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**Original Research Paper** 

Ophthalmology

# A STUDY ON PEDIATRIC CATARACT AND ITS VISUAL OUTCOME AFTER SURGERY AMONG PATIENTS ADMITTED IN TERTIARY HOSPITAL

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ABSTRACT Purpose: The aim of this study was to determine the cause and risk factor and cmplication associated with pediatric cataract ,mean visual outcome after surgery Material Method-This is longitudnal observational study, sample size was130 age group included were birth to 14 years with regular attendance of post operative follow up for at least 3 month after surgery. Result-Male presented more than female ,majority from local and near by city and rural area from low socioeconomic class,. Mean visual outcome was better in male, also better in bilateral cataract than unilateral . Traumatic cataract had better visual outcome .CONCLUSION-Community motivation to receive eye care services will improve the uptake of pediatric cataract surgery in the population. Role of community health workerNGO screening programme to identify childhood cataract at the earliest. Early surgical intervention give better result.

## **KEYWORDS**:

INTRODUCTION—Globally more than 200,000 children are blind from unoperated cataract ,from ocular anomalies associated with cataract and due to complication of cataract surgery also.One million of them live in Asia .Many more children suffer cataract which involve visual axis that may slowly progress over time increasing the visual difficulties as the child grow Cataract is the most important cause of curable blindness .20,000 to 40,000 children with developmental bilateral cataract are born every year The cumulative risk of cataract during the growing year is as high as 1 per 1000.Prevalence of childhood cataract has been reported as 1 to 15 cases in 10,000 children in developing countries .Cataract is responsible for about 10% blindness among children in India. Foster et al stated that "Restoring the sight of one child blind from cataract may be equivalent to restoring the sight of 10 elderly. "Bilateral cataract is the most common cause of treatable blindness & unilateral congenital cataract is an important cause of amblyopia and strabismus .In recent decade due to modern surgical technique and improved intraocular lenses cataract surgery in children has changed and improved ,Also better knowledge of irreversible amblyopia and timely intervention has made an important contribution .The WHO global initiatian for elimination of avoidable blindness by the year 2020 has identifie the control of childhood blindness as priority The burden of pediatric cataract is 10 time higher in developing country A significant less number of cataract surgery is due to shortage of trained ,anaesthetist ,advanced monitoring instrument and vitrectomy machine.Most of the cases are referral because there are lack of anaesthetist and fully equipped o.t in primary health center. The study institute pt. jawaharlal Nehru memorial medical college Raipur chattisgarh department of ophthalmology has been concerned to fight blindness since established ,delivering tertiary care services to chattisgarh and nearby states.

**Materal & Method-** This longitudinal observational study was performed at the department of ophthalmology ,pt.JNM medical college and Dr.Bhim Rao Ambedkar hospital Raipur,Chagttisgarh from january 2015 to june 2016.All walk in pediatric cataract patients presenting in opd and later admitteed for cataract surgery were included ,130 patient were taken for study ,age groupwas birth to 14 years ,follow up done for at least 3 month after surgery.Vision of each eye was assessed with the help of various visual acuity charts depending on the child's age and the level of intelligence,Snellen,s chart for school going children,Snellen,s picture chart for pre school children (3-5),fixation refelex used for infants.finger counting done at a distance of 3,2 and 1meter in children unable to recognize symbole.Refraction was done where ever possible to check improvement in vision. Complete anterior segment examination was done with the add of slitlamp.Ocular alignment was recorded using Hirschberg corneal reflex test.Cornea was examined for the presence of congenital abnormalties such as microcornea any corneal opacity and its relation with visual axis presence of any lamellar laceration, full thickness corneal tear and wound of entry in case of trauma.The type and dencity of opacification of lens were noted along with presence of any subluxation, dislocation or zonular dehiscenc.

Posterior segment examination was done either using +90 D lens in conjunction with slit lamp or indirect ophthalmoscopy using +20 D lens.Ultrassound B scan was done in all cases where posterior segment examination was not possible by either of the above method mature cataract and in all cases of traumatic cataract. Keretometey reading and Ascan done for IOL power calculation in cooperative children. In small and uncooperative patient biometery was done under GA.The standard pediatric surgery done in the institute was cataract extraction /aspiration with posterior chamber IOL, implantation. Primary posterior capsulor rhexis with anterior vitrectomy was done in all children <5 years of age and in children who were considered uncooperative for subsequent laser capsulotomy.IOL implantation was not done in children < 2 years of age, in those cases only cataract extraction /aspiration with PPC+AV was done .In cases of traumatic cataract ,cataract extraction was combined with synechiolysis and iridectomy was performed if needed ,Coexisting corneal tear repair was done in same sitting .All children who underwent surgery were examined in slitlamp nextday.Visual acuity was assessed appropriately, and recorded.

