

**CLINICO-EPIDEMIOLOGICAL PATTERN OF OCULAR INJURIES AT TERTIARY CARE HOSPITAL IN EASTERN UTTAR PRADESH**Singh Hemendra\*<sup>1</sup>, Srivastav Tanmay<sup>2</sup>, Gautam Kumar Raj<sup>3</sup>, Bhushan Prashant<sup>4</sup>, Mishra Deepak<sup>5</sup><sup>1</sup>Senior Resident, Regional Institute of Ophthalmology, Banaras Hindu University, Varanasi, India.<sup>2</sup>Senior Resident, Regional Institute of Ophthalmology, Banaras Hindu University, Varanasi, India.<sup>3</sup>Junior Resident, Regional Institute of Ophthalmology, Banaras Hindu University, Varanasi, India.<sup>4</sup>Associate professor, Regional Institute of Ophthalmology, Banaras Hindu University, Varanasi, India.<sup>5</sup>Assistant Professor, Regional Institute of Ophthalmology, Banaras Hindu University, Varanasi, India.**\*Corresponding Author: Singh Hemendra**

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**ABSTRACT**

**Introduction:** Ocular injuries is important major public health issue. In United States numbers are exceeding 2.5 million ocular injuries per year and out of them about 50,000 lose part or all of their vision on permanent basis and in developing countries this occurrence is even higher. The incidence at which patients with ocular injury need hospitalization range from 4.9 to 89 per 100,000. This study was conducted to find out the epidemiological prototypes of ocular injuries and various parameters influencing it. **Methods:** A retrospective study was carried out at tertiary care hospital between February 2019 to April 2019 and all the individual presented with ocular injuries in eye Outpatient department, Emergency Department and Trauma center were inrolled for the study. Various epidemiological and clinical factors like age, sex division, time of presentation, means of injury, category of trauma and final visual status were analysed. **Results:** Out of total 189 of individuals, 141(74.6%) were below the age of 30 years and female to male ratio was 1:2.9 About 43(22.8%) of the patients reported to hospital within 24hrs of trauma. The causes of ocular trauma included Road traffic accidents 76 cases (40.2%), sports related and recreational 47(24.5%), occupation related 39(20.6%), domestic violence 10(5.3%) and physical assault related 17(9%). Among the type of injuries Open globe injuries responsible for cases 159(84.1%) and patients 30(15.9%) affected by closed globe injuries. The main responsible factor for poor visual outcome was delayed presentation to hospital.

**KEYWORDS:** Ocular trauma, injuries, globe perforation.**INTRODUCTION**

Ocular trauma is major causes of treatable visual blindness and morbidity in our population.<sup>[1]</sup> It is major disabling health problem of all groups. Approximately 1.6 million individuals are blind from ocular injuries, an additional 2.3 million individuals are bilateral low vision from this cause, and almost 19 million with unilateral blindness or low vision.<sup>[2]</sup> Patients with ocular injury need hospitalisation at the rate of 4.9 to 89 per 100000. Occurrence of ocular trauma is increased in young male individuals and the averaged in their 3<sup>rd</sup> decade of life. The characteristic female to male ratio is about 1:4 worldwide with Open globe injury being the commonest.<sup>[3-5]</sup> In United States every year there 2.5 million ocular injuries reported and out of whom about 500,000 blinding eye trauma occur annually worldwide, making important cause of one-sided blindness today and set to be next important reason for blind eyes. The occurrence of ocular trauma is even higher in developing countries.<sup>[6-8]</sup> This study will help in measuring the

burden of the visual loss and identify the responsible factors of ocular trauma. Visual outcome from ocular trauma can vary from full recovery to blind.

**MATERIAL AND METHOD**

The study was done at a tertiary care center in eastern part of uttar pradesh. All individual with ocular injury reported to the hospital and associated Trauma Center between February 2019 to April 2019 were inrolled in the study and studied for epidemiological and clinical factors like age and sex distribution, visual status at the time of appearance, manner of injury, final visual outcome.

Details history was taken with importance on manner of injury, duration of injury, visual acuity and condition of other eye.

Rational terminology for ocular injury and visual status were considered according to Birmingham Eye Trauma

Terminology System (BETTS) and World Health Organization (WHO).

- Moderate – visual acuity worse than 6/18
- Severe – visual acuity worse than 6/60
- Blindness – visual acuity worse than 3/60.

