



ORIGINAL RESEARCH PAPER

Medical Science

CLINICAL PROFILE OF PATIENTS WITH OCULAR TRAUMA – A HOSPITAL BASED STUDY

KEY WORDS: Open globe Injury, Closed Globe Injury, ocular trauma, Blindness

Dr. Manoj Mehta	Professor and HOD, R.D Gardi Medical College, Ujjain
Dr. Yuvraj Hardia*	Junior Resident, R.D Gardi Medical College, Ujjain *Corresponding Author
Dr. Shubhra Mehta	Professor, R.D Gardi Medical College, Ujjain

ABSTRACT
Purpose- To study the clinical profile of patients with ocular trauma and extent of ocular injury in relation to various types of ocular trauma. **Method-** It is a prospective hospital based study conducted over a period of 1.6 years from September 2017 to March 2019. It includes 55 cases of ocular trauma to one or both eye . All underwent a detailed ocular examination includes Visual acuity , Intraocular Pressure with Schiottz tonometer, Slit Lamp Examination and Fundus was examined . Gonioscopy done except in patients of subconjunctival hemorrhage. **Result-** In our study out of 28 patients who had closed globe injuries 16 patients (57.2%) were males while 12 (42.8%) patients were female. Out of 55 patients, majority of patients i.e 31 (56.3%) were between age group of 21-50 years , only 15 patients(27.27%)were in age group >50 years. Majority of patients in study group 13 patients (23.6%) suffered from stone injury , 9 (16.4%) from vegetative twig injury, 8 patients (14.5%) suffered from Road Traffic accidents. 7 (12.7%) suffered from fist injury . Over all 25 patients suffered from blunt injury (45.4%). Only 4 (7.3 %) suffered from chemical injury. Ocular traumas can result in blindness and in our study 41 eyes had visual acuity <3/60 in study groups (37.27%), 30 eyes had visual acuity 6/60- 6/24 where as 39 eyes had visual acuity >6/24. Patients in our study were managed either surgically or medically depending on the type of injury

INTRODUCTION

Ocular trauma is one of the main causes of severe ocular morbidity . Globally more than 55 million eyes injuries occur per year , while there are approximately 1.6 million people with blindness from ocular trauma, 2.3 million people who are bilaterally visually impaired and 19 million people with unilateral blindness or visual loss.

The Majority of ocular injuries are sustained by active and productive individuals unfortunately, these injuries often are vision threatening and the life style and future of these injured individuals are irreversibly altered. Decrease or loss of vision, either monocular or binocular, may result in signi cant economic burdens to families.

Looking at the present scenario of working pattern and visual demands of patients along with the use of sophisticated instruments, it has become mandatory on the part of an ophthalmologist to identify the various ocular structures involved due to ocular trauma, which may vary in severity from a simple corneal abrasion to an extensive rupture of globe, and provide satisfactory vision at its earliest. It is essential to study not only recent injuries but also study the eyes which have sustained an injury at variable time intervals earlier.

Omolase CO. et all found that ocular trauma is one of the leading causes of treatable visual morbidity and blindness.¹ Ekta S et al said that ocular trauma is a major public health problem which needs immediate and comprehensive care. They also suggested that epidemiological profile of ocular trauma vary with greater incidence in developing countries.² Ocular injuries are very common in under privileged persons and nearly 12.9 % of ocular trauma are found in developing under privileged countries.³

MATERIAL AND METHODS

Our study included 55 cases of ocular trauma to one or both eyes attending the outpatients and inpatients in department of ophthalmology along with patient referred with ocular trauma from the causality department of R.D Gardi medical college Ujjain.

METHODOLOGY

A written informed consent from all the patient who were enrolled in the study was taken. Data of the patient was entered on a pretested proforma and was analyzed using proper statistical analytic tools.

Preliminary particular of the patient such as name, age, sex, occupation, socioeconomic status, education and address were noted.

The chief complaint of the patient was recorded followed by a detailed history of present illness which included the detail of history of trauma, mode of injury causative agents, duration of injury, direction of force, signs and symptoms occurring following the injury , any previous treatment . Past history of similar complaint in past any systemic illness if present was recorded.

The patient who were enrolled in the study underwent a detailed and comprehensive ocular examination.

