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Clinical Study Of Eyelid Injuries And Their Management

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***Abstract: Aim**: To describe the etiology and management of eyelid injury in a tertiary care hospital.*
***Methods:** A prospective interventional study was conducted at Department of Ophthalmology, Sri VenkateswaraRam Narayan Ruia Government General Hospital attached to Sri Venkateswara Medical College, Tirupati.Total of 106 cases with eyelid injuries fulfilling the inclusion criteria were examined and results were analyzed.*
***Results:**Out of 106 cases, majority of the patients weremales(67.92%) in the age group of 30-39yrs accounting for 39.62%. Most common mode of injury was road traffic accident(67.92%),most common type of laceration was partial thickness laceration(60.37%), unsighty scar was the most common complication(5.66%).*
***Discussion:** In our study males outnumbered females with RTA being the most common mode of injury and most of the eyelid injuries being partial thickness lacerations.*
***Conclusion:** As the injuries occur more commonly due to road traffic accidents showing 72 (67.92%) of cases in our study, preventive measures are to be taken while riding such as controlling speed.*
***Keywords:**Eyelid injury, road traffic accident, partial thickness laceration*

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I. Introduction

Eyelids are not only protective curtains in front of eyes but also give shape and beauty to the face. Beauty of eyes lies in the perfectly contoured and aligned lids[1].

Eye lid injuries are on the rise primarily because of increasing incidence of road traffic accidents, industrial mishaps and intentional assaults on human body.[2]

Lacerated wounds of the eyelids are common features of ocular trauma and often occur in isolation without any associated intraocular injuries.[2]

Eyelid trauma may often appear trivial but can have profound effects on injury associated morbidity. Recovery of full eyelid function and maintenance of the lacrimal apparatus are important considerations when approaching lid trauma.[3]

II. Material And Methods

The present study was a prospective interventional study conducted in the Department of Ophthalmology at S.V.R.R. Government General Hospital, Tirupati. 106 patientswith eyelid injuries attending Out-Patient Department of Ophthalmology as well as Emergency Department from June 2017 to October 2019 in S.V.R.R. Government General Hospital, Tirupati were selected for the study. The study was conducted to study the types of eyelid injuries, common mode of injuries, role of RTA and the management of these injuries. The subjects were selected consequently as and when they present and the data was categorized into etiology, age, sex, mode of injury, surgical procedures done and analyzed.

Inclusion Criteria:

All patients with all types of Eye lid injuries, who attended Out Patient Department and Emergency Department of S.V.R.R. Government General Hospital, Tirupati.

Exclusion Criteria:

- Patients not willing to participate in the study

The eyelids were examined with special attention to

1. Extent of injury- horizontal and vertical extent, depth of wound (layers of eyelid involved)
2. Nature of wound and margins –clean wound, contaminated wound, infected wound, presence of necrosed tissues
3. Presence of foreign bodies
4. Injuries to eyeball, conjunctival tear, corneal epithelial defect and corneal tear, sclera tear, pupillary reaction and extraocular muscle action.
5. Orbital margins for examination

Procedure methodology

1. Patients with minor injuries were treated as outpatients. All patient with injuries like avulsion of canthal tendons, canalicular laceration, injuries with tissue loss, infected wounds, and patients with associated ocular injuries were hospitalized. Appropriate measures taken to prevent infections.
2. In surgical treatment of partial eyelid injury(fig 1), simple skin suturing (or) anterior lamella not involving margin sutured in layers. In full thickness lid laceration(fig 2) involving lid margin without tissue on (or) with tissue loss <25%, sutured in layers by direct closure and lid margin approximated by three layered technique. In full thickness lid laceration involving lid margin with tissue ion 25-60%, mobilisation by lateral canthotomy and lateral cantholysis and sutured in layers, lid margin approximated by three layer technique. In canalicular injury, mono canalicular lacrimal suture placed(fig 3). Systemic Non Steroid Anti Inflammatory Drugs were used to reduce swelling and pain. Combination of antibiotics, lubricants, non-steroidal anti-inflammatory drugs were used in topical form either as drops or ointment.

post operative follow up:

- Patients were examined every day for first three days(fig 4). Post operative follow up examinations were done at one week(fig 5), six weeks and were reviewed at three months for complications. Canalicular stents were removed after three months.(fig 6)

III. Result

The present study consists of 106 cases of all types of eyelid injuries who attended Out Patient Department and Emergency Department of S.V.R.R. Government General Hospital, Tirupati, from the day of approval of ethical committee.

