



ORIGINAL RESEARCH PAPER

Ophthalmology

PRIMARY REPAIR AND POST OPERATIVE MANAGEMENT OF EYELID LACERATIONS IN A TERTIARY CARE HOSPITAL OF ASSAM: A CASE SERIES

KEY WORDS:

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ABSTRACT

Eyelid laceration refers to partial or full thickness defect in the eyelids that may or may not be associated with other intraocular pathology. Repairing of eyelid injuries is an art which requires good anatomic knowledge and meticulous approach. Gentle tissue handling and proper alignment should be done. The aim should be to achieve the best possible functional and cosmetic outcome. Always bear in mind that "Primary repair is the best repair." Prompt management ensures rapid healing and better anatomic outcome. This presentation contains a series of cases of eyelid laceration that were being managed at casualty of Tezpur medical college.

INTRODUCTION

Eyelid lacerations refer to partial- or full-thickness defects in the eyelid and constitute a significant subset of facial trauma which is often accompanied by other ocular injuries including corneal abrasions, disruption of the lacrimal drainage system, foreign bodies, open globe, or orbital fractures.[1]

ETIOLOGY

- Lid lacerations occur as a result of two general mechanisms including -
 - 1.Contact with sharp objects moving at high velocities that may lead to superficial partial thickness and deep injuries in lid and other structures around the eye including full thickness lid injury.
 2. Avulsion injuries from blunt trauma (It is kindly to be noted that the force of impact of the trauma may also lead to posterior segment problems of the eye, which may lead to impaired VA to different extent, with injuries caused by both sharp and blunt object).[2]

ETHICAL APPROVAL-All procedures performed in the study involving human participants were in accordance with the ethical standards of the institution and/or national research committee.

INFORMED CONSENT-All informed consent was obtained from all individual participants included in the study.

SOURCES OF FUNDING- None.

ANATOMY AND PHYSIOLOGY

- Effective management of eyelid lacerations demands a thorough understanding of the anatomy and physiology of the eyelid structures and surrounding facial structures.
- The most superficial layer of both the upper and lower eyelids is the skin, which is a very unique structure owing to the fact that it is the thinnest in the body containing no subcutaneous fat, mainly owing to its attenuated dermis. Eyelid incisions therefore heal rapidly. The thinness of the skin also helps to keep scarring to a minimum. As it crosses over the orbital rim, the eyelid skin abruptly thickens.
- Immediately deep to the skin is the circular orbicularis oculi muscle which functions as the main protractor of

both the upper and lower eyelids, innervated by cranial nerve VII and divided into pretarsal, preseptal, and orbital parts depending on its location relative to deeper structures. Pretarsal and preseptal portions are responsible for involuntary eyelid closure and aid in the lacrimal pump mechanism also while the orbital portion allows for voluntary eyelid closure.[3][4]

- Both upper and lower eyelids also contain a tarsal plate and conjunctiva. The tarsal plates help maintain the structural integrity of the eyelids, act as attachment points for the lid retractors, and house the Meibomian glands and eyelash follicles. The conjunctiva, is the deepest of the eyelid structures and serves several vital functions.

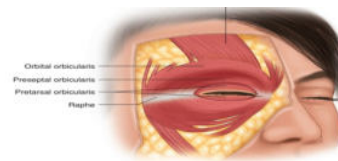


FIG 1: PRETARSAL, PRESEPTAL AND ORBITAL ORBICULARIS OCULI MUSCLE

ANATOMY OF EYELID

Anterior lamella

- Skin
- Subcutaneous tissue

Posterior lamella

- Orbicularis oculi
- Tarsal plate
- Medial and lateral canthal ligament
- Capsulopalpebral fascia
- Lid retractors
- Conjunctiva

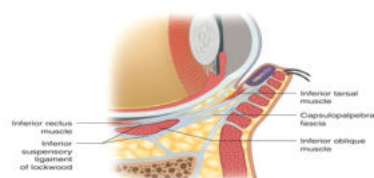


FIG 2:SAGGITAL VIEW OF THE CAPSULOPALPEBRAL FASCIA AND ITS RELATIONSHIP WITH THE LOWER EYELID RETRACTORS

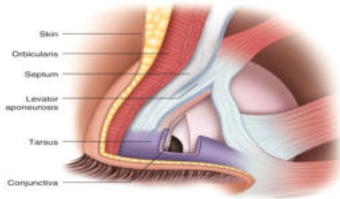


FIG 3:LEVATOR MUSCLE AND ITS RELATIONSHIP TO SURROUNDING STRUCTURES

AIM OF THE STUDY

Earliest possible primary repair and multifocal post operative management of eyelid lacerations in a tertiary Care hospital of Assam

OBJECTIVES

- To determine the post operative and cosmetic outcome in patients with eyelid lacerations where prompt primary repair was done in a tertiary care hospital of Assam.
- To establish the fact that stenting in canalicular injuries results in better functional outcome and maintains the patency of the nasolacrimal passage post operatively.

