

Clinical Management of Eyelid Trauma in a Tertiary Care Teaching Hospital

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Abstract

Background: Eyelid trauma appears to be minor however, it can have serious consequences in terms of injury-related morbidity. Ocular trauma is the major cause of visual impairment worldwide. Management of lid injuries, complete eyelid function, and maintenance of the lacrimal system are important considerations. The current study aimed to assess the extent of eyelid trauma and management of eyelid trauma reported to our tertiary care teaching hospital.

Methods: This cross-sectional study was conducted in the Department of Ophthalmology, Prathima Institute of Medical Sciences, Naganoor, Karimnagar. N=25 cases of eyelid trauma were included. The patients were evaluated by Visual acuity using Snellen's acuity chart, Slit-lamp biomicroscopy of the anterior segment, Extra Ocular Movements, Intraocular pressure using Goldmann Applanation tonometer, Direct and Indirect ophthalmoscopy, Field of vision, Color vision, Diplopia Charting.

Results: Full-thickness involvement of the eyelid was found in 15(60%) of cases and partial thickness was involved in 40% of cases. The margin of eye involvement was seen in 60% of cases and the margin was not involved in 40% of cases. The majority of the patients (84%) had good visual acuity ranging from 6/6 to 6/18. Visual acuity ranged from 6/24 to 6/60 in 12% of the cases, with just one instance having vision less than 6/60 due to an immature cataract in the afflicted eye.

Conclusion: The eyelid injuries are common in the younger age group and affect males frequently with road traffic accidents being an important cause. Lower canaliculus involvement was greater than upper canaliculus involvement because of the inferior canaliculus's more vulnerable location to damage and the loose proximity of the lower lid to the globe medially. The time of presentation has a great impact on the outcome of the repair. The younger group has better cosmetic outcomes postoperatively.

Keywords: Eyelid Trauma, Eyelid Lacerations, Eye Injuries, Management of Eye Injuries

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Introduction

The eyelids are not only protective structures that function as curtains in front of our eyes, but they also give the face its

form and beauty. The eyes are made more beautiful by perfectly shaped and aligned lids. That is why, for the best possible

aesthetic outcome, we should methodically correct any defect or injury to the eyelids caused by trauma or surgery, which necessitates a thorough understanding of lid anatomy and the most recent breakthroughs in the field of reconstruction procedures. Canaliculi are structures that play a crucial function in tear drainage. When the medial eyelid and canthus are injured, the chance of canaliculus damage rises. Damaged canaliculus not only causes epiphora but also causes cosmetic issues. Ocular trauma is a primary cause of vision loss in children and is one of the most prevalent causes of preventable blindness worldwide. In India, 91.8 percent of adult blindness is caused by preventable causes. [1] Ocular damage is prevalent among young working-class individuals, with a male majority. The eyelid, ocular adnexa, and orbit are all designed to reduce the impact of damage on the eyeball. As a result, eyelids are more vulnerable to damage since they serve as a barrier against ocular stress. [2] Although eyelid damage appears to be minor, it can have serious consequences in terms of injury-related morbidity. When it comes to lid injuries, complete eyelid function and maintenance of the lacrimal system are important considerations. Canalicular lacerations occur in 16-26% of all lid lacerations, and they are caused by direct or indirect damage to the canalicular system. [3] Eyelid laceration appears to be the most neglected location of injury in terms of epidemiological research. It is feasible to establish a better preventative approach and hence enhance public health policy in this area if we have a complete grasp of the causes of eyelid lacerations. [4] The timing of presentation, location, degree of tissue loss, related injuries, local infections, and the suitable and precise repair of the injury all influence the surgical repair's success. The sooner the patient arrives at the casualty, the better. Ectropion and epiphora are more likely because of associated tissue loss, infection, and involvement of the canthus and margin, and patient satisfaction with cosmesis is worse. The present study

aimed to learn more about the different types of eyelid injuries and methods of management.

Material and Methods

This cross-sectional study was conducted in the Department of Ophthalmology, Prathima Institute of Medical Sciences, Naganoor, Karimnagar. Institutional Ethical Committee approval was obtained for the present study. Written consent was obtained from all the participants of the study. The duration of the study was 12 months.

