

# Visual Outcome in Ocular Injuries in Road Traffic Accident

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## Abstract

**Introduction:** Ocular injuries in Road traffic accidents constitute a major cause of visual morbidity worldwide with significant economic impact.

**Aim:** The aim of this study to assess the visual outcome in ocular involvement in road traffic accident (RTA).

**Methods:** Prospective study of RTA cases in a tertiary care hospital to find the visual outcome. Patients were clinically examined, and vision was checked.

**Results:** Maximum of RTA in 21-30 years, 34.02%, maximum number of ocular injuries happened in two wheeler accidents. 15.27% of patients vision worsened after injury, 37.5% had no change in vision.

**Conclusion:** Ocular injury as and when occurred has to be tackled urgently and methodically if the final visual outcome is to be improved.

**Key words:** Injury, Ocular trauma, Road traffic accident, Visual outcome

## INTRODUCTION

The eye is the most delicate and highly evolved sense organ contributing 40% sensory inputs to the brain. A trauma which causes little or no concern can cause permanent blindness if it occurs in the eye. There is inordinately high rate of ocular trauma relative to surface area exposed to eye injury. Ocular trauma once described as “neglected disorder” has recently been highlighted as a major cause of visual morbidity.<sup>1</sup> The largest group of causes documented for total ocular trauma group was motor vehicle accident.<sup>2</sup> In addition to the impact on affected individual, there are profound social implications regarding the lost productivity of young men requirement of caring facilities and rehabilitation for the elderly. Thus, there is a great need for more active interest in the prevention of eye injuries and it

is necessary to accumulate relevant data regarding damage caused by road traffic accident (RTA).

## Aim

The aim of this study to assess the visual outcome in ocular involvement in RTA.

## MATERIALS AND METHODS

This was a prospective study conducted on 144 cases of ocular trauma in RTA attending tertiary care hospital were studied. Institutional Ethics committee and Informed consent from selected patients were obtained. The patients with ocular injury were randomly included in the study. Patients of all ages, both males and females irrespective of economic status, who are co-operative, were included in the study. Patients who were unconscious, not cooperative and terminally ill were excluded. Patients with ocular injuries other than RTA are excluded from the study. Detailed work up was done of the patients with ocular trauma in RTA, which included a detailed trauma history, whenever possible from the patient himself and if necessary from the relatives. History of preexisting ocular and medical trauma

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was also recorded. Proforma was drawn up and following details were recorded for each patient with ocular trauma; age and sex, type of vehicle the patient was travelling in, presence or absence of protective eyewear and sign and symptom following the injury.

## RESULTS

In 144 cases, a maximum number of RTA cases in 21-30 age group 34.02% followed by 43 cases 29.84% in 31-40 age group. Out of 144 patients, 130 patients (90.3%) who sustained ocular injury were males and 14 patients (9.7%) were females.

A maximum incidence of ocular injuries was seen among those travelling by two wheelers, 123 patients (85.4%) sustained injuries while travelling in 2 wheelers, 4 patients (2.8%) in 3 wheelers, 13 patients (9.0%) in 4 wheelers and 4 patients (2.8%) were pedestrians (Table 1).

A total of 130 patients (90.2%) had unilateral involvement and 14 patients (9.72%) had bilateral involvement. In our study, unilateral injuries were seen in 90.3% and bilateral in 9.7%. In the study done by Kriedl *et al.* (2003),<sup>3</sup> unilateral injuries were seen in 95.1% of patients and bilateral in 4.9% (Table 2).

Out of 144 patients many patients had multiple ocular structure involvement, orbital lesions were seen in 33 patients (22.91%), lids were involved in 117 patients (81.25%), conjunctiva in 92 patients (63.8%), cornea in 13 patients (8.33%), sclera in 5 patients (3.47%), pupil was involved in 31 patients, lens in 6 patients, (4.16%) posterior segment was involved in 15 patients (10.41%), and cranial nerves were involved in 25 patients (17.36%) (Tables 3 and 4).

