

المؤتمر السنوي الدولي للجمعية الرمادية المصرية
INTERNATIONAL CONGRESS OF THE
EGYPTIAN OPHTHALMOLOGICAL SOCIETY
EOS 2023



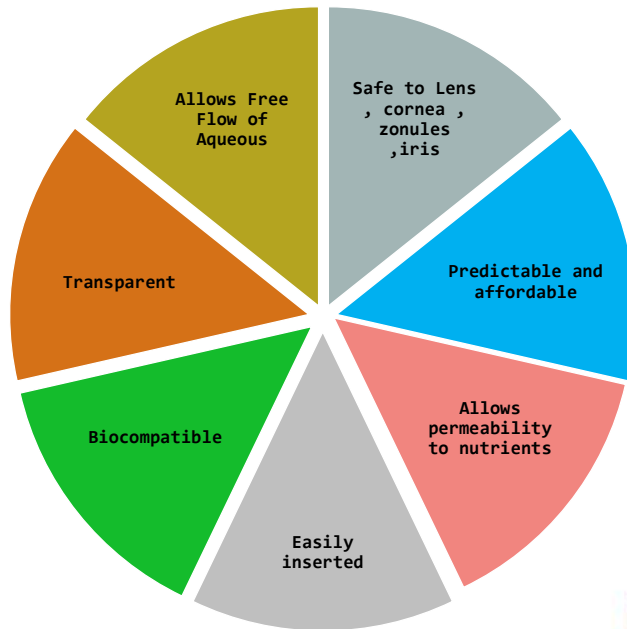
Implantable Collamer

Lens (ICL)

Ihab M. Osman

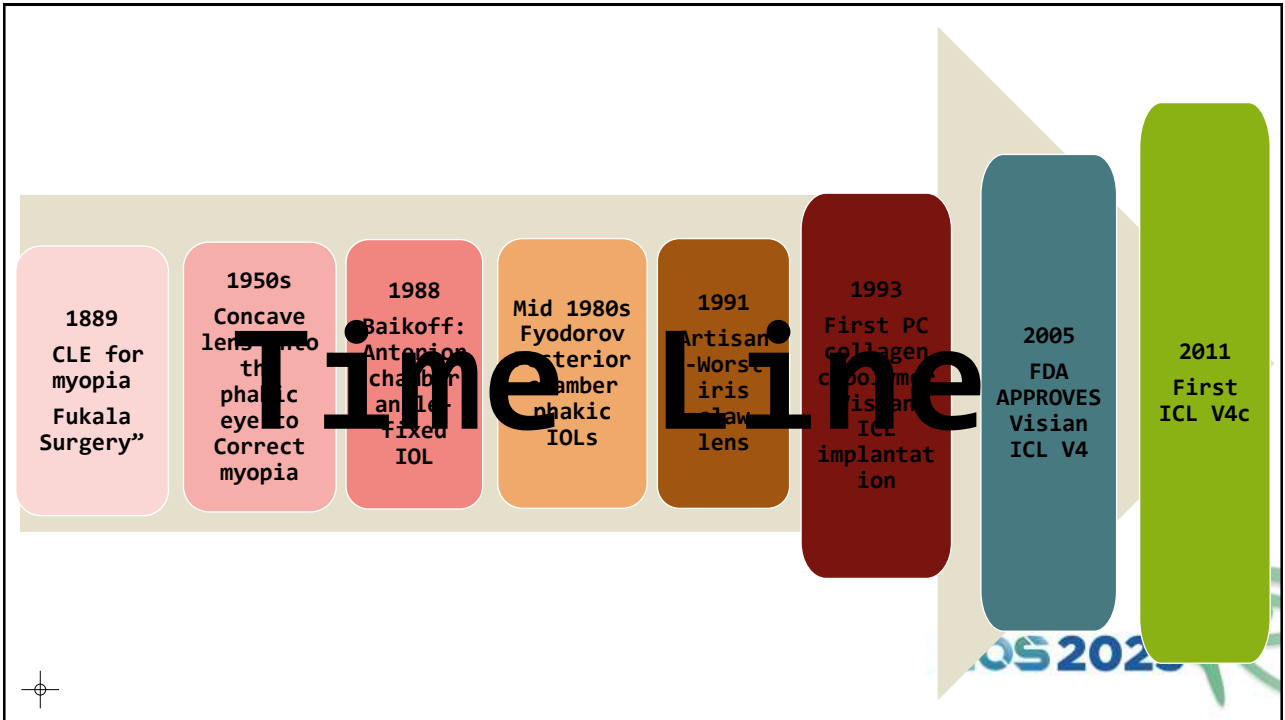


Criteria Of an Ideal Phakic IOL



EOS 2023





Implantable Collamer Lens (ICL)

- ICL is made from 100 % biocompatible soft flexible gel lens to be implanted in the ciliary sulcus .
- The material porcine Collagen (1%) is polymerized with HEMA (99%) Hence collagen copolymer = Collamer

General Characteristics of ICLs



ICL dioptric ranges

ICL™ Myopia (-0.5 D to -18 D)(-23.0 D)

ICL™ Hyperopia (+0.5 D to +10.0 D)

