

PREDICTING PROGNOSTIC VALUE OF OCULAR TRAUMA SCORE (OTS) IN AN OPEN GLOBE INJURY IN TERTIARY EYE CARE HOSPITALRahul Dagwar¹, Nilesh Gaddewar², Ashok Madan³**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: AIM: To evaluate the prognostic value of OTS in open globe injuries. **MATERIAL METHOD:** Retrospective analysis of 77 eyes with open globe injuries was done from 01/07/2013 to 31/12/2014. Patients were assigned raw score sum based on initial V/A, and ocular findings then classified into 5 categories for predicting final visual outcome based on ocular Trauma score (OTS). **RESULT:** We estimated final V/A in 77 cases of open globe injuries (64.93%) had raw score between 65.91 (category 3, 4) Six months after the injury, 42.85% patients of categories 1 (raw score 0-44) achieved V/A of PL/HM as compared to 17% in OTS study. 16 patients with raw compared to OTS study. We reported comparable visual outcome with OTS study except in category 1 & 2. **CONCLUSION:** OTS score is valuable in triage, patient counseling and decision making for the management of ocular trauma. We recommend that OTS should be used routinely for open globe injuries as it is a simple guide.

KEYWORDS: OTS, Open Globe Injury.

INTRODUCTION: Ocular injuries account for over one million cases of blindness and are the most common cause of monocular loss of sight worldwide.¹ It is important for patients and ophthalmologist to have reliable information regarding expected visual outcome of a serious eye injury. Of the important components in management of open globe injury is counseling of the trauma victim and his family.² Even though, with advent of new modalities and improved technology the management of penetrating ocular injuries has changed,² we need to counsel and prognosticate any patient with ocular trauma before and even after the repair of open globe injury. To predict the vision outcome in ocular trauma patients, there has been numerous literatures till date.^{3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18}

Several studies have suggested that the factors that significantly predict visual outcome after open globe injuries are initial visual acuity^{5,6}, presence of RAPD,^{7,8} mechanism of injury,^{7,9,10} wound location,^{7,11,12} lens damage,^{7,12} hyphaema,¹⁴ vitreous haemorrhage,^{11,15} and retinal detachment.^{11,16} time lag between injury and surgery. In 2002, Kuhn et al¹⁷ developed a prognostic model, the ocular trauma score (OTS), to predict the visual outcome of patients after ocular trauma. They analysed over 2500 eye injuries from the United States and Hungarian Eye Injury Registries, and evaluated more than 100 variables to identify these predictors. The OTS is calculated by assigning certain numerical raw points to six variables, initial visual acuity, globe rupture, endophthalmitis, perforating injury, retinal detachment, and an RAPD. The scores are stratified into five categories that give the probabilities of attaining a range of visual acuities post-injury. We are conducting this study to assess prognostic value of the ocular trauma score (OTS) in open globe injuries.

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MATERIALS AND METHODS: We retrospectively reviewed the case records of the patients who underwent surgical repair of open globe injury at a tertiary referral eye care center in central India, Nagpur from July 2013 to December 2014. The center receives high volume of emergency patients out of which a proportion of patients presents with history of ocular trauma and open globe injury. Cases were identified from computerized admissions database. Approval from local ethics committee was obtained to conduct this retrospective review. Detailed evaluation was done regarding the demography, classification of injury, detailed ocular examination, interventions, outcome and follow-up.

Inclusion Criteria: Patients of all ages and both sexes with open globe injuries.

Exclusion Criteria:

- Any patient of open globe injury with history of previous ocular surgery, ocular trauma, major eye disease and uncooperative or comatose patient.
- A patient in whom visual acuity could not be assessed initially or subsequently.
- The presence of a new injury during the follow up period.

The OTS was calculated by assigning a raw point value for the initial visual acuity and then subtracting the appropriate raw points for each diagnosis of globe rupture, endophthalmitis, perforating injury, retinal detachment, and an RAPD (Table 1).

