

Primary Posterior Capsulotomy with Anterior Vitrectomy and Posterior Chamber Lens in Childhood Cataract - A New Approach to the Problem

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To evaluate the safety and efficacy of primary posterior capsulotomy with anterior vitrectomy and IOL implantation in congenital cataract. Fifty case of congenital cataract underwent primary posterior capsulotomy with anterior vitrectomy and IOL implantation during a period of 10 months in the Institute of Ophthalmology, Mayo Hospital, Lahore. Postoperative follow-up ranges from 6 to 12 months. A dramatic fall in postoperative uveitis were recorded in majority of cases. At mean follow-up period of 5 weeks all eyes had a clear central visual area. Primary posterior capsulotomy with anterior vitrectomy and IOL implantation appeared to successfully prevent secondary opacification of visual axis by after cataract.

Key words. Primary capsulotomy, anterior vitrectomy

Routine extracapsular cataract extraction with or without IOL implantation in paediatric eyes is associated with various problems such as uveitis, and postoperative opacification may lead to permanent visual disability. A thick membranous after cataract is formed in children that may necessitate a second operation in the form of a membranectomy and anterior vitrectomy.

Primary posterior capsulotomy with anterior vitrectomy is the latest trend in treatment of these complications in the management of childhood cataract.

Patients and methods

Fifty eyes with uncomplicated congenital cataract unilateral and bilateral were included in this study. Complicated, traumatic or metabolic cataract were not included. In all 32 children were operated. Of these 18 had bilateral cataract and 14 unioocular cataract, with total of 50 eyes. Of these 27 patients were of autosomal dominant variety with other family members being effected. Rest were of autosomal recessive or X linked recessive variety. Children included were aged between 3 months to 4 years. Both sexes were included.

All patients had a thorough ocular and systemic examination.

Technique

Slit lamp examination and indirect ophthalmoscopy where possible were done. Pre and postoperative visual acuities were noted where possible. Systemic problems were ruled out by a paediatrician. General anaesthesia was given in all patients.

Aseptic techniques were strictly followed. In bilateral cataract only one eye at one time was operated for the fear of bilateral endophthalmitis. Interval between two eyes was at least one week. During this period operated eyes were kept covered to prevent amblyopia in second eye.

A routine extracapsular extraction with a capsulorhexis 5-6 mm in diameter was performed (Fig.1). Lens matter aspiration was performed with a Simcoe canula; Phacoemulsifications was used in two eyes¹. A

primary posterior capsulotomy was performed using cystitome in 35 eyes and capsulorhexis forceps in 12 eyes. Ocutome was used in 3 eyes. Anterior vitrectomy 5mm deep to posterior capsule and 2mm around the capsulorhexis margin was performed through anterior approach in 45 cases and pars plana approach in 5 cases² (Fig.2,3). IOL was routinely inserted in all patients above one year of age³ with or without capsular catch (Fig.4)⁴ A thorough wash of anterior and posterior segment was performed at the end of the procedure to washout viscoelastic material. Postoperative systemic antibiotic was started from the day of surgery. On post operative day a local steroid QID and mydriatic BID were started for at least 4-6 weeks.

Slit lamp examination was done where possible in postoperative follow-up. Patients were checked for corneal clarity, aqueous-flare and cells, synechiae formation and fundal glow. Follow-up period extended at least upto 6 months. Any synechiae formation, precipitation on IOL, posterior capsular thickening were noted. Patients were followed at intervals of 2 weeks, four weeks and four months.

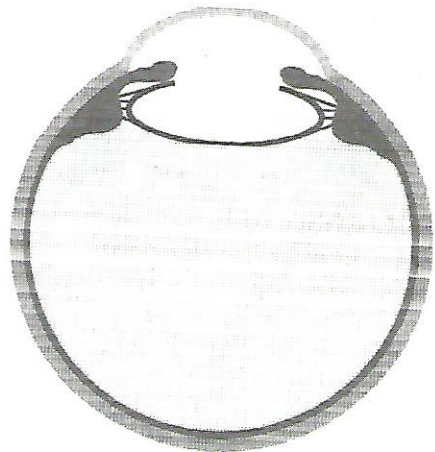


Fig.1 ECCE with Capsulorhexia

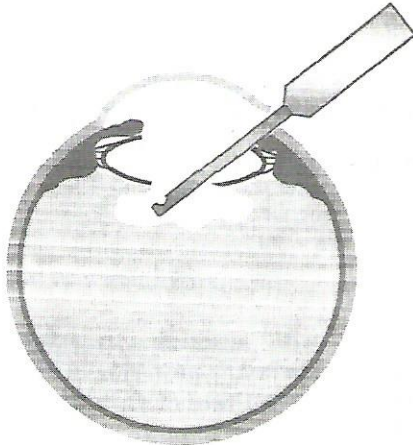


Fig.2. Anterior vitrectomy anterior approach

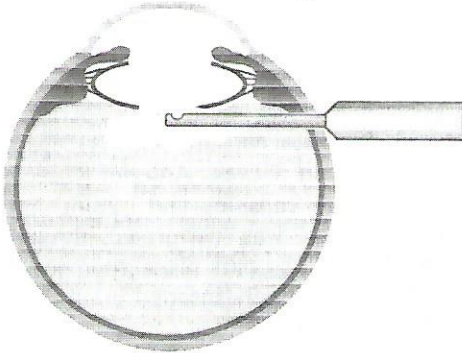


Fig. 3. Anterior vitrectomy with pars plana approach

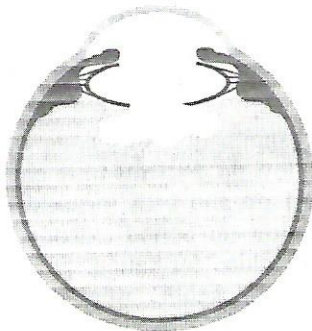


Fig 4. Primary posterior capsulotomy with anterior vitrectomy completed.