Toric ICL™ +1.0 D to +6.0 D (cylinder)

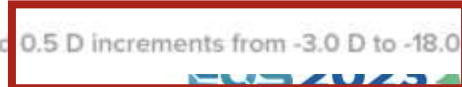


Spherical Lenses

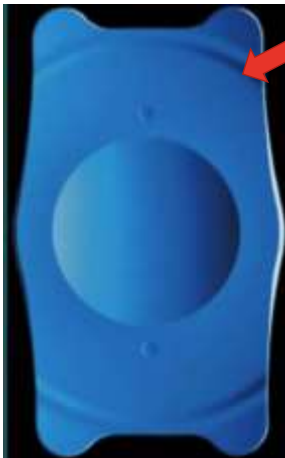
Diopter	Optical Diameter (mm)	Approximate Equivalent OZ at Corneal Plane (mm)
-0.5 to -9.0	6.1	7.6
-9.5 to -10.0	5.9 - 6.1	7.4 - 7.6
-10.5 to -12.5	5.3 - 5.8	6.6 - 7.3
-13.0 to -14.0	5.0 - 5.2	6.3 - 6.5
-14.5 to -18.0 *	4.9	6.1

Lens lengths: 121 mm / 12.6 mm / 13.2 mm / 13.7 mm

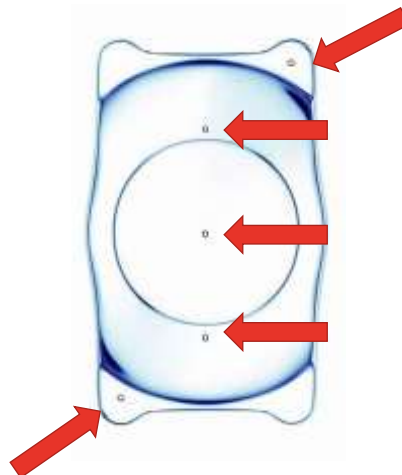
Available in 0.25 D increments from -0.5 D to -3.0 D and 0.5 D increments from -3.0 D to -18.0 D



V4B

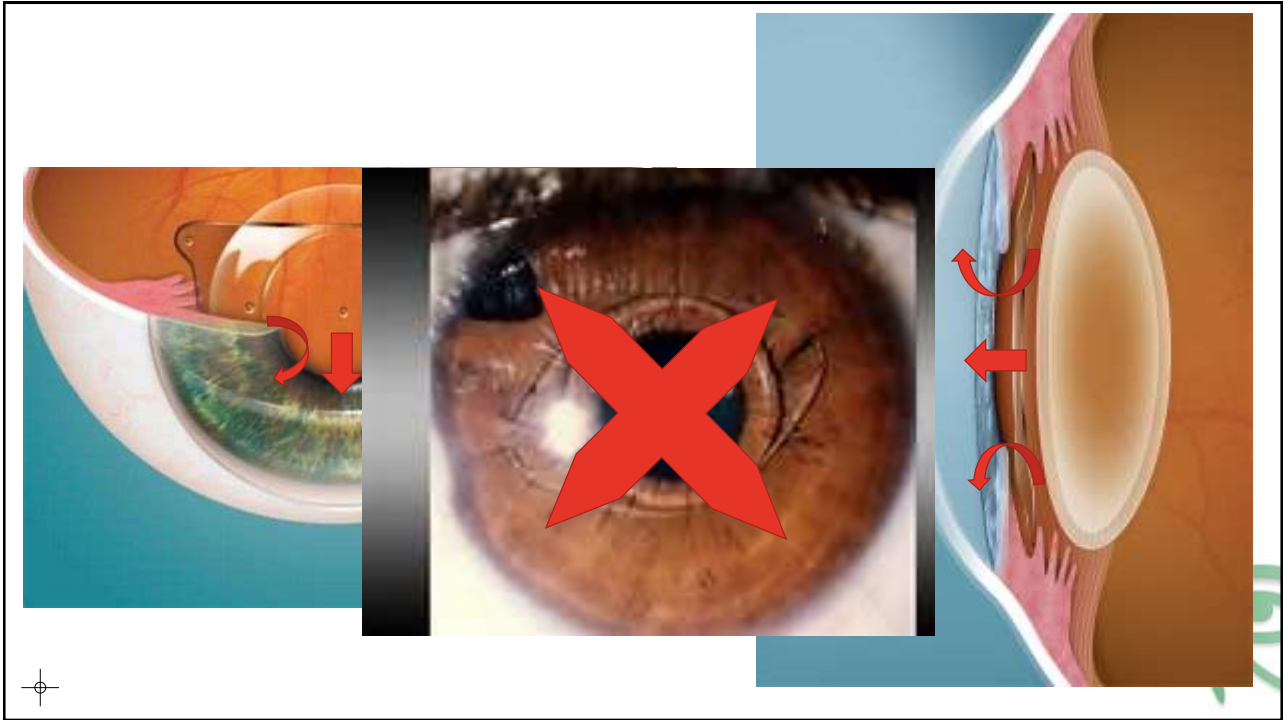


V4C



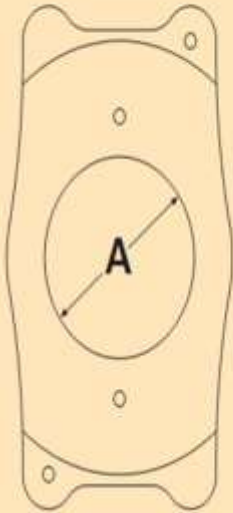
Toric





Vaulting Of ICL

Implantable Contact Lens - Myopia



Spherical Power in half-diopter increments

Optical Diameter (A)