Inclusion Criteria

- In our study 55 patients suffering from ocular trauma were included.
- Patients of ocular trauma in study group were classified using BETTS classification system.

Exclusion Criteria

- Patients with renal and hepatic failiure.
- Pregnant patients.
- Patients with drug allergy.
- Patients with very poor general condition.

Visual acuity was recorded on snellen's chart to assess the amount of visual loss caused by ocular trauma. Intra ocular pressure was recorded .Vision and intra ocular pressure could not be accurately recorded in a few badly damaged globe cases. A detailed torch light examination and Slit lamp examination was done for anterior segment evaluation. Fundus was examined with both direct and indirect ophthalmoscopy. USG was done as required . All the data was then analysed in detail.

RESULTS

Table No.1 Age Wise Distribution Of Patients(n=55 Patients)

Age Group	No. of cases	Percent
<10	03	5.4
10-20	06	10.9
21-30	14	25.4
31-40	09	16.3
41-50	08	14.5
51-60	06	10.9
61-70	07	12.7
>70	02	3.6
Total	55	100

Out of 55 patients, majority of patients i.e 31 (56.3%) were between age group of 21-50 years , only 15 patients (27.27%) were in age group >50 years. These values indicate the ocular injuries most commonly occurs in young people and people who are in productive age group. P value: 0.049847 suggests that there is a normal level of significance that 95% confidence that injury is dependent on age (Z score : 2.63)

Table No. 2 Distribution Of Cases Of Ocular Trauma According To Etiology(n=55 Patients)

Etiological Agent	Frequency	Percent
STONE	13	23.6
FIST	7	12.7
STICK	5	9.1
VEGETATIVE INJURY	9	16.4
THORN	3	5.5
CHEMICAL	4	7.3
BALL	2	3.6
RTA	8	14.5
GLASS	1	1.8
OTHERS	3	5.5
Total	55	100.0

Majority of patients in study group 13 patients (23.6%) suffered from stone injury , 9 (16.4%) from vegetative twig injury, 8 patients (14.5%) suffered from Road Traffic accidents. 7 (12.7%) suffered from fist injury . Over all 25 patients suffered from blunt injury (45.4%). Only 4 (7.3 %) suffered from chemical injury.

Table No.3 Distribution Of Cases According To Type Of Trauma (n=55 Patients)

TYPE OF TRAUMA	NO. OF CASES	PERCENT
OPEN GLOBE	5	9.09
CLOSED GLOBE	28	50.90
EXTRAOCULAR INJURY	18	32.72
CHEMICAL	4	7.27
THERMAL	1	1.81
ELECTRICAL	0	0
RADIATIONAL	0	0
TOTAL	55	100

In our study open globe were 5 patients (9.09%), Closed globe were 28(50.90%) and only 4 patients (7.27%) had chemical injury, 18 patients (32.72%) suffered from Extra ocular lesions.

Table No.4 Distribution Of Closed Globe Injury In Study Group (n=28 Patients)

Closed Globe	Number of Cases	Percent
Contusion	18	64.2
Lamellar laceration	2	7.3
Corneal Foreign Body	8	28.5
Total	28	100

Majority of patients i.e 18 (64.2%) suffered from contusion while lamellar laceration was seen in 2 patients (7.3%) . 8 patients (28.5%) presented with corneal foreign body.

Table No.5 Distribution Of Closed Globe Cases According To Etiology (n=28 Patients)

Closed Globe Etiology	Contusion	Lamellar Laceration	Corneal Foreign Body	Total	%
FIST	7	0	0	7	25
STICK	2	0	1	3	10.7
VEGETATIVE INJURY	1	0	0	1	3.5
THORN	0	0	1	1	3.5
BALL	2	0	0	2	7.2
RTA	3	2	0	5	17.8
GLASS	0	0	1	1	3.5
OTHERS	1	0	1	2	7.2
Total	18	2	8	28	100

Out of 28 patients 7 (25%) had injury with fist , 5(17.8%) patients had injury with stone , 5 (17.8%) suffered from road traffic accidents. 2(7.2%) patients had injury with ball while 6 patients (21.42%) suffered from stone injury.

Table No. 6 Distribution Of Open Globe Cases In Study Group (n=5 Patients)

Open Globe	No. of Cases	Percent
Laceration	4	80
Rupture	1	20
Total	5	100

A total of 5 patients out of 55 patients had open globe injury . 4 patients (80%) showed laceration while only one percent (20%) landed up with globe rupture.

