Malini BM, et al., J Ophthalmic Clin Res 2021, 8: 077
DOI: 10.24966/OCR-8887/100077

HSOA Journal of Ophthalmology & Clinical Research

Original Article

An Epidemiological Survey of Eyelid Trauma Presenting to a Tertiary Care Centre in India

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Abstract

The following study is an epidemiological assessment of eyelid injuries, related aetiology, demography and management. The outcome of the analysis showed that young male adults of working class were found to be more prone for ocular injury due to avoidable causes of eye injury and blindness which can be prevented with proper precautionary measures.

Introduction

Ocular trauma is one of the most common causes of avoidable blindness universally and is found to be a leading cause of vision loss in children. In India, 91.8% of blindness among adult populace is due to an avoidable cause [1]. Ocular injury is of common occurrence in young adults of working class with a male preponderance. Eyelid, ocular adnexa and orbit are structured in such a way that they minimise the trauma impact on the eyeball. Thus, eyelids are more prone to injury as they act as a barrier to ocular trauma. In this study, an epidemiological overview of eyelid injury in a subpopulation of south India has been analysed [2].

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Citation: Malini BM, Yuvarajan K, Rangarajan V, Ramamurthy L, Bansal R, et al. (2021) An Epidemiological Survey of Eyelid Trauma Presenting to a Tertiary Care Centre in India. J Ophthalmic Clin Res 8: 077.

Received: January 29, 2021; **Accepted:** February 05, 2021; **Published:** February 12, 2021

Materials and Methods

A retrograde analytical study was done in Aravind Eye hospital, a tertiary care centre in Coimbatore, Tamil Nadu in India. Data of total 106 cases over a period of 1 year from March 2017 to February 2018 was collected. All patients who presented with lid injuries were included. Patients who had undergone primary repair elsewhere, who presented 1 week post injury and other associated systemic injuries were excluded from this study.

Details regarding patient's age, gender, place, history with details of time, mode and place of injury were recorded. Visual acuity was recorded using Snellen's chart. Patient's vital signs were noted. Ocular examination was carried out using torch light and slit lamp microscope. Fundus examination was done. In cases which needed further work up, other auxiliary investigations like ultrasonography, orbit X ray, visually evoked potential, radio imaging etc., were done.

The lid injuries were repaired on the same day of presentation or the next day under local or general anaesthesia. The wounds were sutured using vicryl 6-0 suture material. In case of canalicular injury, monocanalicular stenting was done. Other associated ocular injuries were also operated at the same time. The patients were followed up after 2 weeks in lid cases without canalicular injury. Those with canalicular injury were followed up at regular intervals and stent removal was done after 3-6 months.

Results

The data of 106 patients collected in this study was analysed. Out of these, 80 (75.47%) patients were males and 26 (24.52%) patients were females contributing to a ratio of 3:1. Maximum number of cases was noted in the 30-40 years age group (24 cases).

The most common mode of injury (Table 1) was due to self fall from 2 wheeler motor vehicle in 26 patients, followed by workplace injury in 19 cases out of which 8 cases were due to injury from iron rod. Stick injury was seen in 11 patients, cradle hook injury in 6 patients, collision between vehicles in 5 patients, bull gore injury in 4 patients, fist fight in 4 cases and pet related injury in 3 cases. In children, the most common mode of injury with stick, cradle hook and injury from the hook on the handle bar in the front of a 2 wheeler vehicle.

Based on laterality, right eye was involved in 57 cases and left eye in 47 cases. Upper lid was found to be more commonly injured (39 cases) than lower lid (33 cases). Both lids were involved in 19 cases. Eyebrow injury was noted in 7 cases. Injury to lateral canthus was seen in 5 cases and 1 case had a tear near medial canthus. 19 patients had partial thickness lid tear and 52 had full thickness lid tear. In 10 cases, total avulsion of lid was noted out of which 1 case had segmental loss of tarsal plate. 8 cases had lid margin tear. Canalicular injury was noted in 27 cases (Figure 1).

Mode of injury	Number
Self fall	26
Workplace injury	19
Stick injury	11
Cradle hook injury	6
Vehicle collision	5
Bull gore injury	4
Fist fight	4
Pet related	3

Table 1: Represents the cause of injury and its incidence from the study data.

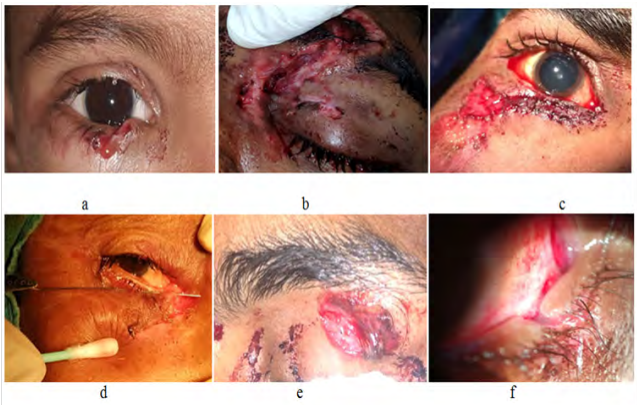

Figure 1: a) lower lid tear with lid margin involvement b) medial canthal and upper lid tear c) lower lid avulsion d) lower canalicular tear e) upper lid tear with fat prolapse f) lid margin tear.

