

Surgical Principles of Repair in Fresh and Old Periocular Lacerations for Good Functional and Aesthetic Outcomes at a Tertiary Care Center: A Case Series

Payal Garg^{1*}, Neeraj Agrawal², Rajat Patel¹, Nidhi Pandey³

¹Department of Ophthalmology, Sardar Patel Institute of Medical Sciences and Research Center, Lucknow, Uttar Pradesh, India

²Department of General Surgery, Autonomous State Medical College, Kushinagar, Uttar Pradesh, India

³Prakash Netra Kendra, Lucknow, Uttar Pradesh, India

Abstract

Aim: To analyse surgical principles for repair in periocular lacerations.

Materials and Methods: A retrospective review of clinical notes and photographs was conducted over a period of 2 years (November 2023- december 2025). Patients presenting with eyelid and /or periocular lacerations and canalicular lacerations were included. Patients with associated globe injuries, orbital and facial bone fractures, intracranial injuries and who failed to follow-up for at least 3 months were excluded from the study. Detailed clinical data analysed were demography (age, sex, laterality), type and mode of injury, wound location, dimensions, presence of orbital fat in wound, involvement of canthi and/or canaliculi, surgical techniques, type of sutures, use of stents, postoperative functional and aesthetic outcomes.

Results: A total of five patients were included; three patients had a primary trauma, one underwent revision of primary repair done elsewhere and one had lateral canthal web correction due to an old mismanaged laceration. All patients were males with a mean age of 26 ± 17.12 years. One patient had both upper and lower lid lacerations involving lid margins with a lower canalicular tear with no visible fat in the wound in the left eye. One patient had only an upper lid tear with lid margin involvement with an upper canalicular tear with visible fat in the wound in the right eye. Two patients had only lower lid tear with lid margin involvement with lower canalicular tear in the left eye with no visible fat in the wound. One patient had lateral canthal injury with web formation in the right eye and imbricated upper lid following repair elsewhere. The best corrected visual acuity was 6/6, N6 in all patients. All patients were advised for CT scan of the orbits to rule out orbital fractures and/or intraorbital foreign bodies and were repaired using standard surgical principles. They did well functionally and aesthetically in the postoperative period till a follow-up of 3 months with no postoperative complications. The canalicular stents were removed at 6 weeks postoperatively and lacrimal sac syringing was done. The lacrimal passages were patent till 3 months of follow-up.

Conclusion: Periocular lacerations involving eyelid margin, canaliculi, canthi and/or orbital septum must be repaired meticulously using standard surgical techniques, preferably by an oculoplastic surgeon, to avoid postoperative complications.

Keywords: Periocular lacerations, Eyelid injuries/lacerations, Lacrimal system injuries, Canalicular lacerations, Lateral canthal web.

INTRODUCTION

The eyelids, which protect the globe against external factors, are frequently affected by orbital and periorbital trauma. Eyelid traumas encompass a wide spectrum, ranging from simple lacerations to more severe injuries that can lead to deeper tissue damage and vision-threatening globe injuries.

The causes of eyelid trauma are often preventable, vary in frequency according to age group, socio-economic status, and

Address for correspondence: Payal Garg,

Department of Ophthalmology, Sardar Patel Institute of Medical Sciences and Research Center, Lucknow, Uttar Pradesh, India
E-mail: dr.payal@gmail.com

© UPJO, 2026 Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <https://creativecommons.org/licenses/by-nc-sa/4.0/>.



UP JOURNAL OF OPHTHALMOLOGY

An Official Journal of Uttar Pradesh State Ophthalmological Society,
UPSOS (Northern Ophthalmological Society, NOS)

p-ISSN: 2250-1916

DOI: 10.56692/upjo.2026140213

How to cite this article: Garg P, Agrawal N, Patel R, Pandey N. Surgical Principles of Repair in Fresh and Old Periocular Lacerations for Good Functional and Aesthetic Outcomes at a Tertiary Care Center: A Case Series. UP Journal of Ophthalmology. 2026;14(2): 111-115.

Received: 10-07-2026, **Accepted:** 26-07-2026, **Published:** 01-08-2026

geographical region, and include workplace-related injuries, falls, traffic accidents, sports injuries, and assaults.¹

Eyelid lacerations present with various findings, such as partial- or full-thickness lid defects, canalicular damage, and accompanying ocular damage.^{2,3}

If not promptly and appropriately treated, these injuries can result in serious anatomic and functional problems, including lid deformities, ocular surface disorders, and associated ocular morbidity.⁴ Incomplete or inadequate repair of the eyelids may lead to complications such as entropion, ectropion, trichiasis, and epiphora, significantly affecting the patient's quality of life.^{4,5}

The aim of this case series is to emphasize the role of meticulous surgical repair to achieve satisfactory cosmetic and functional outcomes with nil/ minimal postoperative complications.

