

Pediatric ocular trauma and its outcomes:Rajasthan,India

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Abstract

Aim:To identify the trend of ocular trauma in pediatric age-group and evaluate final visual outcome.

Materials and Methods: Prospective interventional study at Government medical College, Bharatpur from November 2019 to October 2020, patients up to age 16 years attended the casualty department of eye and undergone intervention with follow-up period of 1 to 3 months or till better recovery.

Results: Total 118 eyes of 115 patients were enrolled. The age-group more affected was above 5 years (67.80%, i.e., 80 eyes) and below 5 years (32.20%, i.e., 38 eyes). Boys (62.71%) were affected more than girls (37.29%). Most of the children reported to casualty within 24 hours (80.50% eyes), remaining patients reported later within 2 days to 1 week (19.50% eyes). Most of the ocular injuries occurred by household objects (22.3%), blunt objects (13.56%), playground/sports (13.56%), accidental fall (11.02%), projectile (7.63%) and others. Best corrected visual acuity (VA) of more than 6/18 achieved in 61.02% eyes, 6/18-6/60 in 18.64% eyes, <6/60-counting finger close face (CFCF) in 5.93% eyes, projection of light (PL)+perception of rays (PR) in 5.93% eyes, and no PL in 8.47% eyes.

Conclusion: Pediatric ocular trauma is still higher in Rajasthan. It requires early presentation and intervention so that prognosis can be enhanced and impact of trauma can be reduced as much as possible.

Keywords: Ocular trauma, open and closed globe injuries, endoscope, pediatric age-group

1. Introduction

Ocular trauma is a significant health problem and preventable cause of visual morbidity and acquired unilateral blindness in pediatric age-group age group ^[1, 2]. Pediatric eye injuries account for approximately 8%-14% of total injuries in children ^[3].

Children below 3 years age group mostly suffer from handler-related injuries such as fingernails of parents, caretakers or siblings; in upper age group most of the ocular injuries occurred by household objects, blunt objects, playground/sports, accidental fall and others. Wooden-stick injuries are still common in form of gilli danda and bow-arrow ^[3, 4, 6]. Boys tend to be affected more commonly than the girls ^[3, 6, 7]. This shows more adventurous and aggressive behavior of boys forgetting severe ocular trauma.

Ocular trauma burden in pediatric age-group is still higher in developing countries and one of the causes of preventable blindness.

Ophthalmologists face difficulty during management of ocular trauma, explaining the

prognosis, counseling to victim and his relatives. Although advent of new modalities, endoscopic approach to orbital wall and floor and the management of ocular injuries has changed with good outcomes. Endoscopic techniques being minimally invasive surgical techniques, particularly, have revolutionized the management of ocular trauma. These have been gradually applied in orbital surgery through the inferomedial approach to the orbit via the maxillary sinus and approaching the orbital subperiosteal space and help to observe fractures and soft tissue of the posterior orbit to precisely place implants and prove to be an accurate and safe procedure protecting the vital structures^[16].

Purpose of this study is to estimate the trend of ocular trauma in pediatric age-group and visual prognosis.

II. Materials and Methods

Prospective interventional study at Government medical College Bharatpur from November 2019 to October 2020 in patients upto 16 years of age.

Inclusion criteria

Pediatric patients with age group upto 16 years of either sex having complaint of ocular trauma attending casualty were included in this study.

Exclusion criteria

Previously established eye diseases like glaucoma, congenital anomalies, other non-traumatic causes and age above 16 years.

Detailed ocular examination, i.e., initial visual acuity by Snellen's charts (4 years and above) and pediatric acuity chart (below 4 years), adnexal, anterior segment examination by slit lamp biomicroscopy, intra-ocular pressure (IOP) measurement, and fundus examination was done. USG scan was carried out to assess posterior segment status, particularly retinal detachment, vitreous haemorrhage and to rule out retained intraocular foreign body (IOFB) in patients with hazy media. X-ray and or computed tomography (CT) scan of the orbit was done to rule out retained IOFB in all patients. CT scan paranasal sinuses was advised in cases where endoscopic approach of management was needed. These cases were examined by pediatrician for any systemic complications along with postoperative management.

III. Results

Total 118 eyes of 115 patients were enrolled.

Table 1: Age and Sex distribution

	Male	Female	Total
Upto 5 year	22	16	38(32.20%)
5-16 years	52	28	80(67.80%)
Total	74(62.71%)	44(37.29%)	118

The age group more affected was above 5 years (67.80%, i.e., 80 eyes) and below 5 years (32.20%, i.e., 38 eyes). Boys (62.71%) were affected more than the girls (37.29%).

Table 2: Age wise cause of injury

	Upto 5 years of age	5 to 16 years
Household objects	10	16
Chemicals	2	5
Blunt	5	11
Sports	8	8

Projectile	2	7
Roadtraffaccidents(RTA)	2	4
Accidentalfall	3	10
Animalbite	2	4
Assault	2	6
Burn/firecrackers	2	10

Most of the ocular injuries occurred by house hold objects (22.3%), blunt objects (13.56%), playground/sports (13.56%), accidental fall (11.02%) and others.

