Artisan Lens Implantation for Pediatric Aphakia with Inadequate Capsular Support

Sameh Galal M.D , FRCS Glasgow
Lecturer of Ophthalmology
Research Institute of Ophthalmology

Financial disclosure

No financial interest in the subject presented

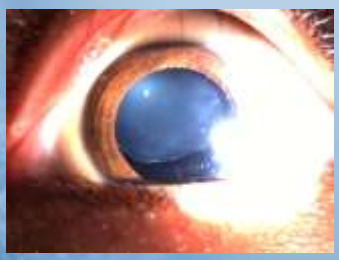
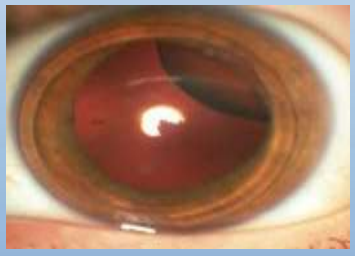
Pediatric Cataract

- **Managing cataracts in children remains a challenge.**
- **Treatment is often difficult and tedious.**
- **The timing of treatment is crucial for the visual development and successful rehabilitation of children.**

Pediatric Cataract

Posterior chamber IOL implantation remains the ideal procedure following cataract extraction .

- **CAUSES OF ABSENT SUFFICIENT CAPSULAR SUPPORT** ;
  - ❑ **Following total lensectomy of a subluxated lens (either congenital or traumatic).**
  - ❑ **Loss of the capsule in a complicated cataract surgery .**


IF THERE IS NO SUFFICIENT CAPSULAR RIM, WHAT TO DO?

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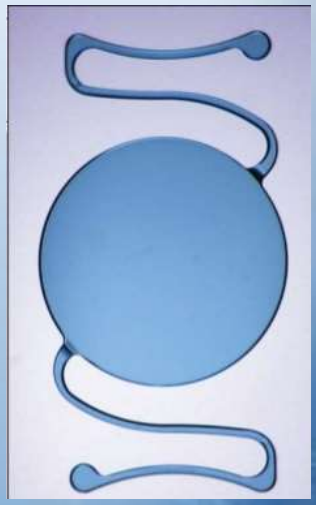
ANGLE SUPPORTED ANTERIOR CHAMBER IOL

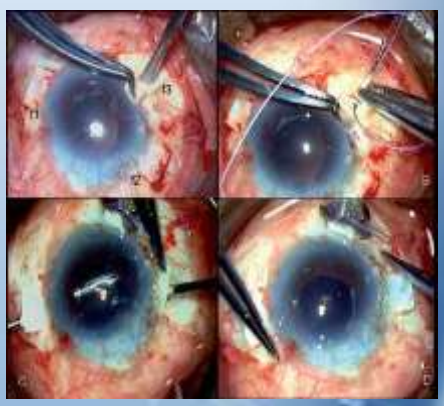


CONCERNS HAVE BEEN RAISED ABOUT THE RISK OF

- **HIGH INCIDENCE OF SECONDARY GLAUCOMA.**
- **PROGRESSIVE PUPIL DISTORTION.**
- **CORNEAL ENDOTHELIAL LOSS.**
-

IF THERE IS NO SUFFICIENT CAPSULAR RIM, WHAT TO DO?

SUTURED SCLERAL FIXATION IOL



CONCERNS HAVE BEEN RAISED ABOUT THE RISK OF

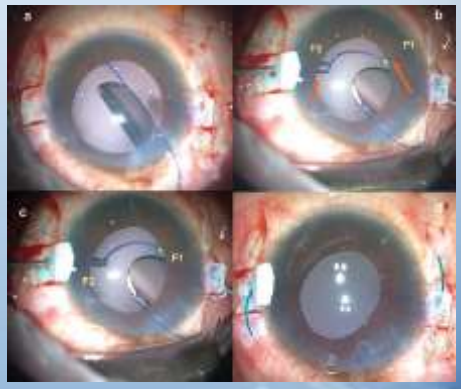
- **CONJUNCTIVAL AND SCLERAL EROSION OF SCLERAL SUTURE**
- **INFECTION OR ENDOPHTHALMITIS .**
- **IOL TILT.**
- **DISLOCATION OF THE LENS IN THE VITREOUS CAVITY.**
- **VITREOUS OR CILIARY BODY HEMORRHAGE .**
- **SECONDARY GLAUCOMA**

IF THERE IS NO SUFFICIENT CAPSULAR RIM, WHAT TO DO?

SUTURELESS SCLERAL FIXATION IOL

- **Sutureless intra-scleral haptic fixation of a three-piece posterior chamber IOL in the ciliary sulcus in eyes with no capsule support**

- **No available data in the literature concerning its use in pediatric age groups.**



IF THERE IS NO SUFFICIENT CAPSULAR RIM, WHAT TO DO?