MATERIALS AND METHODS

A retrospective case series including five patients was conducted over a period of two years (November 2023-december 2025). Patients presented with eyelid lacerations, canthal injuries and canalicular lacerations were included.

Patients with associated globe injuries, orbital and facial bone fractures and intracranial injuries and who failed to follow up for at least 6 months, were excluded from the study.

Detailed clinical data were collected including case notes, demographic data (age, sex, laterality), type and mode of injury, size, depth and position of eyelid lacerations, presence of orbital fat in wound, involvement of canthi and/or canaliculi. The surgical techniques applied for repair, type of sutures (absorbable/non-absorbable), type of stents used in canalicular lacerations and postoperative functional and aesthetic outcomes were analysed. All patients were advised for CT scan of the orbits to rule out orbital fractures and/or intraorbital foreign bodies.

Patients presented with fresh injuries were surgically repaired within 12 to 24 hours of the injury to minimize future complications.

The process began with apposing the lid margin with 2-3 6-0 polypropylene (Prolene) sutures at the meibomian gland orifice plane and at a plane just anterior to the grey line. The orbital septum, if breached, was not sutured as this can lead to postoperative lid retraction. Then, the tarsus was reapproximated using partial-thickness 6-0 polyglactin sutures. The underlying conjunctiva should not be taken in these sutures. The marginal sutures put initially were then tied, leaving long ends. The rest of the skin lacerations were then sutured with 5-0 polypropylene in interrupted fashion. The long ends of marginal sutures were secured in one of the skin sutures on the lid.

If there was a canalicular injury, the procedure involved approximating the two edges of the canaliculus using a self-retaining monocanicular stent (mini-Monoka), followed by lid repair as described above. The distal cut end of the canaliculus was identified by pushing air through the opposite

intact canaliculus with pressure on the lacrimal sac and watching for air bubbles popping from the presumed distal cut end. Also, the white and glistening annular fibres of the distal cut end of the canaliculus were identified in the surrounding pink orbicularis under the operating microscope at higher magnification.

In a patient with an old healed lateral canthal web with upper lid imbrication, double Z plasty was done at the lateral canthus to release the scar tissue along with lateral canthotomy and lateral canthal reconstruction.

After repair, topical antibiotic ointment was applied to the wound. Oral antibiotics and anti-inflammatory medications were prescribed. The non-absorbable sutures were removed on the 10th day. The stents were removed, followed by syringing with normal saline at 6th week postoperatively.

RESULTS

The case series included five patients, all males; right eye: left eye = 2:3, canalicular involvement in four (80%) patients, and loss of lateral canthal angle with web formation in one (20%) patient. The orbital septum was breached in one (20%) patient, indicated by the presence of orbital fat in the wound. Primary suturing was performed in patients with fresh injury and the tissues could be approximated to their normal anatomical position. In cases of canalicular lacerations, self-retaining monocanicular silicone stents were used. One patient was taken up for re-suturing with lower canalicular stenting due to poor approximation during primary repair done elsewhere, one week back. In a patient with an old healed lateral canthal web with upper lid imbrication, double Z plasty was done followed by lateral canthopexy.

All patients were symptom-free with good cosmetic and functional results till 3 months of follow-up. The MRD-1 and 2 were within normal limits in all cases. In 2 cases, there was minimal lagophthalmos with good Bell's phenomenon with no corneal exposure (Table 1).

Case-history

Case-1- 10 year old male with both upper and lower lid lacerations involving margins with lower canalicular tear in left eye following injury due to fall from a tree. Presented with pain, swelling, bleeding, watering in left eye. There was no diminution of vision. On examination, his globe was intact with normal visual acuity and fundus. CT-scan orbit was normal. He was repaired using standard surgical techniques and did well in postoperative period.

Table 1: good cosmetic and functional results till 3 months of follow-up

Case	MRD-1 (mm)	MRD-2 (mm)	Lagophthalmos (mm)
1	3	6	0.5
2	3	5	1
3	5	5	0
4	3	5	0
5	4	5	0

Case-2- 21 year old male, presented with right eye upper lid laceration with upper canicular tear following assault. There was orbital fat in wound. He had watering in right eye with pain, swelling and bleeding in the wound. His visual acuity, fundus, CT-scan orbits were normal. He was repaired and did well in postoperative period.

Case-3- 55 years old male, juice-vendor by occupation, presented with left eye lower lid tear involving margin with lower canicular laceration following injury with knife while cutting fruits. He had watering in left eye with pain, swelling, bleeding in the wound. His visual acuity, fundus, CT-scan orbits were normal. He was repaired and did well in postoperative period.