Table No. 7 Distribution Of Open Globe Cases According To Etiology (n=5 Patients)

Etiology	Open Globe		Total	Percentage
	Laceration	Rupture		
STONE	0	1	1	20
STICK	1	0	1	20
VEGETATIVE INJURY	0	0	0	0.0
THORN	0	0	0	0.0
RTA	3	0	3	60
OTHERS	0	0	0	0
Total	4	1	5	100

In our Study out of 5 patients of open globe injury we found globe rupture in 1 patient (20%) caused by blunt trauma with stone while 4 (80%) patients had laceration.

Table No. 8 Best Corrected Visual Acuity At Presentation (n=110 Eyes)

Visual Acuity	Right eye	Percent	Left Eye	Percent
<3/60	9	16.36	8	14.54
3/60-<6/60	13	23.63	11	20.0
6/60-6/24	16	29.09	14	25.45
6/24-6/12	12	21.81	15	27.27
6/12-6/6	5	9.09	7	12.72
Total	55	100%	55	100%

At presentation 41 eyes had V/A < 6/60 in study group (37.27%). 30 eyes had V/A between 6/60-6/24, whereas 39 eyes had V/A > 24.

Number of cases medically managed are 40% and surgically managed are 60%.

Table No. 9 Distribution Of Cases On Basis Of Management Done (n=55 Patients)

Management	Frequency	Percent
MEDICAL	22	40.0
SURGICAL	33	60.0
Total	55	100.0

Number of cases medically managed are 40% and surgically managed are 60 %.

DISCUSSION

In our study open globe were 5 patients (9.09%), Closed globe were 28(50.90%) and only 4 patients (7.27%) had chemical injury, 18 patients (32.72%) suffered from Extra ocular lesions. A total of 5(9.09%) patients out of 55 had open globe injury, 4 patients (80.0%) showed laceration while only one percent (20%) landed up with globe rupture.

Majority of patients with closed globe injuries i.e 18 (64.2%) suffered from contusion while lamellar laceration was seen in 2 patients (7.3%). 8 patients (28.5%) presented with corneal foreign body.

Ocular trauma can affect any age group but usually it is more common in young adults who are mostly involved in outdoor activities and are highly predisposed to ocular trauma. Ekta S et al 2018 in the study of 200 patients had 141 men and 59 women in there study group. The mean age in there study group was 29.87 yrs.³Maurya Rp et al 2019 in there study of 402 patients had patients between 2-70 yrs of age group and the mean age of the patients was 26.48 they form most vulnerable age group of 6-15 years (24.38%) followed by age group 16-25 years (23.88%).⁴Out of 55 Patients, majority of patients i.e 31 (56.3%) were between age group of 21-50 years, only 15 patients (27.27%) were in age group > 50 yrs. These values indicate that the ocular injuries most commonly occurs in young people & people who are in productive age group. Majority of patients in the study group i.e 13 patients (23.6%) suffered from stone injury, 9 (16.4 %) suffered from vegetative twig injury. 8 patients (14.5%) suffered from road traffic accidents. 7 (12.7%) suffered from fist injury Overall 25 patients suffered from blunt injury. Only 4 (7.3%) patients had chemical injury. This result of our study shows that various etiology are involved in various types of ocular trauma. And final visual outcome depends upon the impact of the injuring object. Ocular trauma affecting an individual in various types and these injuries may be open globe injuries or closed globe injuries. Chemical injuries, thermal, electrical, radiational injuries are also very common ocular injuries. Foreign body lodging themselves in the eye can also have various ocular manifestations. Majumdar M et al 2017 in there study of road traffic accident found full thickness laceration in the upper eyelid inspite of patient wearing helmet which suggest that lid injuries are very common in any ocular trauma.⁵ Pai SG 2013 in there study found that 62.5% of patients presented with lid oedema and ecchymosis and out of these 50% had associated lid tears.⁶ Burnstine AU 2003 in there study of 600 patients, 58.3% patients were found to have orbital fracture on ct scan.⁷Cherry PM (1978) observed that the Scleral rupture occurs away from the site of impact. Ruptures are due to direct impact on the globe which is sufficiently powerful to burst it. there are two types of contusion ruptures, direct ruptures and indirect ruptures.⁸ Netland k.1998 in there study suggested that hyphema may occur after blunt or penetrating trauma and more that 50% cases are associated with sports injury.⁹Dean Elliott; Robert L.Avery (1985) stated that ocular injuries affecting posterior segment include trauma applied directly to the eye in the setting of an intact globe.¹⁰ Azusa Fujikawa et al in there study found that Patients with a wound that was smaller than 5 mm had a significantly better VA than those groups that had wounds that were larger than 5 mm (p=0.0078). Eyes that were first treated with PPV were significantly more likely to achieve a final vision of LP or better (p=0.033).¹¹At presentation 41 eyes had V/A < 6/60 in study group (37.27%). 30 eyes had V/A between 6/60-6/24, whereas 39 eyes had V/A > 6/24. This result of our study is comparable with above mentioned study which suggest that nature of ocular trauma and the type of structural involvement plays a very important role in determining the visual prognosis in patients suffering from ocular trauma.

