

Visual Outcome After Pediatric Cataract Surgery In A Tertiary Eye Care Hospital

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Background: Paediatric cataract though being an avoidable cause of blindness, if not intervened timely, presents an enormous problem in terms of human morbidity, economic loss and social burden.

Aims and objective: The objective of this study was to observe the visual outcome after developmental cataract surgery.

Materials and Methods: A prospective study was conducted in department of pediatric ophthalmology at sankara eye care hospital. The study was conducted for nine months period from february 2019 to september 2019. All the patients of developmental cataract up to age of 15 years were included in the study. The patients underwent either a) lens aspiration + PCIOL implantation b) lens aspiration + PPC+Anterior Vitrectomy+PCIOL implantation depending upon age of patient. Post surgery patients were examined on day 1, 1 week and 1 month period. Glass prescription was done at the end of 1 month post operative period.

Results: A total of 50 eyes of 31 children were included in the study. The mean age was 7.83 ± 4.07 years. Male participants were 24 (77%) and 7 (23%) were female participants. post-operative BCVA of 6/6 - 6/18 was seen in 27 (54%) eyes, 6/60 < 6/18 was seen in 9 (18%) of eyes and < 6/60 in 1(2%) eye. In 13 (26%) of eyes, fixation and follow up of light was seen. There was a statistically significant improvement in post surgical BCVA (p value<0.001).

Conclusion: Our study demonstrates that good visual outcome following pediatric cataract surgery can be achieved by early diagnosis, timely intervention, skill of the surgeon and regular followup in the post-operative period. The tendency to develop posterior capsular opacification in the post-operative period is less likely to occur with lens aspiration +PPC+ Anterior Vitrectomy+PCIOL implantation when compared to lens aspiration+ PCIOL implantation.

Abstract

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Keywords: Developmental Cataract, Primary Posterior Capsulorrhexis, Posterior Chamber Intraocular Lens.

Introduction

Pediatric cataract is one of the major causes of blindness in children, being responsible for 7.4-15.3% of childhood blindness.^{1,2,3} The prevalence of pediatric cataract is between 1 and 15/10000 children.^{4,5}

Visual impairment at an early age can hamper education, personality development, and deprive the career options.⁶ Restoring the vision of one child from a cataract may be equivalent to restoring the sight of ten elderly adults.⁷

Pediatric cataract surgery in children differs from that of adults in that they have lower corneal and scleral rigidity, elastic anterior capsule, soft lens, and formed vitreous.

Materials And Methods

A prospective study was conducted at Sankara eye hospital throughout nine months period from February 2019 to September 2019. All children of developmental cataracts up to the age of 15 years were included in the study. Exclusion criteria were patients > 15 years, Cataract associated with systemic abnormalities, those who are not willing to study. After obtaining the informed consent from parents, a pre-anaesthetic check-up was done. All surgeries were performed by a single pediatric ophthalmologist under LA/GA.

In each follow-up visit detailed anterior and posterior segment examination was done. Visual acuity measurement was done with a standard protocol. Any complications in the

postop period were treated accordingly. Glass prescription was done at the end of 1 month. Amblyopia was managed by either patching. Data were entered in IBM SPSS version 22 and were used for statistical analysis. P-value (<0.05) was considered statistically significant.

Results

In this study, the mean age of the study population was 7.83 ± 4.07 years with a range of 0.58 years to 14 years. 2 (7%) were less than 3 years, 12(38%) were 3 to 6 years, 5 (17%) were 7 to 9 years, 6(19%) were 10 to 12 years and 6 (19%) were greater than 12 years of age. (Table 1). There were 24 (77%) males and 7 (23%) females included in the study (Figure 1). There were 19 (61.3%) cases of bilateral cataract and 12 (38.7%) cases were unilateral cataract (Figure 2). Among the study population, 1 (2%) were nuclear cataract, 9 (18%) were posterior subcapsular cataract, 15 (30%) were total cataract

