

PROFILE OF OCULAR TRAUMA PATIENTS IN A TERTIARY CARE HOSPITAL IN INDIA, A PROSPECTIVE STUDY

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Abstract

Objective: The purpose of this study is to identify the patterns, presentations of ocular trauma, to determine the groups at risk, types of injuries, analyze visual outcomes of ocular trauma in patients presenting at our hospital.

Method –It is a prospective hospital based study done over a period of one year on ocular trauma patients between Jan 2020 – Dec 2020. All consecutive, consenting patients with ocular trauma were interviewed with the aid of a questionnaire and underwent a detailed eye examination.

Results: The study included 100 patients. Males were affected in 82% cases. The highest incidence of trauma was seen in the age group of 21-30 years (29%). Children below 10 years were found in 12 % cases. Blunt trauma was found in 49% whereas penetrating injuries were found in 44 %. The most common site of injury was the cornea (30.58%).

Keywords: ocular trauma, eye injuries, penetrating eye injuries, hyphaema

Introduction:

Ocular injuries are a significant global health problem. It has been recognized that ocular trauma is a leading cause of monocular blindness.^[1]

The eye represents only 0.27% of the total body surface area and 4 % of the facial area, but it is the third most common organ affected by trauma after hands and feet.^[2] Ocular trauma is a significant public health problem and preventable cause of visual morbidity. It is common in developing countries and may lead to permanent visual impairment. It may occur at any age in either sex, especially among pediatric and elderly population. Both hospital and population based studies indicate a large preponderance of traumas affecting males.

According to estimates of world health organization (WHO), the global annual incidence of ocular trauma is around 55 million and worldwide blindness in 1.6 million people is due to ocular trauma.

Early detection and management holds the key to trauma management and prevention of further complications.^[3] The impact of ocular trauma is a major cause for concern due to its devastating effects on the individual as well as the burden it places on the socioeconomic and health resources of any nation. The National Society for the prevention of blindness estimates that upto 90% of all eye injuries are preventable, especially in the pediatric age group.

Epidemiological studies in our environment are necessary to determine the causes of ocular trauma so that strategies to prevent or reduce their occurrence are implemented. The goals of this study were to describe clinical features of ocular trauma, to analyze visual outcomes of ocular trauma, and finally to make recommendations for public health and clinical strategies for the prevention management and research of ocular trauma in the future.

Materials and Methods:

This is a prospective study conducted at the ophthalmology department of a tertiary care institute in Nashik, Maharashtra. This hospital is a tertiary referral centre for ophthalmology and other specialties for patients living in the neighboring villages and towns.

The patients with ocular trauma usually present themselves in the eye OPD. They can be sent from the casualty or referred from other public and private hospitals. All consecutive, consenting patients with any form of ocular trauma, were enrolled in the study.

A questionnaire was used to interview the respondents by the authors. All patients underwent a comprehensive eye examination which included visual acuity (using the Snellen's chart), torch light, slit lamp examination and direct ophthalmoscopy (where it is possible). Imaging studies, primary and secondary surgical intervention and hospital admission was done when necessary.

Ethical approval was obtained from the Ethics and research committee of the hospital. Informed consent was also obtained from each subject.

Those who presented with traumatic black eye only were treated with oral analgesics and anti inflammatory drugs. Those who had corneal and conjunctival foreign body were treated with removal of foreign body under local anaesthetic on slit lamp. Patients of hyphaema were treated with oral vitamin C tablets, topical steroids, cycloplegics and antiglaucoma medications. Large conjunctival tear, corneal, scleral or corneoscleral tear were treated with suturing in operation theatre. Corneal abrasions and epithelial defects were managed with antibiotic patching for 24 hours, followed by topical antibiotics for 1 week. Those with vitreous haemorrhage and retinal detachment were surgically operated. Globe rupture cases where the eye was non salvageable were enucleated. Patients with corneal tear and traumatic cataract underwent primary repair and secondary IOL implantation was done in secondary repair. Patients with IOFB, underwent vitrectomy, IOFB removal and silicone oil injection. Chemical injury cases were managed with normal saline irrigation followed by topical antibiotic, cycloplegic and steroid drops and antibiotic ointment. Treatment was continued for 7 days.

Results: There were 100 subjects in the study with 82 males and 18 females.(ratio of 4.5:1)

The age ranged from 2 years to 79 years with mean age of 34 years.