In selected cases [those with excessive iris tissue handling,traumatic aetiology ,cases where vitrectomy was done] oral steroid were started from the day of surgery ,oral antibiotic and anti inflammatory were also given.Tropical regimen consisted of steroid antibiotic combination eyedrop 1 hrly (1% prednisolone acetate with 0.5% moxifloxacin), alonge with mydiatric agent twice or thrice daily.Oral steroid were tapered over 2 week duration ,tapering of tropical steroid was done over a period of 8 week .Mydiatric agents were stopped after 1 week.The follow up was scheduled on day 1 ,day 3 ,1st week 3rd week 6thweek ,12th weeks postsurgery.In all

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follow up visits uncorrected visual acuity was noted and through slitlamp examination was carried out.Complication ,if any were noted and appropriately managed.At 2nd follow up, refraction was carried out and best corrected visual acuity both for near and distant was determined.Spectacle prescription was given with appropriate near addition.Postoperative amblyopia treatment were given wherever applicable,in the form of 6 hour patching at home.Near task were given to the child during that time span for at least an hour.

Result-The present study was 1.5 year longitudinal study which has reported 21,564 opd patients ,12876 males and 8688 females. Among all ocular ailments we observed approximately 500 children with cataract at eye opd out of which 170 were admitted ,130 children were evaluated and managed surgically ,124 of them came for regular follow up up to 3 month. Conclusively this was found that overall incidence of paediatric cataract in male(04.42%) was higher than female.69.23% were male and 30.76% were female .Among various age group 6.15% were aged <1 year.13.84% belong to 1 to 3.5 age group, 35.38% patients were in the age group of 4 to 8 .44.62% patients aged more than 8 years .The youngest child operated was 10 days old and oldest child was aging 14 year. The study reported clustering of cases from Raipur city (18.46%) and nearby district of Raipur(Balodabazar16.15%,Durg15.38%).Least number of cases was reorted from far district, tribal district of chattisgarh Koriya 00.76%, Jashpur 00.76%, Kanker o5.38%.

Among various religious group maximum number of cases were from hindu community (81.54%).Christian community reported 2nd only to Hindu.Study reported highest number of surgeries done among rural population(60.7%) than urban (39.23%).More than half (58.46%) of patients were illiterate.26.15% has studied up to middle school, only 15.38% has educated up to high school and above.Most of the pediatric cataract patients were belong to low socioeconomic class(65.38%s).In this study positive family history of cataract among first degree relative(14.61%).Positive history of consanguinity found in 14.6% cases.

The present study reported most common mode of presentation was leukocoria 50.76%, lack of visual attention 27.69%, and deviation of eye 21.53%. Mean age of cataract surgery was 7.134 years with SD 0.356 .The youngest operated child was 10 days old and maximam age was 14 years. Mean visual outcome after 3 month follow up was 0.834(Snellens 6/60-6/36).66.97% were blind preoperatively,11.55% has severe visual impairment ,21.53% has moderate visual impairment. After cataract surgery 62.90% patients regain normal vision.Mean visual outcome in traumatic cataract inall pediatric age group is better 0.707 and in non traumatic group was 0.105. In terms of presence of associated ocular co morbidity and visual outcome .with ocular co morbidity mean visual outcomewas1.8859(2/60-3/60)and, without co-morbidity was 0.534(6/24-6/18). In this study comparision made between laterity of pediatric cataract and mean postop BCVA.It was0.717 in log mar unit for unilateral cataract and 0.89 for bilateral cataract.Bilateral cataract cataract did fairly well in terms of visual outcome in our study.

In this study27 patient out of 130 had congenital cataract that underwent surgery .6 has unilateral cataract and 21 had bilateral cataract .3 did,nt came for followup.Mean age of unilateral presentation earlier that was 01.63years and for bilateral cataract it was 01.45.The mean age of cataract surgery for unilateral congenital cataract was 02.40years and for bilateral congenital cataract it was 02.81 years.The visual outcome in unilateral cataract after 3 month follow up is better than bilateral congenital cataract

In this study most common intraoperative complication was retained cortical matte]r[16.09%] followed by pc rent with vitreous loss[11.50%].50% of surgeries went uneventful .Anterior chamber reaction was most common early post operative complication(63.07%) .In the present study the mean visual outcome was compared among major morphologies.It was observed that meanBCVA at 3 month follow up was best in lamellarcataract and blue dot cataract 0.874.Other mixed

morphologies had poor.

