

THE INTERNATIONAL JOURNAL OF SCIENCE & TECHNOLEDGE

Ocular Trauma Pattern in a Tertiary Hospital

Dr. Vepa Meenakshi

Assistant Professor, Department of Ophthalmology, R.S.P.R. Govt. Regional Eye Hospital
Andhra Medical College, Visakhapatnam, India

Dr. T. Jyothirmayi

Assistant Professor, Department of Ophthalmology,
R.S.P.R. Govt. Regional Eye Hospital/K.G.H, Visakhapatnam, India

Dr. T. Vanisri

Civil Assistant Surgeon, Govt. Regional Eye Hospital, Visakhapatnam, India

Abstract:

Traumatic mechanical damage causes severe morphological and functional damage to eye. Thorough examination through systematic and standardized approach, timely management and proper documentation play an important role in a tertiary hospital. Materials and methods: A study was conducted on patients with mechanical injuries in year 2014 from January 1 to December 31 at Department of ophthalmology, R.S.P.R. Govt. Regional Eye hospital, Andhra Medical College, Visakhapatnam. All the patients with injuries underwent thorough anterior segment and posterior segment examination, visual acuity testing with snellen's chart and necessary investigations. Patients were analyzed as per age, sex, cause of injury, time of presentation, vision at presentation, type of ocular injury and final outcome.

Results: Out of 243 patients 197 were male and 46 female. Maximum injuries occurred in 25-44 year age group. Right eye 99 left eye 112 both eyes involved in 32 patients. 55 patients had adnexal injuries, 127 with closed globe injuries 61 with open globe injuries. Most of the injuries are due to violence (87) and RTA (78) others being domestic accidents or occupation related. 142 patients presented with visual acuity >6/18, others with <6/18 to NO PL. Immediate surgical management was done in 76 cases. 15 patients with adnexal injuries and 25 patients with penetrating injuries had improvement in vision by two lines to five lines on immediate surgical management. 36 patients had complications due delay in presentation or severity of injury.

Conclusions: The result of the study showed that the injuries occurred in actively working group and students. Males are 4 times more affected than females. It is very important to treat promptly and preferably within 24 hours to prevent permanent invalidity caused by reduced visual function or blindness of the injured eye

Keywords: Ocular trauma, penetrating injuries, open globe injuries

1. Introduction

Eye is protected anatomically from direct injuries by the lids, eyelashes and projecting margins of the orbit. Still eye can be injured in several ways, by chemicals, heat, radiation and mechanical trauma. Traumatic mechanical damage causes severe morphological and functional damage to eye especially monocular.^{3,4} Mechanical injury to the globe may occur in a variety of ways and produce myriad clinical sequel.^{1,2} Worldwide the typical male to female ratio is 4:1. Young adults are more prone to ocular trauma as they indulge in high risk behavior. A good proportion of cases are road traffic accidents, work related, sports related.^{3,4} Recognition of the public health importance of ocular trauma in view of it being preventable in many cases with proper counseling is gaining importance. Ocular Trauma Terminology guidelines as per Birmingham Eye Trauma Terminology System (BETTS).^{4,5} Eye Wall: Cornea and Sclera Closed Globe Injury: No full thickness wound of the eye wall
Contusions: no full thickness wound, direct energy delivery (e.g. choroidal rupture) or due to change in shape of the globe (e.g. angle recession) Lamellar laceration: partial thickness wound of the eye wall

1.1. Open Globe Injury

Full thickness wound of the eye wall

1. Laceration: full thickness wound at the impact site of a sharp object by outside- in mechanism
2. Penetrating: entrance wound only
3. Perforating: entrance plus exit wound

4. Intra- ocular foreign body: technically a penetrating injury, but grouped separately because of different clinical implications
5. Rupture: Full thickness wound by blunt object by inside out mechanism due to increased intraocular pressure
6. Adnexal injuries: Eyelid and/or conjunctiva injuries

In our study we tried to analyze the state of ocular trauma in tertiary care centre