Distance vision impairment:

- Mild – visual acuity worse than 6/12

Birmingham Eye Trauma Terminology System (BETTS) describes ocular trauma as

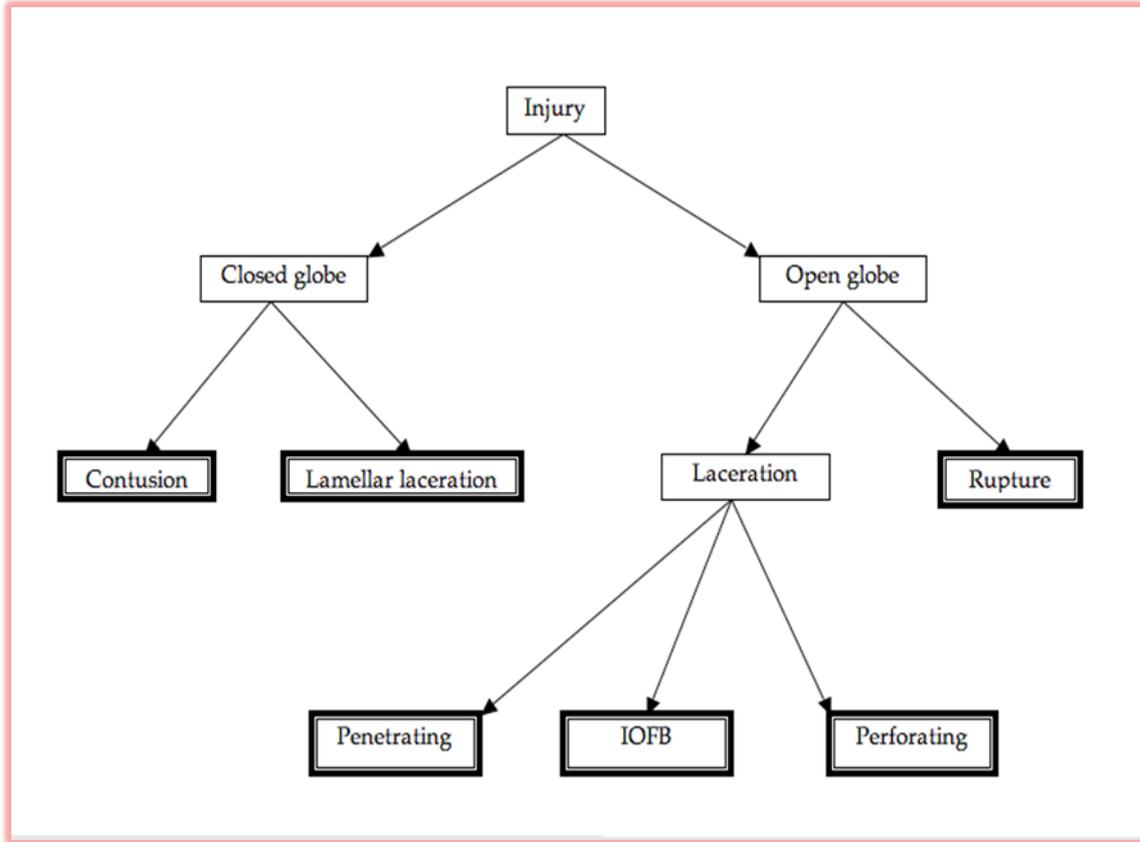


Figure 1: Betts: framed box used for clinical diagnosis.

Statistical Tools - Data was reviewed using appropriate statistical tests (SPSS v16.0) and outcome was reviewed with previous studies for discussion. Association among variables was checked by Chi-Square test and significance was considered when  $p < 0.05$ .

Emergency Department and Trauma Center out of them 189 were included in the time period from February 2019 to April 2019.

- Out of total no. of patients, 141(74.6%) were below the age of 30 years. There are female to male ratio was 1:2.9 (Table 1).

**RESULTS**

- Our study screened 203 (14 patients lost follow up) patients of ocular trauma attending eye OPD,

Table 1: Age group and sex division of patients with ocular injury.

Age	Male	Female	Total
0-10 years	63	19	82
11-20 yrs	32	10	42
21-30 yrs	13	4	17
31-40 yrs	5	2	7
41-50 yrs	13	3	16
51-60 yrs	15	4	19
> 60 yrs	5	1	6
Total	146 (77.25%)	43(22.75%)	189 (100%)