Inclusion Criteria

1. Patients presented with traumatic eyelid injuries
2. Males and Females
3. Available for future follow-up
4. Voluntarily willing to participate in the study

Exclusion Criteria

1. Lid injuries are associated with open globe injury.
2. Lid injuries are associated with an orbital fracture.
3. Patients presenting with a poor general condition require life support.

During the period of the study, patients who come to Orbit and Oculoplasty services will be registered, assessed, and followed upon. A complete history of the patient will be taken, as well as a Slit-lamp examination and a dilated fundus examination. The results of radiological imaging will be examined. Patients will get conservative therapy or surgical intervention, depending on their symptoms. During the presentation, best-corrected visual acuity (BCVA) will be measured, and Schirmer's test will be performed during the follow-up period. The patients were evaluated by Visual acuity using Snellen's acuity chart, Slitlamp biomicroscopy of the anterior segment, Extra Ocular Movements, Intraocular pressure using Goldmann Applanation tonometer, Direct and Indirect ophthalmoscopy, Field of vision, Color

vision, Diplopia Charting. Laboratory investigations included a complete hemogram, Radiological evaluation was done by X-ray orbits, CT scan, and B Scan if required.

Management: All the instances presented themselves in different ways, therefore each one was examined first, and then the cases' handling was chosen. The length of time after the trauma was reported in the history, as well as the form of damage, were used to evaluate the degree of the injury. Wound washing and disinfection were performed under local anesthetic. Primary closure was performed according to the location of involvement, with lacerated wounds that did not involve margins being approximated and sutured. For better anatomical realignment, lid margin lacerations were healed before extra marginal lacerations. Canalicular stents

will be used to treat medial canthus lesions involving the canaliculus.

Statistical analysis: The data was collected and uploaded on an MS Excel spreadsheet and analyzed by SPSS version 22 (Chicago, IL, USA). Quantitative variables were expressed on mean and standard deviations and qualitative variables were expressed in proportions and percentages.

Results

Out of the total n=25 cases studied n=16(64%) cases were males and n=9(36%) cases were females. The age-wise distribution of cases is given in table 1. A critical analysis of table 1 shows that younger age groups up to 20 years are more frequently affected in 44% of cases. The mean age of the study population was 21.5 ± 5.5 years the range of the age group was from 6 years to 72 years.

Table 1: Age wise distribution of cases in the study

Age Group	Frequency	Percentage
< 10	6	24.0
11 - 20	5	20.0
21 - 30	4	16.0
31 - 40	3	12.0
41 - 50	3	12.0
51 - 60	2	08.0
61 - 70	1	04.0
71 - 80	1	04.0
Total	25	100.0

All the cases in our study had unilateral involvement of the eye and the right eye n=16 (64%) of cases was more commonly involved as compared to the left eye n=9(36%) of cases. Assessment of mode of injury revealed 32% of cases were due to

RTA, 28% due to accidental trauma, Fall was the cause of injury in 20% of cases, the sports-related injury occurred in 12% of cases and assault caused 8% of injuries depicted in figure 1.

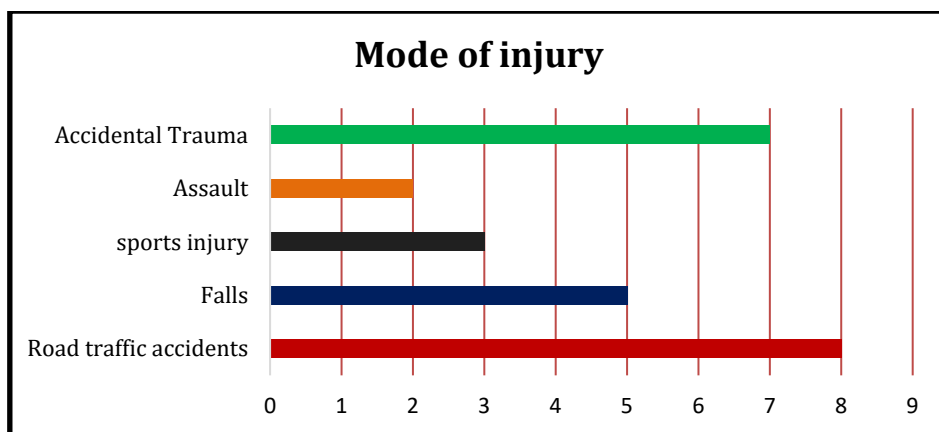


Figure 1: Mode of injury to eyelids in the cases of the study

The time of presentation is time-lapse since the injury plays an important role in the management and outcome of the injury. Early the patients present after injury better will be the outcome. In this study, 56% of

patients were presented below 6 hours following injury. 24% were between 7 – 12 hours. 8% presented late due to location in rural areas given in table 2.