IRIS CLAW IOL

An alternative method of iris fixation involves claw shaped haptics attached to the mid-peripheral iris.

IRIS CLAW IOL

❖ **Artisan aphakia lens is a PMMA anterior chamber iris fixated lens originally designed in 1978 by J .G Worst**

❖**The Artisan IOL is one of the latest versions of the iris fixated anterior chamber IOLs with a substantially different lens design than the previous generations of iris fixated IOLs.**

ARTISAN LENS

CRITERIA	
Optic diameter	5.00 mm
Aver all diameter	8,5 mm
Material	prespex
A constant	115.00
Total thickness	0.76 mm
Weight	8 mg
Shape	Concave-convex lens

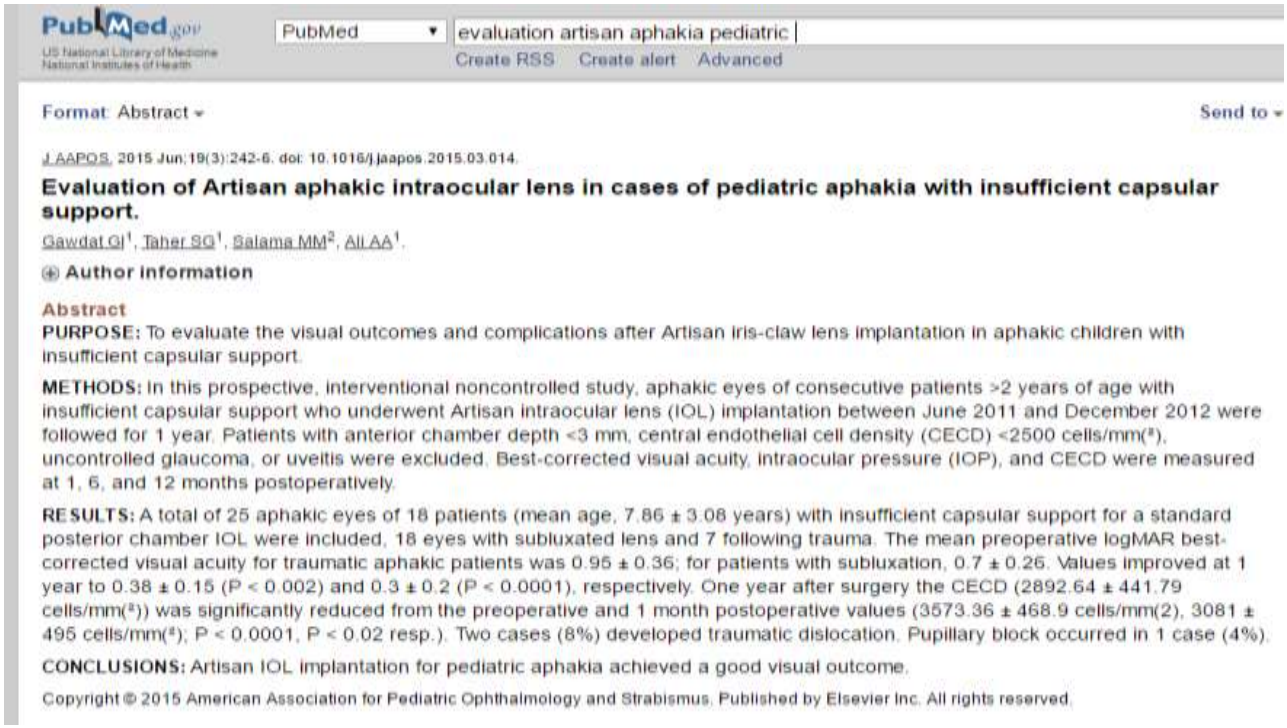
❑ ***Available Power : + 2.00 - + 30 D***

❑***Special small sizes for infants are available with optic diameter of 4.4 mm and over-all diameter of 6.5 mm.***

ARTISAN LENS

•The iris bridge protects the corneal endothelium from the PMMA
•Unrestricted pupillary dilatation and constriction
•Possibility of proper centration of the optic easily
•Optimal visibility of the IOL fixation and centration
•Cosmetically invisible
•Reversible and exchangeable
•No interference with iris vascular physiology
•Easy to reposition if slipped or decentred

•Requires certain surgical skills with a short learning curve
• Requires an incision 5.2 mm
• Puts a high demand on the assistant



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

Gawdat GI[1], Taher SG[1], Salama MM[2], Ali AA[1].

Author information

Abstract

PURPOSE: To evaluate the visual outcomes and complications after Artisan iris-claw lens implantation in aphakic children with insufficient capsular support.

