

Clinical profile of eyes with open globe trauma in a tertiary care hospital of Uttarakhand region

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Abstract

Aim: Ocular trauma is one of the leading causes of ocular morbidity. It can be attributed to be one of the causes for needless blindness. It calls for urgent management and visual rehabilitation. In this prospective observational research, we studied the demographic profile of eyes with open globe trauma in a tertiary care hospital of Uttarakhand region for a period of 3 years. We also tried to assess the risk factors commonly associated with trauma and discussed if awareness could modify them. **Method:** All patients with open globe trauma admitted in the hospital were included in the study. Patients with closed globe trauma, those admitted for secondary procedures post trauma, or cases with injury of ocular appendages were excluded. The eyes were evaluated for age, gender, vision at presentation and wound was assessed for surgical intervention. **Results:** There were 2,320 number of patients admitted for various surgeries in a period of 3 years. Total number of patients with open globe trauma were 41 which constitutes 1.76% of patients operated for various reasons in eye. The ratio of males with open globe and females with open globe were 1.41. Pre operative vision was found to be less than 3/60 in 54.6% eyes which implies Blind eyes as per WHO criteria. Post operatively done ocular USG revealed involvement in 29.3% eyes. **Conclusion:** In our study we found that, younger age group and adults at work were more at risk to open globe trauma. Hence awareness and safety measures would go a long in curbing such accidents.

Keywords: Open globe trauma, penetrating injury, intraocular foreign body.

Open globe trauma management is an ophthalmic emergency and its relevance is evident on a common basis. Eye injury is one of the main causes of ocular morbidity in children and young adults¹. There is immense patience needed not only in surgery but also in visual rehabilitation. Dealing with psychological and emotional aspects of the patient and the family involved can be challenging for the treating doctor. Hence proper counselling becomes an important part of open globe trauma management².

Ocular injuries have been explored in various parts of the world under various subjects, from chemical injuries to blunt trauma to penetrating injuries^{3, 4, 5, 6, 7, 8, 9}.

The epidemiological survey of trauma in various parts of the world explores the risk factors and lays emphasis on their prevention^{10, 11, 12, 13, 14}.

However, there is limited literature on the demographic profile of eyes with open globe trauma specifically in

Himalayan region. In Northern India, there has been dearth of records of people with open globe trauma. This can be attributed to geography of hilly terrain, far flung interiors and also ignorance of people who by default engage in physical labour for livelihood at a very young age^{15, 16, 17, 18, 19}. We, hereby attempt to bring forth the status of such cases in a tertiary care hospital over a period of 3 years. In this study we also look for the risk factors of ocular trauma.

Material and Method:

This is a prospective observational study conducted in a tertiary care hospital of Himalayan region over a period of three years. All patients with open globe trauma admitted in the hospital were included in the study. Patients with closed globe trauma, those admitted for secondary procedures post trauma or cases with injury of ocular appendages were excluded. Proper history was taken regarding their demographic profile and cause of injury. The parameters studied were age, gender, vision at

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presentation, site of wound (corneal or scleral or both). All such eyes were assessed preoperatively on slit lamp, for ocular findings and prognosis.

Patients were given injectable antibiotics (Cefotaxime, Amikacin, Metronidazole) as per body weight along with tetanus toxoid intramuscularly preoperatively.

Primary repair of cornea was done with 10-0 Nylon interrupted sutures. 8-0 Vicryl was used for sclera. If both were involved then suturing was done starting from limbus following standard protocols. Anterior chamber was washed and reformed with air. Eye was dressed with antibiotic and atropine ointment. Post operatively ocular sonography (USG B Scan) was done in each eye to note posterior segment status. Need for any other procedure was duly explained and the decision for stay or referral was made as per patient's choice and convenience. BETT classification was not done as our study specifically focused on open globe injuries and not other cases of trauma. However, we did assess eyes on ocular trauma scale(OTS) meant for open globe injuries. Post operative vision in most of the eyes could not be accessed as some of them were lost to follow up and most of them opted for renowned higher centers in bigger cities after the primary repair was done.