Table 2: Time of Presentation of Eyelid Injury in the Study Group

Time interval of presentation	Frequency	Percentage
< 6 hours	14	56.0
7 – 12 hours	06	24.0
13 – 24 hours	03	12.0
25 – 48 hours	01	04.0
> 48 hours	01	04.0
Total	25	100.0

The frequency of eyelid involvement in the cases of study has been depicted in figure 2. Because related globe injuries were omitted from the research, only injuries to the eyelids were included. The majority of the patients (84%) had good visual acuity

ranging from 6/6 to 6/18. Visual acuity ranged from 6/24 to 6/60 in 12% of the cases, with just one instance having vision less than 6/60 due to an immature cataract in the afflicted eye shown in table 3

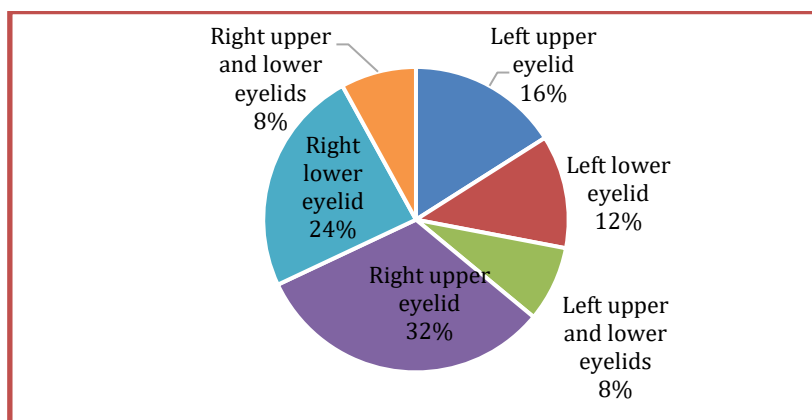


Figure 2: Frequency of eyelid involvement in the study group

Table 3: Evaluation of Visual acuity at the time of presentation

Visual Acuity	Frequency	Percentage
6/6 – 6/18	21	84.0
6/24 – 6/60	3	12.0
< 6/60	1	04.0
Total	25	100.0

Full-thickness involvement of the eyelid was found in 15(60%) of cases and partial thickness was involved in 40% of cases. The margin of eye involvement was seen in 60% of cases and the margin was not involved in 40% of cases. Canicular involvement was found in 20% of cases with both lower and upper canaliculi. In all these cases medial canthus injury was found except in one because of the proximity of the canaliculus to the medial canthus. The canicular injury was not involved in 80% of cases. Levator involvement in presentation characterized

by traumatic ptosis was found in 20% of cases and absent in 80% of cases. Wound infection was found in 8% of cases both of whom presented late and the meantime for the presentation was > 36.5 hours and absent in 92% of cases. The methods of management of cases of the study have been given in table 5. Most of the cases were managed by primary suturing including cases of partial-thickness wounds. No grafts were required in all the cases. N=10 cases with margin involvement injuries underwent three-layer margin suturing.

Table 5: Methods of management in the cases of the study

Management	Frequency	Percentage
Primary suturing	16	64.0
Monocanicular stent	3	12.0
Three-layer margin suturing	5	20.0
I.V antibiotics	1	04.0

Postoperative epiphora was found in 24% of cases as complained by the patient of watering eyes. Most of these cases were having margin and canicular involvement. Munk score was given for all the cases, if the patient does not complain of epiphora he was given (zero) score, if occasional epiphora requiring dabbling less than twice a day was given grade I,

requiring dabbling 2-4 times was given grade II, if dabbling needed 5-10 times per day, then grade III, if dabbling needed more than 10 times was given grade IV. Patients with no epiphora with 0 Munk score were 64% of cases, followed by a score of II in 16% of patients, a score of III in 12% of cases score I in 8% of cases. No case of score IV was found given in figure 3.