The right eye was involved in 73 patients, left eye in 25 patients and both eyes in 2 patients.

The highest incidence of trauma was seen in 21- 30 year age group (29%) (figure 1).Commonest type of injury was corneal tear (figure 4)

Considering knowledge of patients, 22% patients were illiterate, 26% primary, 24% secondary and 20 % were graduates as shown in (figure 3). Most of the patients were farmers (24%). The occupation of the patients is shown in (table 2)

Most injuries (49%) were due to blunt trauma,44 % eyes had penetrating trauma and 3 % were affected by chemical burns while 4% Eyes sustained perforating injury(table 1). Most of the patients (53%) presented within 24 hrs,(26%) presented between 2-3 days, (22%) presented between 4-7 days (table 3).

Figure 4, shows the distribution of the anatomical sites of trauma among subjects. The cornea is involved in 27 % subjects and the lids in 16 % were the two most common sites.

Most patients had visual acuity between 2/60- PL+ (57%) at presentation and between 6/6-6/12(46%) after treatment (figure 2)

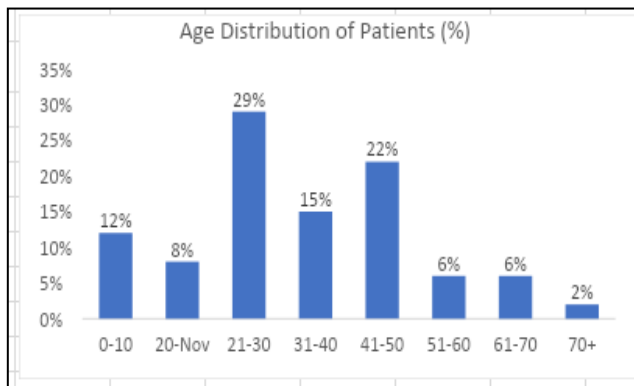


Figure 1: Age distribution of subjects:

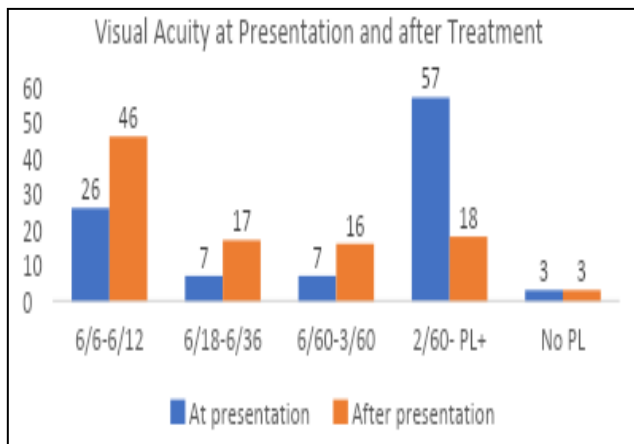


Figure 2: Visual acuity at presentation and after treatment

Considering the education,

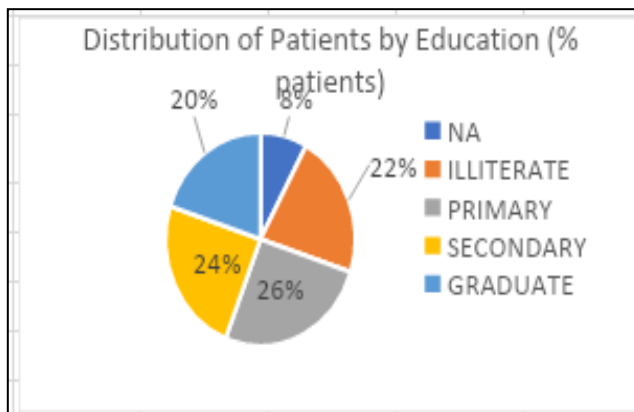


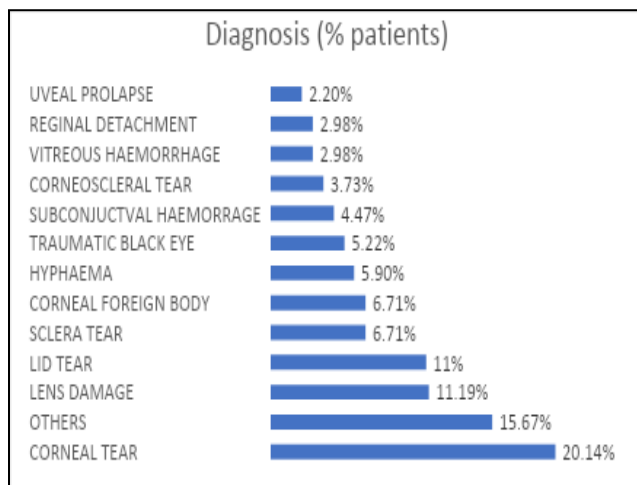
Figure 3: Distribution of patients by education