2. Materials and Methods

A retrospective study conducted on patients with mechanical injuries in year 2014 from January 1 to December 31 at Department of ophthalmology, Andhra Medical College, Visakhapatnam. Out of 72,046 patients treated as outpatients and emergencies 243 patients had mechanical injuries. All the patients with injuries underwent thorough anterior segment and posterior segment examination, visual acuity testing with snellens chart, examination of anterior segment with Slit lamp and posterior segment using Direct / Indirect ophthalmoscopy. Necessary investigations like Bscan ultrasonography, CT scan of orbits and brain were done to few cases. Patients were analyzed as per age, sex, cause of injury, time of presentation, vision at presentation, type of ocular injury and final outcome

3. Results

Out of 72,046 patients treated as outpatient and emergencies 243 patients had mechanical injuries. Trivial injuries like subconjunctival hemorrhage, small abrasions were excluded from the study. It was found that the ocular trauma accounted to 0.32% out of total patients treated at hospital. Out of 243 patients 197 were male and 46 female. Maximum injuries occurred in 25-44 year age group (table -1). Right eye 99 left eye 112 both eyes involved in 32 patients (table-4). 55 patients had adnexal injuries, 127 with closed globe injuries 61 with open globe injuries (table-6&7). Most of the injuries are due to violence (87) and RTA (78) others being domestic accidents or occupation related (table-2). 5 patients below 14 years had lid injuries due to dog bite. 142 patients presented with visual acuity >6/18, others with <6/18 to NO PL (table-5). 158 patients presented to hospital within 24 hours, 18 patients after 1 week. Immediate surgical management was done in 76 cases. Wound repair for the lacerated injuries of lids was done in 15 patients. Patients with open globe injuries involving conjunctiva, cornea and sclera were sutured on an emergency basis (table-8). Penetrating injuries had improvement in vision on immediate surgical management involving the peripheral part of cornea (fig3&4, fig8-13). In very badly injured cases the tear has extended across the sclera up to optic nerve where visual prognosis was bad. 36 patients had complications due to delay in presentation or severity of injury.

4. Discussion

Ocular trauma accounted to 0.33% which is significantly lower when compared to 6.9% in a study at JUDO, south west Ethiopia⁷ and 1.03% a study done at Department of Ophthalmology Government Medical College, Haldwani, Distt: Nainital, Uttarakhand.⁸

Out of 243 patients 197 were male and 46 female, The ratio is 4:1 which is equal to the world wide typical male female ratio and maximum incidence in 25- 44 age group with mean age of 34.33±9.5 accounting to 66.6% which correlates with epidemiological studies^{3,4}. Violence related injuries, RTA, domestic accident, occupation related injuries are 35.8%, 32.1%, 24.3% and 5.8% respectively. Younger & male population are at greater risk since men are more indulged in outdoor work and stimulus to aggressiveness more in males may be due to alcoholism leading to violent behavior and road traffic accidents.

In our study 158 patients presented within 24 hours and 30 patients presented between 24 -48 hours and 55 patients presented after 2 days. The cause for the early presentation could be due to the most of the cases being medico legal cases and they were brought by the policemen. There is not much significance between the eye that is injured right eye was involved in 99(40.7%) cases, left eye was involved in 112(46.1%) cases and in 32 cases both the eyes were involved which correlates with study of Uttarakhand.

Among the causes of injury violence related injuries accounted to maximum no 87(35.8%), local traffic accidents accounted to 78(32.1%), sports, accidental falls and accidental hits at home accounted for 59(24.3%) where as occupation related injuries accounted for 14(5.8%), though dog bite cases are frequent, involvement of the eye is rare accounting to 5 cases.

In our study commonest weapon used in violent injuries is wooden stick. Other injuries are with fist, hand, Iron rods and stone.

In our study closed globe injuries are more common 127(52.3%) and open globe injuries are seen in 61 cases (25.1%) only adnexal injuries are present in 55 cases(22.6%) out of the 61 open globe injuries-penetrating injuries are seen in 41 cases and perforation in 10 cases, IOFB was found in 7 cases and globe rupture in 3 cases.

In our study vision at the time of presentation was NOPL in 7 cases and less than 3/60 to PL in 64(26.2%) cases where visual prognosis is very poor most of these were due to open globe injuries and complications like vitreous hemorrhage, retinal detachment, phthisis (fig6&7). Significant visual improvement is seen in adnexal injuries and closed globe injuries where posterior segment is not involved (fig5). Early surgical repair of lid injuries decreased morbidity of ocular surface (fig1&2). Traumatic cataract was seen in 5 cases where cataract extraction with IOL implant was done at a later date with significant visual improvement (fig14).