METHODS: In this prospective, interventional noncontrolled study, aphakic eyes of consecutive patients >2 years of age with insufficient capsular support who underwent Artisan intraocular lens (IOL) implantation between June 2011 and December 2012 were followed for 1 year. Patients with anterior chamber depth <3 mm, central endothelial cell density (CECD) <2500 cells/mm(²), uncontrolled glaucoma, or uveitis were excluded. Best-corrected visual acuity, intraocular pressure (IOP), and CECD were measured at 1, 6, and 12 months postoperatively.

RESULTS: A total of 25 aphakic eyes of 18 patients (mean age, 7.86 ± 3.08 years) with insufficient capsular support for a standard posterior chamber IOL were included, 18 eyes with subluxated lens and 7 following trauma. The mean preoperative logMAR best-corrected visual acuity for traumatic aphakic patients was 0.95 ± 0.36; for patients with subluxation, 0.7 ± 0.26. Values improved at 1 year to 0.38 ± 0.15 ($P < 0.002$) and 0.3 ± 0.2 ($P < 0.0001$), respectively. One year after surgery the CECD (2892.64 ± 441.79 cells/mm(²)) was significantly reduced from the preoperative and 1 month postoperative values (3573.36 ± 468.9 cells/mm(2), 3081 ± 495 cells/mm(²); $P < 0.0001$, $P < 0.02$ resp.). Two cases (8%) developed traumatic dislocation. Pupillary block occurred in 1 case (4%).

CONCLUSIONS: Artisan IOL implantation for pediatric aphakia achieved a good visual outcome.

PATIENTS AND METHODS

- THIS IS A PROSPECTIVE STUDY CONDUCTED AT THE RESEARCH INSTITUTE OF OPHTHALMOLOGY (R.I.O) AND ABO EL REESH CHILDREN HOSPITAL, CAIRO UNIVERSITY.

- THE STUDY INCLUDED 25 EYES OF 18 PATIENTS, 8 MALES AND 10 FEMALES. AGES OF PATIENTS RANGED FROM 30 MONTHS TO 14 YEARS

PATIENTS AND METHODS

Inclusion criteria

- **Unilateral or bilateral aphakia with improper capsular remnants regardless the cause of aphakia (traumatic, surgical, congenital ...etc).**
- **Age ; more than 2 years old or older.**

Exclusion criteria

- **Uncontrolled glaucoma, uveitis or severe anterior segment structural anomalies.**
- **Low potential visual acuity.**

PATIENTS AND METHODS

Pre –operative evaluation

- **Meticulous anterior segment slit lamp examination .**
- **Visual acuity assessment .**
- **Intra-ocular pressure (IOP) measurement .**
- **Gonioscopy for evaluation of the anterior chamber angle.**
- **Dilated fundus examination for evaluation of the vitreous cavity, optic nerve head, macular area and retinal periphery.**
- **A non contact auto-focus specular microscopy for endothelial cell count.**
- **Flash ERG, Flash and pattern VEP for estimation of retinal and optic nerve functions in cases of suspected low visual potential.**

PATIENTS AND METHODS

Operative details

❑**A 5mm optic Artisan aphakia IOL with a total diameter of 8.5 mm was implanted through a limbal corneo-scleral incision (5.2 mm)**

❑ **A special bent needle was used to enclavate the iris in the claws of the lens through two paraceneses openings made for this purpose.**

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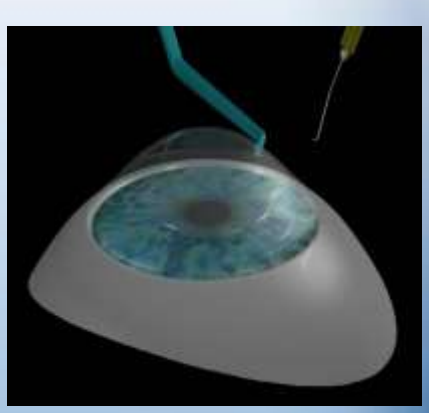
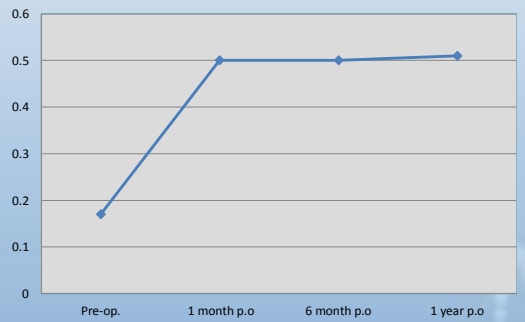


RESULTS

BCVA

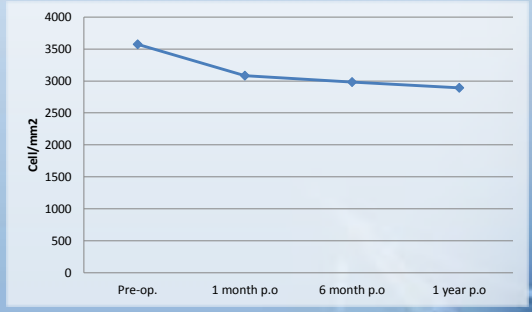
PRE-OP	0.17 ± 0.11
1 MONTH P.O	0.5 ± 0.2
6 MONTHS P.O	0.5 ± 0.2
1 YEAR P.O	0.51±19