Most commonly associated ocular injury (Table 2) was globe injury in 18 cases. Others were conjunctival tear, commotion retinae, subretinal haemorrhage, lens dislocation with iridodialysis, orbital wall fracture, intraocular foreign body, traumatic uveitis and traumatic optic neuropathy. An interesting observation during this study was that 90% of cases with eyebrow injury had globe perforations.

Associated ocular injuries	Number of cases
Globe perforation	18
Conjunctival tear	9
Commotion retinae	4
Lens dislocation	2
Orbital wall fracture	1
Intraocular foreign body	1
Traumatic uveitis	1
Traumatic optic neuropathy	1

Table 2: Represents other ocular injuries noted in the eye lid injury patients.

In 4 cases of canalicular injury, stenting was not possible due to irregular tear and tissue loss. Monocanalicular stenting (aurostent) was done in 23 cases. Out of these, extrusion was noted in 4 cases during first follow up at 2 weeks. In 5 cases canalicular scarring was noted at the end of 6 months follow up. 14 cases had patent canaliculus during the last follow up.

Out of the 18 globe perforation cases, 8 developed phthisis. In one case of tarsal plate loss with lid avulsion, cutler Beard procedure was done.

Discussion

Ocular trauma is globally a major risk for monocular blindness[1], which is preventable and also salvageable with appropriate intervention. Eyelid injuries can occur in isolation or in association with severe ocular injury like globe rupture or fractures of surrounding facial bony architecture. There has been a steady rise in the incidence of ocular injuries because of rapid industrialization, high speed traffic and increased urbanisation. The incidence of eyelid injuries in cases of ocular trauma reported in India is 29.9% [3] and 34.2% [4] respectively. This study describes the overview of eyelid injuries in cases of ocular trauma, epidemiological aspects and management.

The incidence in more in males when compared to females accounting to 75.4% in ratio of 3:1 which is consistent with the study by Desai P et al., [5], which was 83% and Saini et al. maximum number of injuries was noted in 30-40 years peak and mostly working population. As already described in previous studies, middle aged males with more active involvement in work make them prone to injuries. A result of Helsinki Ocular Trauma Study also shows a male predilection in 80% and the peak age group of 15 to 45 years [6]. However injuries in females and children were also noted in significant numbers.

Our study reported a varied aetiology of ocular injury, most common being self fall from two wheeler vehicle and work place injury. In similar case series reported by others work place trauma, assault and road traffic accidents [6] were found as the most common cause of injury while stick injury, sports related trauma were more often seen as reported by Abraham D et al., [7]. Epidemiological survey in Nigerian hospital shows assault and domestic chores to be more often related cause [8]. Our study includes all these documented causes, however, injury to one eye from road traffic accidents especially 2 wheeler vehicles is the highlight of this study. This can be attributed to the constant rise in usage of 2 wheeler vehicles as a mode of transport in India without proper protective gear thus emphasising on the importance of strict rules and regulation for traffic safety and management to be adopted. Accidental stick injury and cradle hook injuries were found to be recurrent causes for injury in children in this study. Blouse hook injuries in infants in Indian scenario were documented as frequent cause by Naik MN et al., [9] and stick injury/ sports equipment injury are more common in adolescents age group as reported by the Helsinki trauma study [10].

Kennedy and associates reported lower eyelid involvement in 66.2% of cases, upper eyelid in 27.5% [11]. However, upper lid was more commonly involved in our study. Similar statistical data was provided in the study by Naik MN et al. Also there were more severe associated injuries in cases of upper lid trauma.

Canalicular involvement in eyelid injuries constitutes around 16-36% of ocular trauma [9,11,12] and our study accounts to 25.5 % in concordance with above data.

Associated globe injury has been reported in 20% to 44% in previous studies [10] and constituted around 16% in our data, while rest of our injuries were in same line in comparison with study by Naik MN et al., and Ajayi et al., [8,9]. Study by Naik MN et al., shows

more incidence of globe rupture in upper lid involvement [11] while our study data shows more incidence of globe rupture in upper lid and eye brow injury.

All the above studies have given an extensive information about the causes of eye lid and ocular injury. Eyelid trauma has a lot of risk factors like epiphora, lagophthalmos, ectropion, exposure keratopathy and other related complications as consequences. It is also cosmetically disfiguring and causes social hindrance. Thus the data provided in this study and other studies help in taking initiatives for prevention, imposing measures to improvise safety, enforcing mandatory rules and regulations for vehicle and machinery handling, usage of protective eye gears and hence minimise the incidence avoidable causes of ocular injury.

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