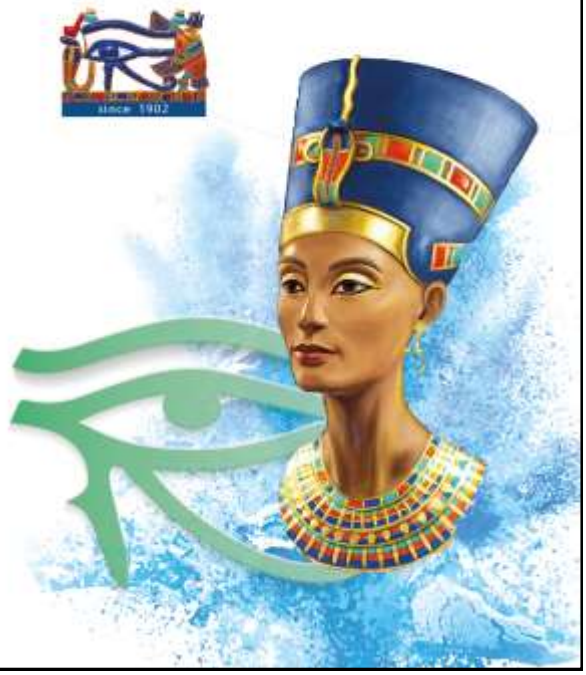
المؤتمر السنوي الدولي للجمعية المصرية
INTERNATIONAL CONGRESS OF THE
EGYPTIAN OPHTHALMOLOGICAL SOCIETY
EOS 2023

Iris- Claw Lenses in Children (The fundamentals)



Christina S. Farag, M.Sc, MRCSed

Assistant Lecturer of Ophthalmology, Cairo University

I have no financial

interests

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Iris claw in Children

1. History of Artisan
2. Material and design of the IOL
3. Ideal patient to choose
4. Preop preparation
5. Types of implantation
6. Postoperative complications
7. Results of prior studies

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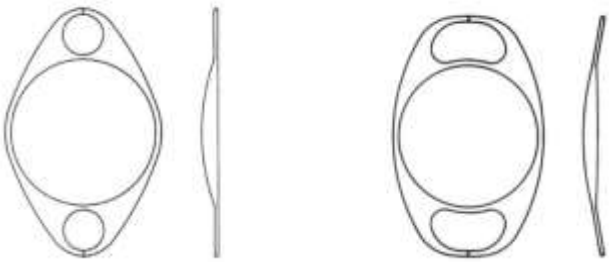
Iris Claw lenses

1978: introduced by Prof. Jan Worst, Netherlands (Wörst Claw lens)

1996: First implantation in children , Netherlands (VanderPol & Worst, 1996)

Mid 90s: an improved vaulted design of the ARTISAN® Aphakia Lens (Ophtec, Groningen, The Netherlands) was commercialized.



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Iris Claw lenses

2004: First report on Artisan IOL in children (Lifshitz et al, 2004)

2006: First long-term FU of corneal endothelium in children after Artisan (Odenthal et al, 2006)

In USA: Not FDA approved, only available through a compassionate use pathway for anterior implantation.

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Aphakic Artisan IOL

Material and Design

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Aphakic Artisan Material & Design

- Non-foldable: PMMA
- Powers available: +2.0 D to +30.0 D (1.0 D increments)
- Pediatric ARTISAN Aphakia (4.4*6.5 or 4.4*7.5) (actually unavailable)

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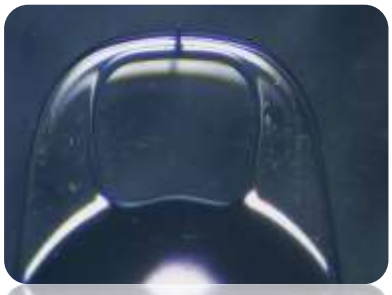
IOL Haptics "Claws"