# 1. Proportion of children with visual acuity grading before and after surgery-





S.No.	Etiology	Frequency	Mean post op BCVA at 3 month follow up	
			Log MAR	Snellen's
1.	Traumatic	28	0.707	6/36-6/24
2.	Non traumatic	96	0.863	6/60-6/36
3.	Total	124	(Attrition 06	5)

3. Ocular co-morbidity and mean visual outcome-







5. Congenital cataract laterality and mean visual outcome-



6. Visual outcome in congenital cataract according to the age of intervention-

S. No.	Age of surgery	Frequency	Mean post op BCVA at 3 month follow up	
			Log MAR	Snellen's
1.	<3 month	03	1.986	CF close to face
2.	3 month- 1 year	13	1.1	5/60-6/60
3.	>1 year	11	1.678	2/60-CF close to face
4.	Total	27	Attrition 03	

7. Morphology of cataract and mean visual outcome (log MAR)-



Discussion- In this study incidence among male is higher than female, this is because male presented more than female to take up eye surgery .This was probably due to high social value for the male child.Maximum number of patients belong to age group 8-14 years .This delayed presentation of children to tertiary eye care center is due to lack of awareness regarding the problem among local population and unavailability of service in remote area. The study olso highlight district wise distribution of pediatric cataract presenting to a premier tertiary care center of CG, Majority of cases were from Raipur city and near by district of Raipur. Manly from nearby rural area because of easy asscebilityLitracy is a major factor accounting for awareness about problem .Raipur and Durg have the maximum population (14%) of state population ,that co relates with the higher number of patients from these areas .Durg district is adjacent to Bhilai industrial industrial area which has been contributing to higher education and awareness for so many years.maimum number of cases are from Hindu and Christian community ,which refelect increased education and awareness among them.but this is actually according to their actual population within the state.Higher number of pediatric cataract surgeries among rural population is more than urban .That may be a reflection of special efforts being undertaken in the form of community screening and blind school screening to fulfill the backlog of cataract surgeries in rural area of chattisgarh. There had been adequate number of corporate hospitals to provide pediatric

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eye care services which had been preference for well to do urban patients Chirau programme, "Smart Card facility " has substantial impact in this area. In this study more than half of patient,s mother were illiterate ,they believed that their children was too young for surgery or child might get better with medical that may not require surgery. This study highlight the fact that literacy of mother is contributory to early presentation, visual outcome and better follow up.It was observed that most pediatric cataract patients belong to low socioeconomic class. Thy waited for the child to learn to see, waited for white small spot to disappear, Denied the blindness , accepted the blindness and decided not to seek advice travelling to the big city to visit the eye hospital, did not want to stay at hospital for long time ,as it affected their daily earning. Only 14% patient has positive family history among first degree relative. Pediatric cataract are both clinically and Genetically heterogeneous found in, onethird to half bilateral pediatric cataract has genetic basis .This study reported 14.61% cases have had a positive history of consanguinity in parients ,that reflected lack of awareness with regard to the hazarads of consanguineous marriage.

In this study ,a strongly positive significant correlation between preoperative and postoperative visual acuity was seen .Clinical benefit and gain from surgery was evident from this study.,The visual outcome was good enough to begin the path of visual stimulation and visual developmentAmblyopia is a significant complication of delayed presentation depending upon the laterality and morphology of the cataract .The probable reason for late presentation of pediatric cataract in this study could be health treatment behavior, poverty, gender, local health beliefs, and ability of the local health care team to provide the needed care. In this study 2/3rd cases were male. This gender discrepancy is likely related to different care pattern for boys and girls in the state. Other reason for our observation may be socio-economic issue ,lack of awareness about pediatric cataract, low capacity of our primary and secondary health system to detect and .refer patients.The visual outcome of traumatic and non traumatic cases were compared at 3 month follow up ,the traumatic group had significant better visual outcome as most of the traumatic pediatric patient visited ophthalmology emergencey service within 24 hours after injury so visual outcome was fairly good It is necessary that traumatic cataract should be managed as soon as possible to avoid other complication such as amblyopia

**CONCLUSION-** From this study this could be concluded that cataract is one of the major cause of treatable blindness.Female have less access to eye care than male .Genetic and premarital counseling ,rural and particularly tribal education is necessary.Role of community health workers NGO screening programe to identify child hood cataract at the earliest is contributory and substantial.With modern diagnostic equipments and surgeries and timely intervention many eye can be salvaged with not only a useful retention of vision but vision may restore up to normalcy.What we see now is probably only the tip of an iceberg.Community motivation to receive eyecare services will improve the uptake of pediatric cataract surgery in the population.

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