AGE INCIDENCE:

The present study showed that the incidence of eyelid injuries is more common among 30-39 years with mean age group being 33.44±14.85 years, which accounts for 39.62% of total cases in the study.

Table 1: Age Incidence

Age in Years	No. of Cases	Percentage
<10 yrs	6	5.66%
10 - 18 yrs	6	5.66%
19 - 29 yrs	28	26.41%
30- 39 yrs	42	39.62%
40 - 49 yrs	8	7.54%
50 yrs and above	16	15.1%
Total	**106**	**100%**

Sex Incidence:

This study shows that the incidence of eyelid injuries in males 67.92% (72 cases) in comparison to females 32.08% (34 cases).

Table 2 : Sex Distribution

Sex	No. of Cases	Percentage
Male	72	67.92%
Female	34	32.08%

Eye Affected:

This study shows that in 54.71% of cases right eye is involved in comparison to 45.29% cases with involvement of left eye.

Table 3: Eye Affected

Eye Affected	No. of Cases	Percentage
RE	58	54.71%
LE	48	45.29%
BE	0	0%
Total	**106**	**100%**

Mechanism Of Injury:

The present study shows that RTA is the most common mode of injury, which accounts for 67.92% (72cases). Following which self fall is the 2nd most common mode, accounts for 15.10% (16 cases). Assault was the 3 most common mode with 9.44% (10 cases).

Table 4: Mode of injury/Object of injury

Mode	No. of Cases	Percentage
RTA	72	67.92
Self fall	16	15.1
Bull Horn Injury	6	5.66
Blouse hook	2	1.88
Assault	10	9.44
Total	**106**	**100%**

Time Elapsed:

This study showed that maximum number of patients came to the hospital within first 24Hrs of injury accounting for 79.24% (84 cases), 7 cases (13.20%) reported between 24-48 Hrs and remaining 7.56% (4 cases) reported after 3 days of injury.

Table 5: Time since injury

Time Since Injury	No. of Cases	Percentage
<24 Hrs	84	79.24%
24-48 Hrs	14	13.20%
>48 Hrs	8	7.56%
Total	**106**	**100%**

Table 6: Type of Laceration

Type of laceration	No	Percentage
Partial thickness	64	**60.37%**
Full thickness laceration with lid margin without tissue loss:	12	11.32%
Full thickness laceration with lid margin with tissue loss	10	9.4%
Canalicular tear:		
A. Monocanalicular	10	9.4%
B. Bicanalicular	0	0
Canthal injuries:	10	9.4%

Other Structures Involved:

Table 7: Other structures involved

Structure	Type of Injury	No. of Cases	Percentage
Conjunctiva	Sub ConjunctivalHaemorrhage	13	12.26%
	Conjunctival laceration	9	8.49%
Corneo scleral involvement	Corneo scleral laceration	6	5.66%
Globe involvement	Globe rupture	2	1.88%
Anterior Chamber	Hyphema	2	1.88%
Posterior Segment	Posterior segment	0	0
Orbit	Fracture of inferior orbital margin	2	1.88%

Complications:

Table 8 : Complications

Eyelid Deformities	No. of Cases	Percentage
Lid notching	4	3.77%
Lid retraction	0	0%
Epiphora	1	0.94%
Unsightly scar	6	5.66%
Cicatricialectropion	2	1.88%
Cicatricialentropion	0	0%
Ptosis	1	0.94%
Total	14	13.2%