Optic/Haptic Thickness (B)

Overall Height (C)

-3.0D to -12.0D	5.50 mm	0.3 – 0.5 mm	1.15 – 1.77 mm
-12.5D to -13.5D	5.25 mm	0.5 mm	1.08 – 1.78 mm
-14.0D to -16.5D	5.00 mm	0.5 – 0.6 mm	1.12 – 1.89 mm
-17.0D to -23.0D	4.65 mm	0.5 – 0.7 mm	1.19 – 2.05 mm

The ICL™ for myopia is available in the following lengths:

11.5 mm 12.0 mm 12.5 mm 13.0 mm



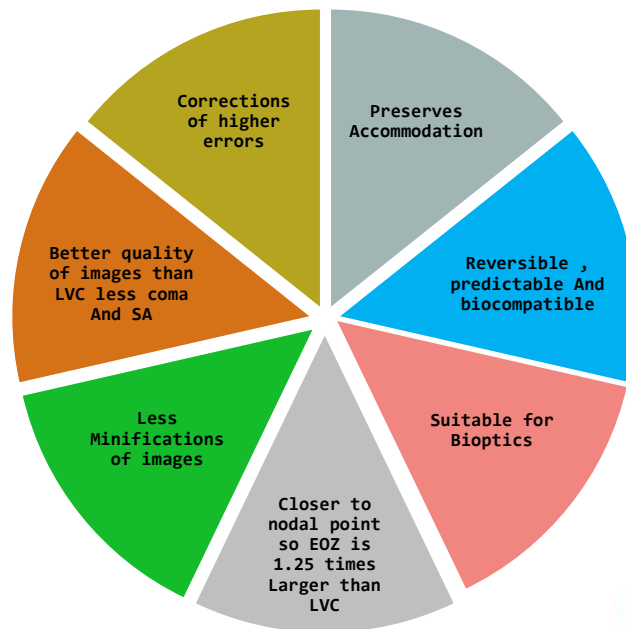
STARR VISIAN ICL



Eyecryl IOL

2023

Advantages of ICLs



EOS 2023



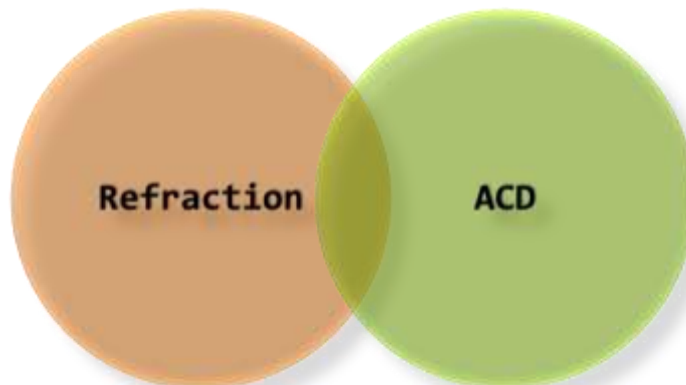
Prerequisites for ICLs

- Age from 18 to 45 years
- Not fit for LASIK surgery (High Myopic error)
- Intolerant to contact lens and refusing glasses
- Clear, stable Lens
- Ophthalmologically free from ocular pathologies(, glaucoma, uveitis, corneal disorders, KC, etc...)
- Better with no history of previous ocular surgeries