Violence related injuries mostly occurred in people coming from villages and slums with poor literacy and under influence of alcohol. Road traffic accidents are the second commonest cause of ocular injuries which correlates with epidemiological studies of ocular trauma. Simple and safety measures like wearing seat belts, helmet and abstinence from alcohol while driving can prevent major cause of blindness.

Age group	Male	female	Total	Percent %
< 5 yrs	5	02	7	2.9
5-14	18	-	18	7.4
15-24	37	04	41	16.8
25-34	43	20	63	25.9
35-44	48	10	58	23.9
45-54	25	04	29	11.9
55-64	14	04	18	7.3
>65	07	02	09	3.7
Total	197	46	243	
	81.1%	18.9%		

Table 1: showing age distribution
P value < .0001

Violence related	87	35.8
Road traffic accidents	78	32.1
Occupation related	14	5.8
Domestic accidents	59	24.3
Dog bites	5	2.0
Total	243	

Table 2: for Cause of injury

<24 HRS	158	65.02
24-48 HRS	30	12.3
48HRS-1WK	37	15.3
>1 WK	18	7.4
Total	243	

Table 3: duration of presentation
P value when compared to <24 hrs to >24hrs
< 0.0001

Right eye	99	40.75%
Left eye	112	46.1%
Both eyes	32	13.2%
	243	

Table 4: Eye involved

6/6 -6/18	142	58.4%
<6/18-3/60	16	6.58
<3/60-PL	64	26.2
No PL	7	2.9
Not documented Not cooperative	14	5.8
Total	243	

Table 5: Vision at presentation

Injuries of Adnexa	55	22.6%
Closed globe	127	52.3%
Open globe	61	25.1%
Total	243	

Table 6: Type of injury
P value < 0.0001 when closed globe d open globe injuries compared by chi²

Penetrating	41
Perforation	10
IOFB	7
Rupture	3

Table 7: open globe injuries

Conservative	154	63.4%
Surgical	76	31.2%
Referral to higher centre	13	5.4%
Total	243	

Table 8: Management

5. References

1. Principles and practice of ophthalmology Gholman A. Peyman MD vol 111 edition ---- pg 374-377
2. Parsons diseases of eye 21 edition pg 374-377
3. Liggett PE, Pince KJ, Barlow W, Ragen M, Ryan SJ. Ocular trauma in urban population. Review of 1132 cases ophthalmology 1990; 1997;;:581
4. Epidemiological study of ocular trauma in an urban slum population in Delhi, India IJO 2008 Jul-Aug
5. Kuhn F, Morris R, Witherspon D, Heimann K et al A standerdised classification of ocular truma.
6. modern management of ocular trauma by Samue Boyd MD, Paul Sternberg Jr in Pharmaceutical Edition 2010
7. Asaminew T, Gelaw Y, Alemseged F. A 2-year review of ocular trauma in JIMMA University Specialized Hospital. Ethiop J Health Sciences 2009; 19:67-76
8. Pattern of Ocular Trauma in Tertiary Care Hospital of Kumaon Region, Uttarakhand J Indian Acad
9. Forensic Med. April-June 2013, Vol. 35, No. 2