Table 1: Showing different types of trauma and percentage of patients presenting with it

TYPE OF TRAUMA	PERCENTAGE
BLUNT	49
PENETRATING INJURY	44
PERFORATING INJURY	4
CHEMICAL INJURY	3

Table 2: Showing occupation of patients

OCCUPATION	PERCENTAGE
FARMER	24
ARTISAN	13
LABOURER	16
HOMEMAKER	5
STUDENT	10
NOT APPLICABLE	11
EMPLOYEE	14
BUSINESSMAN	2

**Figure 4:** Distribution of anatomical sites**Table 3:** Time interval between trauma and treatment

Time interval between trauma and treatment	No of patients	percentage
<24 hrs	53	53%
2-3 days	26	26%
4-7 days	22	22%

Discussion:

Males were affected in 82% of cases and females in 18% of cases which is consistent with other studies. This is well supported by a study conducted by Gothwal^[4] in Hyderabad where males were involved in 86% of cases of ocular trauma. This may be explained by the fact that males tend to be more aggressive, perform more artisan jobs and are adventurous in their behavior compared with females, and these make them more prone to ocular trauma. Also males are mainly engaged in outdoor activities where trauma is highly encountered.^[5]

Our study showed that 12 % cases of trauma were seen in children of less than 10 years of age. Maximum number of trauma cases were seen in age group of 21-30 years(29%).Majority of authors have found the highest incidence of ocular trauma in the young and very young age group^[6,7]. Young children are more susceptible to ocular trauma because of their physical vulnerability, lack of coordination, and curiosity/desire to explore, which may lead to serious hazards.

In our study maximum number of cases (26%) had education up to primary level. Farmers (24 %) and labourers (16%) had the highest amount of trauma .People belonging to rural background with lower education level and socioeconomic status are more affected by ocular trauma due to delay in seeking medical care.

98% of victims had unilateral eye involvement and only 2% had bilateral injuries. Similar low bilaterality was reported by Baber et al(2.9%), Jahangir et al(3%) and Bucan et al(1%)^[8,9,10]

In this study, open and closed globe injuries were almost proportional, 48% and 49% respectively. Open globe injury is almost in agreement with other studies conducted in other countries. Uttarakhand (45.5%) and Peshawar, Pakistan(46.18%)^[11,12]. Majority of the patients presented within 24 hours of eye trauma(53%) which may have contributed to the favourable visual outcome seen the study. Similar number of patients were reported in study of Dhasmana R, Bahadur H,Jain K^[13]

The cornea was the most common site of injury (30.58 %) followed by the lids(11%). This is similar to what was found in study of Mohammed D Adamu et al^[14]. This may be due to their being the most exposed part of the eye .Lens damage was seen in 11.19% of patients.

At presentation 60% patients were under blindness category (< 3/60) which is similar to the percentage of patients in other studies^[15]. Post treatment in my study the vision improved to 6/12-6/6 in 46% cases.

In pediatric age group, our study reports agreed with the literature that majority of injuries occurred at home and could be avoided with supervision. These important trends highlight the need for prevention strategies to increase public awareness and re-emphasize the use of protective eye wear within the high risk groups in the population while engaging in common domestic activities which can likely cause eye injury.^[16]

Conclusion:

Most of the ocular trauma occurred among the male subjects who are in the young and active working age group .Majority of patients presented within 24 hours from the time of ocular trauma and received immediate treatment .Cornea was the most commonly affected ocular structure by trauma. Majority of pediatric patients presented with corneal tear, mostly associated with traumatic cataract. In such patients the final functional outcome was poor due to corneal scarring and amblyopia. This study highlights the importance of mass health education and awareness about risk of ocular trauma, morbidity caused by delayed presentation, and need to adopt safety equipment such as goggles, helmets especially during travel, playground and at workplace. Public education and awareness programs regarding health seeking behavior of ocular injuries need to be conducted for improved outcome of ocular injuries.