"Flexible" haptics

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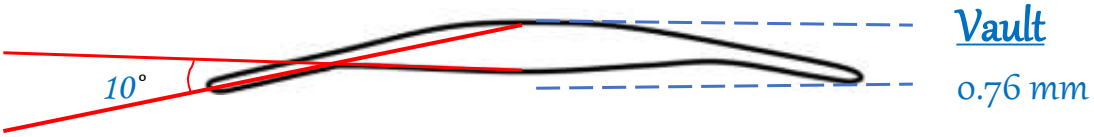
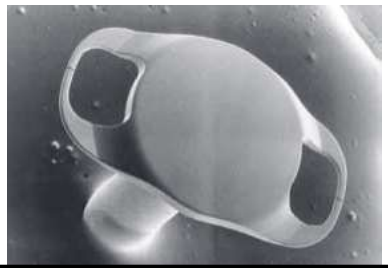
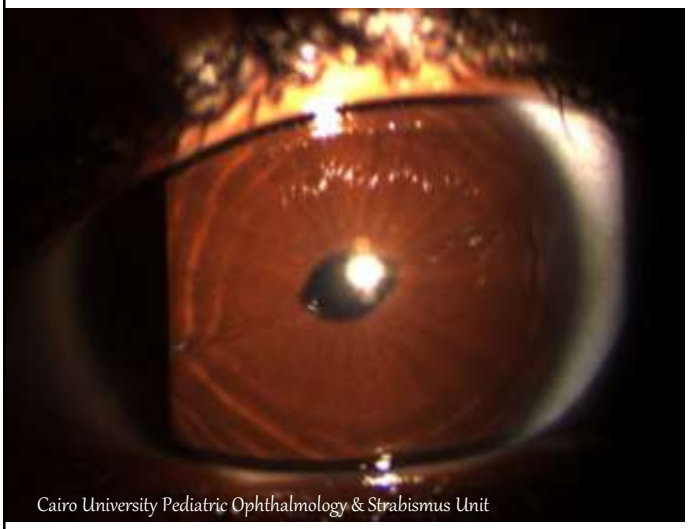
IOL Optic & Optic –Haptic Angulation

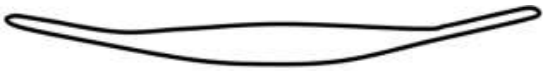


Biconvex optic

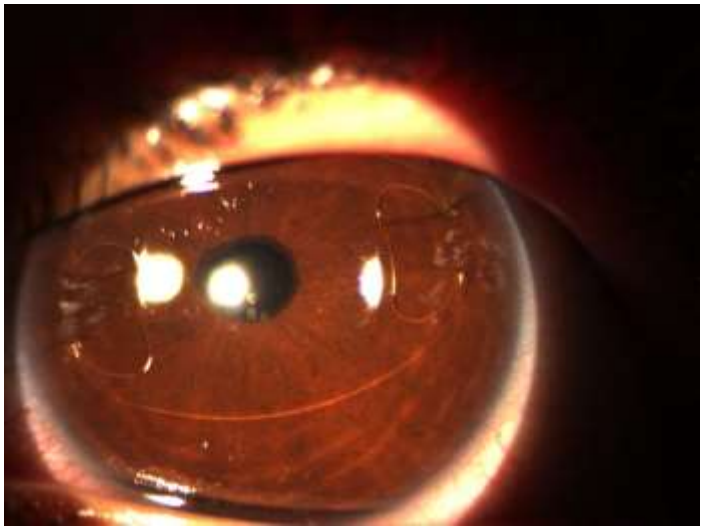


Posterior enclavation "Vault Down"





Anterior enclavation "Vault Up"



A- Constant & Power Calculation "Aphakic"

	Anterior	Posterior
Optical	115.7	116.9
US	115	116.8

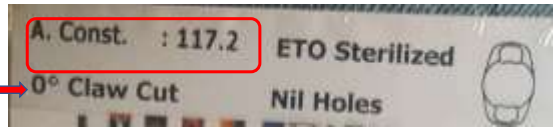
Use SRK-T or Holladay formula

Alternatives

- The available alternatives in the market

Away Cheaper, **BUT:**

- different manufacturing processing
- Haptics are relatively more "Rigid": easy to fracture during enclavation.
- Different A constant
- Different angulation (Zero Angulation)
- No obvious vault
- Not well studied
- Better avoided in children



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Aphakic Artisan IOL

Patient Selection

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To be Safe & Stable:

A) Normal Anterior Chamber Anatomy

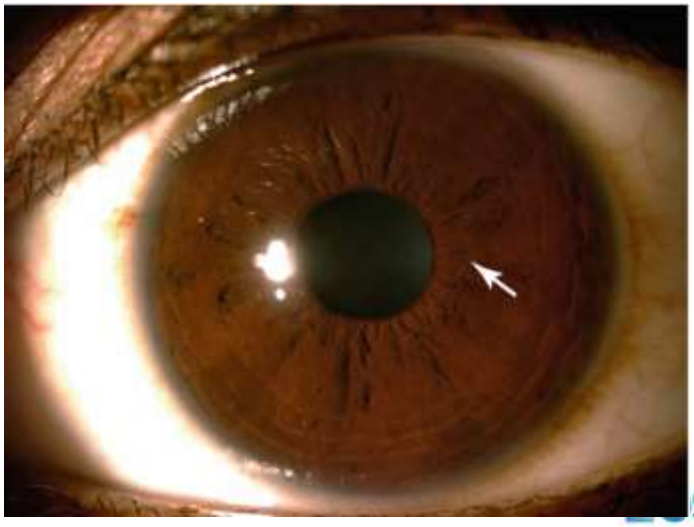
&

B) Good Iris Diaphragm

A) Anterior chamber (the rule)

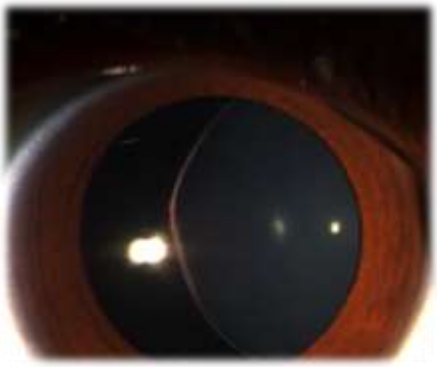
- Preoperative anterior chamber depth (ACD) Not less than 3 mm.
- Preoperative central endothelial cell density (CECD) NOT less than 2500 cells/mm2

B) Good Iris diaphragm



Good Iris diaphragm

- Not atrophic: showing normal pattern
- Not torn: as in sphincteric rupture
- dilatable
- Not tough
- No adherent capsule on the back



Usually Show Poor dilatation

Good Iris diaphragm

Sphincteric rupture

May fail to respond to intracameral Miochol

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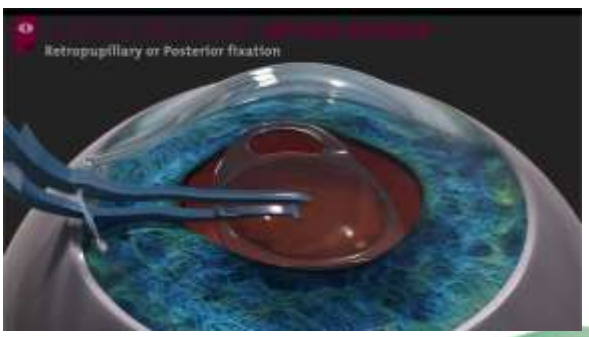
Good Iris diaphragm

Tough Iris

- Failure to pass the IOL
- Difficult to dilate



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Tough iris

Good Iris diaphragm

Sommering ring adherent to the back of Iris

- Failure of dilatation
- Makes iris tough
- Failure of enclavation

Good Iris diaphragm (The exception)

Ectopic pupil
Lens and pupil are out of Axis
Incomplete pupillary dilatation

Abnormal ACA
Anterior \abnormal retinal insertion
Higher risk of RD and glaucoma

Iris Claw is Safer option when you suspect abnormal retinal insertion

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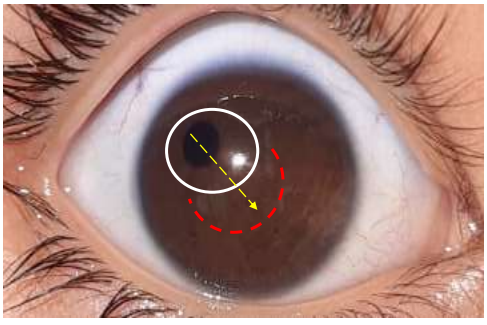
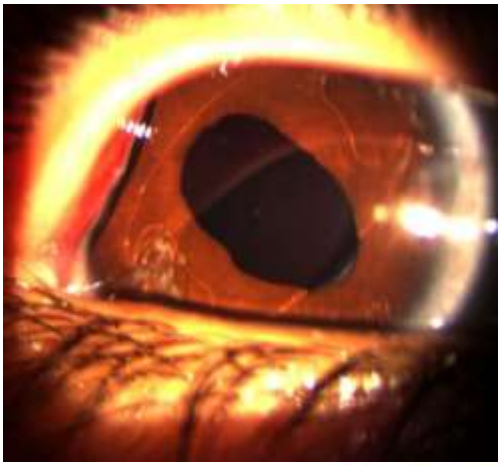
Good Iris diaphragm (The exception)