Initial Visual Factor	Raw points
A. Initial visual acuity category	NPL = 60 LP to HM = 70 1/200 to 19/200 = 80 20/200 to 20/50 = 90 > 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	
Table 1: Computational method for deriving the OTS score	

Details of all the surgical steps were recorded. Total duration of follow up, visual acuity at four months follow up and anatomical status of the eye at final follow up were recorded. Final anatomical status of the eye indicating corneal scar, phthisis bulbi, pseudophakia or traumatic cataract, retinal detachment, glaucoma was recorded in the study eyes.

For statistical analysis, the initial visual acuity (VA) after injury and the VA at final follow up were grouped in five categories: Group 1 - VA \leq 20/40, Group 2 - VA: 20/50 <20/200, Group 3 - VA: 20/200 - CF, Group 4 - VA: HM- PL and Group 5-VA: NLP. The relationship between different preoperative variables and the final VA was analyzed using correlation analysis.

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RESULTS: On analysis of the data of 77 pts we found that mean age of patients was 36 years (range 3-68 years), with male to female ratio of 3.27. In our study 46(59.74%) had penetrating injury, 10(12.98%) had retained IOFB, 13(16.88 %) had perforating injury, and 8(10.38.%) had globe rupture. Commonest cause of injury was hammer-chisel or stone in 20(25.97%) followed by 15(19.48%) wooden stick, 12(15.58%) sharp wire/needle, 8(10.38%) thorn, 6(7.79%) assault and others 16(20.77) included sports, household, firecracker & road traffic accidents related injuries. In these patients, 40(51.94%) had cataract, 7(9.09%) had endophthalmitis, 9(11.68%) had RD at presentation, 3(3.89%) developed RD after first intervention. Majority of the patients 50(64.93%) were of category III & IV. In category I & II, 6 patients lost vision, as 2 went into phthisis & 4 because of fulminant endophthalmitis. One (1.29%) patient had undergone evisceration, 4(5.19%) undergone repeat RD surgery, 7(9.09%) required secondary IOL implantation and 4 required penetrating keratoplasty.

Raw pts	OTS CATAGORIES	NO OF PTS	NPL	LP OR HM	1/200 TO 19/ 200	20/200 TO 20/ 50	>20/40
0-44	I	7	4(57.14%)	3(42.85%)	-	-	-
45-65	II	16	2(12.50%)	6(37.50%)	4(25%)	3(18.75%)	1(6.25%)
66-80	III	23	-	2(8.5%)	3(13.04%)	7(30.43%)	11(47.82%)
81-91	IV	27	-	-	1(3.70%)	6(22.22%)	20(74.07%)
92-100	V	4	-	-	-	-	4(100%)

Table 2: Shows the final visual acuity achieved by different category patients after 6 months

DISCUSSION: The present study has showed that high incidence of open globe injuries appeared in young adult male with low education and low socioeconomic level. Most patients were not wearing protective devices, and half of the injuries were work-related. Cillinio et al.⁴ reported that the average age of open globe injuries patients was 35.6 years, which was similar to the findings of our study and the study by Kanoff et al.¹⁸ We reported comparable visual outcome with OTS study except in category I & II¹⁷. Six months after the injury, 42.85% patients of category I (raw score 0-44) achieved V/A of PL/HM as compared to 17% in OTS study. 16 patients of category II (raw score 45-65) had better vision as compared to OTS study. This was probably because of our relatively small number of category I & II patients. Just like Pieramici et al⁷ (1997) we recognized that retinal Detachment and endophthalmitis may occur during the postoperative period. The ocular trauma score developed by Kuhn et al is considered to be a valuable tool in establishing the severity of an open globe injury. However, the presence of endophthalmitis and retinal detachment are sometimes the later complications of trauma, it might not be possible to include their score during the initial scoring done preoperatively.

CONCLUSION: OTS score is valuable in patient counseling and decision making for the management of ocular trauma. We recommend that OTS should be used routinely for open globe injuries as it is a simple guide.

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