RESULTS

ECC

Pre-op	3573.36 ± 468.9
1 month P.O	3081.64 ± 495.3
6 months P.O	2985 ± 479.07
1 Year P.O	2894.24 ± 444.6



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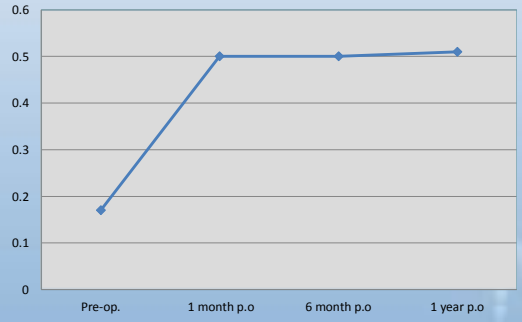
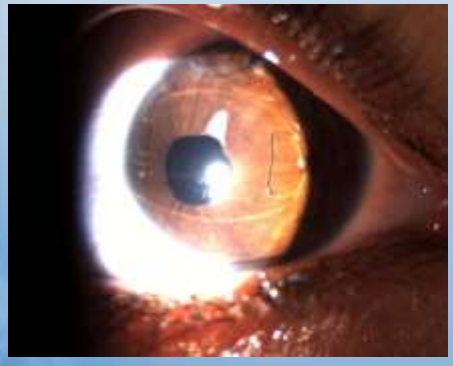


RESULTS

CENTRATION

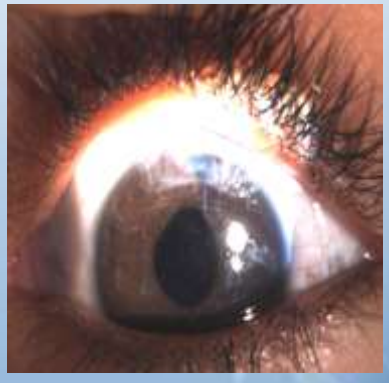
- No spontaneous decentration or claw slippage occurred in any of the 25 eyes



RESULTS

CENTRATION

In 2 of 25 eyes (8%), traumatic lens dislocation with slipped one claw occurred 2 and 4 months post operative respectively. Both cases were readmitted and slipped haptics were re-enclavated .



RESULTS

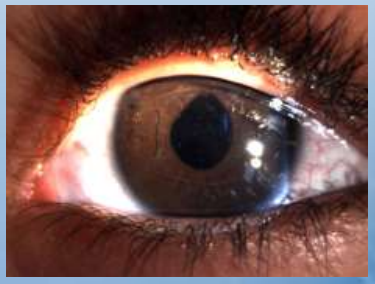
SECONDERY OUTCOME

- Pupillary block occurred in one eye the 3rd day post operative and IOP was elevated (40 mmHg).
- Surgical interference was arranged, in the 4th day post-operative.

RESULTS

SECONDERY OUTCOME

- In 2 of 25 eyes (8%), early post operative mild anterior uveitis occurred.
- Both cases were treated immediately with topical prednisolone acetate 1% atropine sulfate t.d.s .
- Marvelous response was noticed after 3 days of treatment.
- No consequent considerable complications apart from pigmented deposits on the IOL optic and fine KPs



CONCLUSION

- ARTISAN LENS IS A FAVORABLE OPTION FOR CORRECTION OF PEDIATRIC APHAKIA IN ABSENCE OF CAPSULAR SUPPORT DUE TO :
  - EASY TO IMPLANT(SHORT LEARNING CURVE).
  - FREE PUPILLARY DILATATION AND CONSTRICTION.
  - LOW INCIDENCE OF UGH SYNDROME.
- VISUAL OUTCOMES OF ARTISAN APHAKIC IOLS ARE COMPARABLE TO, IF NOT BETTER THAN, ALTERNATIVE IOL TYPES .

CONCLUSION

- ARTISAN IOL IS SAFE ON THE CORNEAL ENDOTHELIUM. HOWEVER, PROSPECTIVE STUDIES OF THE LONG TERM EFFECT OF THE CLAW LENSES ON THE CORNEAL ENDOTHELIUM IS VERY IMPORTANT.

- OTHER RECENT ALTERNATIVES SUCH AS ;SUTURELESS GLUED SCLERAL FIXATION IOL AND PC IRIS SUTURED IOLS ARE RECOMMENDED TO BE STUDIED AND COMPARED WITH THE ARTISAN CLAW LENS IN PEDIATRIC AGE GROUPS