



OCULAR TRAUMA IN PEDIATRIC AGE GROUP IN A TERTIARY EYE HOSPITAL

Ophthalmology

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ABSTRACT

Ocular trauma is the most common cause of uniocular blindness in children. Injury may occur due to blunt trauma, penetrating injuries, projectile injuries, chemical exposure, explosions/blast injuries, and crush injuries. Open-globe injuries, where the eye wall has a full-thickness wound, are associated with poorer outcomes, compared to closed globe injuries. If a ruptured globe is suspected, manipulation and examination of the eye should be kept to a minimum until the patient is in the operating theatre. Visual prognosis varies greatly depending on type and location of injury. Presenting visual acuity is a key factor in predicting final visual outcome **Aim:** To study demographic profile, cause, visual outcome in pediatric ocular trauma **Materials & Methods :** The study included all children of age group 15 years and younger sustaining eye injuries and presented to the outpatient department or emergency services. The duration of the study was 1 year. A detailed ocular examination included visual acuity, slit lamp biomicroscopy, fundus examination, x-ray orbit and CT orbit if needed. All patients were followed up to 6 months post discharge. **Results :** Out of the 32 children who had ocular trauma of which 21 were boys and 11 were girls with a Male: Female ratio of approx. 2:1. The children with the age group of 5-10 years were found to be highest who were 24 in number (75%) followed by the children within the age group of 11-15 years (25%). Among these children a total of 23 children (71.9 %) presented with closed globe injury, among these children 14(43.75%) of them had a close globe injury while playing with bat/ball and the rest 9(28.12 %) had a closed globe injury secondary to finger nail injury. In contrary 9 children (28.12%) of the 3 had an open globe injury commonly caused due to trauma from needle, knife, glass and pen. **Conclusion:** Closed globe injury was the most common ocular injury noted in children presenting to a tertiary eye hospital.

KEYWORDS

Pediatric ocular trauma, causes, outcome.

INTRODUCTION

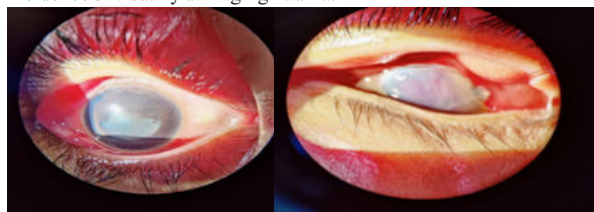
Ocular trauma is the most common cause of uniocular blindness in children. Injury may occur due to blunt trauma, penetrating injuries, projectile injuries, chemical exposure, explosions/blast injuries, and crush injuries¹

Open-globe injuries, where the eye wall has a full-thickness wound, are associated with poorer outcomes, compared to closed globe injuries.²

If a ruptured globe is suspected, manipulation and examination of the eye should be kept to a minimum until the patient is in the operating theatre.

Eye injuries are an important cause of ocular morbidity in children, being a leading cause of non-congenital unilateral blindness in this age group.⁴

Such injuries cannot always be prevented, but by identifying any underlying factors in the etiology of serious injuries,⁵ It may be possible to determine the most effective methods of reducing the incidence of visually damaging trauma.⁶



Aim

To study demographic profile, cause, visual outcome in pediatric ocular trauma

MATERIALS & METHODS

The study included all children of age group 15 years and younger sustaining eye injuries and presented to the outpatient department or emergency services.

Demographic profiles of all patients in terms of age, sex, residential area (urban or rural), date and time of injury, and any treatment were noted.

Methodology

A detailed history as to the cause of the injury was obtained. Any systemic injury was noted.

Demographic profile of all patients in terms of age, sex, residential area (urban or rural), date and time of injury, and any treatment were noted.

A detailed ocular examination included visual acuity, slit-lamp biomicroscopy, and fundus examination. In infants and preschool children visual acuity was evaluated using Teller Acuity Cards.

In the rest of the children, visual acuity was assessed using a Snelling chart. Intraocular tension was measured in all patients, except in those having open globe injuries. Gonioscopy was performed in closed globe injury.

Ultrasound of the eye and adnexa were obtained. Radiography of the eye was advised in patients with a suspected retained intraocular foreign body.

