

# Claw Lens As An Option In Pediatric Aphakia

Ghada Gawdat, MD  
Professor Of Ophthalmology  
Cairo University  
2023

## Ideal Choice For Aphakia Correction

- IOL implantation in the capsular bag.
- But in some cases, the scenario doesn't go this way.
- The challenge is bigger in **PEDIATRIC** patients.

## Inadequate Capsular Support

- Absence of capsular support whether post trauma or post lensectomy poses a great challenge for IOL implantation to achieve visual rehabilitation in pediatric age group.
- *Angle supported ACIOLs* are known with their complications as hyphema, secondary glaucoma, size and corneal decompensation.
- *Sclerally fixated IOLs* with or without sutures are known to decenter, tilt, show scleral erosion, up to their fall in the vitreous cavity. They can even result in vitreous incarceration (*sclerotomy sites*) and RD.

## In Inadequate Capsular Support

- This makes iris fixated claw lenses anteriorly or posteriorly a safer choice in these cases (*intact iris diaphragm*).
- Implantation can be performed primarily or as a secondary procedure.

## Indications Of Claw IOL Implantation

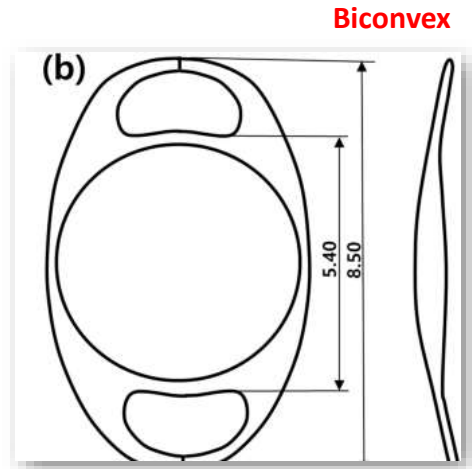
- Eventful cataract surgery
- Ectopia lentis cases
- Anterior segment trauma

*Absent capsular support*

## Contraindications

- Shallow AC < 3mm
- Uveitis
- Endothelial cell disorder
- Glaucoma
- Corectopia

## Currently



## Surgical Technique

- IOL calculation (*A constant 115 for Ant., 116 for Post*)
- Wound size
- IOL placement
- Peripheral iridectomy (anterior>posterior)
- Iris enclavation

