



A STUDY OF VARIOUS OCULAR INJURIES AMONGST PAEDIATRIC PATIENTS VISITING A TERTIARY EYE CARE HOSPITAL.

Ophthalmology

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ABSTRACT

Aim: To study the types, mode of injury and its effects on visual prognosis and outcome of pediatric ocular trauma. **Methods:** In our longitudinal cross-sectional study we included 50 pediatric patients presenting with ocular trauma for duration of 6 months. We evaluated detailed history of present illness, modes of injury, visual acuity, intraocular pressure, slit lamp examination and fundus examination among children less than 12 years. Patients were treated and followed up for 2 months at regular interval and complications if any were noted. **Results:** 50 children up to 12 years of age were evaluated. Majority of patients were in the age group of 10-12 years also male predominance was noted in our study. On comparing the mode of injury, wooden stick injury was commonly found in 3-5 years of age group but above 5 years of age firecracker injury was more common. Open globe injuries were more compared to closed globe injuries. No final vision impairment was seen with closed globe injuries and their vision improved on aggressively preventing amblyopia. Whereas open globe injury did not show improvement since they presented with poor visual acuity. **Conclusion:** The visual outcome depends on the severity, type of injury as well as on the early management, extended follow-up and prevention of amblyopia. Open globe injury showed very poor visual outcome compared to closed globe. Proper children education is must and also counselling of parents, teachers and care givers is a need.

KEYWORDS

INTRODUCTION

"Pediatric ocular trauma is trauma forever" holds right. Ocular injuries are the most acquired cause of monocular blindness in children.^{1,2} Worldwide, incidence of severe visual impairment or blindness caused by ocular trauma in children varies from 2% to 14% according to different studies.³ Children are more susceptible to eye injuries due to immature motor skills. They have a natural curiosity and are often seen imitating with no regards to the risk and outcomes.

Paediatric ocular trauma differs from adult in, -

- Generally, late onset of presentation to hospital
- Difficulty in examination
- Necessity of frequent general anaesthesia and repeated surgical procedures
- Difficulty in postoperative care and parent's understanding
- Possibility of amblyopia and other complications.⁵

TYPES OF INJURY

Closed globe injuries
Open globe injuries

CLOSED GLOBE INJURIES:

Includes injuries without full thickness defects of the coats

- Contusions
- Lamellar lacerations – partial thickness injuries to coats.

OPEN GLOBE INJURIES:

Includes full thickness defects in corneoscleral coat of the eye which include lacerations.

- Penetrating – if the object traverses the coat only once
- Perforating – if both entry and exit wounds are present.
- Rupture – full thickness inside to outside breaks in ocular coat.

Paediatric ocular trauma (closed as well as open globe injuries) can lead to severe morbidity as a result of visual impairment and therefore, this study was to analyse the mode and type of ocular trauma, its visual outcome and factors influencing the visual prognosis amongst paediatric patients which came to our tertiary eye care centre.

AIM OF THE STUDY

- To study the types, modes of injury and its effects on visual prognosis.
- To study the management and outcome of pediatric ocular trauma.

MATERIALS AND METHODS

Inclusion Criteria

- children <12 years attending our institute with history of ocular trauma

Exclusion Criteria

- children with other ocular emergencies.

This is a longitudinal cross-sectional study of 50 pediatric patients presenting with ocular trauma. Study duration is 6 months from June 2022 to November 2022.

Study Place: tertiary eye care center.

All children <12 years presented to my institute with history of ocular trauma were evaluated with detailed history of present illness, modes of injury, visual acuity, intraocular pressure, slit lamp examination, fundus examination and extraocular movements. Required investigations like ultrasonography and x-ray orbit were done for appropriate patients. Patients were treated and followed up for 2 months at regular intervals and complications if any were noted.

OBSERVATIONS

A total of 50 pediatric patients (up to 12 years) were seen during the study period.

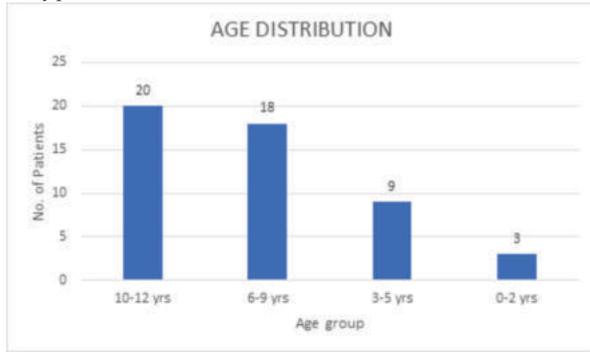


Figure 1 Representing Age Distribution Among Pediatric Patients

Out of 50 patients, maximum that is 20 patients were in the age group of 10 to 12 years, 18 were in the age group of 6 to 9 years, 9 patients were in 3 to 5 years group while 3 patients were in 0 to 2 years group.