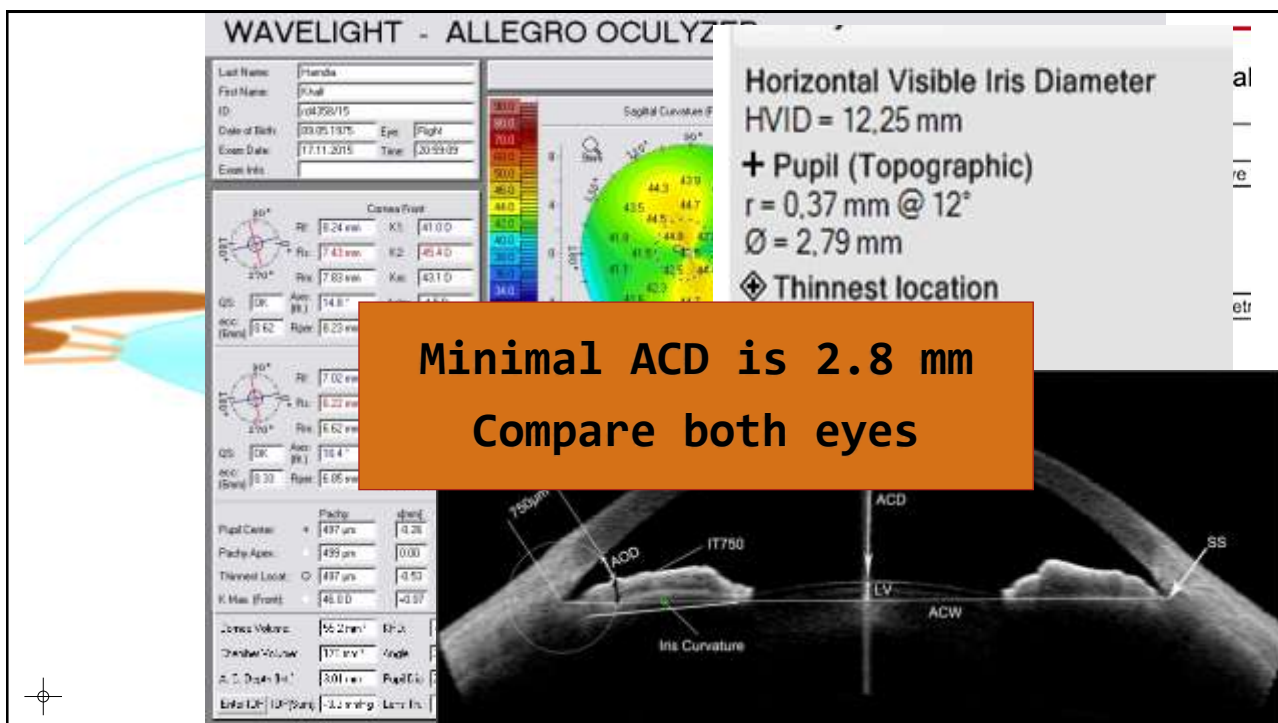
EOS 2023



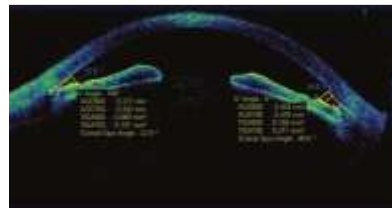
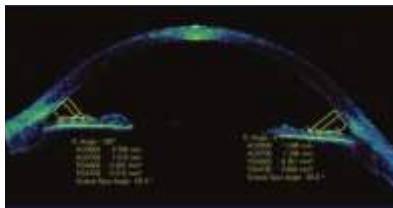
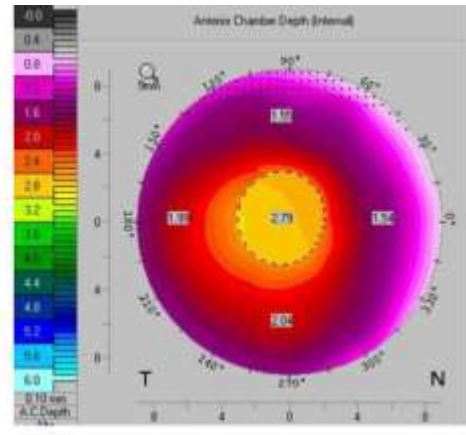
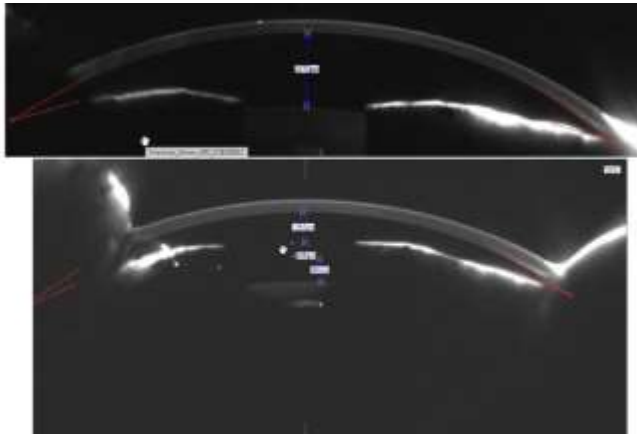
Preoperative considerations



Both cycloplegic and manifest
Stable refraction ($\leq 0.5D$ change in 6 months)



We must assess ACD in the center and in the periphery

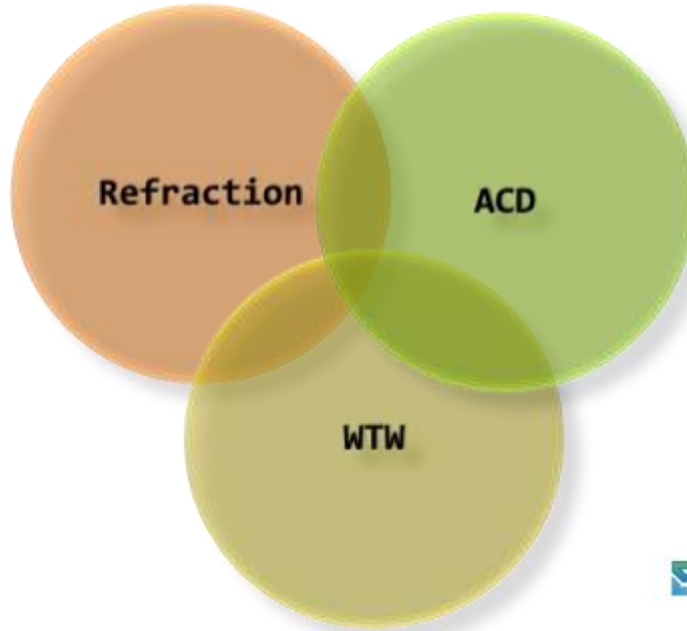


The peripheral depth must be checked because this is where myopic IOLs have greater thickness.



