

Intra-Ocular Lens Implantation In Children

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We report the outcome of intra-ocular lens implantation (IOL) in 15 eyes of 15 patients with visually significant cataracts (10 traumatic and 5 developmental). Eleven had posterior chamber lens implants (PCL) and four anterior chamber lens implants (ACL), two among the later group being secondary implants after failed contact lens trials. Eleven patients were males and four females. At the time of operation, age ranged from 3-12 years. Follow up period was 6-24 months. Most significant complications were fibrinous uveitis and capsular thickening. Uveitis was worse in younger patients (aged 3-5 years) and became less virulent with sub-conjunctival injection of Depomedrol. The marked capsular thickening required capsulotomy in 50% of the cases mostly within six months of operation. Visual outcome was excellent (VA 6/12 or better) in 40%, good (VA 6/24 - 6/12) in 33% fair (VA 6/60 - 6/24) in 20% and poor (Less than 6/60) in 7% (the eye with macular damage, corneal scarring and early age onset cataract). Best results were obtained in traumatic cases aged 5 years and over, with intact climatic conditions with heat and dust around and socio-economic factors are responsible for failure of contactlens. Two patients required secondary ACLs after poor compliance with contact lenses. Unilocular cataract, traumatic or developmental, in children had till recently been a problem for the parents, ophthalmologists and allied specialities. Left alone the child is left with unilocular vision, leucocoria (cosmetically un-acceptable and a psychological burden on child and parents) with added risk of developing squint sooner or latter by the poorly seeing eyes - risk being proportionately worse with earlier age onset of cataract.

Key Words: Intraocular Lens, IOL implantation, ophthalmology.

Removal of these unocular cataracts and correction with aphakic glasses for part of the day i.e. 4-6 hours with occlusion or good eye to help to prevent the development of amblyopia in some cases. However, never a useful exercise to fuse two images due to large degree of anisokonia, 1-2 contact lenses came next -3 and were claimed with better results. It needed on average, nine lenses per year (Moorefields eye hospital report, 1982) with lot of cooperation and patience on part of the parents with time for frequent hospital visits. It showed a poor compliance with our patients and parents. The cause could be recurring cost (lost, damaged) handling problems and weather conditions like dry, dusty hot climate and other socio-economic factors put together. Intra-ocular lens implantation as therefore elected in unocular traumatic and developmental (but not congenital) cataracts to restore good vision with a possibility of binocular vision of some grade at least.

Material and Methods

Fifteen eyes of 15 children under 12 years were operated under G.A. by two of us (M.S.A. T.S.) with ECCE + PCL in eleven and ECCE with ruptured posterior capsule and ACL in four patients, two among the latter were secondary ACLs after intolerance to contact lenses. Ten were traumatic cataracts due to blunt injury, two with corneal scars and damaged iris, 5 were developmental noticed around 3 years of age

Power of IOL was calculated mostly with SRK formula and in a few it was on guess work. Pupils were dilated with 1% Tropicamide, 1% Atropine and 10%

Isonephine. A standard ECCE was aimed with fornix based flap and bipolar cautery to limbal blood vessels. Partial thickness grooved posterior limbal incision from 1200-1700 was made. The A.C. was entered by a 20 gauge needle tip and Healon injected into A.C. Posterior synechiae and PAS when present were separated with Healon canula and home-made irritating cystitome. Anterior capsulotomy was done in a can-opener technique taking with as much of anterior capsule as possible without zonular attachment - idea was to leave as fewer active epithelial cells as possible to reduce the chances of after contract. Corneal section was completed with corneal scissors. Lens delivery was mostly easy excepting a few times when pupil came down. Three interrupted sutures of 10% Perlon were placed at 10, 12 and 2^o Clock position. A.C. was maintained and remaining lens matter was meticulously cleared with irritation-aspiration canula using BSS with adrenaline. (1cc in 500 ml), posterior capsule was polished where needed with I.A canula tip. More Healon was injected into FAC and PC inferiorly. PCL was then slipped behind the iris into the ciliary sulcus. No attempt was made for it to go into the capsular bag.