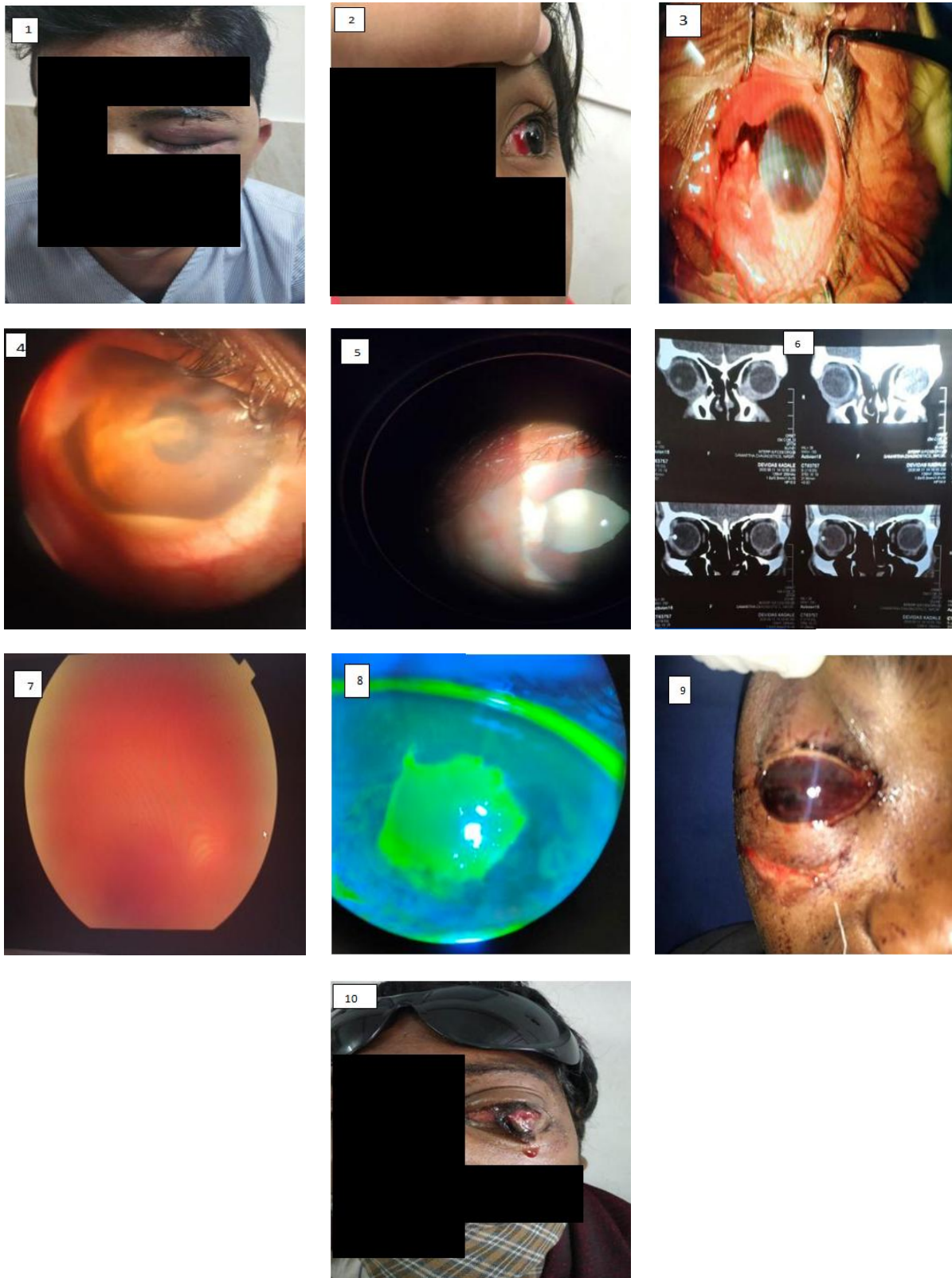


Figure 5: 1) Traumatic black eye, 2) Subconjunctival haemorrhage, 3) Corneal tear with iris prolapsed, 4) Corneal tear with hypopyon, 5) Corneal tear with traumatic cataract, 6) Intraocular foreign body (IOFB), 7) Vitreous haemorrhage, 8) Epithelial defect, 9) Traumatic rupture, 10) Traumatic eversion of eye

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