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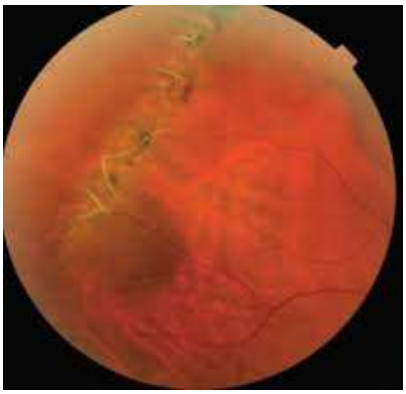
Aphakic Artisan IOL

Preop. Preparation

Preop. Preparation

- Be aware of associated medical condition (e.g Cardiac)
- BCVA
- Exclude uveitis or uncontrolled glaucoma
- Dilate Pupil

Preop. Preparation



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Aphakic Artisan IOL

Anterior or posterior enclavation

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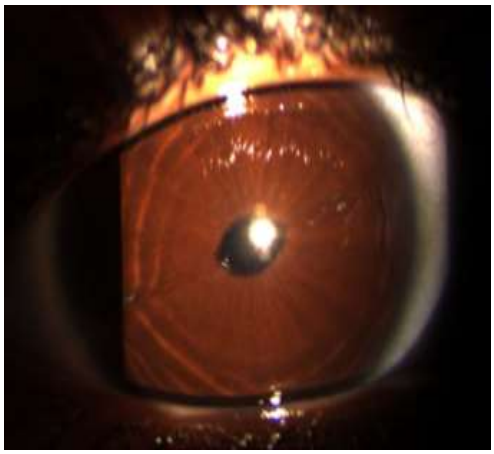

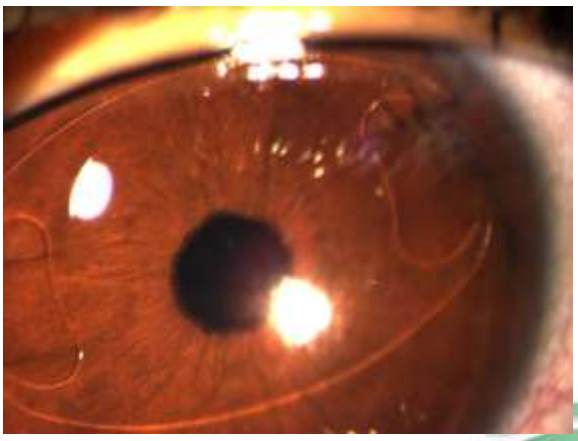

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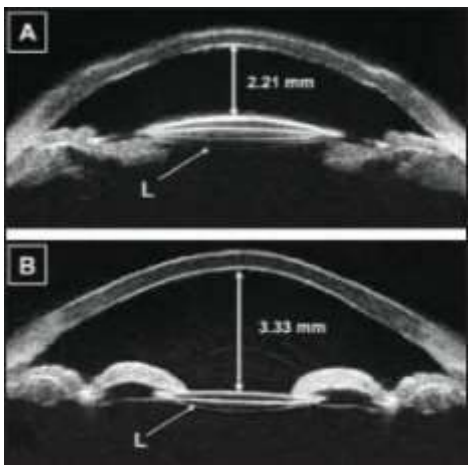
Anterior or posterior enclavation



- Anterior: easily seen by parents and examiner especially in younger age patients.
- Posterior: away from cornea.