Annexure



Figure 1: Lacerated wound of upperlid and avulsion of lower lid



Figure 2: wound repair done & vision was 6/6 postop

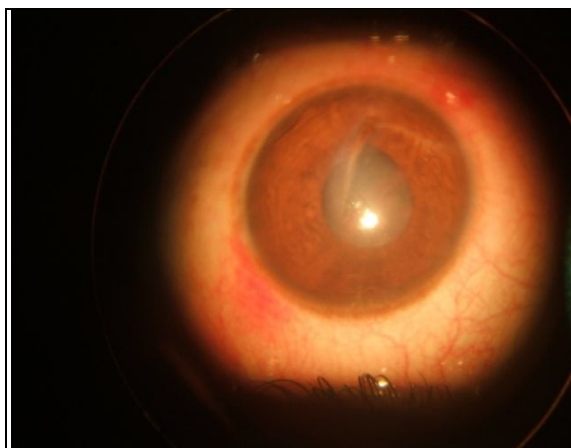


Figure 3: Open globe injury - corneal injury

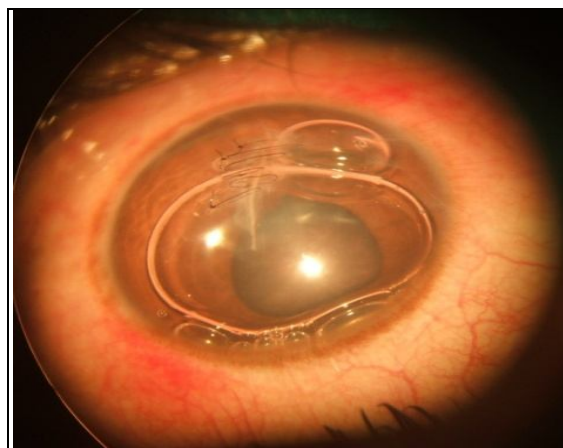


Figure 4: wound repair done on same day with good visual outcome

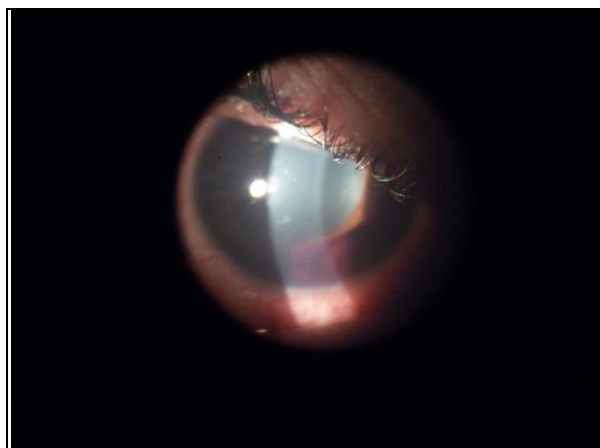


Figure 5: Closed globe injury showing traumatic mydriasis & Hyphema with good visual out come



Figure 6: A large lacerated injury of left side face with globe rupture

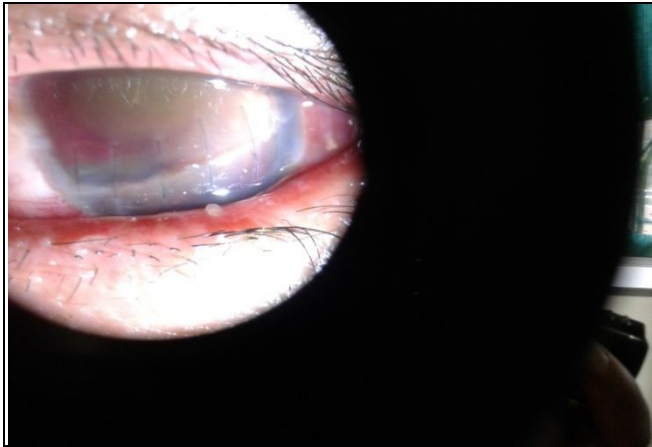


Figure 7: Closed globe injury with Iris prolapse with vitreal haemorrhage



Figure 8: An old lady with single eye [left eye blind] with lower lid laceration



Figure 9: Emergency repair with good lid apposition



Figure 10: Lower lid laceration with loss of lateral half of lower lid



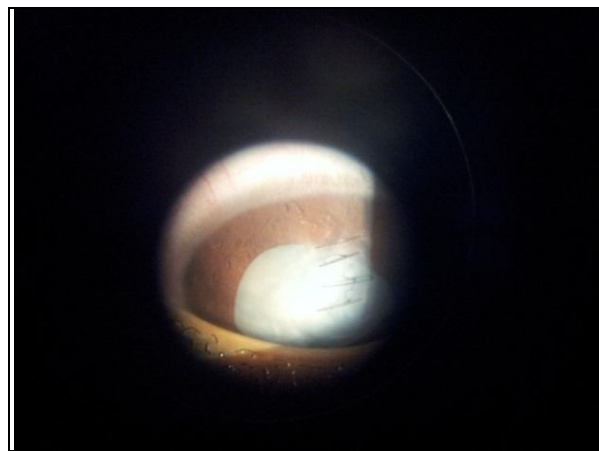
Figure 11 : Wound repair done No exposure after 2 months



Figure 12: Lower lid avulsion with fracture floor of orbit with anophthalmos



Figure 13: after wound repair



*Figure 14: Cataract developed in a case of open globe injury
Cataract extraction with P.C IOL implantation done with good visual recovery*