EOS 2023

Preoperative considerations




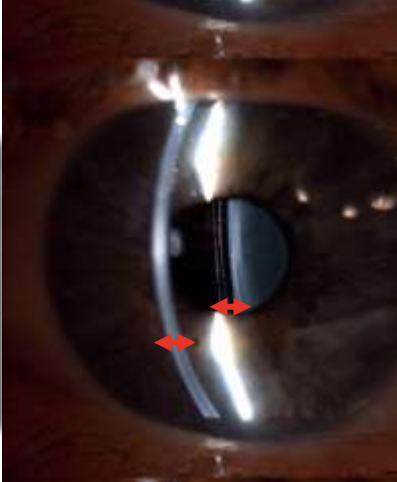

White to white measurement

The image shows a screenshot of the IOL-MASTER software interface. On the left, there is a 'Measure To' menu with options for Line, Rectangle, Circle, and Ellipse. Below it, 'Length (mm)' is set to 12.36, with 'From (µm)' at 4.47, 0.00 and 'To (µm)' at 5.02, 0.00. There are also 'Emboss line' and 'Place line' checkboxes, and a 'Brightness' slider. On the right, there is a 'WTW' table with columns for 'W', 'V', 'P', and 'P2'. The table contains data for both eyes (OD and OS). A large yellow oval is overlaid on the center of the screenshot with the text 'Double check WTW'. Below this, another yellow oval contains the text 'IOL-MASTER® may overestimate WTW(0.34mm to 0.5mm) May lead to an oversized ICL.' At the bottom of the screenshot, the word 'eyes' is written in a large, bold font. The 'EOS 2023' logo is visible in the bottom right corner of the screenshot.

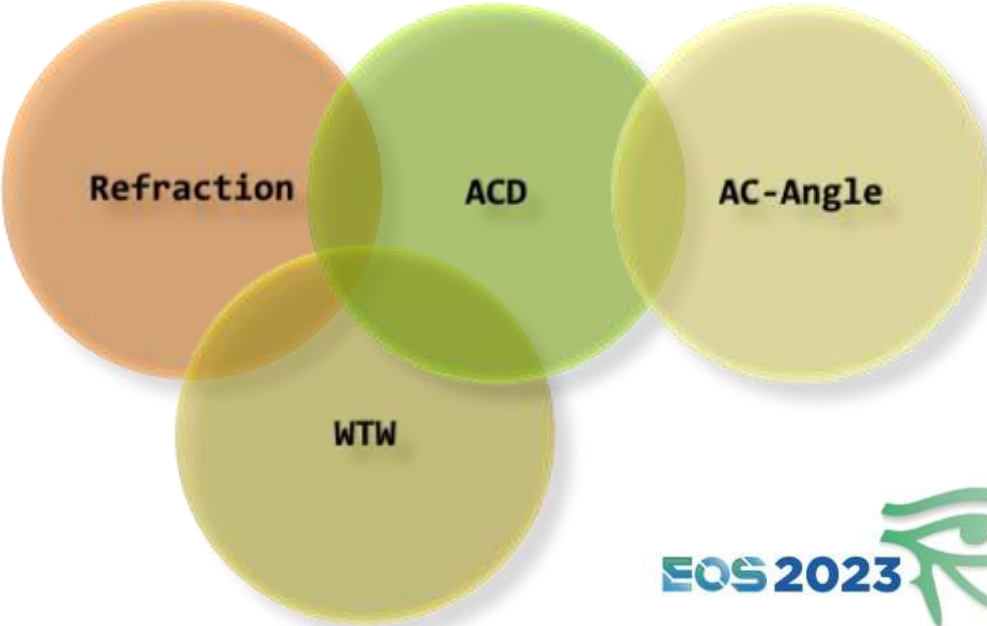
Double check
WTW


IOL-MASTER® may overestimate WTW(0.34mm to 0.5mm)
May lead to an oversized ICL.


eyes

<p>ICL with High vault</p> 		<p>ICL with Low vault</p> 
<p>Oversized WTW =Oversized ICL= Increased ICL Vault</p>	<p>Ideal size ICL Vault of 0.250- 0.750 mm (0.5 - 1.5 C. Thickness)</p>	<p>Undersized WTW=Undersized ICL = Decreased ICL Vault</p>

