Short Communication

Clinical outcomes of Lateral Tarsal Strip Procedure for the Correction of Entropion and Ectropion

PJO – Official Journal of Ophthalmological Society of Pakistan

Farah Huma[1], Zahid Kamal Siddiqui[2], Muhammad Rizwan Khan[3], Waqar Ahmed[4], Bahadur Iftikhar[5]

[1,3]Faisalabad Medical University, Faisalabad, [2,4,5]King Edwad Medical University, Mayo Hospital, Lahore

ABSTRACT

Purpose: Evaluating the clinical outcomes of Lateral Tarsal Strip Procedure for the correction of entropion and ectropion.

Study Design: Interventional case series.

Place and Duration of Study: Mayo Hospital Lahore, from January 2018 to March 2023.

Methods: Lateral Tarsal Strip Procedure was performed for the correction of Lower lid malposition in 43 patients for entropion or ectropion. Complete ocular assessment was done including palpebral fissure height, amount of inward/outward turning of lids, abnormalities of lashes and pre-existing tear film abnormality. Patients with previous eye surgery were excluded. We collected data regarding surgical outcomes and satisfaction of patients.

Results: Forty-three patients were included in this study. There were 30 men and 13 women in the age range of 59 to 82 years (mean 72.2±4.9 years). There were 28 right and 15 left lower eyelids. Surgical success with anatomical correction of Involutional ectropion was achieved in all patients. Distribution of type of lid abnormality is shown in Table 1. There were no perioperative or postoperative complications. After the initial 100% results, only two out of forty-three eyelids (4.6%) had recurrence of involutional ectropion after 4 and 6 months.

Conclusion: Lateral Tarsal Strip is a simple and effective approach in achieving correction for entropion/ectropion.

Keywords: Lower lid laxity, Entropion, Ectropion, Tarsal Strip, lid malposition, lower lid tightening.

How to Cite this Article: Huma F, Siddiqui ZK, Khan MR, Ahmed W, Iftikhar B. Clinical outcomes of Lateral Tarsal Strip Procedure for the Correction of Entropion and Ectropion. 2025;41(1):84-87.
Doi: 10.36351/pjo.v41i1.1720

Correspondence: Farah Huma
Faisalabad Medical University, Faisalabad
Email: dr_farahhuma@hotmail.com

Received: August 17, 2023
Revised: October 30, 2024
Accepted: November 30, 2024

INTRODUCTION

The position and alignment of the eyelid in relation to the globe are crucial for the protection and proper functioning of the eye. When the eyelid does not properly align with the globe, it can lead to conditions such as entropion, where the eyelid turns inward, or ectropion, where it turns outward, away from the globe. Lower lid laxity is one of the primary causes of abnormal eyelid positioning, which is the focus of our study. Other contributing factors include eyelid masses, trauma, chronic rubbing due to vernal keratoconjunctivitis (VKC), and neurological damage. Entropion or Ectropion can involve either upper or lower lids, but our study includes cases with lower lid malposition solely due to increased lower lid laxity. Which means that due to aging, the lower lid support decreases and entropion or ectropion results into discomfort to the patient.[1] This discomfort can range from constant irritation and watering from the affected eye to corneal ulceration and infection or even perforation in extreme cases. The disrupted tear-film

over the eye, due to lower lid malposition results in dry areas prone to desiccation and epithelial damage and infection subsequently resulting in descemetocele and perforation of globe. The constant irritation caused by inward turning of eyelid, along with eyelashes, causes inferior corneal epithelial damage and thinning, ending-up in disastrous results.

The symptoms of these eyelid conditions can be extremely distressing for patients, often leading to poor performance at work and difficulty managing everyday tasks at home due to constant eye irritation and tearing. In addition to the functional issues, cosmetic concerns can become significant, and if left untreated, these conditions can cause considerable psychological distress for the patient.

Usually, the lateral canthal tendon gets thinner and relaxed with age related tissue changes, and hence is increased in lid laxity. Doing lower lid retractor plication, or everting sutures does not solve the problem unless the length of the tarsal strip is shortened and re-adjusted.[2] The prevalence of involutional entropion and ectropion in the elderly population is 2.1% which means although less common, it is a troublesome condition.[3]

Conservative measures such as artificial tears, taping, and goggles generally provide only temporary relief and can often worsen the existing damage over time. Therefore, early and prompt surgical correction is crucial, not only to alleviate symptoms but also to prevent potential vision loss caused by tear film disruption. This paper describes the Lateral Tarsal Strip procedure, in which a lateral canthotomy is first performed, followed by the division of the eyelid into two lamellae. The tarsal strip is then separated from the lamella and sutured to the periosteum of the lateral orbital wall. A key advantage of this technique is that it avoids lateral canthal deformity, while the tightened and elevated appearance of the lower eyelid improves both function and aesthetics.[4] Outcomes for Lateral tarsal strip can be satisfactory with anatomical and functional improvements.[5]

This study discusses the results of Lateral tarsal strip procedure performed for ectropion and entropion with a follow up of 6 months.

