

Road Traffic Accidents and Ocular Trauma: Experience at Tripoli Eye Hospital, Libya

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Road traffic accidents (RTA) are common occurrences every day. With the ever increasing number of various road transport vehicles, and the increasing number of new drivers, traffic accidents keep on increasing, causing mild to severe human injury, including injuries to the eyes.

Eye injuries, often resulting in some visual loss, create enormous costs both to the victim and to society. There is great need for more active interest in the prevention of eye injuries. It is necessary to accumulate relevant data of damage caused by road traffic accidents (RTA) and, also, to evaluate the present situation in Libya.

The Casualty Service of the Tripoli Eye Hospital, which receives trauma cases, is open day and night. Many cases of eye injuries are sent from the Trauma Centre, Central Hospital, Tripoli.

Ocular involvement in road traffic accidents may involve the eyelids, lacrimal canaliculi, orbital wall, conjunctiva, cornea, sclera and the extra-ocular muscles. There may be prolapse of uveal tissue, vitreous loss, traumatic cataract, retinal detachment, vitreous haemorrhage, choroidal rupture, optic nerve avulsion or a ruptured globe.

This two year study, from 1 October 1993 until 30 September 1995, reports the ocular trauma caused by road traffic accidents in patients attending or referred to the Tripoli Eye Hospital.

Material and Methods

Twelve hundred and ten patients were included in this study of eye injuries of all types, of which 248 (20.5%) patients (276 eyes) were found to have been caused by road traffic accidents. These patients were seen in the Casualty Service, Eye Outpatient Department and then later admitted for treatment in the inpatient department of the Hospital. Demographic

data and details of the injury were obtained. Information regarding time, location, type and mechanism of eye injury and use of spectacles (or other protection) was recorded. Any offending broken pieces of windscreen glass, spectacle trauma, steering wheel or dash board impact were noted. The mechanism of injury was then categorised as blunt, sharp, projectile or combined. The question was asked if the car-safety belts were in use at the time of the accident.

An eye examination was performed on each patient and visual acuity, examination findings, diagnostic tests required, diagnosis and medical and operating treatment were recorded. Due to inadequate compliance with follow-up, the final outcome has been reported in only about half of the patients.

Results

This study is a statistical analysis of 276 traumatised eyes of 248 patients. One hundred and eighty six (75%) patients were male and 62 (25%) were female. The mean age was 32.5 years – the youngest child was 2 years old and the oldest person was 68 years. One hundred and sixty-one patients were adults (65%) and 87 (35%) patients were categorised as paediatric (younger than 16 years). In the paediatric group 58 (66%) were boys and 29 (34%) were girls.

The right eye was injured in 116 (42%) patients and the left eye in 104 (37.7%). Both eyes were affected in 28 (20.3%) patients.

Patients younger than 33 years account for 82% of all the RTA ocular trauma.

The time of presentation at the Hospital, after the injury, was usually within 24 hours (73%). Table 1 gives the 'time since injury' which included 15 (6%) patients presenting after 48 hours.

Table 1: Time of Presentation

Time Since Injury	No. of Patients (%)
Within 24 hours	181 (73%)
Within 48 hours	52 (21%)
Within one week	8 (3%)
Longer than one week	7 (3%)



Severe lacerating injury involving the eye
Photo: John Sandford-Smith

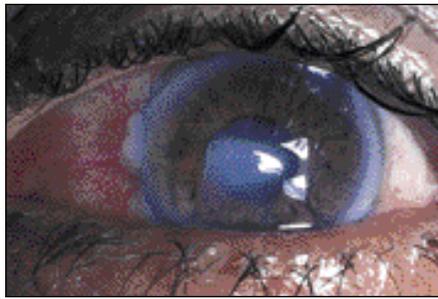
Nature of the Injury

Most of the accidents were due to collision of one car with another vehicle, often in head-on impact overtaking on one-way routes, or at road traffic crossings. At times the injury was caused by a careless driver injuring a pedestrian.