Table 3: Age wise mode of injury

	Up to Age-group5year	5to16years
Eyelidabrasion	2	3
Eyelidlaceration	3	7
Eyelidhematoma	5	10
Eyelidburn	1	9
Subconjunctivalhemorrhage(SCH)	6	7
Subconjunctivaltear	1	4
Subconjunctival foreign body	4	5
Cornealabrasion	7	13
Cornealforeignbody	4	7
Cornealtearpartial	6	8
Corneoscleral tear	11	25
Hyphema	3	7
Lensinjury	4	11
Iridodialysis	0	2
Vitreoushemorrhage	1	4
Globerupture	2	7

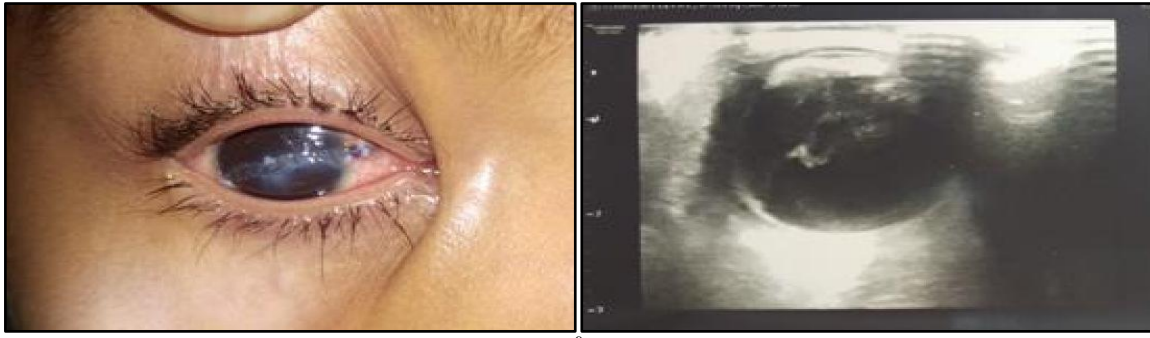
Table 4: Age wise Pre and post treatment best corrected visual acuity(BCVA)

	Ageup to5years		Age5to16years	
	Pre-treatment	Post-treatment	Pre-treatment	Post-treatment
>6/18	8	24	39	48
6/18-6/60	16	7	12	15
<6/60-CF	7	2	16	5
PL+PR+	4	2	6	5
NOPL	3	3	7	7
Total	38	38	80	80

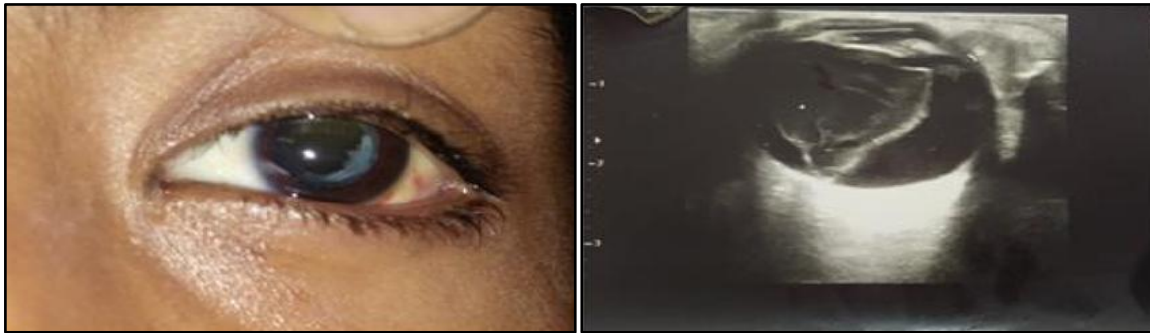
Best corrected visual acuity (VA) of more than 6/18 achieved in 61.02% (24+48)eyes, 6/18-6/60 in 18.64%(7+15)eyes, < 6/60-counting finger close face (CFCF) in 5.93%(2+5) eyes, projection of light (PL) + perception of rays(PR)in5.93%(2+5)eyes,andnoPLin8.47%(3+7)each eyes.

Most of the children reported to casualty within 24 hours (80.50% eyes) and remaining patients reported late varying from 2 days to 1 week(19.50%eyes).

In our study, total 76 eyes needed indoor admission. 45 eyes were operated for partial and full thickness corneo-scleral tear, 2 of which required endoscopic intervention, fourteen eyes with traumatic cataract were treated surgically with posterior chamber intraocular lens(PCIOI)implantation.Three patients were operated for endophthalmitis and two required evisceration.



Picture 1 & 2: Corneo-scleral tear repaired with B Scan showing anterior segment distortion and anterior vitreous degeneration



Picture 3 & 4: Pseudophakia with capsular opacification with B scan showing Retinal detachment and vitreous hemorrhage



Picture 5: corneal opacity

Picture 6: repaired corneal tear with pseudophakia



Picture 7: Traumatic cataract

IV. Discussion

In the present study, pediatric ocular trauma is found to be more prevalent in age-group of 5 to 16 years than below 5 years of age which is similar to other studies^[1, 6, 7]. School-age children are more susceptible than younger age-groups, because younger age-group children are most of the time under parental supervision. Younger age-groups are more susceptible to handler-related injuries like finger nails of siblings, mother or caretakers^[4,6].

Boys tend to be affected more commonly than the girls because of adventurous and aggressive behavior of boys which was found to be the main reason for getting severe ocular trauma [3,5,6].

Most of the ocular injuries occurred by house hold objects, blunt objects, playground/sports, accidental fall and others. Wooden-stick injuries are still common in form of gilli-danda and bow-arrow [3,6].

In our study, incidences of open-globe injuries were higher. It's incidence varies in different studies in different countries [1,5].

Most of the children reported to casualty within 24 hours (80.50% eyes), remaining 2 days to 1 week (19.50% eyes). Late reporting was found to be concerned with poverty, extremely remote area, and fear factor in parents and children. Those who visited within 24 hours had good visual prognosis [5,8-10].

Open globe injuries, later presentation (after 24 hours) and posterior segment involvement is associated with poor visual prognosis [1,6,11-15].

V. Conclusion

The burden of ocular trauma in pediatric age-group is still higher in developing countries and one of the causes of preventable blindness. This group needed supervision, required early presentation so that early intervention can be done and prognosis can be enhanced and impact of trauma can be reduced as much as possible.

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