Gender distribution

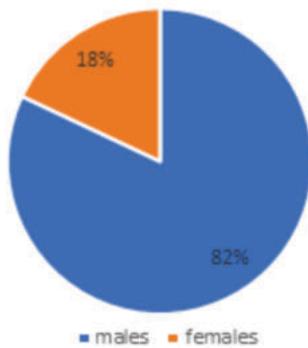


Figure 2 Representing Gender Distribution Among Pediatric Patients

Males were more commonly injured (82%) than females (18%).

Mode of Injury

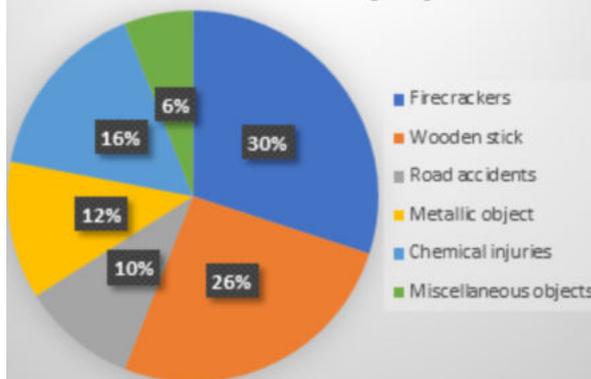


Figure 3 Representing Distribution Of Modes Of Injuries Among Pediatric Patients

CORRELATION OF AGE AND MODE OF INJURY

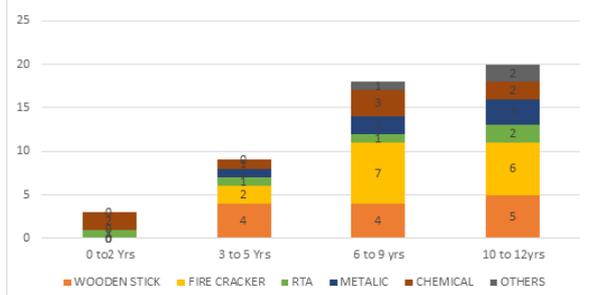


Figure 4 Representing Correlation Of Age And Mode Of Injury

Majority of patients were injured by firecrackers (30%) and wooden stick (26%). Other modes of injury were by road traffic accidents (10%), metallic object (12%), chemical injuries (16%) and rest 6% were injured by other miscellaneous objects like fist, toys etc.

In age wise distribution, <2 years of age, 2 had chemical injury and 1 had road traffic accident.

The predominant mode of injury in children >2 years of age is by wooden stick and firecracker.

In 3 to 5 years age group, 44.4% were injured by wooden stick, 22.2% by fire crackers and 11.1% were injured by road traffic accidents, metallic objects and chemical injuries each.

In 6 to 9 years age group, 38.88% were injured by firecracker, 22.2% by wooden stick, 5.55% by road traffic accidents, 11.11% by metallic objects, 16.66% by chemical injuries and 5.55% by other miscellaneous objects.

In 10 to 12 years age group, 30% were injured by firecracker, 25% by wooden stick, 15% by metallic objects, 10% by road traffic accidents, chemical injuries and other miscellaneous objects.

TYPES OF INJURIES



Figure 5 Representing Types Of Injuries

Out of all, 60% were open globe injuries and 40% were closed globe injuries.

time of presentation

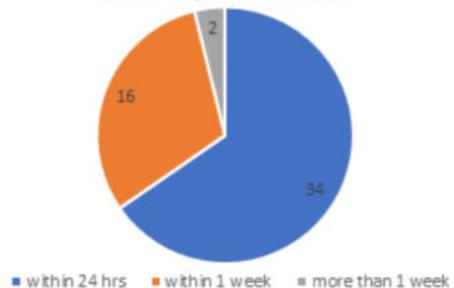


Figure 6 Representing Time Of Presentation Of Patients

Out of 50, 32 patients (64%) presented within 24 hours, 16 (32%) within 1 week and 2 patients (4%) presented after 1 week of injury.

Table 1 Showing Visual Acuity At Presentation According To Type Of Injury.

type of injury	Patient's visual acuity on presentation				total children
	6/12 to 6/6	6/60 to 6/18	CF/CF to CF 3meter	HM+ PL+ PR4+ OR faulty	
open globe injury	0	2	9	9	20
close globe injury	5	10	10	5	30

MODE OF TREATMENT

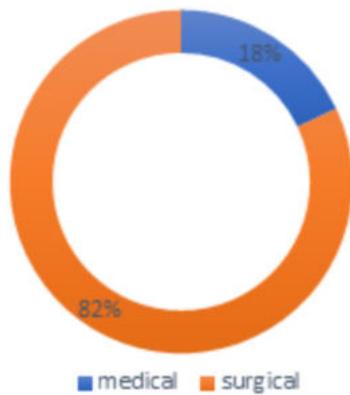


Figure 7 Representing Mode Of Treatment.