Case-4- 25 years old male, with left eye lower lid laceration involving lower canaliculus following road-traffic accident. He had pain, swelling and bleeding in the wound. He was repaired elsewhere, one week back with no satisfactory apposition. His visual acuity, fundus, CT-scan orbits were normal. He was re-sutured with stenting of lower canaliculus and did well in postoperative period.

Case-5- 19 years old male, with history of right eye injury following fall from tree. He was primarily repaired at a trauma centre and presented with watering with foreign body sensation in right eye at our centre, five months after injury. He had loss of lateral canthal angle with web formation with hypertrophied scar tissue with imbricated upper lid. He had complaint of watering and foreign body sensation. His visual acuity, fundus, CT-scan orbits were normal. He was repaired using double Z-plasty technique with 6-0 polyglactin sutures and lateral canthal reconstruction was done to reform the lateral canthal angle. The scar tissue and upper lid were released with cosmetic improvement. The patient was comfortable till 6 months of follow-up.

DISCUSSION

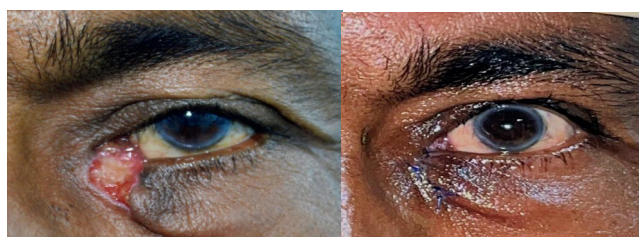
Eyelid lacerations (EL) are common ophthalmic injuries that require prompt assessment and appropriate management to minimize the risk of complications. Consistent with other studies, our results showed that EL are more common in men.^{1,2} In a publication conducted in Türkiye, similar to our results, the reported ratio was 3.75:1.7.¹³ This may be related to the more frequent participation of men in activities that can increase the risk of eye injury, such as occupational or industrial activities (construction, manufacturing), sports or



Case 1: 10 year old male with left eye upper and lower lid lacerations with lower canicular involvement (pre and postop pics)



Case 2: 21 year old male with right eye upper lid laceration with canicular involvement with presence of orbital fat in the wound (pre and postop pics)



Case 3: 55 year male with left lower lid injury with lower canaliculus involvement (pre and postop pics)



Case 4: 25 year old male with left eye lower lid laceration with lower canicular involvement with resuturing and stent placement (preop and postop pics)

recreational activities (contact sports, shooting, hunting), and certain hobbies (woodworking, metalworking).¹²

Considering the distribution of EL by age group in the literature, most injuries were reported in adolescence and the average age was around 30 years. Of the total, 23% of patients were between the ages of 0 to 9 years, 18% were between the ages of 9 to 18 years and 6% were aged 60 and over.⁶ These results may be attributed to a higher level of active work participation among individuals aged 20 to 50. The results of our study are consistent with the literature. Most of the patients (80%) were between the ages of 19 and 64; the mean age was 26 years, 20% were aged less than 18 years, and no patient was aged over 65.

Considering the etiology of injury in the literature, the prevalence in different countries may vary due to differences in geographical location and socio-economic status. Regional variations in lifestyle, occupational hazards, and cultural practices may also influence the etiology of EL. In one study, 59.9% of EL were caused by road accidents, followed by



Case 5: 19 year old male with right lateral canthal web with imbricated upper lid, underwent double Z-plasty with lateral canthotomy and lateral canthal reconstruction (preop, intraop and postop pics)

assault (13.6%), animal attacks (12.7%), and falls (9%)(2). In our study, the most common cause was fall (40 %), followed by road accident, assault and occupational injury in 20 % each.

Kumar and Batham² reported that the most common accompanying finding was subconjunctival hemorrhage, followed by hyphema, conjunctival laceration, traumatic lens injury, and corneal laceration. Tabatabaei et al.⁽¹¹⁾ reported that globe injury was present in 6.1%. In our case series, all cases with these associated injuries were excluded.

The most commonly reported late complication of EL is lid notching, which usually results from improper approximation or development of a wound gap.⁶ Kumar and Batham² also reported lid notching (6.3%), hypertrophic scars (1.8%), ptosis (2.7%), tearing (2.7%), and lagophthalmos (0.9%) as other complications. In our study, no patient presented with such late complications. Most complications can be prevented through careful and effective primary closure. Complications tend to arise when closure is delayed or when tissue approximation is poorly executed. In the literature, the anatomical success rate of canaliculalaceration repair ranges between 75% and 100%, while the functional success rate is in the range of 58-96%.^{7,8} Qin et al.⁵ reported that epiphora following canaliculalaceration trauma might be associated with the time elapsed from injury to repair, duration of stent placement, structural abnormalities in the medial canthus, and distance between the distal cut end and the lacrimal punctum. In our study, no patient complaint of watering in late postoperative visits and syringing was patent in all patients after stent removal.

