



## Pediatric cataract surgery-outcomes and complications.

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### ABSTRACT

**Background:** Childhood cataract management remains a challenge. This study aims at evaluating clinically the outcomes and complications following pediatric cataract surgery.

**Methods:** In a retrospective and prospective observational study, we reviewed clinical records of 30 patients who are already operated or admitted pediatric cataract patients who were operated for surgery during the period from March 2014 to May 2015 with a follow up of at least 6 months.

**Results:** The most common associated features were, amblyopia (23%) strabismus (23%) and corneal opacity or scar (20%). Most common postoperative complications were PCO and anterior uveitis and incidence was equal (59%). Post-operative BCVA 6/12 or better in traumatic cataract patients (69%) followed by bilateral developmental cataract patients (22%) and least in unilateral development patients (12.5%).

**Conclusion:** We found the most common post-operative complications were PCO and anterior uveitis.

**KEYWORDS :** Pediatric cataract surgery complications.

### Background

Childhood blindness is a priority of "vision 2020-Right to sight" a global initiative for the elimination of avoidable blindness.<sup>1</sup> WHO estimates that globally of the 1.4 million blind children, cataract accounts for 12% of the causes.<sup>2</sup> In the developing world blindness in childhood due to cataract is estimated to be 1.5/1,000, ten times higher than the developed world.<sup>3</sup>

Blind children have a life time of blindness ahead, which affects their overall development and influences their education, employment and social life. Thus restoring the sight of one child blind from cataract may be equivalent to restoring the sight of 10 adults.<sup>1</sup>

The main aim of treatment is not only to restore useful vision in the eye affected, but also aim to restore binocular single vision. Early diagnosis and timely management prevents visual deprivation from amblyopia and development of strabismus.

Childhood cataract management remains a challenge. Good visual outcome depends on doing the surgery as early as possible.<sup>4</sup> Increased intraoperative difficulties, postoperative inflammation, changing refractive state of the eye and tendency to develop amblyopia all add to the difficulty in achieving good visual outcome.<sup>1</sup>

Keeping these aspects in view, this study has been undertaken and the present work aims at evaluating clinically the outcomes and complications following pediatric cataract surgery.

### Methods

This study was a retrospective and prospective observational study. The study was conducted in the Department of Ophthalmology, at a tertiary care center in a metropolis catering every income group.

The material for the present study was drawn from patients attending the out- patient Department of Ophthalmology at the hospital who are already operated and admitted pediatric cataract patients who were operated for surgery during the period from

March 2014 to May 2015 with a follow up of at least 6 months.

Thirty cases of pediatric cataract were included in the study. Data of operated pediatric cataract patients and the patients attending the outpatient department who are already operated were categorized into etiology, age, sex and analyzed. Case number 1-20 were retrospective and 21-30 were prospective. All the cases were studied in the following manner

- Patients were selected as per inclusion and exclusion criteria.
- Written and informed consent and assent from each patient was taken after explaining the study to parents.
- Patients with evidence of pediatric cataract as defined in inclusion criteria were enrolled in study voluntarily from inpatient and outpatient department.
- Detailed clinical history, clinical examination, detailed ocular examination, biochemical investigations, imaging study, specialized tests were noted.

### INCLUSION CRITERIA:

- Children above 2 years of age and below 12 years with pediatric cataract.
- Patients operated for pediatric cataract from March 2014 to May 2015
- Patients whose parents are willing to give the consent for the study.

### EXCLUSION CRITERIA:

- Cataracts with vitreous hemorrhage or exudates in vitreous.
- Presence of ocular infections (conjunctivitis, scleritis, blepharitis).
- Cataracts with ruptured posterior capsule
- Nasolacrimal duct obstruction
- Co-existent ocular abnormalities
- Glaucoma
- Uveitis
- Previous intra-ocular surgery
- Parents unable to comply with post-operative optical

correction and regular follow-up visits.

**Results**

Total of 39 eyes of 30 patients were enrolled in the study and operated on by same surgeon. 20 patients (67%) were males and 10 patients (33%) were females. Majority of the patients were aged between 10-12 years at presentation. Unilateral cataracts comprised 70% of the cases and 30% of the cases were bilateral. 23% were idiopathic, 20% due to hereditary. Rubella accounted for 13% of the cases. In the traumatic group, penetrating trauma was more common (24%) than blunt trauma (20%).

**Table 1 showing characteristics of 30 cataract patients.**

Characteristic	Number	Percentage (%)
<b>Gender</b>	20	67
Male	10	33
Female		
<b>Age (yrs)</b>	0	0
<4yrs	8	26
4-8 yrs	22	74
8-12 yrs		
<b>Laterality of cataract</b>	9	30
Bilateral	21	70
Unilateral		
<b>Etiology of cataract</b>	6	20
Hereditary	4	13
Rubella	6	20
Blunt trauma	7	24
Penetrating trauma	7	23
Idiopathic		

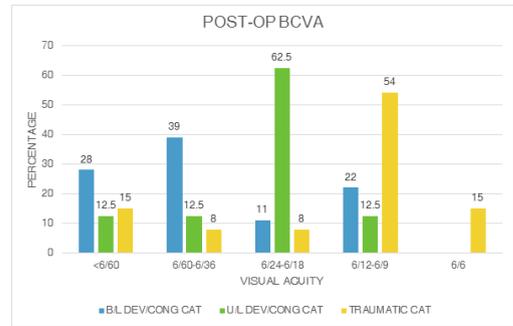
As shown in the table 2, about 71% of the eyes underwent cataract aspiration with PCIOL and 13% of eyes underwent cataract aspiration with PCC with anterior vitrectomy (AV) with PCIOL and 16% of eyes underwent cataract aspiration with surgical aphakia. the most common associated features were, amblyopia (23%) strabismus (23%) and corneal opacity or scar (20%). Most common postoperative complications were PCO and anterior uveitis and incidence was equal (59%).