METHODS

This interventional case series included consecutive patients undergoing Lateral Tarsal Strip surgery for the treatment of ectropion and entropion. The study adhered to the Declaration of Helsinki. Outcome measures focused on improvements in the patient's overall appearance, the restoration of normal tear film positioning, and the correction of punctum placement. Functional success was defined as the relief of constant lash irritation against the eye and a reduction in excessive tearing once inflammation subsided. Pre-operative and post-operative photographs were taken for comparison. The selection of the surgical procedure was guided by a pre-operative clinical examination, particularly the lateral pinch test, which confirmed lower lid or lateral canthal tendon laxity.

The exclusion criteria comprised of patients with a history of previous eyelid surgery, trauma to the eyelid and surrounding areas, or presence of a stye, chalazion, or other lesions observed during the examination. The surgical technique involved preparing the patient by sterilizing and draping the area, followed by the administration of local anesthesia. A lateral canthotomy was then performed, with the appropriate portion of the lateral canthal tendon being transected after performing acantholysis of the lower eyelid. The tendon was shaped into a strip and attached to the periosteum of the lateral orbital wall. The skin was sutured, and a bandage was applied. The patient was instructed to return for follow-up the next day, and post-operative oral antibiotics and analgesics were prescribed. During the follow-up visit, photographic data was collected and compiled. Complications, if any, were recorded and the mean follow-up period was six months, during which clinical improvements and any recurrences were documented.

RESULTS

Forty-three patients were included in this study. There were 30 men and 13 women in the age range of 59 to 82 years (mean 72.2±4.9 years). There were 28 right and 15 left lower eyelids. Surgical success with anatomical correction of Involutional ectropion was achieved in all patients. Distribution of type of lid abnormality is shown in Table 1. There were no perioperative or postoperative complications. After the

Table 1: *Type and prevalence of Lower lid malposition.*

Type of Injury	No of Eyes	Percentage
Involutional Ectropion	34	80%
Involutional Entropion	06	14%
Cicatricial Ectropion	03	6%

initial 100% results, only two out of forty-three eyelids (4.6%) had recurrence of involutional ectropion after 4 and 6 months.

Figure 1: Involutional Entropion pre-operative and post-operative photograph one week after surgery.

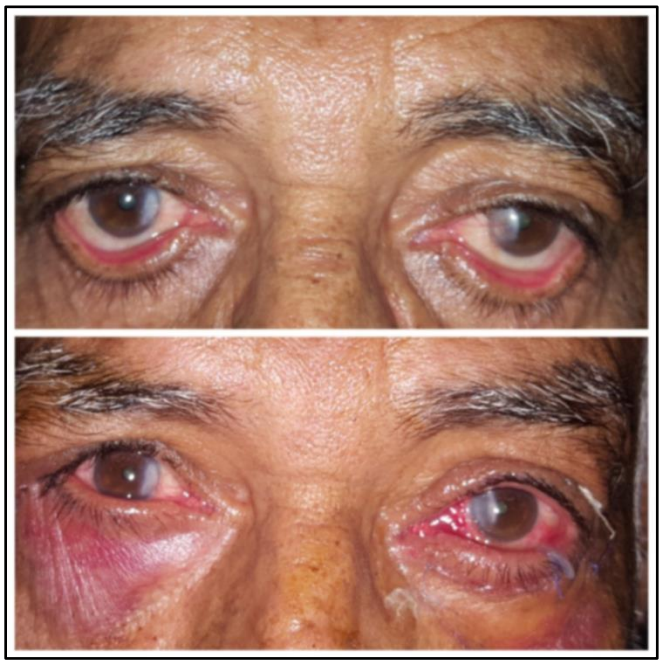

Figure 2: Involutional Ectropion pre-operative and post-operative photographs one week after surgery.

DISCUSSION

Out of 43 patients included in our study, only 2 showed recurrence within 6 months. While 95% of the results showed that lateral tarsal strip procedure is an excellent procedure for correction of ectropion and entropion resulting from increased lower lid laxity.

Lower lid malposition can lead to various symptoms due to tear-film disruption like dry eyes, increased lacrimation, superficial punctate keratitis, conjunctiva cicatrization etc. Prolonged exposure can even lead to visual disturbances. Moreover, such conditions are cosmetically unacceptable for the patients. The condition can affect the quality of life and cosmetic concerns especially in females. Treatment options including tear substitutes and ointments provide only temporary relief and do not provide permanent solution to the lower lid laxity unless corrected surgically.

