

# Ocular Trauma Admitted at Tripoli Eye Hospital: Magnitude, Pattern, and Outcome

Saifeddin Krewi<sup>®</sup> and Fadia Sase

Department of Ophthalmology, Faculty of Medicine, University of Tripoli; Educational Tripoli Eye Hospital, Tripoli, Libya

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## ABSTRACT

Eye injuries can lead to many health consequences. The effect of eye injuries is not mainly cause of vision loss, but it can burden our community and lead to many economical conflicts.

*Objective:* is to demonstrate the trend of ocular trauma admitted at Tripoli Eye Hospital in the form of magnitude, pattern and outcome.

This study was a longitudinal, descriptive study. It was conducted at Tripoli Eye Hospital during the year 2015-2016. Two hundred and twenty seven patients with history of trauma to the eye were included in the study. The data were obtained from the patient's records including age, gender, affected eye, etiology and location of trauma and the management. Data was analyzed by SPSS version 16.

The magnitude of ocular trauma in this study was around the third of cases admitted to Tripoli Eye Hospital during Jun 2015 till January 2016. High percentage of eye injuries was found in male. Out of 227 trauma eye cases, 53.3% patients suffered left eye injuries, 48% presented within the first 24 hours. Street (27.8%) and home (26.4%) were contributed to the most common places for eye trauma. The most common cause was Mechanical (93%), mainly by blunt (28.2%) and sharp (26.4%) objects. Open eye injuries are more common (39%) than close eye injuries (34%). The ocular Trauma system Score (OTS) 2 level is the most common end result for eye trauma (23%).

The study showed that around a third of admitted patients to the hospital are due to trauma. The majority of ocular trauma in study population was due to mechanical cause, more in males, younger than 10 years of age. Open globe injuries were more common and the OTS 2 level is the most common end result for eye trauma.

*Keywords-*Ocular Trauma; Glob injuries; Complications; Prevention.

## INTRODUCTION

Ocular trauma is an important worldwide cause of preventable morbidity and accounts for half a million cases of monocular blindness worldwide.<sup>1,3</sup> Approximately half of all patients who present to an ophthalmic casualty department do so because of ocular trauma. Majority of injuries are minor affecting peri-orbital structures, ocular surfaces such as corneal abrasions and superficial foreign bodies. Only 2-3% of all eye injuries require hospital admission.<sup>4</sup> The demographic pattern (age/gender) of ocular injuries varies with the environment and cause of injury.

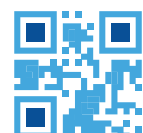
The general pattern is that of a curve with two peaks: one in the age group 5-25 years and another in people aged 70 years and over. Compared to women, the risk of eye injuries in men is four times higher.<sup>5</sup> Every year, approximately 2 million eye injuries occur in the United States, of which, more than 40 thousand results in permanent visual impairment.<sup>6</sup> When considering eye injuries requiring hospital admission, rates have ranged from 8 to 57 per 100,000.<sup>6</sup> With all of these numbers still there are scant

epidemiological data on moderate to severe injuries with potentially sight threatening sequela that are available to inform not only planners and providers of eye health care, but also health and safety strategies for the prevention of ocular injuries.<sup>7</sup> Injury to the eye or its surrounding tissues is the most common cause for patients to get medical attention at emergency department.<sup>8</sup> The surgical management of injuries is directed toward restoration of normal ocular anatomy and the goal is to prevent secondary complications.<sup>8</sup>

Despite its public health importance, there is relatively less data on magnitude and risk factors for ocular trauma, especially from developing countries, hence the current study was conducted to describe ocular trauma that admitted to Tripoli Eye Hospital. It examined the magnitude, pattern and the outcome of ocular trauma.

## MATERIALS AND METHODS

A longitudinal descriptive study was conducted in Tripoli Eye Hospital, which is an eye health care center specialized only for treating eye diseases. The hospital has an emergency



department, outpatient clinic, diagnostic area, operation rooms and admission floor. It provides an eye care for people from different cities of Libya. The study was conducted in June 2015 till January 2016. The study included all patients admitted to TEH due to ocular trauma. Data was collected by interview and from medical records of patients. All patients were interviewed and underwent detailed ocular examination. Injuries were classified according to BETT (Birmingham Eye Trauma Terminology) and other ocular trauma classification. In order to predict the 6 months visual acuity, it used the Ocular Trauma Score system to estimate the result. This system is based on immediate visual acuity and the type of eye injury that occurred. The raw score are estimated then transferred to table score to get the result. OTS scores range from 1 (most severe injury and worst prognosis at 6 months follow-up) to 5 (least severe injury and least poor prognosis at 6 months).<sup>5</sup> Data related to complications were collected by special form; follow up visit, and on phone. A questionnaire was included the patient's age, gender, affected eye, etiology and location of trauma, classification of eye injury, complications and management option. Data analyzed statistically by using SPSS statistical package version 16. Percentage and mean ± SD were used.

