



Ocular Trauma Study In Rural Indian Population – Clinical Features And Visual Outcomes Based On Ocular Trauma Score

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Introduction

- ▶ **Ocular injuries leads to monocular blindness in nearly half million people worldwide¹.**
- ▶ **Despite being major cause of ocular morbidity very less data available from developing countries like India.**
- ▶ **It leads to significant socioeconomic impact on young population, especially in developing countries.**

1.Wagh V, Tidake P. Clinical Study and Profile of Ocular Trauma: Findings From a Rural Hospital in Central India. Cureus. 2022 Jul 16;14(7):e26915. doi: 10.7759/cureus.26915. PMID: 35983395; PMCID: PMC9377383.

Aims And Objectives

- ▶ **To classify ocular trauma cases based on epidemiological profile.**
- ▶ **To classify and compare mechanical injuries with ocular trauma score.**
- ▶ **To suggest recommendations based on findings of the study.**

Material and methods

- ▶ **Prospective observational study**
- ▶ **No. of cases- 299**
- ▶ **Duration- Jan 2018- May 2019**
- ▶ **Includes both sexes, all age groups**
- ▶ **BCVA**
- ▶ **Anterior segment evaluation with Zeiss classic SL 115 slit lamp**
- ▶ **Posterior segment evaluation with direct and indirect ophthalmoscope**
- ▶ **Radiological imaging like B scan, X Ray, CT and MRI was performed, when indicated.**
- ▶ **SPSS 11.0 package was used for data analysis**

Results

- ▶ Out of 299 cases, 104 were in age group 30-45 years.
- ▶ Males outnumbered females in the ratio 1:5.
- ▶ The most common culprit was industrial work in 102 cases (34.11%).
- ▶ Only 36 cases (12.04%) reported within 1 hour of injury leading to significant ocular morbidity.
- ▶ Unilateral ocular trauma was observed in 291 cases.
- ▶ 8 had bilateral involvement. All 8 bilateral cases were due to non-mechanical causes.
- ▶ The association between chemical injuries and laterality was observed to be statistically significant. (Chi square = 86.47, df=2, P= 0.001)

Activity	0-16 years	16-44 years	45 and above	Total n(%)
Industrial work	3	93	6	102(34.11)
Sports related	45	10	1	56(18.73)
Slip / Fall	9	35	9	53(17.73)
Farming	0	18	11	29(9.07)
Bystander and others	10	41	8	59(19.73)
Total	67	197	35	299(100)

**Total No. of
cases
N= 299**

**Mechanical
273 cases (91.30%)**

**Closed Globe
216 cases
(79.12%)**

**Open Globe
57 cases
(20.08%)**

**Non- mechanical
26 cases (8.69%)**

- Chemicals-21 cases (80.76%)
- Thermal-4 cases (15.38%)
- Electrical-1 case (3.84%)

Diagnosis	No. of cases (%) n=299
Corneal foreign body	169 (56.52%)
Corneal tear	27 (9%)
Hyphema with iris injury	28 (9%)
Globe rupture	5 (1.7%)
Retinal detachment	24 (8%)
Vitreous hemorrhage	9 (3%)
IOFB	6 (2%)
Orbital fracture	5 (1.6%)
Chemical and thermal injuries	26 (8.7%)
Total	299 (100%)

**Table Shows Various Types of
Ocular Injuries**

Visual Acuity

- ▶ 36 cases with open globe injuries had moderate to severe visual impairment and BCVA in the range of 20/50 to 20/200.
- ▶ 4 cases had no PL on presentation.
- ▶ While closed globe injuries had better VA ranging between 20/20 to 20/40.

VA grades	Open Globe Injury No. of cases (%)	Closed Globe Injury No. of cases (%)
20/20	1 (1.75)	73 (33.79)
20/20 to 20/40	12 (21.05)	77 (35.64)
20/50 to 20/200	36 (63.16)	51 (23.61)
20/200 to PL+	4 (7.02)	12 (5.5)
No PL	4(7.02)	3 (1.39)
TOTAL	57 (100)	216 (100)

Table shows Visual Acuity On Presentation

Zones Affected

- ▶ Out of 57 cases of open globe injuries, 24 had penetrating type of injuries affecting zone II.
- ▶ While out of 216 cases of closed globe injuries, maximum number 113 cases were in zone I.

Zone of Injury	Open globe injury No. of cases	Closed globe injury No. of cases
Zone I	13 (22.80)	113 (52.31)
Zone II	24 (42.10)	48 (22.23)
Zone III	20 (35.08)	55 (25.46)
TOTAL	57 (100)	216 (100)

Table Shows Zones Involved In Various Mechanical Injuries

Ocular Trauma Score-OTS

- ▶ Based on OTS, we divided the patients into 5 classes on the likelihood of final visual acuities NO PL, hand motion and counting fingers, 1/200–19/200, 20/200–20/50, and $\geq 20/40$.
- ▶ We converted these into OTS raw score in which raw score 1 had the worst visual prognosis and raw score 5 had the best visual prognosis.
- ▶ 202 cases of closed-globe injuries had better visual prognosis than open globe injuries in 46 cases.
- ▶ Visual prognosis was dependent on the time of presentation and the type of injury. 11 cases of open-globe injuries had worst visual prognosis due to late presentation.

Table 1. Computational method for deriving the OTS score

Initial Visual Factor	Raw points
A. Initial visual acuity category	NLP = 60 LP to HM = 70 1/200 to 19/200 = 80 20/200 to 20/50 = 90 $\geq 20/40$ = 100
B. Globe rupture	-23
C. Endophthalmitis	-17
D. Perforating injury	-14
E. Retinal detachment	-11
F. Afferent pupillary defect (Marcus Gunn pupil)	-10
Raw score sum = sum of raw points	

Sum of raw points	OTS Categories	No PL n (%)	PL or HM- n (%)	1/200 to 19/200- n (%)	20/200 to 20/50- n (%)	>20/40- n (n%)
0-44	1	-	-	-	-	-
45-65	2	2 (100)	-	-	-	-
66-80	3	-	6 (14)	36 (86)	-	-
81-91	4	-	-	-	12 (100)	-
92-100	5	-	-	-	-	1 (100)

Discussion

- ▶ **There are very few research articles from less developed nations on profile and prognostic variables of ocular trauma.**
- ▶ **Hence, present study was carried out to study clinical features and prognosis among patients with ocular trauma in rural-based hospital.**
- ▶ **OTS is the most widely accepted tool for predicting visual prognosis. We estimated the likelihood of final visual acuities in 57 cases of open-globe injuries with the help of OTS.**

Conclusion

- ▶ Ocular trauma is more common among young males, with industrial work being most common cause. Thus, role of safety measures should be emphasised.
- ▶ Unilateral, closed-globe injury was more common compared to bilateral and open injuries.
- ▶ In open-globe injuries, zone II was more commonly affected, while in closed injuries, zone I was more common.
- ▶ Visual impairment was more severe in open-globe injuries.
- ▶ With regards to the prediction of final VA, our results were comparable to the ocular trauma score study, thus affirming its utility.
- ▶ Early diagnosis and prompt treatment leads to improves visual outcome.



Thank You!!