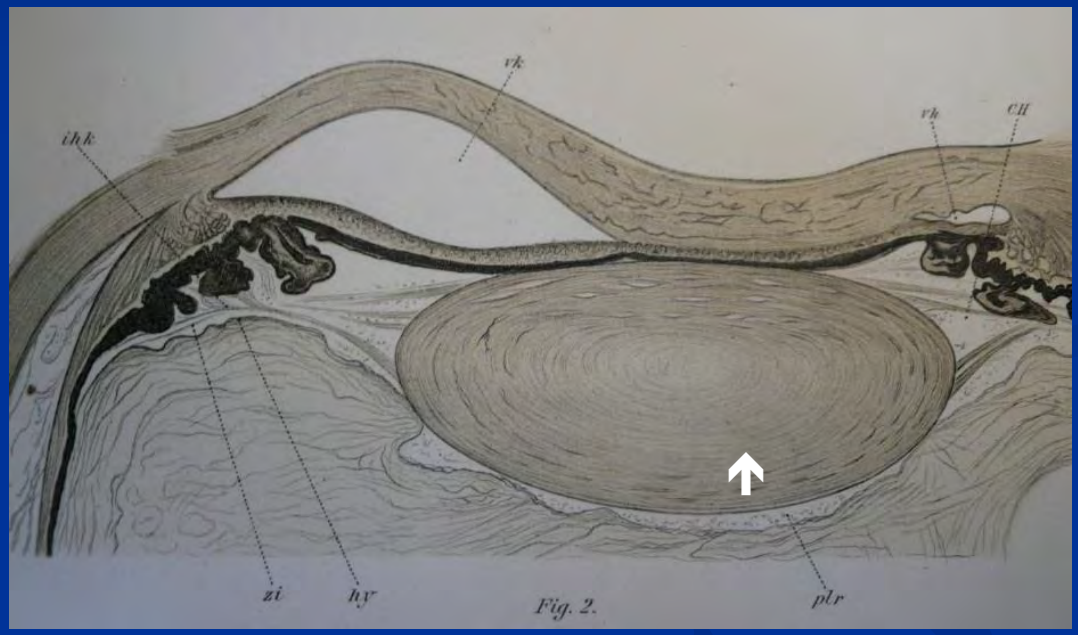