- Parent counselling

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Postoperative FU

First Day postop:

Make sure

- PI is patent
- AC is quiet
- IOP
- Sites of enclavation

Postoperative FU

- Regular FU:

Centration and site of enclavation

IOP

ECC

BCVA and amblyopia therapy

Fundus exam

Aphakic Artisan IOL

Post- operative complications

Disenclavation

Dislocation

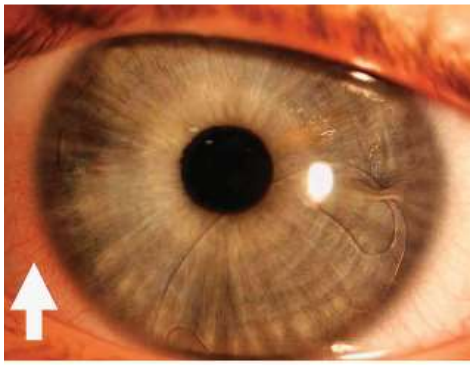
Corneal decompensation

Pupillary block

Pigment dispersion

2ry glaucoma

Disenclavation & Dislocation



Disenclavation & Dislocation

- Can be traumatic
- Sometimes with trivial trauma
- Parents should know the possibility and Should Not ignore mild "red eye" or "change in vision"

How to minimize it's probability?

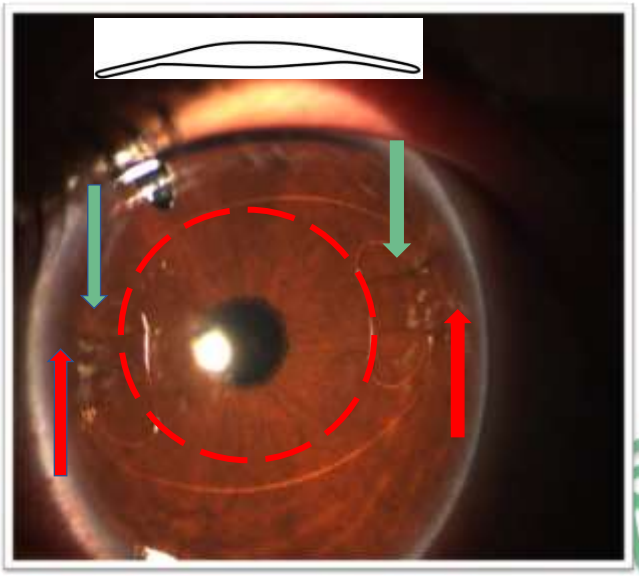
To achieve "stability" & "Safety": "Mid-peripheral iris enclavation".

Midperiphery: immobile part, thicker stroma

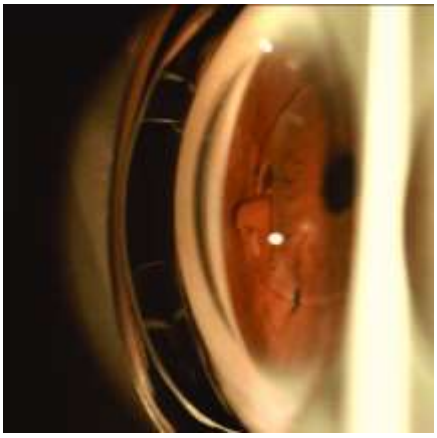
Not in:

The peripheral Iris : it will jeopardize angle structure, easier to touch the cornea, pressure on feeding vessels (ischemia & Iris atrophy)

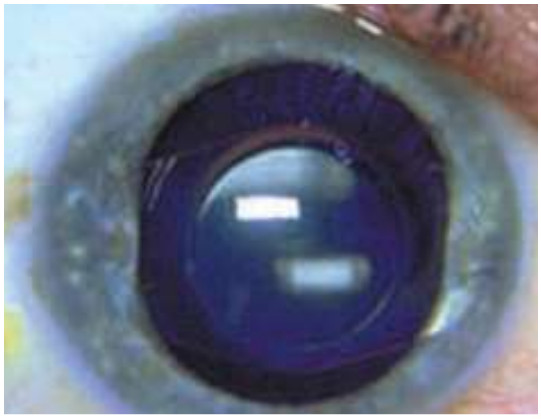
The Central Iris: mobile part, IOL tilt, hinder pupillary dilatation, pupil distortion.