Preoperative considerations







Anterior Chamber Angle



ANTERIOR CHAMBER PARAMETERS

ACD / ACV / ACA

- **NORMAL VALUES:**

- $ACV \geq 100 \text{ mm}^3$
- $ACA \geq 24^\circ$
- $ACD \geq 2 \text{ mm}$

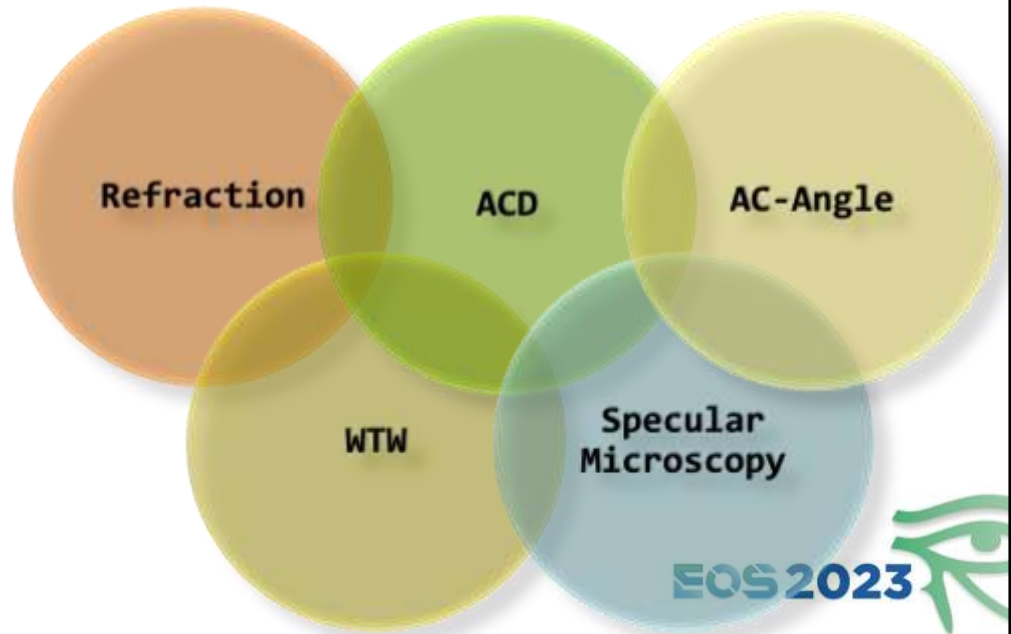
- IF LESS THAN THESE VALUES MAY LEAD TO ACG

- **FOR PHAKIC IOLS :**

- $ACV \geq 100 \text{ mm}^3$
- $ACA \geq 30^\circ$
- $ACD \geq 3 \text{ mm}$




Preoperative considerations



Effect of ICL on endothelium

Clinical science

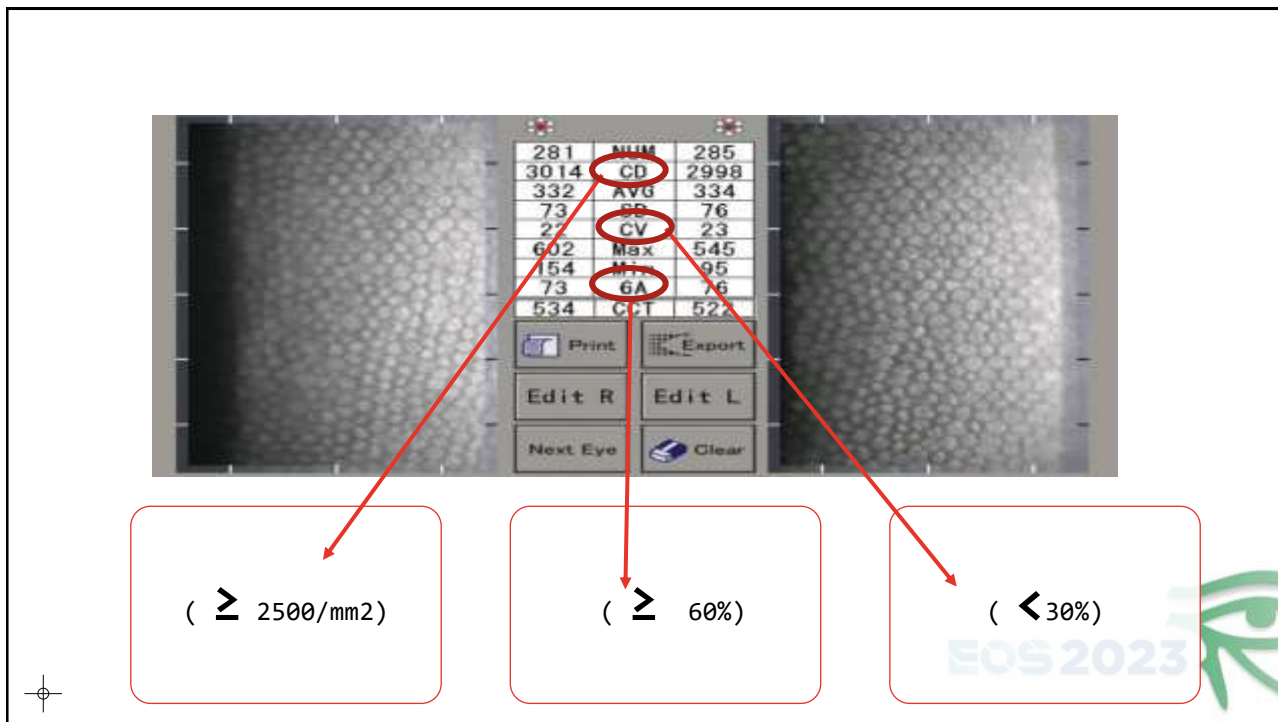
Four-year observation of the changes in corneal endothelium cell density and correlated factors after Implantable Collamer Lens V4c implantation 