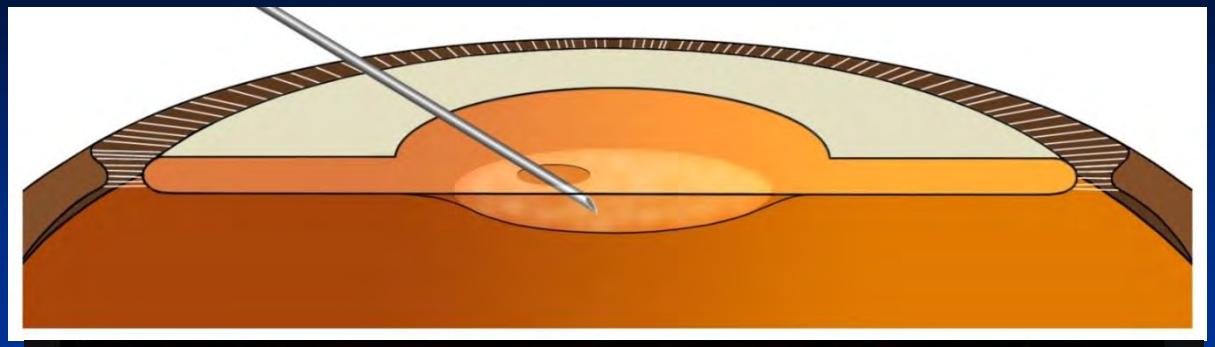
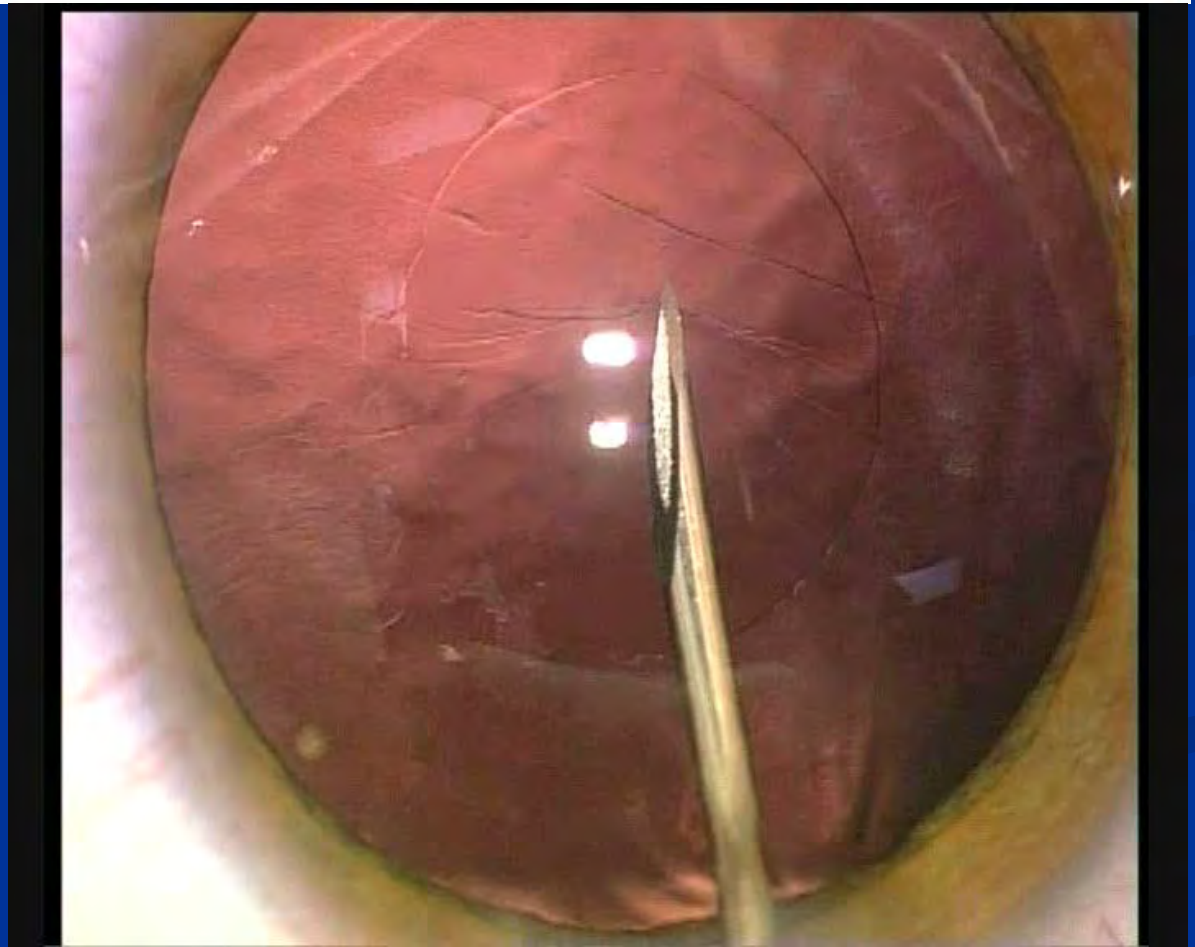


