



Clinical Profile of Ocular Trauma in a Tertiary Care Centre at Tertiary Care Teaching Hospital

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Abstract

Introduction: Ocular trauma is a major cause of preventable visual impairment and blindness worldwide. It contributes significantly to monocular blindness and poses a substantial socioeconomic burden. Global estimates suggest that nearly 55 million individuals suffer eye injuries annually, with millions developing permanent vision impairment. Understanding the clinical spectrum and risk factors of ocular trauma is essential for early management and prevention strategies. **Materials and Methods:** A hospital-based cross-sectional observational study was conducted among patients presenting with ocular trauma at a tertiary care centre. Detailed demographic data, injury mechanism, clinical findings, and visual outcomes were recorded and analyzed statistically. **Results:** Among 150 patients evaluated, ocular trauma was more common among males and young adults. Mechanical injuries and road traffic accidents were the leading causes. Closed globe injuries were more common than open globe injuries. Visual outcome depended on injury severity and early intervention. **Conclusion:** Ocular trauma remains an important public health problem. Early diagnosis and prompt treatment improve visual prognosis. Preventive measures including protective eyewear and public awareness are essential.

Keywords: Ocular trauma, Eye injuries, Visual impairment, Closed globe injury, Open globe injury



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INTRODUCTION

Ocular trauma is a significant cause of visual morbidity and blindness worldwide. It encompasses injuries to the globe, adnexa, orbit, and optic nerve resulting from mechanical, chemical, or thermal insults. [1] Trauma to the eye is considered a preventable cause of blindness, yet it continues to contribute significantly to the global burden of visual disability. Studies indicate that approximately 55 million individuals suffer ocular trauma annually, of which nearly 19 million cases result in unilateral vision loss and about 1.6 million lead to blindness. [2]

The epidemiology of ocular trauma varies across geographical regions and socioeconomic groups. Developing countries report a higher incidence of ocular injuries due to occupational hazards, road traffic accidents, domestic injuries, and lack of protective measures. [3] Eye trauma frequently affects individuals during their productive years, resulting in financial loss and reduced quality of life. [4]

Mechanical injuries constitute the majority of ocular trauma cases. Studies have shown that non-occupational injuries account for more than 80% of ocular trauma, with sports injuries and road traffic accidents being the leading causes. [5] Blunt injuries are more common than penetrating injuries and frequently occur due to wooden, metallic, or stone objects. [6]

Globally, ocular trauma represents one of the leading causes of unilateral blindness. Epidemiological data reveal that injury-related visual impairment occurs across all age groups, although young adults and males are disproportionately affected. [7] Higher incidence among males is attributed to occupational exposure and increased participation in outdoor activities. [8]

Ocular trauma can be classified into open globe injuries and closed globe injuries based on integrity of the eye wall. Closed globe injuries include contusions and lamellar lacerations, whereas open globe injuries involve full thickness wounds of the eyeball. [9] The

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severity of injury influences visual outcome and need for surgical intervention. [10]

Early recognition of ocular trauma and prompt ophthalmic management play a crucial role in preventing permanent vision loss. Several studies have emphasized the importance of understanding epidemiological trends and clinical patterns of ocular injuries to develop effective prevention strategies. [11]

The present study aims to evaluate the clinical profile, causative factors, and visual outcomes of ocular trauma among patients attending a tertiary care centre.

MATERIALS AND METHODS

This is a hospital-based, cross-sectional and observational study was conducted in the Department of Ophthalmology at a tertiary care teaching hospital over a period of 12 months.

Study Population

Patients presenting with ocular trauma during the study period.

Sample Size

Sample size was calculated based on prevalence of ocular trauma estimated at 30% among ophthalmic emergencies. A total of 150 patients were included.

Inclusion Criteria

- Patients of all age groups presenting with ocular trauma
- History of recent eye injury
- Patients willing to participate

Exclusion Criteria

- Patients with pre-existing ocular pathology unrelated to trauma

- Incomplete medical records
- Post-surgical complications unrelated to trauma

Methodology

All patients underwent detailed evaluation including:

1. Demographic Data

- Age
- Gender
- Occupation
- Mode and place of injury

2. Clinical Evaluation

- Visual acuity assessment
- Slit lamp examination
- Fundus examination
- Ocular trauma classification

3. Investigations

- Intraocular pressure measurement
- B-scan ultrasonography
- CT scan orbit (when indicated)

4. Management

- Medical therapy
- Surgical intervention when required
- Follow-up evaluation of visual outcome

Data were collected using standardized proforma.

Statistical Analysis

Data were analyzed using SPSS software. Descriptive statistics were used to determine frequency and distribution. Chi-square test was applied to evaluate association between injury type and visual outcome. P value <0.05 was considered significant.