**Table 2 showing surgical procedure and post operative complications of 30 cataract patients.**

Characteristic	Number	Percentage (%)
<b>Surgical procedure</b>	28	71
CAT.ASP.+PCIOL	5	13
CAT.ASP.+PPC+AV+P CIOL	6	16
CAT-ASP+SURGICAL APHAKIA		
<b>Associated features</b>	2	7
Nystagmus	7	23
Strabismus	3	10
Microphthalmia	3	10
TORCH	6	20
Corneal opacity or scar	7	23
Amblyopia		
<b>Post-operative complication</b>	23	59
PCO	23	59
Anterior uveitis	1	2.5
Posterior synechiae	2	5
Macular edema	1	2.5
Vitreous loss	1	2.5
PCT	1	2.5
Glaucoma		
Retinal detachment		

FIGURE 1 SHOWS that post-operative BCVA 6/12 or better in traumatic cataract patients (69%) followed by bilateral develop-

mental cataract patients (22%) and least in unilateral development patients (12.5)



**Figure 1 showing the post operative BCVA in cataract patients.**

**Discussion**

The evolving treatment and improved surgical technique, availability of better IOLs, a better understanding of the amblyogenic process and more appropriate rehabilitation methods have transformed the nearly hopeless condition of pediatric cataract into a therapeutically rewarding experience.<sup>5</sup>

The ideal surgical intervention for a pediatric cataract should accomplish restoration of a clear visual axis, minimal operative and postoperative complications, minimal dependence on familial compliance with postoperative regime, careful control of refractive outcome and long term stable results.

The aim of cataract surgery in children is to enable the acquisition or the restoration of a normal visual function. Visual outcome depends on the age of onset, type of cataract, laterality, method of optical rehabilitation, amblyopia therapy, other associated features and post-operative complications.

Traditionally, aphakic optical correction in children has been undertaken with spectacles and contact lenses. These external devices carry inherent disadvantages. Spectacles generate optical aberrations and are cosmetically unappealing. They are not suitable for unilateral aphakia because of high degree of aniseikonia they induce. Contact lenses may be used in patients with unilateral or bilateral aphakia, but they require diligent care on part of parents as well as patient.<sup>6</sup>

An alternative to external optical correction is intraocular lens implantation. Implantation of IOL in pediatric patients remains a controversial issue despite refinements in surgical technique and encouraging visual results reported in the past.

In our study, visual outcome after surgery and the various causes of visual impairment following the surgery was assessed in 39 eyes of 30 patients below the age of 12 years of varied etiology. The children were distributed in the age groups of <2 years, 2-4 years, 4-6 years, 6-8 years, 8-10 years and 10-12 years. 57% of the children fell into the age group of 10-12 years. No cases were reported in <4 years age group. This could probably be due to delay at presentation and unawareness of parents towards the disease.

This study showed high incidence in males (67%) and male to female ratio was 2:1.

In a study conducted by Vijaylaxmi there is a male predominance and bilateral developmental cataracts were four times more common than unilateral developmental cataracts.<sup>7</sup> This is comparable to our study.

In our study, 56% of patients presented with developmental cataract, of which 30% were bilateral and 26% were unilateral. The remaining 44% patients presented with traumatic cataract.

In our study, surgical procedures were grouped into three groups.

Thus, 71% eyes underwent Cataract aspiration without PPC with PCIOL implantation (Group 1), 13% eyes underwent Cataract aspiration with PPC with anterior vitrectomy with PCIOL implantation (Group 2) and 16% eyes underwent cataract aspiration with surgical aphakia. Visual outcome was good in the few cases where PPC was resorted to. However the number of cases is too small to conclude upon.

In the study, 9 (69%) of 13 patients with traumatic cataract had postoperative BCVA of 6/12 or better. In patients with bilateral developmental cataract 4 of 18 patients (22%) achieved postoperative BCVA of 6/12 or better. Visual outcome was poor in patients with unilateral developmental cataract where only one of 8 patients (12.5%) achieved post-operative BCVA of 6/12 or better, in view of obstinate amblyopia.

Brady K.M. and associates showed that 70% of traumatic eyes achieved postoperative BCVA of 20/40 (6/12) or better. In bilateral cataracts, 60% achieved BCVA 6/12 better and in unilateral only 20% achieved postoperative BCVA of 6/12 or better.<sup>6</sup> This is comparable to our study.

A study was conducted by Eckstein M and associates on 52 children between age 2-10 years with traumatic cataract. They showed that there were no serious operative complications and 35 eyes (67%) of 52 patients had BCVA of 6/12 or better.<sup>6</sup>

This is comparable to our study in traumatic cataract group.

Thus visual outcome was good in traumatic cataracts followed by bilateral development cataracts and poor in unilateral developmental cataract. In our study, visual outcome in the traumatic cases was dependent upon the size and extent of traumatic lesion. Poor visual outcome in children with developmental cataract was related to late age of presentation, unilateral cataract, deep amblyopia and poor potential for binocular single vision.

## Conclusion

In conclusion, we found the most common post-operative complications were PCO and anterior uveitis.

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