When the posterior capsule ruptured; after anterior vitrectomy an ACLs was inserted. Healon as washed out and wound was secured watertight with more interrupted, buried 10% perlon sutures. Miochol was used to miotose the pupil. Injection Decadron (1mg) Gentylin (20mg/s) and Depomedrol (20mg/a) was given subconjunctivally into the inferior fornix. Antibiotic drops were instilled and

eye padded till dressing on the following day. Patients were kept on Mydriacyl 1% d O Table 1)

Table 1 Patient Data

No. of Pts.	Age of IOL Surg. (Years)	Length of follow up (Months)	Etiology of a cat.	Type & power of IOL	Surg. Technique	Visual Activity Pre op	Visual Activity Current	Final Refraction
1.K.A.	5 Yrs	17	Dev.	ACL 19D	ECCE	HM	6/6	+1,11DS
2MM	8	15	Tr	PCL21D	ECCE	HM	6/18	-0.050DS
3KA	10	14	Tr	PCL21D	ECCE	HM	6/18	-1.50DS
4MH	12	14	Dev.	PCL21D	ECCE	6/60	6.6	+1.50DS
5SB	12	14	Tr	PCL21	ECCE	HM	6/12	-0.75DS
6MH	12	14	Dev	PCL21D	ECCE	HM	6/6	+1.00DS
7HA	5	13	Tr	PCL24D	ECCE	PR+	6/18	+1.50DS
8SB	5	13	Dev	PCL21D	ECCE	PR+	6/24	-1.00DS
9AC	5	12	Tr2Yr ago Failed CLpc ruptured	ACL19D	ECCE	PR+	6/24	-1.00DS
10AA	4	12	Tr operated in KSA 1-1/2yr	19D	ECCE	PL	CF	Squint Ortho response
11KB	10	11	Tr	PCL21D	ECCE	PR+	6/6	
12AR	12	8	Dev	PCL22D	ECCE	CF	6/12	+1.50DS
13M.A.	3	8	Tr (1yr)	ACL22D	ECCE	PR+	6/0	-1.00DS
14MQ	9	7	Tr	PCL22D	ECCE	HM	6/9	-0.75DS
15AR	12	6	Tr	PCL23D	ECCE	6/60	6/9	-

D-BD and Maxitrol eye drops QID. Follow up was after one week, two weeks four weeks, eight weeks and then 3-6 monthly.

Visual acuity was measured and glasses given after refraction where needed. For posterior capsular thickening YAG - Laser or surgical capsulotomy of 4mm was performed after 3-6 months.

Complications

Peroperative, transient bleeding occurred in cases with posterior synechiae separation. It settled down quickly, Post-operative complications are listed in Table 3. Most significant were fibrinous uveitis - worse in 3 to 5 years old patients. We think it was at least partly due to poor compliance of these smaller kids to topical drops which are difficult to instill and are then promptly squeezed out. The severity of this complication educed tremendously when a mixture of injection Decadron (1mg), Gentacin (20mg) and Depomedrol (20mg)a were given subconjunctivally at the end of operation to provide constant steroids. Visually significant posterior capsular thickening needing capsulotomy occurred in 50% of cases mostly within 6 months of operation (Table 4).d ND-YAG laser capsulotomy was done in cooperative 8-12 years sold and surgically in younger non-cooperative children. Iris-implant synechiae formed in 50% of PCLs and in 25% of ACLs. No case needed an IOL removal or replacement.

Table 2. Present and pre-operative visual acuities of patients with traumatic & nontraumatic uniuocular cataracts.

Visual Acuity	No of patients with each type of cataract			
	Traumatic (10)		Nona-traumatic(5)	
	Preop	VA Current	Preop	VA Current
6/12 or better	-	4	-	2
6/12-6/24	-	3	-	2
6/24-6/60	-	2	-	1
Less than 6/60(10)	-	1	4	-

Table 3: Postoperative intraocular lens complications

Complications	PCLs(11)	ACLs(4)
Fibrinous Uveitis	8	3
Visually significant posterior capsule opacity	5	2
slris-implant synechiae	6	1
Iris-sphincter erosion	4	1
Posterior capture	2	-

Table 4: Secondary surgical procedures

Procedures	PCLs(11)	ACLs(4)
Posterior capsuloty (Surgical/ND-YAG)	5	2
IOL repositioning	-	-
IOL removal/replacement	-	-

Results

The level of pre- and post operative visual acuities is shown in Table 2. Final visual acuity was excellent (VA 6/12 or better) in 40% good (VA 6/24-6/12) in 33% fair (VA 6/60 - 6/24) in 20% and poor (less than 6/60) in 7% -

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most with damaged maculae,, scared cornea and amblyopia, in early age onset cataracts (Table 5). Post operative refraction varied from zero to 1.50 with a similar cylindrical correction mostly. No patient developed diplopia.