Glass-splinters from the windscreen caused cut wounds to the face, eyelids, conjunctiva and corneas. Rupture of the globe occurred. In some cases the injuries were limited to the external eye only with

Table 2: Types of Injury

Injuries	No. of Patients (%)
Extraocular	
Eyelid bruising	104 (37.7)
Eyelid oedema	98 (35.5)
Eyelid laceration	49 (17.8)
Avulsion of extraocular muscles	12 (4.5)
Orbital rim fracture	3 (1.1)
Anterior Segment	
Subconjunctival haemorrhage	117 (42.4)
Corneal abrasions	84 (30.4)
Corneal perforations	129 (46.7)
Scleral perforation	64 (23.2)
Hypaema	138 (50)
Iris injury	164 (59.4)
Traumatic angle recession	29 (10.5)
Traumatic cataract	88 (31.9)
Lens dislocation	21 (7.6)
Posterior Segment	
Vitreous haemorrhage	65 (23.6)
Comotio retinae	55 (19.9)
IOFB	
Intraocular foreign body (IOFB)	27 (9.8)
Globe	
Ruptured globe (with prolapse of uveal tissue, lens and vitreous)	27 (9.8)



Angled corneal laceration

Photo: John D C Anderson

superficial abrasion to the cornea. In some instances, for example, pieces of glass and the frame of the spectacles pierced the eye causing a perforating injury. In a few instances the steering wheel and dashboard were struck by the forehead, face and the eye causing severe blunt trauma. Rarely, a fracture of the orbital margin resulted.

Table 3: Operations Required

Operating Procedure	No. of Patients %
Extraocular	
Eyelid repair	49 (17.8)
Anterior Segment	
Canalicular repair	5 (1.8)
Conjunctival repair	19 (6.9)
Corneal repair	129 (46.7)
Sclero-corneal repair	64 (23.2)
Paracentesis	14 (5.1)
Lensectomy	88 (31.9)
Posterior Segment	
Vitrectomy/Retinal detachment surgery	37 (13.4)
Globe	
Enucleation	9

Intraocular foreign bodies or extraocular foreign bodies impacted in the soft tissues of the eyes or adnexae. It was not possible to distinguish whether the glass fragments were from windscreen glass or spectacle glass.

None of the patients was wearing the safety seat belt.

Diagnosis (Table 2)

More than one injury was noted in 174 (65%) of the eyes which had severe trauma. The types of injury sustained by the patients is given in Table 2.

Surgery (Table 3)

Table 3 lists the surgical procedures required following injury.

Visual Acuity (Table 4)

Post-treatment visual acuity was affected directly in proportion to the intensity of the trauma, whether blunt or sharp fragments. Perforating injuries of the cornea and sclera led to gross visual loss (Table 4).

Discussion

The Trauma Centre of the Central Hospital recorded a total number of 18,903 general trauma cases in the 24 months of the study. Of these, 1992 patients were admitted for medical and surgical treatment.

The Tripoli Eye Hospital recorded eye injuries in 5420 persons, of which 1210 were admitted to the Hospital. This total included 552 paediatric patients and 658 adults.

Of the 1210 trauma inpatients, the number requiring admission with ocular trauma

Table 4: Post-treatment Visual Acuity in 276 Eyes

Visual Acuity	No of Patients (%)
6/6	84 (30.43)
6/9-6/18	85 (30.79)
6/24-6/60	54 (19.59)
C.F at 5 metres to C.F. at 1 metre (CF = Counting Fingers)	44 (15.94)
No light perception	9 (3.28)

due to road traffic accidents was 248 (20.5%). During the same period the Trauma Centre admitted 1922 RTA patients. Thus the percentage of road traffic accidents causing ocular trauma is 12.5%.

Negrel and Thylefors report that many studies have found over 85% of RTA eye injuries were a consequence of passengers not wearing seat belts.¹ A dramatic decrease in RTA eye injuries was confirmed by studies in the United Kingdom after seat belt legislation was introduced.²

Recommendations for the Prevention of Ocular and Orbital Injuries in Road Traffic Accidents

1. Passengers sitting in the front seats more commonly sustain ocular trauma.
 - The use of safety seat belts must be made compulsory.
 - All road vehicles must have laminated glass windscreens.
2. The practice of sitting younger children on the lap of a parent on one of the front seats should not be allowed.
3. There is urgent need for education of the public through the use of news media and television programmes.
 - The requirement of wearing seat belts
 - Observation of the rules of the road
 - Punishment for reckless driving and dangerous overtaking
4. The use of unbreakable plastic spectacles should be encouraged.
5. Road markings, guiding traffic and drivers, need to be re-painted more frequently. Paint should be fluorescent so as to be clearly visible during darkness.

References

1. Negrel A-D, Thylefors B. The global impact of eye injuries. *Ophthalmic Epidemiology* 1998; 5: 143-69.
2. Cole MD, Clearkin L, Dabbs T, Smerdon D. The seat belt law and after. *Br J Ophthalmol* 1987; 71: 436-40

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