## RESULTS

A total 745 patients were admitted in Tripoli Eye hospital during study period and nearly a third (30.5%) of total admission is due ocular trauma, with mean age of 21±18.2 years and 42% of the cases were from Tripoli. Trauma occurrence was more among males (82%) compared to females, male to female ratio was 4.6:1 (Table 1).

**Table 1:** Demographic characteristics of patients with ocular trauma

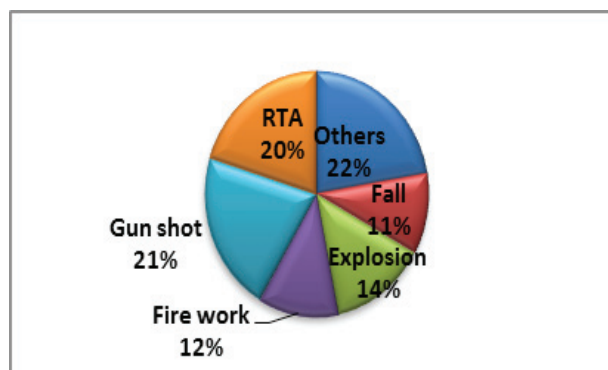
Characteristic	No.	%
<b>Sex:</b>		
Male	187	82.4
Female	40	17.6
<b>Age:</b>		
<10years	82	36.1
11-20	44	19.4
21-30	49	21.6
31-40	23	10.1
41-50	11	4.8
>50	18	7.9
<b>Residence:</b>		
Tripoli	95	42
Outside Tripoli	132	58

Left eye injury was reported in 53.3% of the cases, 48% of cases were presented within 24 hours after injury. The most common place of trauma was at street and home with percentage around 27.8% and 26.4% respectively and the lowest was at work. The most common cause was Mechanical (93%), mainly by blunt (28.2%) and sharp (26.4%) objects (Table 2).

**Table 2:** Pattern of ocular trauma among admitted patients at Tripoli Eye hospital.

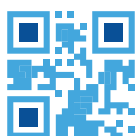
Character	No.	%
<b>Site of trauma</b>		
Right eye	97	42.7
Left eye	121	53.3
Both	9	4
<b>Duration of trauma</b>		
Within 24 hours	109	48
2-3 days	39	17.2
4-5	10	4.4
6-7	2	0.9
>week	5	2.2
Unknown	62	27.3
<b>Place of trauma</b>		
Street	63	27.8
Home	60	26.4
Work	23	10.1
Unknown	81	35.7
<b>Cause trauma</b>		
Mechanical	212	93.4
Non mechanical	2	0.9
Mixed	11	4.8
Others	2	0.9
<b>Object of trauma</b>		
Sharp	60	26.4
Blunt	64	28.2
Other	94	41.4
Unknown	9	4

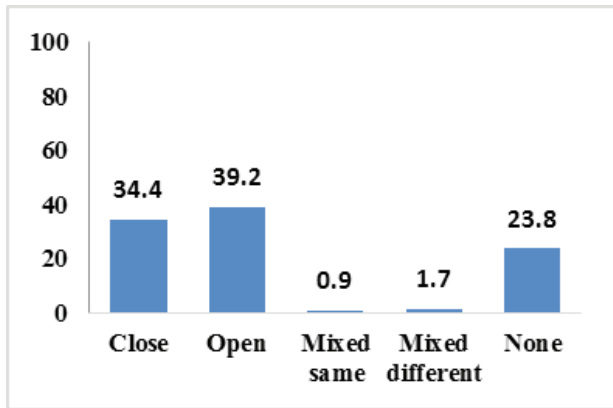
Further analysis for object of trauma, gunshot and road traffic accidents were 21% and 20% respectively (Figure 1).