Table 5: Final results

Excellent	6/12 better	=40%
Good	6/24 - 6/24	=33%
Fair	6/60 - 6/24	=20%
Poor	Less than 6/60	=7%

Discussion

The management of unocular cataract in children had till recently been a difficult and controversial issue both for the ophthalmologists and parents. For quite sometimes the debate had been as to what will happen (size-wise and related stability) to the IOL as the child's eye will grow; would it become loosened from ciliary sulcus and dangle about/dislocate. According to the embryologist,, the anterior segment (cornea and sclera up to the insertion of recti muscles) attains its near adult size just before the age of two years. It is the posterior segment that enlarges in the remaining years. Refraction is stable (almost to emmetropic level by the age of 4 years or so as far as cornea and lens are concerned - 6. Axial myopia (where bound to occur) (should therefore be no contraindication to IOLs).

The fibrinous uveitis associated with IOLs was almost similar both in ACLs and PCLs apart from the previous trauma to produce cataract and uveitis-now reactivated with exaggerated response. Children do not open their eyes properly for the instillation of drops and rather squeeze them out too quickly for these to be effective enough to combat uveitis. We found that a mixture of short and longer acting steroids (Dacadron-1 mg and Depomedrol 20mg) subconjunctival injection supplied an adequate quantity of steroids to reduce this complication drastically.

The posterior capsular thickening needing a capsulotomy (ND-YAG laser/surgical) remains a problem, but removing maximum of anterior capsule and god polishing of the posterior capsule should reduce its incidence as well.

Correcting unocular aphakes with part-time i.e. 2-4 hours per day with glasses to keep macula stimulated, while occluding good eye is not the ideal solution as the child soon gets fed up with aphakic lens induced distortions and magnifications (Fig. 1,2,3). Extended wear contact lens is an excellent way of correcting aphakia in children, but has proved a failure in our community due to its recurring cost,, maintenance, fitting, climatic and other socioeconomic factors. Epikeratophakia as an alternative to contact lenses and IOLs in young patient gives us a hope. But the initial cost is forbidding at present in our

country, it has been shown that compliance by patient in accepting best practical correction is better in those who have intra-ocular lenses compared to those with the contact lenses^{9,12,11}

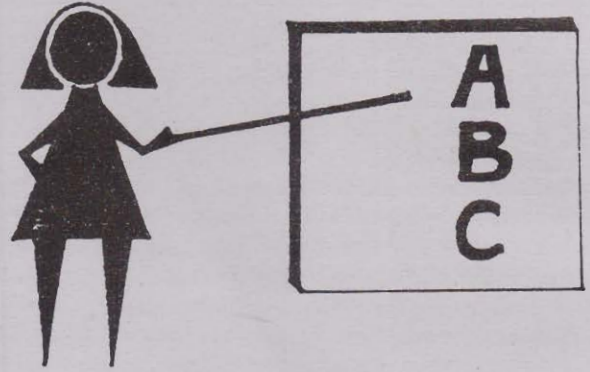


Fig. 1: Phakic vision, binocular (Akhtar)

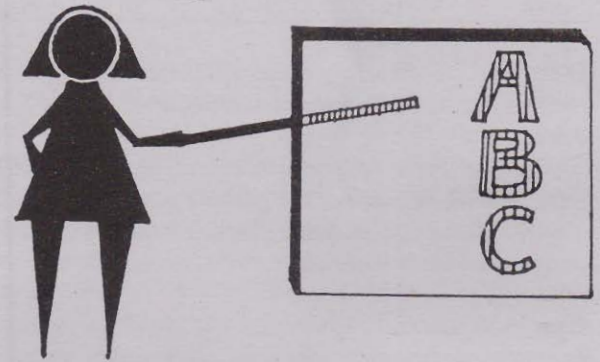


Fig. 2: Unocular aphakic (uncorrected) and phakic eyes used together (Akhtar)

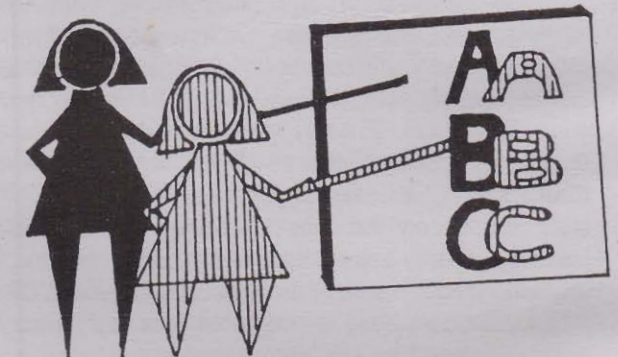


Fig. 3: Diplopia and distortions when using phakic and aphakic (corrected) eyes together (Akhtar).

This study showed that IOLs in children aged 3-12 years is a genuine attempt to restore good vision, binocular in a fair number of cases. One worry remains as to the long term (60-70 years) effect on stability, trauma and biodegradation of the material used for IOLs¹².

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