Wen Yang ¹, Jing Zhao ², Ling Sun ², Jiao Zhao ², Lingling Niu ², Xiaoying Wang ²,  Xingtao Zhou ²

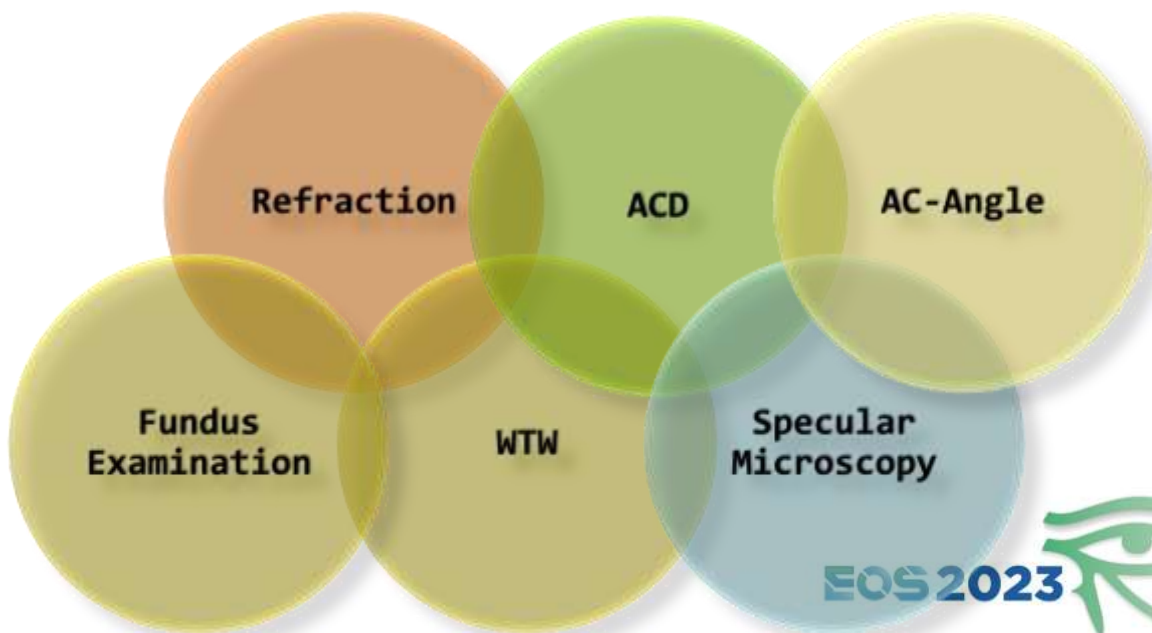
- 4.03%±2.2% reduction in ECD
- Vault was the most significant factor for changes in ECD

British Journal of Ophthalmology 2021





Preoperative considerations



SEARCH
CALCULATOR
SELECT DOCTOR
HELP

Welcome Paula Ommerli-Weber

SELECT DOCTOR
1 - Paula Ommerli

witzerland

Doctor ID: **33604** Paula Ommerli Date: 2012.03.01

Calculate For: ICL Toric ICL

Patient ID:

Patient Name:

Operative Eye: OOD OOS

DOB: Year: Month: Day:

ØVD:

Sphere:

Cylinder:

Axis:

	Power	Degrees
K1	<input type="text"/>	<input type="text"/>
K2	<input type="text"/>	<input type="text"/>
ACD	<input type="text"/>	
CT	<input type="text"/>	
WW	<input type="text"/>	
CL Sphere	<input type="text"/>	

Any previous intervention? No Yes

STAAR Surgical
ICL Power Calculation Software

Click on the Patient ID box and enter the patient's ID.

The accuracy of predicting the necessary power of an intraocular lens is directly related to the accuracy of these measurements.

Use the **TAB** or **ENTER** Key to move to the next field. Press **Calculate** when finished.

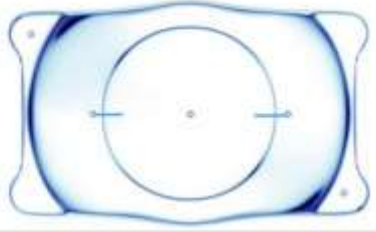
Online calculator

<https://ocos.staarag.ch/>



SEARCH
CALCULATOR
SELECT DOCTOR
HELP

Toric ICL



Implantation Orientation Diagram

PATIENT INFORMATION

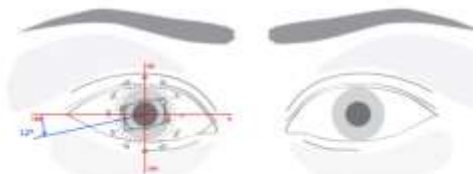
Gender	Patient ID	Refraction Status	Date of Birth
Female	123456	High Myopia (R) / High Astigmatism (L)	1975.03.03