In the past various procedures for treating Ectropion have been proposed, depending upon the cause. That included, application of lateral canthal suture, full thickness wedge resection, horizontal shortening and blepharoplasty, Kuhnt-Zymanowski Procedure and Lazy-T procedure. Similarly, entropion correction includes Jones procedure and lower lid retractor plication.[6]

The lateral tarsal strip procedure gives excellent post-operative results with a well-formed lateral canthus and promising improvement in symptoms. However, this procedure requires selection of the right patient. Snap-back test and lower lid laxity test are performed to see the elasticity and flexibility of lower lid. It also requires evaluating how part of the lid can be fashioned into a proper strip size. If the patient is not right candidate for the tarsal strip correction, the failure of symptomatic relief post-operatively cannot be counted as a failure of this procedure.[7]

According to a recent review, lateral tarsal strip still remains a successful and acceptable procedure for eyelid malposition.[8] We find many alternatives to the LTS for example; Bick procedure, the LTS is considered as a technique of choice by most oculoplastic surgeons because of its technique, success rate and good cosmetic and functional results.[5,9] Some authors have modified the technique by utilizing skin excision along with LTS with comparable results.[10]

The limitations of our study are small sample size,

single center and short follow. The procedure can be compared with other procedures in randomized controlled trials making more reliable studies.

Funding: This study was not funded by any organization.

Patient's Consent: Researchers followed the guidelines set forth in the Declaration of Helsinki.

Conflict of Interest: Authors declared no conflict of interest.

Ethical Approval: The study was approved by the Institutional review board/Ethical review board **(COAVS/1/2022)**.

REFERENCES

1. **von Sonnleithner C, Brockmann T, Rübsam A, Bergholz R, Bertelmann E.** Lidfehlstellungen [Eyelid Malpositions]. Klin Monbl Augenheilkd. 2015 Dec;**232(12):**1429-1444. Doi: 10.1055/s-0033-1358204.
2. **Hahn S, Desai SC.** Lower Lid Malposition: Causes and Correction. Facial Plast Surg Clin North Am. 2016 May;**24(2):**163-71. Doi: 10.1016/j.fsc.2015.12.006. PMID: 27105802.
3. **Damasceno RW,Osaki MH,Dantas PE,Belfort R Jr.** Involutional entropion and ectropion of the lower eyelid: prevalence and associated risk factors in the elderly population. Ophthalmic Plast Reconstr Surg. 2011;**27(5):**317-20.
4. **Vydláková J, Tesař J, Krátký V, Šín M, Němec P.** Lateral Tarsal Strip Technique in Correction of Eyelid Ectropion and Entropion. Cesk Slov Oftalmol. 2021 Spring;**77(2):**73-78. English. Doi: 10.31348/2021/10. PMID: 33985336.
5. **Hou X, Guo Y, Li S, Lin M, Jia R, Rokohl A, Heindl LM.** Lateral tarsal strip procedure for involutional ectropion: A retrospective analysis of 85 cases and a comprehensive literature review. Adv Ophthalmol Pract Res. 2021 Sep 9;**1(1):**100004. Doi: 10.1016/j.aopr.2021.100004. PMID: 37846389; PMCID: PMC10577831.
6. **Woźniak-Roszkowska E, Iljin A, Noszczyk B, Antoszewski B.** Evaluation of outcomes of lower eyelid entropion and ectropion surgical repair. Pol Przegl Chir. 2023 Oct 17;**96(2):**50-58. Doi: 10.5604/01.3001.0053.9352. PMID: 38629275.
7. **Rougraff PM, Tse DT, Johnson TE, Feuer W.** Involutional entropion repair with fornix sutures and lateral tarsal strip procedure. Ophthalmic Plast Reconstr Surg. 2001 Jul;**17(4):**281-7. Doi: 10.1097/00002341-200107000-00008. PMID: 11476179.
8. **Kopecký A, Rokohl AC, Heindl LM.** The role of the lateral tarsal strip procedure in modern ophthalmic plastic surgery-A review. Front Ophthalmol (Lausanne). 2022 Aug 26;**2:**871964. Doi: 10.3389/fopht.2022.871964. PMID: 38983505; PMCID: PMC11182132.
9. **Kam KY, Cole CJ, Bunce C, Watson MP, Kamal D, Olver JM.** The lateral tarsal strip in ectropion surgery: is it effective when performed in isolation? *Eye (London England)*. 2012;**26(6):**827–32. Doi: 10.1038/eye.2012.34
10. **Lee H, Cha E, Baek S.** Outcomes of Lateral Tarsal Strip in Conjunction with a Minimal Skin Muscle Excision Underlying Cauterization in Korean Patients with Involutional Entropion. Front Surg. 2022 May 12;**9:**870751. Doi: 10.3389/fsurg.2022.870751. PMID: 35647003; PMCID: PMC9133528.

Authors Designation and Contribution

Farah Huma; *Senior Registrar: Design, Literature search, Data acquisition, Manuscript preparation, Manuscript editing.*

Zahid Kamal Siddiqui; *Professor: Concepts, Data acquisition, Data analysis, Manuscript review.*

Muhammad Rizwan Khan; *Assistant Professor: Statistical analysis, Manuscript review.*

Waqar Ahmed; Senior Registrar: *Literature search, Data acquisition.*

Bahadur Iftikhar; *Postgraduate Trainee: Manuscript preparation, Manuscript editing*