Children who did not cooperate with the examination were examined under general anesthesia before any intervention. All patients were appropriately managed and followed up on days 1 and 7 and in the first and sixth months.

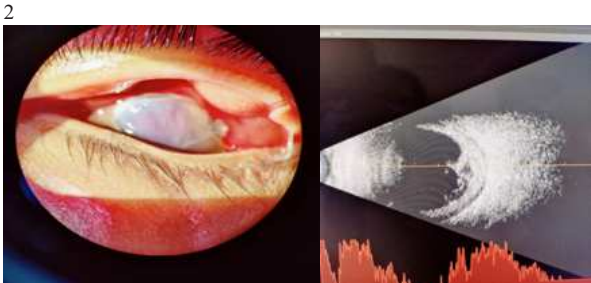
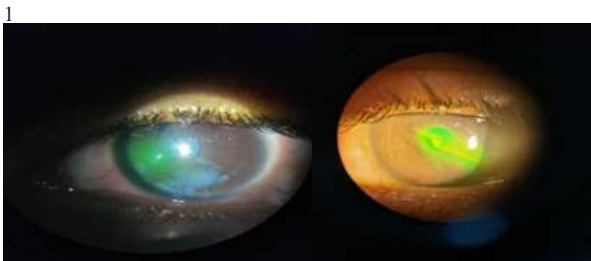
Patients requiring surgical intervention were operated upon with the repair of perforation, removal of foreign body, vitrectomy. These patients were followed up on day one postoperative period and subsequently till 6 months. At every visit, the best corrected visual acuity, slit-lamp examination, intraocular pressure, and fundus examination were performed. Patients with minimum follow ups of 6 months were included in the study group

RESULTS

Out of the 32 children who had ocular trauma of which 21 were boys and 11 were girls with a Male : Female ratio of approx. 2:1. The children with the age group of 5-10 years were found to be the highest who were 24 in number (75%) followed by the children within the age group of 11-15 years (25%).

Among these children a total of 23 children (71.9 %) presented with closed globe injury, among these children 14 (43.75%) of them had a close globe injury while playing with bat/ball and the rest 9 (28.12 %) had a closed globe injury secondary to finger nail injury. In contrary 9

children (28.12%) of the 3 had an open globe injury commonly caused due to trauma from needle, knife, glass and pen



Post Op

Mechanism Of Injury

The commonest type of injury was closed globe injury(43.75%)of them had a close globe injury while playing with bat/ball and the(28.12 %) had a closed globe injury secondary to finger nail injury.

In contrary (28.12%) of the 3 had an open globe injury commonly caused due to trauma from needle, knife, glass and pen

Socio- Demographic Characteristics

SOCIO-DEMOGRAPHIC VARIABLES	NUMBER OF CHILDREN(%)
AGE(YEARS)	
5 to 10	75
11 to 15	25
SEX	
MALE	65.63
FEMALE	34.75
RESIDENCE	
URBAN	45.9%
RURAL	54.1%

Open Globe Injury Profile

TYPE OF INJURY	MALE	FEMALE	TOTAL (%)
CORNEAL PERFORATION	3	3	18.75
CORNEOSCLERAL PERFORATION	5	1	18.75
SCLERAL PERFORATION	2	00	6.25

GLOBE RUPTURE	2	2	12.5
TOTAL	12	6	56.25

Closed Globe Injury Profile

TYPE OF INJURY	MALE	FEMALE	TOTAL%
HYPHEMA	3	2	15.62
SUPERFICIAL FB	4	1	15.62
ENDOPHTHALMITIS	1	00	3.13
CORNEAL ABRASION	2	00	6.25
DISLOCATED LENS	1	00	3.13
TOTAL	11	3	43.75

Treatment And Visual Outcome

In the open globe injury, 36 eyes (36/39, 92.3%) required immediate surgical intervention in the form of surgical repair of the perforation site. Three eyes had sealed corneal perforation, which were managed by medical treatment. One patient having sealed corneal perforation developed a cataract 2 months later and underwent cataract removal surgery with implantation of intraocular lens.