## DISCUSSION

This study of 144 patients with ocular injuries following RTA, demonstrates a wide spectrum of serious ocular injuries. In our study, patients <30 years accounted 45.13% of the cases while in the study done by Shtewi *et al.*,<sup>4</sup> patients <33 years accounted for 82%. In the study done by Kriedl *et al.*,<sup>3</sup> unilateral injuries were seen in 95.1% of patients and bilateral in 4.9%. In our study ecchymosis was seen in 64.58% of patients, in comparison to the study by Shtewi *et al.*,<sup>4</sup> in which it was seen in 37.7%. In our study, lid edema was seen in 65.88% patients while in the study by Shtewi *et al.*<sup>4</sup> and it was seen in 35.5%. 14.58% of patients in our study had lid laceration, while in the study by Shtewi *et al.*<sup>4</sup> and it was seen in 17.8%. Orbital fractures in our study were seen in 22.22% of patients

**Table 1: Type of vehicle involved in ocular injuries**

Type of vehicle	Number of cases (%)
2 Wheeler	123 (85.4)
3 Wheeler	4 (2.8)
4 Wheeler	13 (9.0)
Pedestrians	4 (2.8)

**Table 2: Eye involved**

Eye involved	Number of cases (%)
Unilateral	130 (90.2)
Bilateral	14 (9.72)

**Table 3: Ocular involvement**

Ocular involvement	Number of cases (%)
Orbital	33 (22.91)
Lids	117 (81.25)
Conjunctiva	92 (63.8)
Cornea	12 (8.33)
Sclera	5 (3.47)
Anterior chamber	8 (5.55)
Pupil	31 (21.52)
Lens	6 (4.16)
Posterior segment	15 (10.41)
Cranial nerves	25 (17.36)

**Table 4: Visual outcome**

Ocular involvement	Vision			P*
	Improved	Static	Worsened	
Anterior segment	68	45	6	<0.0001
Posterior segment	9	4	2	
Cranial nerves	6	5	14	

\*Pearson chi-square test

while these accounted to 1.1% in the study by Shtewi *et al.*<sup>4</sup> In a study done by Cruz *et al.*,<sup>5</sup> cause of orbital fracture was attributed to RTA in 54% of cases. In our study, 58.33% patients had subconjunctival hemorrhage while in the study by Shtewi *et al.*<sup>4</sup> and 42.4% were found to have the same. Corneal abrasion was seen in 2.77% of patients in our study while in the study by Shtewi *et al.*,<sup>4</sup> it was seen in 30.4%. In our study, corneal perforation was seen in 4.86% while in the study by Shtewi *et al.*<sup>4</sup> and it occurred in 46.7%. Hyphema was seen in 4.16% patients in our study while it occurred in 50% cases in the study by Shtewi *et al.*<sup>4</sup> Traumatic cataract occurred in 1.38% in our study and in 31.9% in the study by Shtewi *et al.*<sup>4</sup> Lens dislocation occurred in our study in 2.08% while it occurred in 7.6% cases in the study by Shtewi *et al.*<sup>4</sup> Vitreous hemorrhage was seen in 0.69% of our patients while it occurred in 23.6% of the patients in the study by Shtewi *et al.*<sup>4</sup> In our study, only one patient (0.69%) had IOFB while in the study by Shtewi *et al.*,<sup>4</sup> it was seen in

9.8% of patients. In our study, 95.13% of patients had closed globe injury and 4.86% had open globe injury while in a study done by Serrano *et al.*,<sup>6</sup> among boys 82.4% had closed globe injuries and 17.6% had open globe injuries and among girls, 83.8% had close globe injuries and 16.2% had open globe injuries. In another study done by Smith *et al.*<sup>7</sup> 68.58% of patients had closed globe injury and 31.41% patients had open globe injury. In our study 44.44% patients had visual outcome of 6/6, 39.58% had 6/9-6/60, 5.5% had CF, 3.47% had PL, and 6.24% had no perception of light while in the study by Shtewi *et al.*,<sup>4</sup> 30.43% patients had 6/6, 50.30% patients had 6/9-6/60, 15.94% had CF and 3.28% had no perception of light.

## CONCLUSION

Ocular injuries due to RTA involved the lids which while causing a certain degree of cosmetics disfigurement and do

not have any effect on any final visual outcome. Only those injuries which involved the globe had a poor prognosis for the final visual outcome.

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