**Figure 1:** Distribution of other objects (N=94) among patients admitted to Tripoli Eye Hospital

Open eye injuries are more common (39%) than close eye injuries (34%). Mixed same were included the subcategory of open or close injury. While mixed different were included both subcategory of open and close injury (Figure 2).





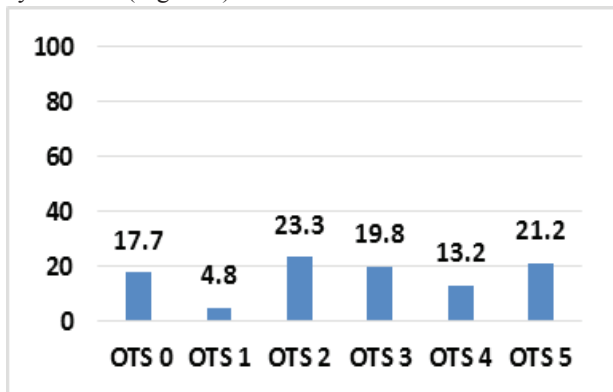
**Figure 2:** Types of Globe Injuries.

Concerning ocular trauma management, 43.2% of cases were treated medically and 42.7% were underwent surgical intervention (Table 3).

**Table3:** Management type for ocular trauma patients.

Management	No.	%
Medically	98	43.2
Surgically	97	42.7
Referral	14	6.2
Discharge against medical advice	10	4.4
Unknown	8	3.5
Total	227	100

The OTS 2 (23%) level is the most common end result for eye trauma (Figure 3).



**Figure 3:** Outcome of ocular trauma by using Ocular Trauma Score.

## DISCUSSION

Ocular trauma is an important cause of visual loss and is frequently preventable. The magnitude of ocular trauma in this study was around the half of cases admitted to Tripoli Eye Hospital during June 2015 till January 2016. Eye injuries become the major risk factor for vision loss in one or both eyes.

Mean age of patients during study period was 21±18.2 years, most affected age groups were less than 10 years old

and 21-30 years, in comparison with Pandita et al study. The maximum number of injuries was seen in the age group 16-20 years and 26-30 years (11.5% and 11.3% respectively). Eye injuries were predominant among male in current study group and at all ages. This will support the high trend of trauma in male as compared to female, which is similar to results of Pandita et al that men had higher rate of ocular trauma than women (74% vs 26%).<sup>9</sup>

The study revealed that the most injuries occurred at street and home, which was in agreement with previous Indian study<sup>1</sup> as well as with Rafindadi study<sup>4</sup> and Malika et al study.<sup>10</sup> However, contradictory finding was demonstrated in Pandita et al study, which showed that outdoor activity and work were the most common places for eye injuries.<sup>9</sup> A mechanical injury was the most common cause of injury with 93.4% mainly blunt and sharp trauma type. For further analysis results demonstrate gunshot was responsible for 21% of trauma. This gave an idea that violence is a risk factor for eye injuries.

In this study, medical treatment accounting for 43.2% of cases, while Cao et al study revealed (22.2%) patients were managed conservatively on medications, and the remaining 2835 (77.8%) required additional procedures.<sup>11</sup> Open globe injuries were reported in 89 (39.2%) patients, which is more frequent than closed injury in present study, However, contradicted finding was demonstrated in Asaminew et al<sup>12</sup> and Mir study<sup>13</sup> Ocular Trauma Score give a good idea about the prognosis of eye injuries and can be used to give patients realistic expectation about their condition.

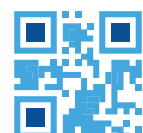
The OTS evaluation of the patient showed that 11(4.8) had a score of 1 (most severe injury and worst prognosis at 6 months follow-up) and 48 (21.1%) were had a score 5 (least severe injury and least poor prognosis at 6 months), while study conducted by Mishra et al reported 23 (13%) had a score of 1 (extremely bad visual prognosis) and 109 (61%) had a score of 5 (relatively good visual prognosis).<sup>14</sup>

## CONCLUSIONS

Eye injury trauma contributed to one third of the hospital admission, the study showed that around the third of admitted patients to the hospital are due to trauma. The majority of ocular trauma in study population was due to mechanical cause, occurring mainly in males, younger than 10 years old. Open globe injuries were more common and the OTS 2 level is the most common end result for eye trauma.

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