In the closed globe injury, five patients (33.3%) required immediate intervention. These included two patients with the removal of a corneal foreign body. One patient needed paracentesis and removal of blood from the anterior chamber, one patient required vitrectomy for endophthalmitis, and one patient required removal of dislocated lens from the anterior chamber

Causes Of Ocular Injury

TYPE OF INJURY	NO.OF EYES (%)
SPORTS RELATED (CRICKET BALL,SPINNING TOP)	17 (28.5%)
WOODEN STICK	14 (22.9%)
FIRECRACKER	11(18%)
METALLIC	7(11.5)
CHEMICAL	3(4.9%)
OTHER	8 (13.9%)
TOTAL	60

Visual Outcomes In Closed And Open Globe Injury

VISUAL ACUITY	OPEN GLOBE INJURIES	CLOSED GLOBE INJURIES	CHEMICAL INJURIES	ADNEXAL INJURIES
6/12 - 6/6	4	5	-	5
6/12-6/60	5	3	3	-
PL	3	1	-	-
NO PL	1	-	-	-
UNABLE TO ASSESS	1		1	-

DISCUSSION

Pediatric ocular trauma forms about 20-50% of all ocular injuries reported. ⁷

The incidence of pediatric ocular trauma in our study found to 18.9% be in a one year period. ⁷

32 children presented in the outpatient department during the study period with ocular injury ⁸Saxena recorded the incidence in a tertiary eye care center in the duration of 6 months as 20.8%. ¹²

Maurya showed about 30.35% of ocular trauma occurred in the pediatric age group. ⁹Waseai et al noted an increase in the childhood trauma to the extent of 49.7% in the Egyptian population. Chakraborty etc al in their study from Eastern India, noted the majority of children were from urban population¹⁰

Singh et al has shown a high preponderance of childhood trauma in the rural population.¹¹ In their study, they demonstrated that rural area children are at 1.5 times higher risk of ocular injuries than urban children.¹² Katiyar et al has shown in rural population, accounting for 78% of ocular injuries.¹³ We found that children aged 6-10 years were most commonly affected followed by those in the age range of 11 to 15 years. Our study also showed preponderance to males over females. In most of the studies demonstrate the wooden stick as a common cause of injury.¹⁵

Open globe injuries present more potential for poor vision than the closed globe injuries. In our study those who presented with visual acuity between P1+ - 6/60 didn't improve beyond 6/60. Delayed presentation of the patients to the hospital delays intervention thus leading to poor prognosis.¹⁴

CONCLUSION

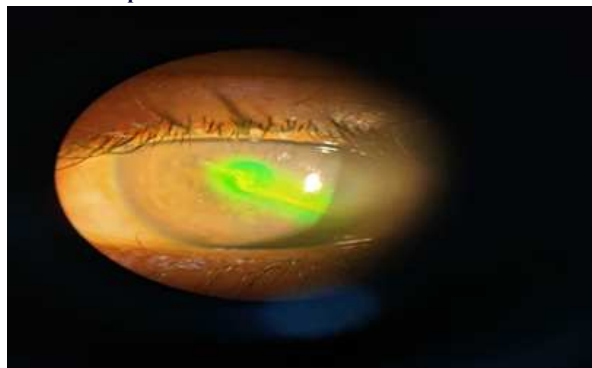
Our study concludes that ocular injuries are major cause of pediatric blindness. The age group from 6 to 10 years is susceptible for trauma. Timely referral and management can help to prevent blindness originating from ocular trauma. Follow-ups of children are important for treating complications in the long term. It is very essential to educate children, parents, and teachers regarding ocular health and hygiene in order to minimize eye injuries.

Formation of a rapid action ocular trauma team may help to treat pediatric ocular trauma and create awareness and educate child, family, and society regarding ocular trauma.

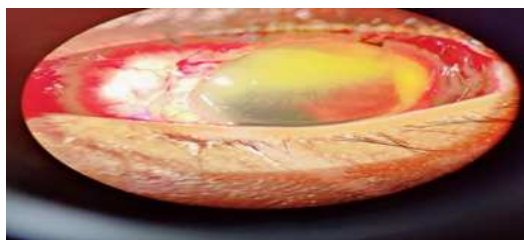
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Trauma with pencil



6



Full thickness corneal perforation



Conflicts Of Interest

The authors declare no conflicts of interest

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