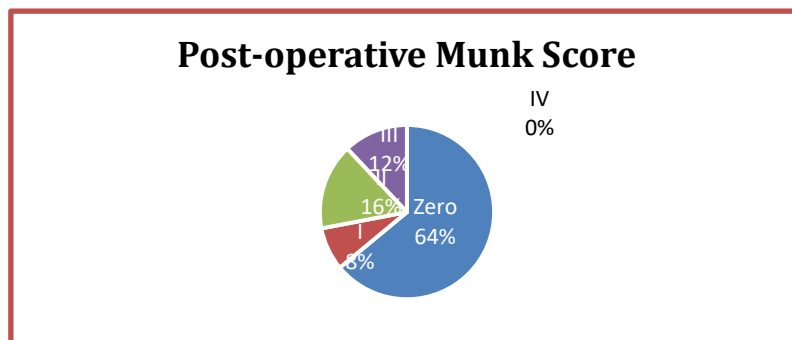


Figure 3: Munk Score of the cases post-operatively

Postoperative visual acuity was almost similar, there was no significant change in postoperative visual acuity. The postoperative cosmetic outcomes were evaluated based on patients' perceptions revealed that 68% were satisfied with the postoperative outcomes.

Discussion

Ocular trauma is a leading cause of monocular blindness worldwide, and it is both avoidable and reversible with the right treatment. Because of fast industrialization, high-speed traffic, and rising urbanization, the prevalence of eye injuries has steadily grown. Studies from India have shown that eyelid injuries account for 29.9 – 34.2% of all ocular trauma cases. [5, 6] In the current study the younger age group < 20 years was commonly affected with 44% of cases the mean age was 21.5 ± 5.5 years. In a similar study AH Suthar et al., [7] in Gujarat found the maximum incidence in the 3rd and 4th decade and the mean age was 31.64 years. In this study, we found that n=16(64%) cases were males and n=9(36%) cases were females. A. Tabatabaei et al., [4] showed (that 24.7%) were female and 73(75.3%) were male among 98 patients. M.N. Naik et al., [8] found that 83.3% of patients were males with eyelid injuries. The right eyelid was involved in n=16 (64%) of cases and the left eye n=9(36%) of cases. Canicular involvement was found in 20% of cases with both lower and upper canaliculi. Sendul SY et al. [9] reported that the lower canaliculus was involved in 33 patients (78.57%) followed by the upper in 7 patients (16.6%) and 2 patients had bicanalicular involvement (4.76%). According to Kennedy et al., [10] inferior canalicular damage is the most prevalent (66%) followed by superior canaliculus (28%) and bicanalicular injury (6%). Jordan et al., [3] found similar results in a study where 50% of people had inferior canaliculus involvement, 23% had superior canaliculus involvement, and 4% had

bicanalicular involvement, which is similar to our study where inferior canaliculus was involved in eight cases and superior canaliculus in one. The results of surgical repair vary depending on various aspects, including the kind of damage, the duration of the injury, and the quantity of tissue lost. In this study, 60% of the patients required suturing in layers we used 6-0 Vicryl suturing under local anesthesia. Epiphora, lagophthalmos, ectropion, exposure keratopathy, and other associated problems are all possible outcomes of eyelid injuries. [11] It's also unattractive and makes it difficult to socialize. As a result, the information supplied in this and other research aid in the development of preventative strategies and the implementation of safety measures.

Limitations of the study included a limited number of cases included in this research and the study was conducted in a single tertiary care hospital. The follow-up of the patients in this study was of short duration. For a correct picture, a large group of samples must be included and possibly multicenter studies must be conducted along with a long-term follow-up.

Conclusion

The eyelid injuries are common in the younger age group and affect males frequently with road traffic accidents being an important cause. lower canaliculus involvement was greater than upper canaliculus involvement because of the inferior canaliculus's more vulnerable location to damage and the loose proximity of the lower lid to the globe medially. The time of presentation has a great impact on the outcome of the repair. The younger group has better cosmetic outcomes postoperatively.

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