Mid-peripheral enclavation



Away from cornea and angle structures



Good centration
Ability to dilate

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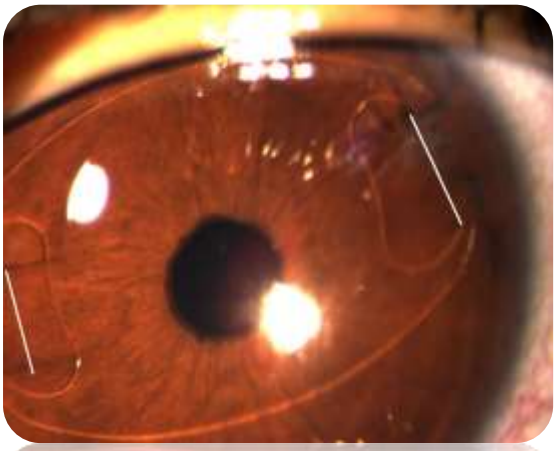
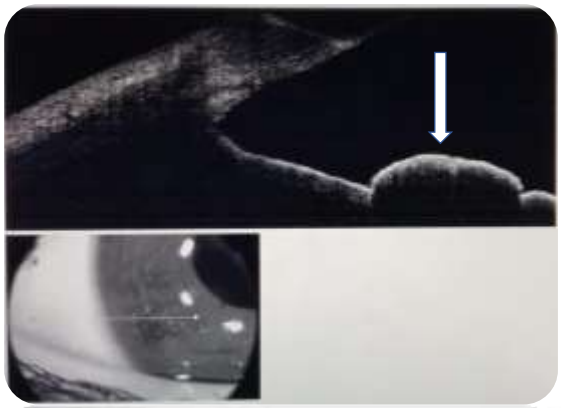
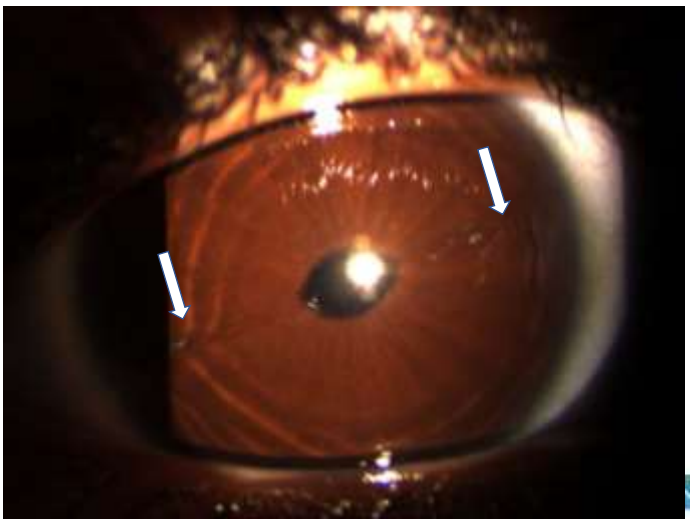
Ensure good iris bridges inbetween claws





Make sure you see the enclavation Fold intraop. And in FU

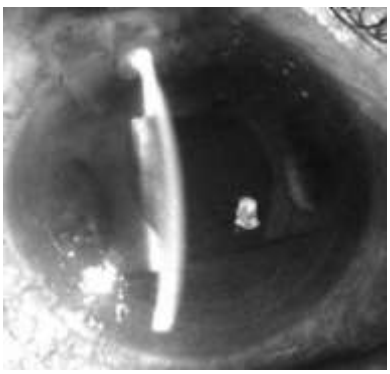


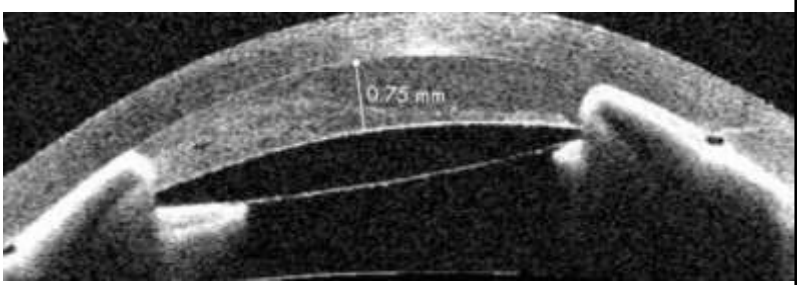
Corneal decompensation

- Mainly from direct trauma by dis-enclavated Haptic, rather than slow loss of endothelial cells.
- Central enclavation of the IOL with to & Fro movement in AC.
- Children should avoid eye rubbing

- IF Peripheral limited area>> re-enclavate
- IF severe>> explant.

Pupillary block





- Mendrinos, E & Dreifuss, S & Dosso, A & Shaarawy, Tarek. (2008). Evaluation of a pseudophakic pupillary block with an anterior segment OCT. The British journal of ophthalmology. 92. 714-5. 10.1136/bjo.2007.125385.