STUDY LIMITATIONS

The limitations of our study include the small sample size and the fact that it was conducted at a single center, which may limit the generalizability of the findings. The main reason for the small sample size was the exclusion of patients who had other globe or orbital injuries. Additionally, the study had a relatively short follow-up period, which limited our ability to observe long-term outcomes and complications.

CONCLUSION

Like other types of trauma, EL are more commonly observed in young adults and men. Considering this, it is crucial to

provide preventive advice and implement safety measures in workplaces to reduce the incidence of preventable injuries. The most frequent mechanisms of injury involve trauma with sharp objects, while falling is the leading cause. Notably, EL involving the lacrimal passage is predominantly associated with falls. It is important to note that eyelid traumas are often accompanied by severe ocular pathologies such as conjunctival laceration, hyphema, corneal abrasion, and corneoscleral perforation. In particular, traffic accidents and injuries caused by blunt objects were the most commonly reported etiologic factors in patients presenting with these ocular pathologies.

Overall, a comprehensive understanding of EL, their etiologic factors, associated ocular injuries, and appropriate management strategies is crucial in achieving optimal outcomes and preserving both the functional and aesthetic aspects of the eyelids.

REFERENCES

1. Cillino S, Casuccio A, Di Pace F, Pillitteri F, Cillino G. A five-year retrospective study of the epidemiological characteristics and visual outcomes of patients hospitalized for ocular trauma in a Mediterranean area. *BMC Ophthalmol.* 2008;8:6.
2. Kumar J, Batham S. Clinical study of eyelid and periorbital injuries and their management. *Journal of Dental and Medical Sciences.* 2020;19:54-60.
3. Kennedy RH, May J, Dailey J, Flanagan JC. Canaliculalaceration. An 11-year epidemiologic and clinical study. *Ophthalmic Plast Reconstr Surg.* 1990;6:46-53.
4. Chiang E, Bee C, Harris GJ, Wells TS. Does delayed repair of eyelid lacerations compromise outcome? *Am J Emerg Med.* 2017;35:1766-1767.
5. Qin YY, Li ZH, Lin FB, Jia Y, Mao J, Wang CY, Liang XW. Risk factors for persistent epiphora following successful canaliculalaceration repair. *Int J Ophthalmol.* 2021;14:106-111.
6. Long JA, Tann TM. Eyelid and lacrimal trauma. Kuhn F, Pieramici D. *Ocular Trauma: Principles and Practice.* New York: Thieme Medical Publishers; 2002:373-382
7. Murchison AP, Bilyk JR. Canaliculalaceration repair: an analysis of variables affecting success. *Ophthalmic Plast Reconstr Surg.* 2014;30:410-414
8. Naik MN, Kelapure A, Rath S, Honavar SG. Management of canaliculalacerations: epidemiological aspects and

- experience with Mini-Monoka monocanicular stent. *Am J Ophthalmol*. 2008;145:375-380.
9. Chaudhary A Singh SP, Agasti M, Singh BK. Eyelid trauma and their management. *International Journal of Ocular Oncology and Oculoplasty*. 2016;2:240-243.
10. H.B. Harold Lee, Elizabeth A. Bradley, *Surgical Repair of Lateral Canthal Web, American Journal of Ophthalmology, Volume 142, Issue 2, 2006, Pages 339-340, ISSN 0002-9394, <https://doi.org/10.1016/j.ajo.2006.03.019> (<https://www.sciencedirect.com/science/article/pii/S0002939406003709>)*
11. Tabatabaei A, Kasaei A, Nikdel M, Shoar S, Esmacili S, Mafi M, Moradi M, Mansouri M, Eshraghi B, Tabatabaei Z. Clinical characteristics and causality of eye lid laceration in iran. *Oman Med J*. 2013;28:97-101
12. Herzum H, Holle P, Hintschich C. Lidverletzungen. Epidemiologische Aspekte [Eyelid injuries: epidemiological aspects]. *Ophthalmologe*. 2001;11:1079-1082
13. Türkoğlu EB, Tök L Yalçın Tök Ö, Dikci S. Akbaş Kocaoğlu F. Örnek F. Epidemiologic Evaluation of Ocular Trauma with, Eyelid Injuries. *MN Ophthalmol* 2014;21:56-62.