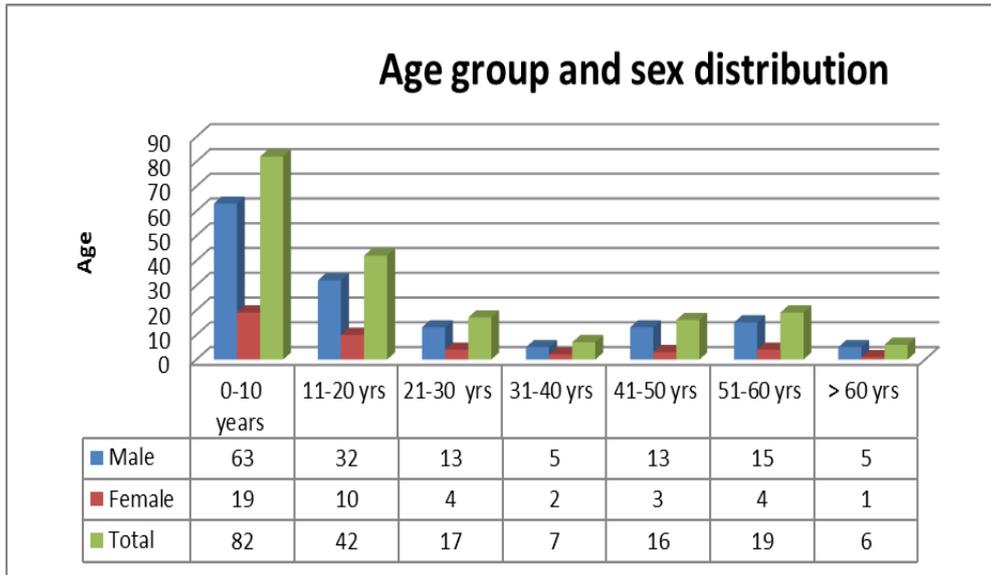


Figure 2: Bar diagram of age and sex distribution.

- In this study, 43(22.8%) of the patients presented to hospital within 24hrs of trauma while 145(76.7%) attended hospital within 2 days and 17 (9%) in 2 to 7 days after trauma.(Table 2)

Table 2: Duration of presentation.

Duration of presentation	No. of patient	%age
<24Hrs	43	22.75%
24-48Hrs	102	53.97%
>48 hrs-1 week	17	9%
>1 week	27	14.28%
total	189	100

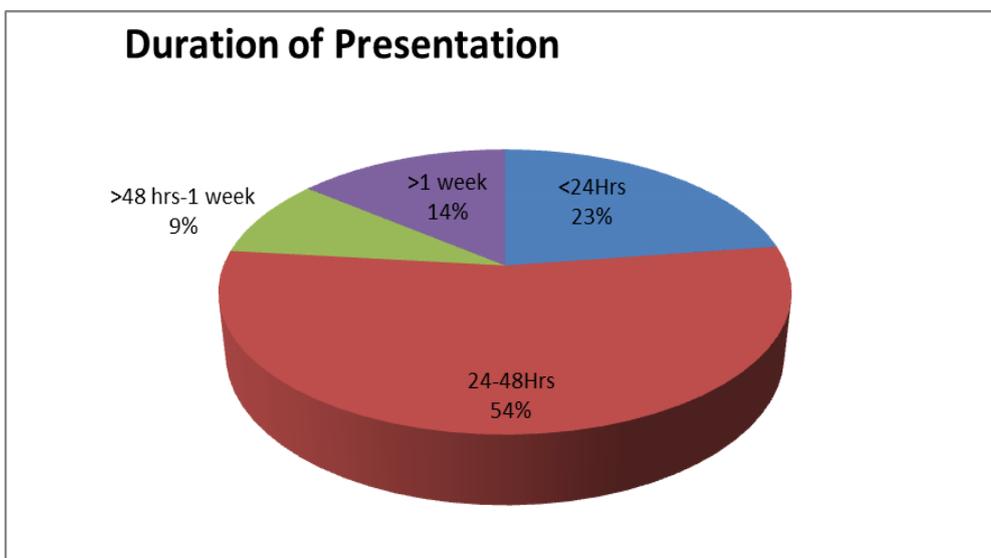


Figure 3: Pictoral diagram of Duration of presentation.

Road traffic accidents are the most important reason of ocular trauma and accounts for cases (43.3%) in our study. Other causes included sports related and recreational (5%), occupation related (6.7%), fall from

hieghts (18.3%) and physical assaults (26.7%). Among the type of injuries Open globe injuries accounted for cases (71.6%) and patients (28.3%) suffered closed globe injuries.(Table 3)

**Table 3: Mode of injury and sex distribution of patient with ocular trauma.**

Mode of injury	male	female	Total (%age)
Road traffic accident	62	14	76 (40.2)
Sport related	44	3	47 (24.5)
Occupational related	22	17	39(20.6)
Physical assault	12	5	17 (9)
Domestic violence	3	7	10 (5.3)
total	143 (75.6%)	46(24.3%)	189 (100%)