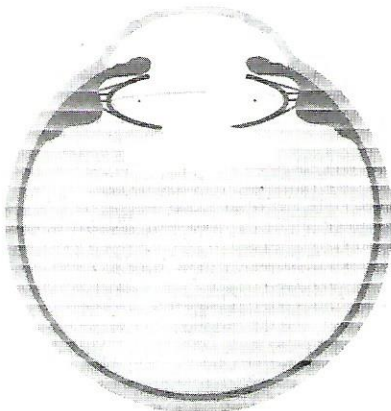


Fig.5 IOL implace

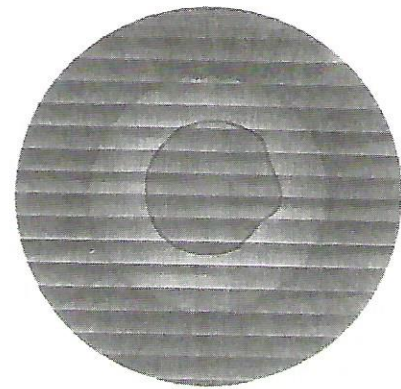


Fig. 6. Posterior capsulotomy against fundal glow

Results

A dramatic fall in postoperative uveitis was recorded in majority of patients. Mild flare on postoperative day was noted in nearly all patients. Cells were seen in grade I-III in 15 cases. Only five patients developed significant iritis with formation of synechiae⁵.

Of these only one patient developed extensive reaction which was severe enough to mask fundal glow. This cleared-up with local and systemic steroids. Corneal striate was noted in 15 patients (30%) which was not severe and cleared up with treatment.

Table:1 Age Distribution

Age	No. of Eyes	%age
< 6 months	13	26
6 m to 1 y	14	28
1-3 y	12	24
4-6 y	4	8
7-9 y	5	10
> 9 y	2	4
Total	50	100

In follow-up period seventeen patients showed precipitates on IOL between 2-4 weeks time but these stabilised with intensive local steroid treatment.

Posterior capsular thickening was noted invariably in all the patients, but the thickening stopped at the posterior capsulotomy margin. Posterior capsular catch of intraocular lens made no difference in this regards. Significant visual improvement was achieved in patients with bilateral cataract specially in first eye. Unocular procedures were found to be associated with dense amblyopia. Postoperative visual rehabilitation was achieved by prescribing glasses in majority of cases. Contact lens was restricted to three patients.

Snellen's charts were used where possible to assess visual improvement. Visual evoked response was used in small children. Visual activity in first eye of bilateral patients achieved ranged from 6/6-6/60. Second eyes vision achieved ranged from 6/18-1/60. In unocular cataracts dense amblyopia was found with best vision attained at 1/60. Occlusion therapy was routinely used to improve the vision.

Table 2: Postoperative complications

Complication	No. of eyes	%age
Corneal striate	15	30
Aqueous flare + - ++	50	100
Cells in AC Grade I-III	15	30
Post synechiae formation	5	10
Exudative reaction	1	2

Discussion

Management of childhood cataract have always been a nightmare for the eye surgeon. Extracapsular extraction has invariably been followed by a dense after cataract in few weeks time, thereby necessitating a second operation.⁶ There has also been a very high rate of significant anterior uveitis with exudative reaction. Intracapsular extraction has the risk of secondary glaucoma and retinal detachment and therefore, has long been discarded. Lensectomy and anterior vitrectomy have been used in recent past. Insertion of intraocular lens was not possible in these patients. A recent change in approach to a childhood cataract has dramatically changed the outcome of the procedure.

In addition to normal extracapsular extraction a routine posterior capsulotomy is done. Anterior vitreous just behind the capsule is removed. This has a dual advantage of not allowing lens fibers to grow on its surface while at the same time the posterior capsule falls back. The depth of anterior chamber is increased thereby preventing rubbing of intraocular lens to the iris. Postoperative uveitis is thereby significantly reduced. Lens fibers in after cataract do not grow beyond margin of posterior capsulotomy. A necessity of second surgery thereby being averted. The peripheral capsules both anterior and posterior firmly hold intraocular lens in place.⁷ Normal child activities being restored.

We tend to correct vision to myopic side so that normal daily functions are restored without glasses. Bifocal glasses for reading and distance are normally prescribed. The procedure has transformed the management of childhood cataract both surgically and functionally. Now the surgeons in our department are routinely adopting this procedure. It is safely recommended that all eye surgeons adopt this procedure.

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