RIGHT EYE


Ø	Power	Sphere	Cylinder	Axis
6.00 (12.00mm)	SPH+0.00	0.00	0.75	180

LEFT EYE ORDERED

Ø	Power	Sphere	Cylinder	Axis	Serial Number
6.00 (12.00mm)	SPH+0.00	0.00	0.75	180	VACP188



Rotate lens **counterclockwise 12°** after horizontal implantation





Phakic IOL informed consent

Vision-Threatening Complications

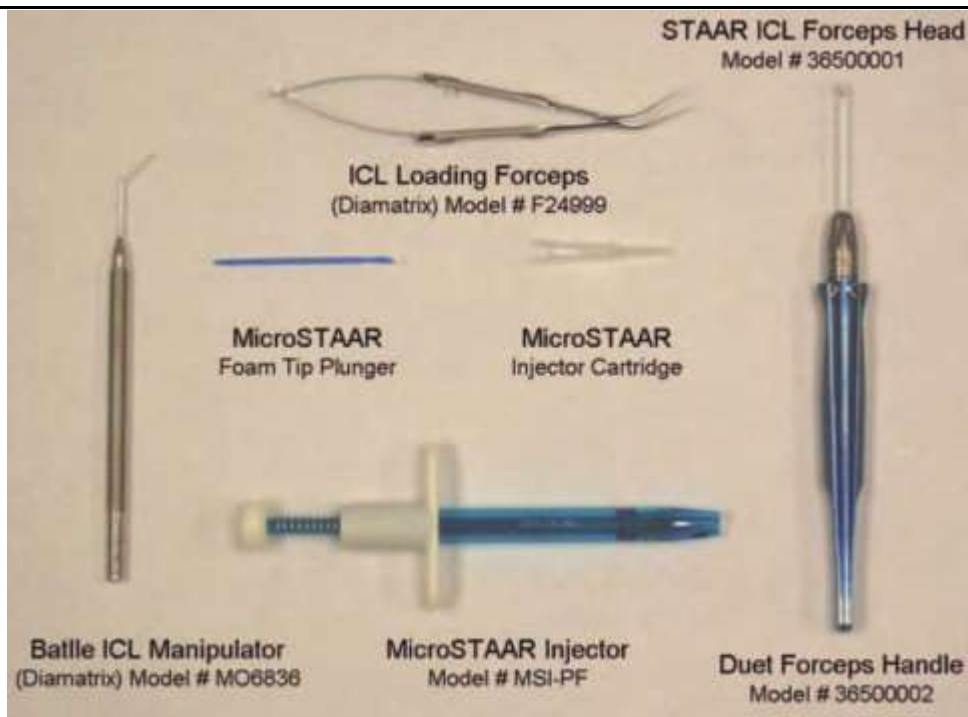
- Infection
- Damage to the iris
- Retinal detachment
- Cataract
- Corneal swelling (edema)
- Loss of cells lining the inner surface of my cornea (endothelial cells)
- Glaucoma

Other Rare Risks

I understand that other complications could threaten my vision, including, but not limited to, iritis or inflammation of the iris (immediate and persistent), uveitis, bleeding, swelling in the retina (macular edema), and other visual complications. Though rare, certain complications may result in total loss of vision or even loss of the eye. Complications may develop days, weeks, months, or even years later.

Non Vision-Threatening Complications

- Sedation
- Increased sensitivity to light or night glare
- "Starbursting," halo, or "heat wave" effect in my vision
- Over-correction or under-correction
- Lens may change position (decentration)



PROPER ANAESTHESIA



Intra -Operative Complications of ICL

- Torn ICL = replace
- Wrong orientation = reposit



Glare and Halo after ICL Implantation

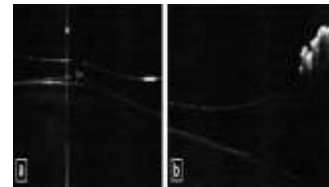
- Pupil size
- Optic size
- High myope



EOS 2023



Refractive surprises



Retained OVD

Wrong calculation

OD	S	C	A
-4.75	-0.25	12	9
-4.75	-0.25	12	9
-4.75	-0.25	11	9
<-4.75	-0.25	12>	

OS	S	C	A
-1.90	-1.25	94	9
-1.90	-1.25	94	9
-1.90	-1.25	94	9
<-1.90	-1.25	94>	

AD ECD	N TD

HIDEK SV-ERRA



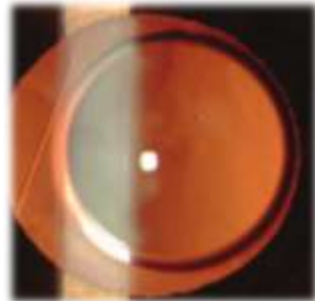
IOP rise

- Improper sizing = high vault ICL
- Retained OVD
- Uveitis
- Steroid response
- Pigment dispersion
- Puillary block(old designs)



Other Postoperative Complications

- Rotation of toric IOL
- Cataract
- Corneal edema
- Infections
- Myopic maculopathy
- Angle anomalies, synechiae, or NVs.
- Zonular anomalies (ICLs)
- Loss of endothelial cells at a faster rate



THANK YOU