Result:

There were 2,320 patients admitted for various surgeries over a period of 3 years. Out of these 1,131 (48.75%) were males and 1,186 (51.12%) were females. Total number of patients with open globe trauma were 41 which constitutes 1.76 % of patients operated for various reasons

As per gender distribution, there were 24 (58.5%) males and 17(41.5%) females with open globe injury. The ratio of males with open globe and females with open globe was 1.41.

Table-1. Distribution of patients according to age, sex and eye involved.

	Variable	No (%)
Age Group	≤20yrs	23 (56.1)
	21 – 40yrs	12 (29.3)
	>40yrs	6 (14.6)
Sex	Male	24 (58.5)
	Female	17 (41.5)
Eye	Left	20 (48.8)
	Right	21 (51.2)

In our study we found that majority of trauma cases belonged to age group <20yr, constituting 56.1% (Table-1).

Preoperative vision was in the range of No PL to no visual impairment as per WHO criteria. Table-2 shows the various presentations of visual status preoperatively in case of open globe trauma.

USG B Scan done gently on third day revealed additional findings in 12 (29.3%) patients (table-3). These findings were related to trauma per se.

Analytically 54.6% eyes had a score of 1 on ocular trauma scale.

Table-2. Distribution of patients according to pre-op vision of the affected eye.

		Eye Affected		Total
		Right	Left	No. (%)
		No. (%)	No. (%)	
Vision	6/6 – 6/18	4 (22.2)	1 (6.7)	5 (15.2)
	6/24 – 6/60	3 (16.7)	1 (6.7)	4 (12.1)
	5/60 – 3/60	3 (16.7)	3 (20.0)	6 (18.2)
	2/60 – PL+, PR accurate	5 (27.8)	4 (26.7)	9 (27.3)
	PL+,PR inaccurate – NPL	3 (16.7)	6 (40.0)	9 (27.3)
Total		18 (100.0)	15 (100.0)	33* (100.0)

Table 3. Distribution of patients according to USG findings.

USG Findings	No (%)
RD	5 (12.2)
VH	7 (17.1)
No Finding	29 (70.7)

Discussion:

The global incidence rate of ocular trauma was estimated to be 3.5 per 100 000 persons per year. It is one of leading indications for enucleation in China and in USA.

The burden of ocular trauma was found to be 3.2% out of total patients attending eye opd in another study. WF Schrader stated that here was a relative constant incidence of 3 open globe injuries per 100,000 population^{13,15,16,19}.

The surgical load of patients with open globe trauma constituted 1.76 % in our hospital. This could be attributed to various factors like awareness and motivation of the patient and proximity to the hospital. We found that most of the admitted patients were from higher mountains and those from remote rural plain areas. Those who were from the main city wanted to try as many options available to them.

In our study, the ratio of males to females with open globe were 1.41, implying more females especially of younger age group. Most of the times the history revealed household quarrels and carelessness. Many studies have reported more male subjects because of more outdoor activities performed by males^{12,13,15,16}. Singh et al have reported actively working adults younger than 25 years of age were the commonest age group affected (64%)¹¹.

Cillino et al reported that cause of injury differed significantly by gender ($p = 0.001$) and urban vs. rural location ($p = 0.009$). Initial visual acuity was found to be correlated with final visual acuity (Spearman's correlation coefficient = 0.658; $p < 0.001$). Our study shares similar views on profile of the patient and visual prognosis at the time of presentation to the hospital.

Rao et al found Grade IV visual acuity ($<5/200$) at pre-

sentation as the most important factor contributing to poor visual outcome²⁰.

In this study we found that most of the open globe trauma cases were in younger age group. Children of both genders were susceptible to injury while playing due to lack of awareness. Adults were found to be more at risk while working without safety gears. It is evident from our study that proper counselling of parents and families can help in preventing ocular morbidity among children. We, hereby, emphasize the need for provision and implementation of safety measures at work places.

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