In our study, cases 67 (35.4%) were blind at presentation i.e., visual acuity <3/60, majority of final visual outcome was <6/18-3/60 i.e 78(41.3%) and 44(23.3%) with visual acuity 6/6-6/18.(Table 4)

**Table 4: Type of injury and final visual outcome at 6 week.**

Globe Injury (Close and open globe)	<3/60-PL Negative	<6/18-3/60	6/18-6/6	Total (%age)
Lamellar laceration	6	0	3	9 (4.8%)
contusion	11	8	2	21(11.1%)
perforating	17	14	13	44(23.3%)
penetrating	23	36	16	75(39.7%)
Intraocular foreign body	4	7	3	14 (7.4%)
adnexal	6	13	7	26(13.8%)
Total	67 (35.4%)	78(41.3%)	44(23.3%)	189 (100%)

## DISCUSSION

The burden of ocular trauma was found to be 1.2% out of total individuals attending Eye Opd, Emergency and Trauma center. This number is significantly lower when compared to other studies. JUDO reported at south west Ethiopia, where this burden was found 6.9%, with 63.8% of the cases below the age of 30 years with mean age 25.5 years and male to female ratio 3.2:1. There were 141(74.6%) cases belongs 30 years of age and male to female ratio was 2.9:1 in our study. JUDO study revealed that 31.6 % of cases reported within 48 hours while 28.6% arrived one week or later.<sup>[9]</sup> In our study, 43(22.8%) of the patients reported to hospital within first 24 hrs of trauma while 145(76.7%) attended hospital within 2 days and 17 (9%) in 2 to 7 days after ocular trauma. In Haryana study found that males (76.01%) are affected more commonly than females (23.99%). Our study was showed male female ratio in this same approach. Cornea was the commonest structure affected in about 47.6% followed by iris in 32.64%.<sup>[10]</sup>

Mukherjee et al. study reported 44.9% of patients were fall within the 20 yrs of age, emphasizing the vulnerability of younger age.<sup>[11]</sup> In our study this number were 65.6%. Shukla IM et al reported 29.5 % of the patients were under 30yrs of age.<sup>[12]</sup> In our study this number were reduced to 9%. Similarly 86.74% of patients came from first 30yrs of life reported by Parmar et al in 1985. In our study 74.6% patients came under this category.

Shukla IM et al showed : Ocular trauma shows 31.50% patients reported in first 24 hrs, 48% of patients reported within 1<sup>st</sup> week and 20.5% reported after the 1<sup>st</sup> week.<sup>[12]</sup> Our study showed that 22.8% of patients first contact with the Ophthalmologist within 24 hrs & 85.7 % turned up to RIO, BHU hospital within first week. The majority of patients belongs to rural area of Eastern part of uttar pradesh & most of them are not conscious about risk problem of ocular injuries. The better visual outcome at the end of six week depends on earliest visit to ophthalmologist.

Visual acuity in the traumatic eye at presentation is a prognostic factor in the management of penetrating trauma. The result of penetrating ocular injury can be predicted by the details that in this study the visual acuity at presentation in (63.33 %) of cases was only perception of light. In the present study, (41.67 %) of patients show the final visual status 6/60 at 4week & at the end of 2nd month following treatment shows that (31.67 %) of patients got vision better than 6/24-6/36. Narang S etal. 2004 in his study regarding paediatric open globe trauma explained that visual acuity at 1<sup>st</sup> visit was more than or equal to 6/12 in 1.39 %, 3/60 to 6/12 in ( 6.94% ) & light perception to less than 3/60 in ( 72.22 %). Corrected visual gain was 6/12 or better in 44.44 % & 6/18 to 6/24 in (22.22%) Parihar JK etal 2000.<sup>[13]</sup> Visual status improved by two lines or more in 68.72% of patients surgically treated by Badrinath SS.198.<sup>[14]</sup>

**SUMMARY AND CONCLUSION**

From this study it is concluded that delay in 1<sup>st</sup> visit has a significant effect on final visual status along with presence of complications. This study showed road traffic accidents were most important reason of ocular injuries followed by sport related injuries, occupation related injuries and physical assault. So preventive and precautionary measures are advised like wearing helmet and seat belts while driving, protective goggles during welding, supervising children while playing to prevent ocular injuries. An urgent referral system for ocular trauma patients. In our study, cases 67 (35.4%) were blind at 6 week follow up i.e., visual acuity <3/60, majority of final visual outcome was <6/18-3/60 i.e 78(41.3%) and 44(23.3%) with visual acuity 6/6-6/18.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the consent form the patient has given his consent for his/her clinical information to be reported in the journal.

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Nil.

**Conflicts of interest**

There are no conflicts of interest.

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