



## Original Research Article

## Clinical profile of ocular injuries following road traffic accidents in a tertiary care centre

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## ABSTRACT

**Introduction:** Road traffic accidents are common occurrence owing to increase in number of vehicles and various other reasons. Severe eye injury can result in visual morbidity. The purpose of the study was to evaluate the epidemiology and pattern of ocular injuries in a tertiary care centre.

**Materials and Methods:** This is a hospital based retrospective study of patients attending emergency outpatient department of a tertiary care centre. Demographic data and details of injury were obtained. Details of ocular examination including visual acuity, anterior and posterior segment findings and other details like extra ocular involvement, need for surgery was recorded.

**Results:** 312 eyes of 290 patients were included in the study. 91% patients were males. 61% of the cases presented within 24 hours of injury. There were 91% closed globe injuries and 9% open globe injuries. Periorbital ecchymosis and subconjunctival haemorrhage were the most common presentation. 23% had posterior segment involvement and 11% had orbital fractures and 21% had extra ocular involvement. 35% patients required surgical intervention. 4.8% of the patients had no perception of light.

**Conclusion:** Ocular injuries as and when they occur have to be tackled efficiently and methodically. Primary preventive approach such as avoidance of alcohol, strict adherence to traffic rules can prevent ocular morbidity associated with road traffic accidents.

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## 1. Introduction

Road traffic accidents are common occurrences every day. It is a major public health problem.<sup>1</sup> Owing to increase in number of vehicles and various other reasons, RTA are on a rise leading to mild to severe injury including injuries to eye. Ocular trauma may involve lids and adnexa, cornea, sclera, lens, retina, optic nerve and orbital walls. Severe eye injury can result in visual morbidity. The cost and consequences of these are significant.

Ocular trauma is a preventable public health problem and hence the need for increasing awareness among the general public. This study aims at providing information on the epidemiology, pattern and magnitude of ocular injuries following RTA at a tertiary care centre.

## 2. Materials and Methods

This is a hospital based, retrospective study conducted in a tertiary care centre. All the injury cases attending outpatient department from January 2016 till December 2016 were included in the study. Patients of all ages, sex, irrespective of their socioeconomic status were included in the study. Those who were unstable, non-co-operative and ocular injuries other than RTA were excluded from the study. Patient details like name, age, sex, place of injury, type of vehicle, whether or not the patient was under the influence of alcohol, time of presentation to the hospital since the injury were noted. Visual acuity at the time of presentation was recorded using Snellen's chart. Pupillary reaction, presence or absence of RAPD was noted. Thorough evaluation of the patients with slit lamp examination, fundus examination with indirect ophthalmoscope with 20D lens was done wherever possible.

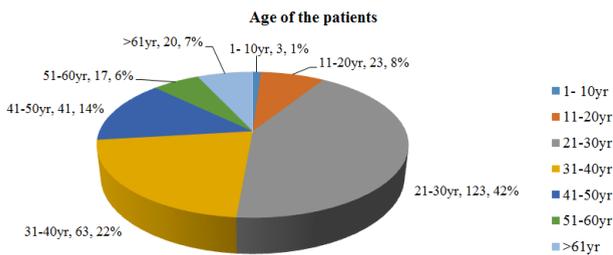
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In case of media opacity B scan ultrasound was done. Patients with suspected intraocular foreign body and orbital wall fractures underwent CT scan. Patients who required surgical intervention were admitted and surgery performed after obtaining informed consent. Visual acuity was recorded after the surgery. All these data were tabulated and analysed.

**3. Results**

312 eyes of 290 patients had ocular injuries following road traffic accident. Out of them 264(91%) were male and 26(9%) were female. Right eye alone was involved on 52% and left eye in 40% of the cases. 8% of the patients had both eye involvement. 42% of the RTAs happened among 21-30 years age group (Figure 1). Youngest patient was 2 year old and oldest patient was 80year old. 61% patients presented to the OPD within 24 hours of the injury.



**Fig. 1:** Showing age distribution of the patients.

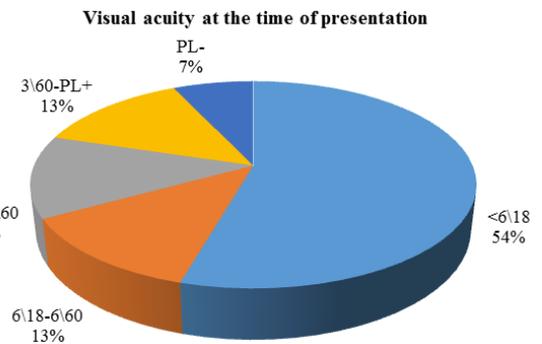
Majority of the patients were riding two wheeler (77%) and 3% were pillion. 4% were driving three wheeler and 9% were driving four wheeler at the time of accident. Whereas 7% who sustained injuries were pedestrians. Surprisingly only 12% patients were under the influence of alcohol at the time of accident. 91% suffered closed globe injury whereas 9% had open globe injury.

54% of patients had visual acuity better than 6\18 and 7% of patients had no perception of light at the time of presentation (Figure 2). Ecchymosis was the commonest type of ocular injury which was seen in 51% of the patients.