In my study, main mode of treatment was surgical (82%) that included corneal tear suturing, amniotic membrane grafting, cataract extraction with intraocular lens implantation with or without anterior vitrectomy, lid tear and canalicular tear suturing.

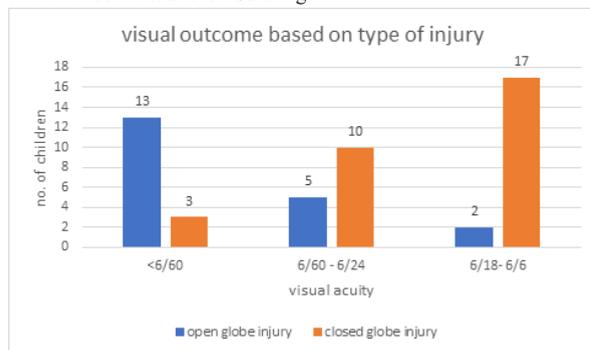


Figure 8 Representing Visual Outcome Based On Type Of Injury

In my study, in closed globe injury, following treatment out of 30, 22 patients showed improvement in visual acuity and 8 patient's vision remained the same. In open globe injury, following treatment out of 20, 14 patients showed no improvement and only 6 patient showed improvement in vision.

In my study, out of 50, 10 patients (20%) developed post traumatic cataract as a complication, 1 developed endophthalmitis, 1 panophthalmitis, 1 corneal ulcer, 3 developed traumatic glaucoma and 1 patient showed retinal detachment. Rest 33 patients were without any complication.

DISCUSSION

In my study, 50 children up to the age of 12 years were enrolled and evaluated.

The majority of the patients were in the age group of a 10 to 12 years followed by 6 to 9 years of age group which shows an increase in ocular trauma as the age advances. similar results were found in study of Shoja et al. which noted majority of injury in the age group of 7 to 12 years.⁹

We identified a male predominance for ocular trauma. This tendency also found in study done by El-Sebaity, Soliman W¹ with male predominance which can be explained by the more aggressive and violent nature of activities in which boys are involved more than girls.

The major mode of injury in my study was with firecrackers and wooden stick injury but in the data published by Serrano et al⁶ in which blunt object like wooden stick was major mode of injury but not firecracker. This disparity can be due to my study period which included Diwali time.

When mode of injury was correlated with age in my study, in 3-to-5-year age group, wooden stick injury was the commonest one but above the age of 5 years as the age advances, firecracker injury was the

commonest in my study followed by wooden stick which shows more involvement in festivals and more playful nature in children above 5 years of age. Similar results were found in study by Sofi et al.¹⁰

Open globe injuries were more common than closed globe in my study while results from other literature like Al Mahdi H showed higher frequency of close globe injuries compared to open globe. This disparity can be due to more referral of open globe injury to the tertiary eye care centre.

64% injuries presented within 24 hours of injury and main mode of treatment was surgical.

The visual outcome was related to the type and severity of the injury. Most closed globe injuries in my study did not cause any final visual impairment in the affected eye and also showed improvement in vision. Whereas the open globe injury was to be the more severe with a significantly high incidence of poor visual acuity at the time of presentation which showed improvement in vision only in 6 patients out of 20. The study done by Saxena R, Sinha R on pattern of paediatric ocular trauma in India⁷ also concluded that open globe injuries carry a poorer prognosis and more likely to suffer from long term complications.

Cataract was the commonest complication observed in my study.

Despite a successful trauma management, amblyopia should be aggressively prevented in the early post traumatic period as it could lead to worse decrease in visual function than the injury itself.⁸

CONCLUSION

Among wide range of ocular injuries, predominant mode in my study was wooden stick and firecracker injuries. The visual outcome depends on the severity, type of injury as well as on the early management, extended follow up and prevention of amblyopia. In spite of having improving healthcare and treatment possibilities, open globe injury showed very poor visual outcome compared to closed globe. The results of this study suggest the necessity to focus on developing new methods and strategies to aim at reducing the frequency of trauma as a priority. Proper children education is must and also counselling of parents, teachers and care givers is a need in terms of safety precautions and restriction of fireworks in open public space.

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NIL

CONFLICT OF INTEREST

There were no conflicts of interest.

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