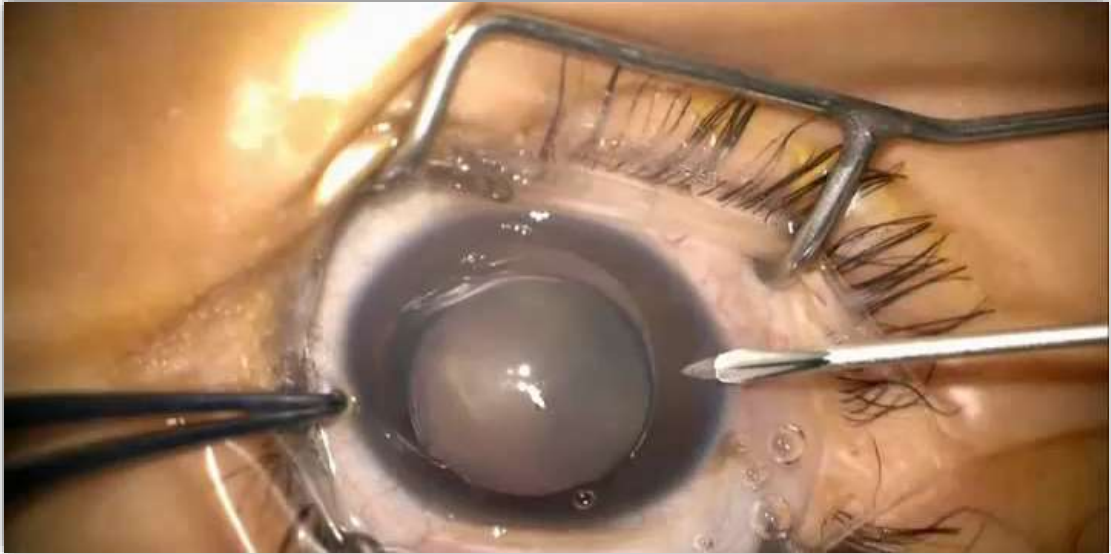
## Anterior IOL Fixation



## Anterior IOL Fixation



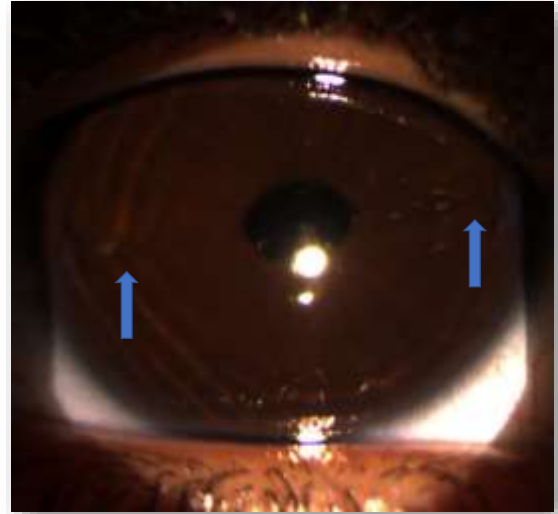
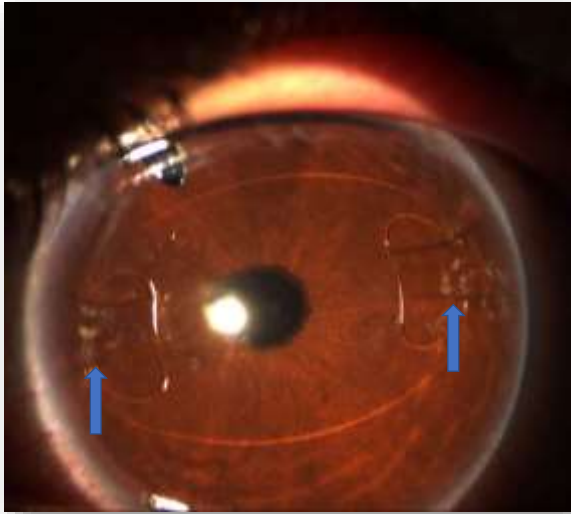
## Posterior IOL Fixation (*Vault*)



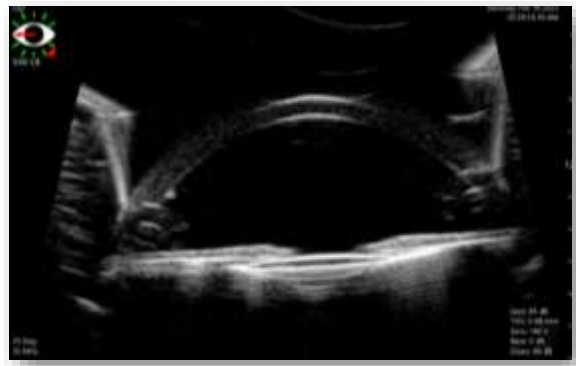
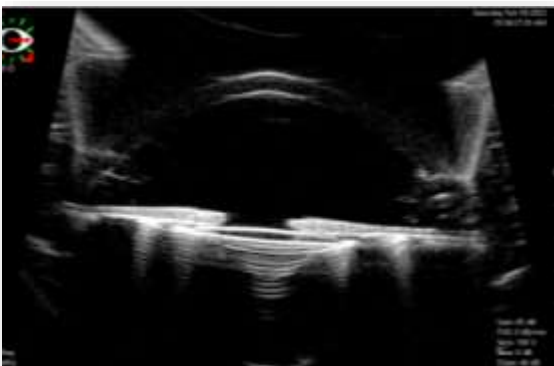
## Anterior Versus Posterior Claw IOL Placement

- No significant difference between Ant # Post claw lens regarding endothelial cell loss. (*Mora et al 2018*)
- The mean endothelial cell count in a 5year-old child is approximately 4000 cells/mm<sup>2</sup> compared to 2500 cells/mm<sup>2</sup> in adults. (*Cleary et al 2011*)
- Patients with retropupillary placed IOL achieved better visual outcome whatever the causative indication.
- Patients with AC artisan achieved good VA and had significant EC loss. (*gawdat et al 2015*)
- Patients with anteriorly placed iris claw IOL had higher IOP readings and macular edema. (*Al Dwairi et al 2022*)