RESULTS

Table 1: Age Distribution

Age Group	Number	Percentage
0–10 years	20	13.3%
11–30 years	62	41.3%
31–50 years	44	29.3%
>50 years	24	16%

In the present study, the highest number of cases was observed in the **11–30 years age group**, accounting for **41.3%** of the total patients. The **31–50 years age group** constituted **29.3%** of cases, representing the second most affected group. Children aged **0–10 years** accounted for **13.3%** of cases. Patients aged **above 50 years** contributed **16%** of cases.

Table 2: Gender Distribution

Gender	Number	Percentage
Male	102	68%
Female	48	32%

Among the total patients evaluated, males constituted 68%, whereas females accounted for 32% of cases. This demonstrates a clear male predominance in ocular trauma incidence.

Table 3: Mode of Injury

Cause	Number	Percentage
Road Traffic Accident	40	26.7%
Sports Injury	32	21.3%
Occupational Injury	28	18.7%
Domestic Injury	30	20%
Assault	20	13.3%

Table 3 demonstrates the present study, road traffic accidents (26.7%) were identified as the most common cause of ocular trauma. Sports-related injuries (21.3%) were the second most common cause of ocular trauma. Domestic injuries accounted for 20% of cases. Occupational injuries contributed 18.7% of cases and were commonly observed among individuals engaged in industrial work, construction, agriculture, and manual labor. Assault-related injuries constituted 13.3% of cases and are often associated with blunt or penetrating ocular trauma.

Table 4: Type of Injury

Injury Type	Number	Percentage
Closed Globe Injury	95	63.3%
Open Globe Injury	55	36.7%

In the present study, closed globe injuries accounted for 63.3% of cases, whereas open globe injuries constituted 36.7% of cases.

Table 5: Clinical Presentation

Manifestation	Number	Percentage
Pain	112	74.7%
Redness	98	65.3%
Decreased Vision	86	57.3%
Foreign Body Sensation	52	34.7%

Table 5 depicts, pain was the most common presenting symptom, observed in 74.7% of patients. Redness of the eye was noted in 65.3% of cases. Decreased vision was reported in 57.3% of patients, reflecting the severity of ocular involvement. Foreign body sensation was present in 34.7% of cases and is commonly associated with superficial corneal abrasions or retained foreign bodies.

Table 6: Visual Outcome

Visual Outcome	Number	Percentage
Improved Vision	82	54.7%
No Change	42	28%
Vision Loss	26	17.3%

In the present study, 54.7% of patients showed improvement in vision after treatment. Approximately 28% of patients showed no significant change in vision following treatment. About 17.3% of patients experienced permanent vision loss.

DISCUSSION

Ocular trauma remains a significant cause of visual impairment globally. The present study demonstrated that young adults were most frequently affected. Similar findings have been reported in previous studies showing peak incidence of ocular trauma in individuals aged 15–49 years.

In our study among the total patients evaluated, males constituted 68%, whereas females accounted for 32% of cases. This demonstrates a clear male predominance in ocular trauma incidence. Male predominance observed in the present study aligns with global epidemiological trends. Increased occupational exposure and outdoor activities are major contributing factors. Studies have consistently reported higher incidence of ocular trauma among males compared to females. [12,13]

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Road traffic accidents were identified as the leading cause of ocular trauma in this study. Previous research also reported road traffic accidents and sports injuries as common causes of ocular injuries. [14] Mechanical injuries involving blunt objects were found to be predominant, consistent with earlier studies. [15]

The present study, closed globe injuries accounted for 63.3% of cases, whereas open globe injuries constituted 36.7% of cases. Closed globe injuries were more

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common than open globe injuries in the present study. Closed injuries generally have better prognosis compared to penetrating injuries, which often require surgical management. [16] Earlier studies have reported similar distribution patterns of ocular injuries. [17]

Pain was the most common presenting symptom, observed in 74.7% of patients. Redness of the eye was noted in 65.3% of cases. Decreased vision was reported in 57.3% of patients, reflecting the severity of ocular involvement. Foreign body sensation was present in 34.7% of cases and is commonly associated with superficial corneal abrasions or retained foreign bodies. Pain, redness, and decreased vision were common presenting symptoms among patients. [18] These findings are consistent with previous clinical studies describing similar symptom profiles. [19]

In the present study, 54.7% of patients showed improvement in vision after treatment. Approximately 28% of patients showed no significant change in vision following treatment. About 17.3% of patients experienced permanent vision loss. Visual outcome following ocular trauma depends on severity of injury and prompt management. [20] The present study demonstrated improvement in vision among more than half of the patients. Studies suggest that early intervention and proper surgical management significantly improve prognosis. [21]

The preventable nature of ocular trauma highlights the importance of public awareness and safety measures. Use of protective eyewear, workplace safety regulations, and road safety programs can significantly reduce incidence of ocular injuries.

CONCLUSION

Ocular trauma is a leading cause of preventable blindness and visual impairment. Young males constitute the most vulnerable population. Mechanical injuries and road traffic accidents are common causes. Early diagnosis and management improve visual outcomes. Implementation of preventive measures and public awareness programs are essential to reduce burden of ocular trauma.

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