METHODS AND MATERIALS

It is a retrospective and interventional case series of patients attending the casualty of Tezpur Medical College and Hospital with eyelid lacerations (some involving the canaliculus) due to road traffic accidents. A total of 11 patients with eyelid lacerations were enrolled for the study, out of which 4 patients had lower canaliculus injury and 1 had upper canaliculus involvement. All patients were subjected to prompt primary repair with proper post operative management. The outcome was evaluated in terms of functional, post traumatic infection, cosmetic and anatomic grounds.

EQUIPMENTS USED

- Castroviejo needle holder
- Tissue holding forcep
- Nettleships punctum dilator and Bowmans probes of different sizes
- Lacrimal syringing set
- Polyglactin Absorbable suture 6-0 and 8-0
- Stent for canalicular injury cases- 16G cannula

PROCEDURE

Preoperative procedure

1. Injection tetanus toxoid 0.5ml IM (all cases).
2. Broad spectrum antibiotics (oral/injectable).
3. Local Eye drops and ointment.
4. Sterile saline irrigation.
5. Anesthesia (Local/topical).
6. Betadine preparation.
7. Debridement (Mechanical).
8. Sterile draping.

- Simple, superficial and eyelid margins laceration repair- Skin and muscle edges were reapproximated with simple interrupted sutures using 6-0 Polyglactin Absorbable suture. Skin edges were brought edge to edge while suturing. Suture knots are spaced 2-3mm apart, always avoiding tight suturing. Re-approximation of the edges of the eyelid margin was done by placing one simple interrupted suture from gray line to gray line. Important point are sutured first for better approximation.

- Lacerations with canalicular involvement- Under the microscope, punctum in the involved lid with canalicular injury is dilated with Nettleship's punctum dilator. And then a careful probing is done with Bowman's probe of proper size to find out the injured proximal canalicular opening. Only in case of doubt we do a careful syringing to find out the proximal canalicular opening. Then we try

to locate the distal canalicular opening as hinted by the probe. Posterior to the lacerated canaliculi we give some stay suture, then miniaturized stent 16G cannula from the punctum upto the common canalicular duct were placed. Then we tied the knots for the suture already placed and pericanalicular bites are taken anterior to the canalicular injury. Then the wound is closed

RESULTS

A total of 11 cases of eyelid lacerations were repaired over a span of 6 months. The patients attended the casualty of Tezpur Medical College and Hospital following road traffic accidents. The patients belonged to age group of 30-45 years. A total of 4 patients had lower canaliculus involvement(36.36%) and 1 patient had upper canaliculus involvement(9.09%). In all patients primary repair was done within 24 hours. Surgery was performed under local anaesthesia in all patients. Stents in canalicular injury were kept in situ to varying extent in different cases with an aim to keep the stent for not less than 3months post surgery. Follow up ranged from 12 weeks to 16 weeks after stent removal. Saline irrigation of the lacrimal passage could be performed in all the patients which showed patent nasolacrimal passage. There were no complications post operatively and all the patients had satisfactory functional and cosmetic outcome.

CONCLUSION

This study is a sincere attempt to assess the functional and cosmetic outcomes in patients with eyelid lacerations where prompt primary repair was done in a tertiary care hospital of Assam. Early intervention in eyelid lacerations allows easy canalicular visualization and reduces unnecessary mechanical intervention. Keeping in mind that "Earliest possible primary repair is the best repair", prompt management ensures rapid healing and good functional and cosmetic outcomes with least chance of post traumatic infection. However, a comparative robust study will be required with more participants to evaluate and assess the findings of this study better and incorporate the same in the near future for the better management of such cases.

TAKE HOME MESSAGE:

Early surgical repair should be the rule for the following reasons-

1. To minimize possibilities of post traumatic infection
2. For a better functional recovery
3. For a better cosmesis
4. Early primary repair including canalicular repair whenever required is technically easier than late repair

PRE-OPERATIVE AND POST-OPERATIVE PICTURES OF PATIENTS UNDERGOING REPAIR



FIG 4: EYELID LACERATIONS INVOLVING LOWER CANALICULUS



FIG 5: EYELID LACERATION INVOLVING UPPER CANALICULI



FIG 6: EYELID LACERATION INVOLVING EYELID MARGIN



FIG 7: EXTENSIVE EYELID LACERATION WITH LOWER CANALICULUS INVOLVEMENT



FIG 8: EYELID LACERATIONS WITH EXTENSIVE TISSUE INVOLVEMENT



FIG 9: EYELID LACERATIONS WITH EXTENSIVE TISSUE INVOLVEMENT

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