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Pupillary block

- Postop Pain, Nausea & Vomiting is red flag
- PI is Too small/ not patent
- Severe fibrinous reaction blocking PI
- Improper anterior vitrectomy>>pupillary block

- Surgical PI

Pigment dispersion

1 Month postop

1 year postop

Pigment dispersion

- Less with vaulted models
- Cycloplegic can be used in early postop period (Cicloplegica ED bid, 1 wk).
- Pigments may get cleared with time

Aphakic Artisan IOL

Summary of Previous studies

Iris-Claw intraocular lenses in children

BERT A.E. VAN DER POL & JAN G.F. WORST
Department of Ophthalmology, Refaja Hospital, Stadskanaal, The Netherlands

Accepted 7 May 1996

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Long-Term Follow-Up of the Corneal Endothelium After Artisan Lens Implantation for Unilateral Traumatic and Unilateral Congenital Cataract in Children

Two Case Series

Monica Th. P. Odenthal, MD,† Marije L. Sminia, MD,* Liesbeth J. J. M. Prick, MD, PhD,* Nitza Gortzak-Moorstein, MD,* and Hennie J. Völker-Dieben, MD, PhD‡*

EOS 2023

American Journal of Ophthalmology
Volume 156, Issue 2, August 2013, Pages 382-386.e1

Original article

Posterior Iris-claw Aphakic Intraocular Lens Implantation in Children

Johannes Gonnermann, Necip Torun, Matthias K.J. Klamann, Anna-Karina Maier, Christoph von Sonnleithner, Peter W. Rieck, Eckart Bertelmann

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Journal of American Association for Pediatric Ophthalmology and Strabismus
Volume 19, Issue 3, June 2015, Pages 242-246

Major Article

Evaluation of Artisan aphakic intraocular lens in cases of pediatric aphakia with insufficient capsular support

Ghada I. Gawdat MD, Sameh G. Taher MSc, Marwa M. Salama MD, Adel A. Ali MD

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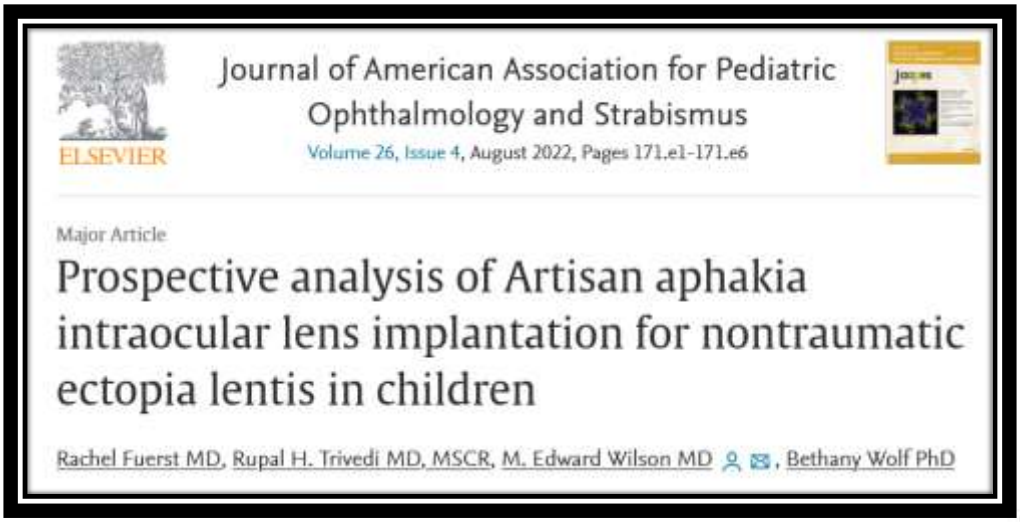
Journal of American Association for Pediatric Ophthalmology and Strabismus
Volume 26, Issue 4, August 2022, Pages 171.e1-171.e6

Major Article

Prospective analysis of Artisan aphakia intraocular lens implantation for nontraumatic ectopia lentis in children

Rachel Fuerst MD, Rupal H. Trivedi MD, MSCR, M. Edward Wilson MD, Bethany Wolf PhD

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Take Home message

Iris claw lenses is a valid and relatively easy option in children.

Short learning curve with good centration.

Wise patient selection will reduce rate of complication.