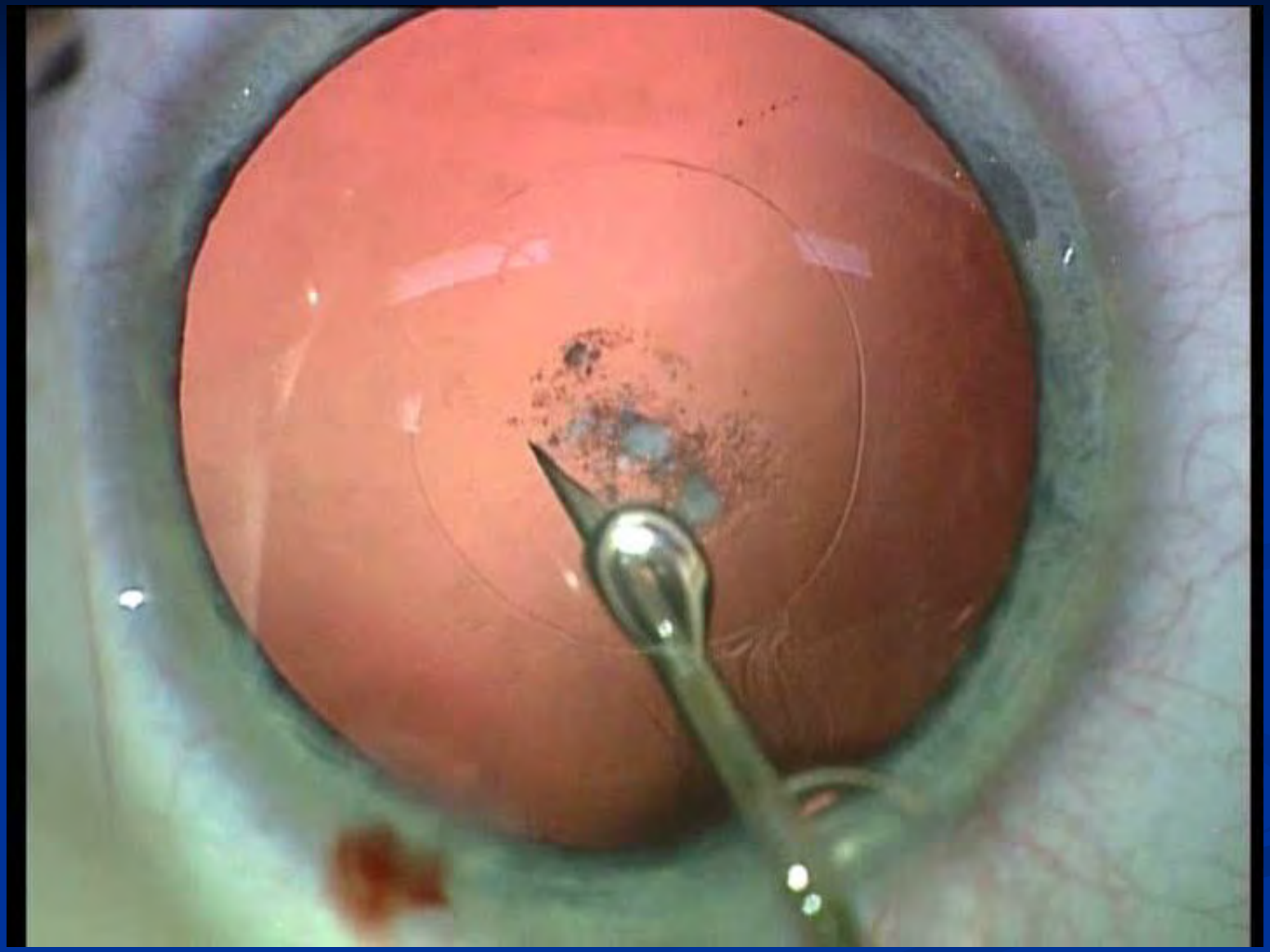
Fig. 2.

