

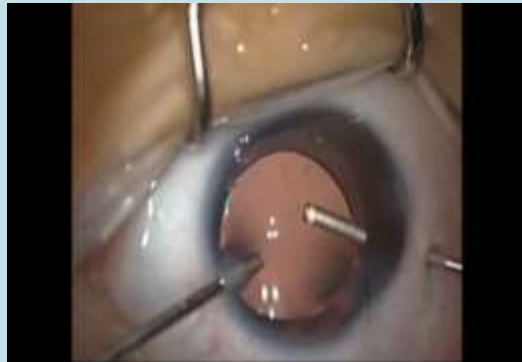
Timing of Intraocular Lens Implantation in Children

←
Early
1st year

←
Late
2 yrs or
older

Early IOL Implantation

- ▣ Advances in surgical technique
- ▣ Improvement in IOL material
- ▣ Better understanding of eye growth



Bilateral Cataract

➤ 12 months :

Postoperative
Refraction + 3D-4D



Why ?

- **Bilateral Cataract:**
 - **Immediate constant correction**
 - **↓ Dependence on compliance**
 - **Less ongoing expenses**
 - **Better optics**

Can Contact Lenses Do the Trick?

- ▣ Considerable care required
- ▣ Inconsistency: loss, infection
- ▣ Expense: frequent power change
- ▣ Drop –out rate: 44%



[Assaf et al., 1994]

Can Contact Lenses Do The Trick?

Infant Aphakia Treatment Study:

In 1st year:

- Replacement:
 - . Silicone: 10.9(2-24)
 - . RGP: 16.8(8-32)
- Adverse events:
 - . corneal abrasion
 - . bacterial keratitis
 - . corneal opacity



(Russel et al,2012)

Can Aphakic Glasses Do the Trick?

- **Poor optics:**
 - **Narrow visual field**
 - **Ring scotoma**
 - **↑nystagmus amplitude**
- **Extra weight + size**
- **Undesirable cosmetic/ psychological effect**
- **Poor fit**



Can Aphakic Glasses Do the Trick?



Cons of Early IOL Implantation

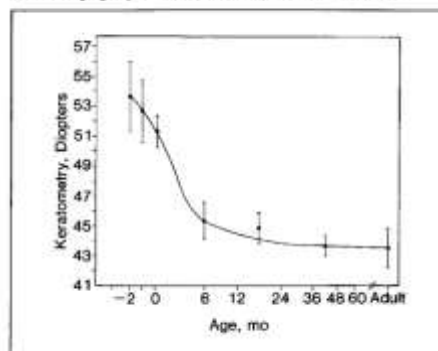
- ▣ Appropriate power selection
- ▣ Visual axis opacification (VAO)
- ▣ Greater tissue reactivity



Keratometric Changes In First Year

- 51.2D - 44D

Fig 2. — Keratometry values plotted with respect to age on logarithmic scale. Negative number represents months of prematurity; dots, mean value for age group indicated; and bars, standard deviations.



Gordon and Donzis, 1985

Axial length changes and Myopic Shift

- From birth-12 months: 16.8-20 mm

Formula: $-7.97 + 0.05 \times \text{age at surgery} + 0.97 \times \text{laterality}$

(Haevenaars et al, 2011)

- Underpowering IOL: at 1 yr. $\rightarrow +3 - +4D$
- Give the residual + error in glasses (Low power)

Myopic Shift

- 4 D myopia:

Is this bad ?

- Myopic shift :
 - . Greater in unilateral pseudophakia
 - . Greater below age 1 yr. *(Cornejo,2017)*



Prediction Error

- . Mean absolute prediction error: 1.08 D \pm 0.93D
- . Greater prediction error:
 - Corneal radius < 7.3mm
(Moore et al,2008)
 - Age at surgery
- .SRK-T and SRKII formulae were better ($P \leq 0.035$)
(Shuaib et al,2019)

What Gave Early Implantation a Bad Name?

- Lundvall and Zetterstrom (2006)
 - 31 eyes:
 - Median age: 2.5 months
 - Range : 8 days -10 months
 - 30% : \leq 18 days
 - 22% : > 6 months
 - Results:
 - VAO: 70%
 - Vitreous hge, RD, strabismus , IOL dislocation

Visual Axis Opacification (VAO)

- Incidence: 37.9% (Trivedi et al., 2004)
- Results analysis:
 - Average age : 3.8 ± 3.0 months
 - No VAO: 5.4 ± 4.0 months
 - Significant correlation:
 - Anterior segment dysgenesis
 - Iris hypoplasia
 - PFV



Does Primary IOL Implantation Protect Against Glaucoma?

	Pseudophakic	Aphakic
➤ No. (eyes)	73	53
➤ Mean follow-up (yrs)	6.1	7.24
➤ Glaucoma	1(1.37%)	11(20.75%) <i>(Asrani et al,2000)</i>

Cairo University Children's Hospital Database

- 23/206 eyes (11%) in 1st year
- 11/86 eyes (13%) in 2nd year



Aphakia

1st year: 17(74%)
2nd year: 11(13%)

Pseudophakia

1st year:6(26%)
2nd year: 0
(Gouda et al,2019)

Why 1ry IOL Implantation May Reduce The Incidence Of Glaucoma

- **Chemical theory:**
 - . Minimizes passage of vitreous chemicals injurious to trabecular meshwork
- **Mechanical theory:**
 - . Reduces disorganization of trabecular meshwork caused by loss of support in aphakia

So Are You With Me?