Treatment Of Eyelid Injuries:

Table 9 : Treatment of Eyelid Injuries

Type of Injury	Number of Cases	Percentage
Skin Suturing	43	40.56%
Skin and Subcutaneous suturing	21	19.81%
Full thickness Repair including Lid margin	32	30.18%
Canalicular Suturing	10	9.43%

IV. Discussion

Out of 106 cases reported in the present study in S.V.R.R. Government General Hospital, Tirupati,the incidence of eyelid injuries was more common with mean age group being 33.44±14.85 years.InAl Tabatabaei et al[4]study, the most common age group affected was 29 yrs, in SelamYektaSendul et al[5]study it was 26.16+/-18.42 yrs and in AparajitaChaudhary et al[6] it was 19-35 yrs. This can be attributed to the fact that they are more active and occupationally involved age group and hence are more vulnerable for the injuries.

This study shows that RTA accounts for 52.83% (28 cases) was the most common cause of injury because of increase in road traffic accidents. Occupational injury and Domestic causes are responsible for 13.20% and 24.52% of cases respectively, followed by 9.44% (cases) of sports and other activities and males outnumbered females with 67.92% incidence as males were commonly involved in outdoor activities. In Milind N Naiket al[7], males were affected in 83.3% cases.

In our study RE was involved most commonly with 54.71% cases as compared to 45.29% cases of LE, and right eye upper eyelid was the most commonly involvedleft eye combined injuries and right eye upper eyelid injuries with 20%, 20% and 16%cases respectively. It is comparable with other studies.InRupeshAgrawalet al[8] study RE was involved in51.7% cases.

This study showed that maximum number of patients came to the hospital within first 24Hrs of injury accounting for 79.24% (84 cases) ,14 cases (13.20%) reported between 24-48Hrs and remaining 7.56% (8 cases)reported after 2 days of injury.In ShaziaQayum et al[9]study 52.2% of cases presented within 24hrs and in Malik S R K et al[10]study, 83.1% cases presented within 24hrs. This study shows Partial thickness laceration is the most common type of injury with 64 cases (60.37%).

In our study, patients with complications like unsightly scar were 6 cases (5.66%), followed by lid notching- 4 cases (3.77%) and cicatricialectropion - 2 cases (1.88%).

The present study shows that RTA was the most common mode of injury, which accounts for 67.92% (72cases) and two wheeler riding was the most common activity among them. Following which, self fall was the second most common mode, thataccounts for 15.10% (16 cases). Bull horn injury was the third most common mode with 5.66%(6 cases).

In our study, conjunctiva was the most commonly involved structure with sub conjunctivalhaemorhage involving 13 cases followed by conjunctival lacerations-9 cases, total of 22 cases. The second common structure involved was Corneal lacerations 6 cases(5.66%) followed by globe rupture, hyphema and fracture of inferior orbital margin, each of 2 cases (1.88%) .In Saini J S et al[11]study cornea was most commonly involved with corneal lacerations accounting for 17.64%.

In our study, Simple skin suturingwas done in 43 cases (40.56%) followed by Anterior lamella not involving lid margin suturing in layer by layer technique in 21 cases (19.81%) in partial thickness laceration. In Full thickness lid laceration involving lid margin without tissue loss, lid laceration was sutured in layers and lid margin approximated by three layered technique in 12 cases (11.32%).In Full thickness lid laceration involving lid margin with tissue loss <25%,lid laceration was sutured in layers by direct closure and lid margin approximated by three layered technique in 8 cases (7.54%). In cases of Full thickness lid laceration involving lid margin with tissue loss 25-60%, mobilisation by lateral canthotomy and lateral cantholysis and sutured in layers. lid margin approximated by three layered technique was done in 2 cases (1.88%).Direct suturing of Medial canthal tendon to periosteum by 5-0 prolene was done in 4 cases (3.77%).Direct suturing of Lateral canthal tendon to periosteum by 5-0 prolene was done in 6 cases (5.66%). In canalicular lacerations, Mono canalicular lacrimal stent was done in 10 cases (9.43%).InNajiM et al[12]study, simple skin suturing was done in 85% of the cases.