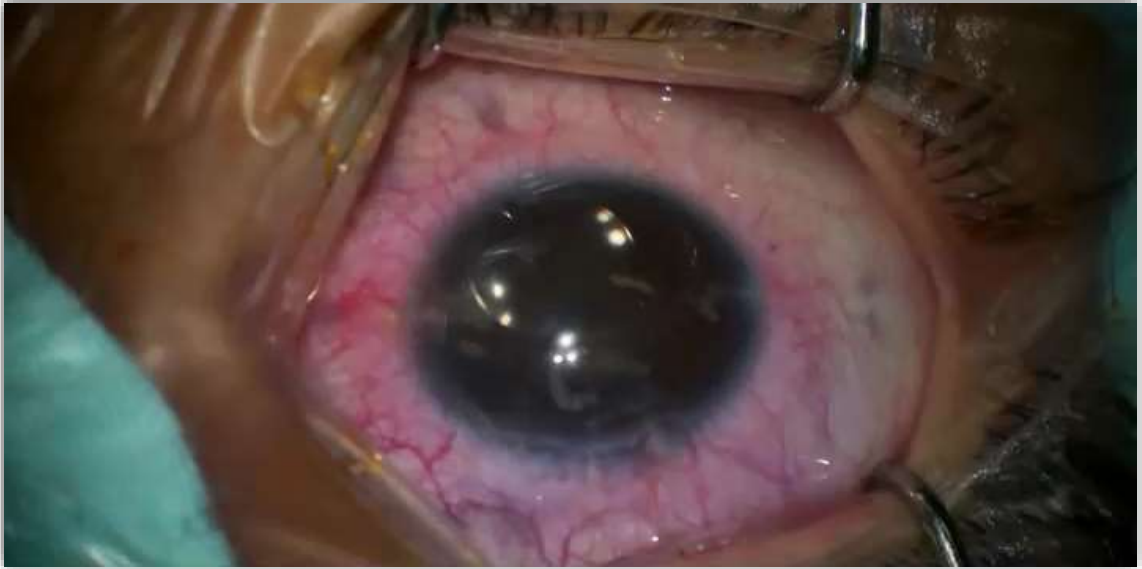
# Postoperatively



# Postoperatively



# Complications





## Our Current Study (CUPS)

Prospective randomized study , comparing anteriorly fixated claw lens to retropupillary fixation in pediatric aphakic patient w inadequate capsular support.

Age range from 4-18 years

### **Inclusion criteria**

- Lens subluxation (hereditary / traumatic) that requires lensectomy and intraocular lens implantation.
- Microspherophakia that requires lensectomy and intraocular lens implantation.
- Aphakia with insufficient capsular support

## Our Current Study (CUPS)

### **Exclusion criteria**

- Preoperative central endothelial cell density (CECD) less than 2500 cells/mm<sup>2</sup>
- Preoperative anterior chamber depth (ACD) less than 3 mm.
- Severely damaged iris.
- History of uveitis or glaucoma.
- Macular lesions or previous retinal surgery

## Preliminary 6 months results

	AC artisan n=16 eyes, 14 patients	PC artisan n=13 eyes, 11 patients	P value
Age (Mean +/- SD) in years	6.57 +/- 3.44	6.41 +/- 2.69	0.93 *
<b>Change in CECD</b>			
Preop CECD (Mean +/- SD)	3442.9 +/- 439.98	3366.0 +/- 326.94	0.70 *
Median cell/mm <sup>2</sup>	3414	3289	
1 <sup>st</sup> month postop (m +/- SD)	3056.75 +/- 626.2	3237.1 +/- 670.5	0.2826 **
Median	2985	3289	
6 <sup>th</sup> months postop (Mean +/- SD)	2939.3 +/- 587.6	3107 +/- 586.5	0.565 *
Median	2817	2986.5	
<b>Best corrected logMAR visual acuity</b>			
Preop logMAR BCVA (M +/- SD)	1.09 +/- 0.55	0.83 +/- 0.32	0.2 *
2M post op logMAR BCVA	0.37 +/- 0.3	0.16 +/- 0.16	0.12 **
6 <sup>th</sup> M post op logMAR BCVA	0.13 +/- 0.11	0.125 +/- 0.13	0.5 **
LogMAR lines improvement of VA	0.73 +/- 2.3	1.08 +/- 2.4	0.75 *

## Preliminary 6 months results

### Comparison of CECD over postop follow up points in the same group

P value	AC artisan	PC artisan
Preop to 1 <sup>st</sup> month postop (using one-tailed paired t-test)	0.058	0.24
1 <sup>st</sup> m to 6 <sup>th</sup> m post op (using one-tailed paired t-test)	0.12	0.052
Preop to 6 <sup>th</sup> month values (one way ANOVA test for eyes completed 6 M)	0.33	0.27
<b>Loss rates</b>		
1 <sup>st</sup> month postop- Preop	-10%	-4%
6 <sup>th</sup> month postop- Preop	-13%	-9%

## Take Home Message

- Claw IOL implantation is an easier and less risk taking surgery.
- In cases of Marfan syndrome, claw lenses are safer than sclerally fixated IOLs. (*peripheral retinal degenerations*)
- Safe in cases w weak zonules where CTR placement poses a threat of fall of the PCIOL posteriorly.
- Claw IOLs have less tilt if any compared to IOLs fixed by sutures to sclera, or by scleral tunnels or sulcus placed PCIOLs.
- They have less glare whether anteriorly or posteriorly placed.
- Claw lenses (*ant & post*) show less endothelial cell loss when compared to sclerally fixated IOLs .

**Thank You For Your Attention**