Table 1: Descriptive analysis of age in study population (N=31)

Age (years)	Frequency	Percentage
<3 years	2	7
3-6 years	12	38
7-9 years	5	17
10-12 years	6	19
>12 years	6	19
Total	31	100

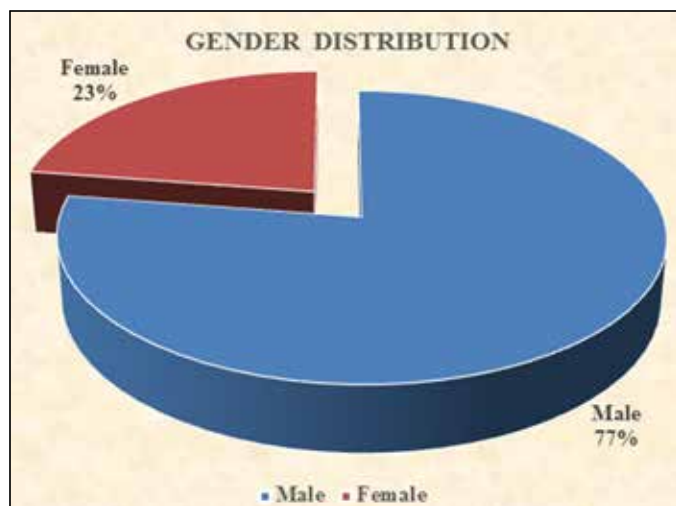


Figure 1: Pie chart of gender in study population

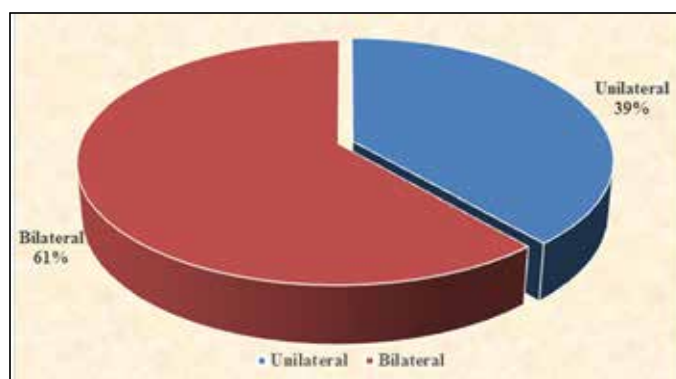


Figure 2: Pie chart showing unilateral and bilateral involvement of cataract in children

and 25(50%) were zonular cataract. The most common type was the zonular cataract (Table 2). 12 (24%) eyes of children had lens aspiration with PCIOL implantation, 38 (76%) eyes of children had lens aspiration with primary posterior capsulorrhexis with anterior vitrectomy with PCIOL implantation.

Among the study population, 4 (33.33%) out of 12 developed PCO following lens aspiration with PCIOL implantation, none of the cases developed PCO who undergone lens aspiration with primary posterior capsulorrhexis with anterior vitrectomy with PCIOL implantation at the end of 1 month post-op period.

In our study, postoperative BCVA of 6/6-6/18 was found in 54% of cases. The differences in the BCVA log mar score

Table 2 : Descriptive analysis of lens status in the study population (N=50)

Type of cataract	Frequency	Percentage
Nuclear cataract	1	2%
Pssc	9	18%
Total cataract	15	30%
Zonular cataract	25	50%
Total	50	100

Table 3: Comparison of mean BCVA log mar in Pre-operative and post-operative follow-up periods (N=35)

Follow-up periods	Log mar BCVA (Mean± STD)	Mean Difference	95% CI of mean difference		P-value
			Lower	Upper	
Pre-operative	1.23 ± 0.87				
Day 1	0.42 ± 0.3	0.81	0.51	1.11	<0.001
1st week	0.38 ± 0.31	0.85	0.54	1.15	<0.001
1st month	0.36 ± 0.31	0.86	0.56	1.17	<0.001

*The differences in the BCVA log mar score at day 1, 1st week and 1st months follow up period with baseline value (pre-operative) were statistically significant (P value <0.001).

at day 1, 1st week, and 1st months follow up period with baseline value (pre-operative) were statistically significant (P-value <0.001) (Table 3).