Strength Of The Study

1. Determination of the high risk individuals and high risk conditions which raise concern for eyelid laceration along with or without serious ocular trauma.
2. There are less number of studies on eyelid injuries. So, this study was taken up to develop a better preventive strategy and hence improve the public health policy in this respect.
3. Helps in reducing the risk of ocular trauma due to RTA.

Limitations Of The Study

1. It was a single centred study
2. Study had a smaller sample size.
3. Thermal, electrical and burn eyelid injuries were not included in the study.
4. Eyelid oedema, black eye and contusions were not included in the study.

V. Conclusion

As the injuries occur more commonly due to road traffic accidents showing 72 (67.92%) of cases in our study, preventive measures are to be taken while riding such as controlling speed. Males were more affected in comparison to females in a ratio of 2:1, because of occupational injuries as well as injuries due to outdoor work are common in males.

The wounds should be treated as early as possible within 24 hrs to achieve good results and to prevent unsatisfactory postoperative complications like infections, stenosis of the punctum, corneal exposure etc.

Conflicts of interest

Nil

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Figure 1: Partial Thickness Lid Laceration

Figure 2 : Full Thickness Lid Laceration

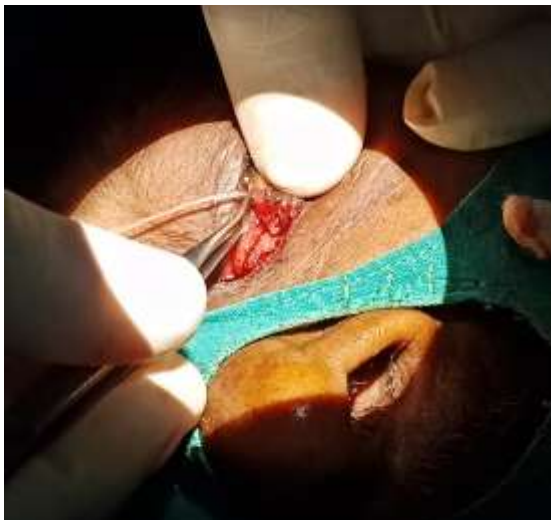

Figure 3 : Intraoperative Monocanalicular Stent

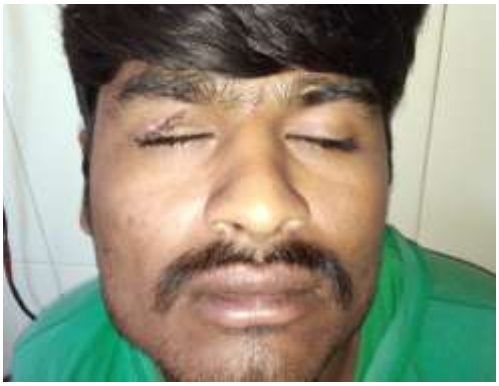

Figure 4 : Postoperative Day Partial Thickness Injury

Figure 5 : Postoperative One Week Showing Unsighty Scar

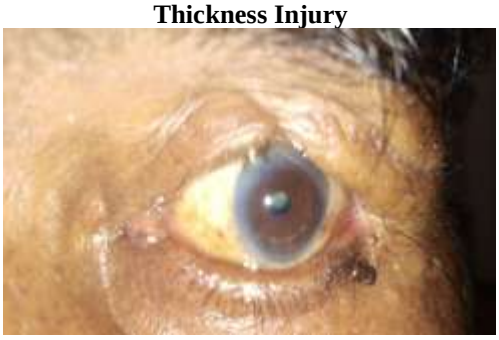

Figure 6 : Postoperative 3 MonthsshowingUnsighty Scar

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