Berger E. Beitraege zur Anatomie des Auges in normalem und pathologischem Zustande, ed 1.Wiesbaden, JF Bergmann, 1887, p 29-30

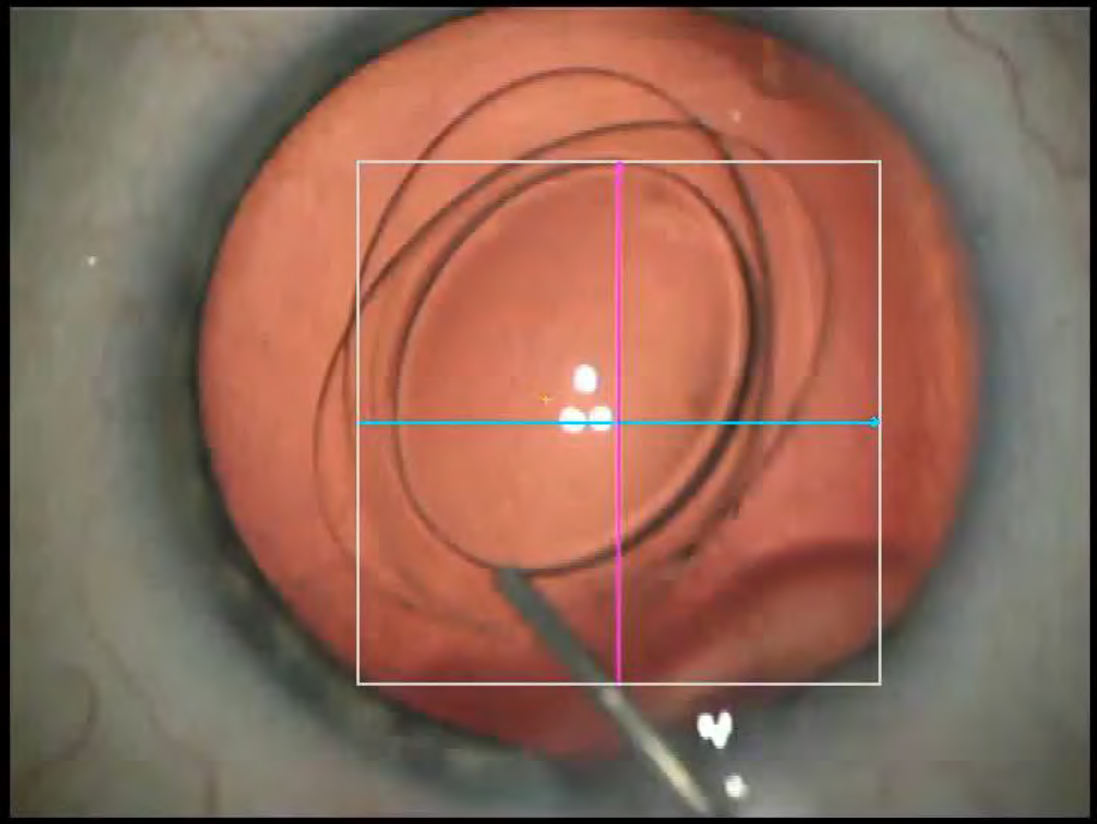
BIL technique – Prof.Dr. Marie-Jose Tassignon







Performing PPCCC: no vitreous prolaps



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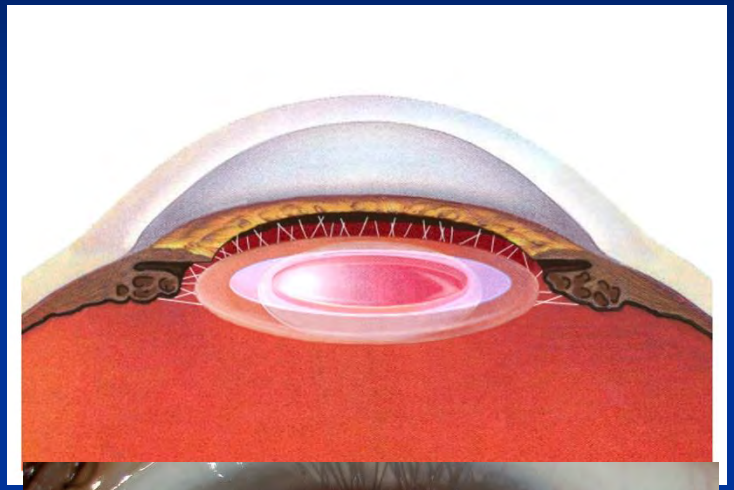