Discussion

There are few studies to demonstrate the visual outcome after developmental cataract surgery in children. Our study demonstrates the visual outcome, intraoperative, postoperative complications, and causes of decreased vision in developmental cataract following pediatric cataract surgery.

In our study, the mean age of the study population was 7.83±4.07 years with a range of 0.58 years to 14 years. Our findings were similar to Rishikesh Nikhil et al⁸ who had a mean age of 7.6±4.2 years with a range of 2 months to 16 years of age.

Our study included significantly more number of males 24(77.41%) than females 7(22.58%). This is similar to a study conducted by Khandekar et al⁹ they attributed this finding to be less access to eye care facilities available to females in India. In our study 19 (61%) children had bilateral cataracts and 12 (39%) children had unilateral cataracts. This indicates that there was no significant difference in the occurrence of unilateral and bilateral cataracts. This is discordant with other studies Rishikesh Nikhil et al, in their study unilateral to the bilateral occurrence was 3:1. Khandekar et al¹⁰ in their study unilateral to the bilateral occurrence were 6:1. This can be attributed mainly because of the exclusion of traumatic cataracts in our study.

In our study, the most common type of pediatric cataract was zonular 25(50%), followed by total cataract 15(30%), posterior sub capsular cataract 9(18%), nuclear cataract 1(2%). This is by the study conducted by anjita hirachan et al.¹¹ In our study, 38 eyes with pediatric cataract underwent lens aspiration with primary posterior capsulorrhexis with anterior vitrectomy with PCIOL implantation; these patients didn't develop PCO in the post-operative period. 12 eyes with

pediatric cataract underwent lens aspiration with PCIOL implantation. out of the 12, 4(33.33%) developed PCO in the post-operative period. In our study, it was found that 84.6% of patients undergoing surgery for bilateral cataract had BCVA of 6/6 – 6/18 and 55.55% of unilateral cataract cases have post-op BCVA between 6/6 – 6/18. This is by the study conducted by Aditi ghodke et al,¹² they found that 66.7% of patients undergoing surgery for bilateral cataract achieved a post-op BCVA between 6/6-6/12 as compared to 38.5% in unilateral cases.

In our study, postoperative BCVA of 6/6-6/18 was found in 54% of cases. This result is by the study conducted by Anjita hirachan et al they found that 61.1% had final BCVA of 6/6-6/18.

In our study, none of the patients developed an intraoperative complication. The most common early postoperative complication in our study was membrane formation which was treated with topical and systemic steroids accordingly. A similar result was obtained by other Anjita hirachan et al.

In our study, posterior capsular opacification is the most common postoperative complication after pediatric cataract surgery. A similar result was found in Rishikesh Nikhil et al. In our study none of the cases developed posterior capsular opacification in the postoperative period who underwent lens aspiration with primary posterior capsulorrhexis with anterior vitrectomy with pciol implantation.

In our study, the causes of decreased vision at the end of 1 month were due to posterior capsular opacification and amblyopia. Amblyopia was managed by patching therapy. PCO was managed by Nd-YAG capsulotomy.

Conclusion

Our study demonstrates that good visual outcomes following pediatric cataract surgery can be achieved by early diagnosis, timely intervention, the skill of the surgeon, and regular followup in the post-operative period.

The tendency to develop posterior capsular opacification in the post-operative period is less likely to occur with lens aspiration with primary posterior capsulorrhexis with anterior vitrectomy with PCIOL implantation when compared to lens aspiration with pciol implantation.

In pediatric cataract cases, there can be a refractory surprise in the post-operative period, probably because of the wrong measurement, as the children will be uncooperative for accurate measurement or under the anaesthetic effect.

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