Management of ocular trauma depends widely upon the severity of ocular trauma as well as the type of tissue involved in trauma. Some patients can be managed conservatively without any surgical interventions but others who had open globe injuries usually require surgical intervention.

In our study we found that 22 patients (40%) required medical management whereas 33 patients (60%) required surgical intervention. The type of surgical intervention depended on the type of ocular trauma as well as the tissue involved.

CONCLUSION

Ocular trauma have varied presentation and the type of trauma plays a very important role in the level of ocular tissue damage and resultant blindness.

Our study showed closed globe injuries are more common than open globe injuries but both type of injuries require a comprehensive management approach to prevent blindness from ocular trauma.

REFERENCES

1. Omolase CO, Omolade EO, Ogunleye OT, Omolase BO, Ihemedu CO, Adeosun OA. Pattern of ocular injuries in owo, Nigeria. *J Ophthalmic Vis Res.* 2011 Apr;6(2):114-8.
2. Syal E, Dhawan M, Singh SP. To study the epidemiological and clinical profile of ocular trauma at a tertiary health-care facility. *Delta J Ophthalmol [serial online]* 2018 [cited 2023 Jan 17];19:259-67
3. Thylefors B. Epidemiological patterns of ocular trauma. *Aust N Z J Ophthalmol.* 1992 May;20(2):95-8.
4. Maurya RP, Srivastav T, Singh VP, Mishra CP, Al-Mujaini A. The epidemiology of ocular trauma in Northern India: A teaching hospital study. *Oman J Ophthalmol.* 2019 May-Aug;12(2):78-83. doi: 10.4103/ojo.OJO_149_2018.
5. Khandelwal R, Majumdar MR, Gupta A. An unusual mechanism of ocular trauma in badminton players: two incidental cases. *BMJ Case Rep.* 2012 Aug 8;2012:bcr2012006363. doi: 10.1136/bcr-2012-006363.
6. Pai, S. C., Kamath, S. J., D'Souza, S., & Dudgeja, L. (2013). A clinical study of blunt ocular trauma in a tertiary care centre. *Online Journal of Health and Allied Sciences*, 12(2), [10].
7. Burnstine MA, Elnor SG, Elnor VM. Orbital fibroblast chemokine modulation: effects of dexamethasone and cyclosporin A. *Br J Ophthalmol.* 1998 Mar;82(3):318-22.
8. Cherry PM (1978) " Indirect traumatic rupture of globe" *Arch Ophthalmology* 96(2): 252-6.
9. Netland KE, Martinez J, LaCour OJ 3rd, Netland PA. Traumatic anterior lens dislocation: a case report. *J Emerg Med.* 1999 Jul-Aug;17(4):637-9.
10. Dean Elliott and Robert L. Avery (1985) non penetrating posterior segment trauma issues in ocular trauma and ophthalmology clinics of North America ; WB Saunders Philadelphia 8 (4); 569-587
11. Fujikawa A, Mohamed YH, Kinoshita H, Matsumoto M, Uematsu M, Tsuiiki E, Suzuma K, Kitaoka T. Visual outcomes and prognostic factors in open-globe injuries. *BMC Ophthalmol.* 2018 Jun 8;18(1):138. doi: 10.1186/s12886-018-0804-4.