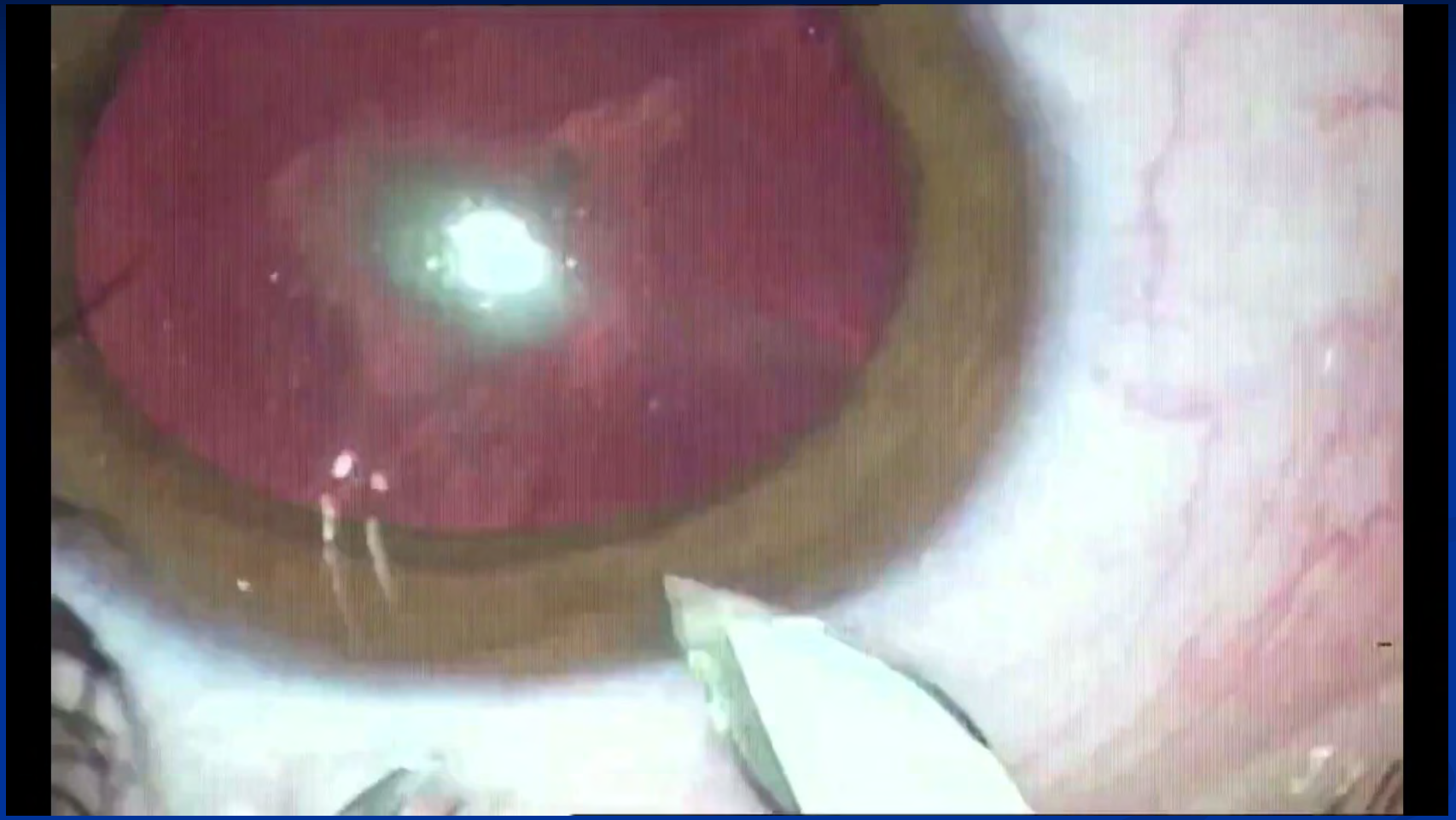
The Bag-in-the-Lens (BIL technique): aiming at preventing PCO





Conclusion

- BIL technique confer the benefits of PCO prevention, rhexis phimosis prevention, improved centration and improved rotational stability.


Thank you
Clinica Oftalmologica NAOSAN