Out of 23% patients who had posterior segment involvement, 26 patients had vitreous haemorrhage. Traumatic optic nerve injury was seen in 15 patients (Figure 3).

Eyelid ecchymosis was seen in 51% of patients making it the most common ocular presentation. Lid tear was seen in 27% of cases whereas 4% had lid tear with tissue loss. 2% showed canalicular tear. Orbital fractures was seen in 11% of the cases. 21% had extraocular injuries.

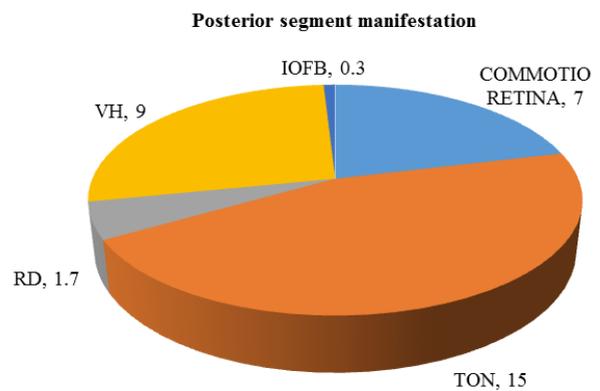
Majority of the patients were managed conservatively. Only 35% patients required surgical intervention. Lid repair, canalicular tear repair, corneal tear repair, scleral tear repair, cataract surgery, intravitreal antibiotics, retinal detachment surgery were the various surgical procedures



**Fig. 2:** Showing visual acuity at the time of presentation to hospital.

**Table 1:** Showing distribution of various anterior segment findings

Type of ocular trauma	Number	Percentage
Subconjunctival haemorrhage	145	50
Chemosis	32	11
Epithelial defect	9	3
Corneal tear	13	4.5
Hyphema	11	3.8
Traumatic mydriasis	23	8
Iris prolapse	15	5
Lens dislocation	4	1.8
Traumatic cataract	6	2
Vitreous in AC	2	0.7
Scleral tear	20	7



**Fig. 3:** Showing posterior segment manifestation

performed. In case of traumatic optic neuropathy intravenous methyl prednisolone was given. Visual acuity was assessed after the surgery. 50% showed improvement in visual acuity, 35% had no change whereas 15% showed deterioration in visual acuity in the immediate postoperative period. 4.8% of the patients were totally blind.

#### 4. Discussion

Ocular trauma is a major cause of visual morbidity. One out of every twenty patients seen by an ophthalmologist is a case of ocular trauma.<sup>2</sup> Road traffic accidents resulting in ocular trauma is the major cause of avoidable blindness. Our study shows the profile of ocular injuries following road traffic accidents in patients attending regional institute of ophthalmology in south India. The study shows increased incidence of road traffic accidents in males. This may be explained by their increased outdoor activities, rash driving and alcohol abuse. Right eye was more frequently involved in this study which was similar to Alam J et al.<sup>3</sup> The peak age of RTA was found to be 21-30 years which was similar to other studies. Only 12% patients gave the history of alcohol consumption during the time of accident which is considered a risk factor impacting road traffic injuries.<sup>4</sup> Around 77% of the patients were riding two wheeler similar to study reported by Puzari et al<sup>5</sup>

61% of the patients reported to the hospital within 24 hours of accident. Ignorance of health facilities available, poverty, late referral, distance, illiteracy could be the reasons for late presentation. According to Das et al significant delay in seeking medical care is reported in developing countries including India.<sup>6</sup> About 68% of the patients who reported were from rural place. Majority of the patient had good vision (<6\18). 7% of the patients showed no perception of light at the time of presentation to the hospital. Ecchymosis and SCH were the most common presentation. In general anterior segment injury were more common than posterior segment injury and severity of diminution of vision was seen in posterior segment injury. Even after intervention 4.8% had no perception of light.

The frequency of different type of ocular injuries found in our study showed similarities with other studies.<sup>5-10</sup> (Table 2)

**Table 2:** Showing ocular injuries in our study and other studies.

	Present study	Puzari BS et al <sup>5</sup>	Shtewi ME et al <sup>7</sup>
Ecchymosis	51%	78.33%	37.7%
Subconjunctival haemorrhage	50%	83.33%	42.4%
Corneal tear	4.5%	3.33%	46.7%
HypHEMA	3.8%	6.66%	50%
Vitreous haemorrhage	9%	1.66%	23.6%
IOFB	0.3%	1.66%	9.8%
PL negative	4.8%	1.66%	3.28%

#### 5. Conclusion

Severe eye injury can result in ocular morbidity. The cost and consequences of these are significant. It is a preventable public health problem. Henceforth ocular

injuries as and when they occur have to be tackled efficiently and methodically. If the final visual acuity has to be improved, better first aid facilities, referral service, trained ophthalmologist who can assess and manage ocular injuries on an emergency basis, well equipped facility, visual rehabilitation, follow up services are of paramount importance. On the other hand unsafe roads, distracted driving, exhaustion, alcohol intoxication are some of the reasons leading to road traffic accidents. Therefore primary preventive approach like avoidance of alcohol, wearing protective eyewear, helmets, training of drivers, proper infrastructure including maintenance of roads, enforcing road safety standards and vehicle standards must be implemented.

#### 6. Source of Funding

None.

#### 7. Conflict of Interest

None.

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