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Case Report

Combined Lateral Tarsal Strip and U-Plasty Flap for Surgical Management of Cicatrical Ectropion After Facial Tumor Excision: A Case Report

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Abstract

Background: Cicatricial ectropion, characterized by outward eyelid eversion due to anterior lamella shortening, often results from scar contraction after trauma or surgery. Due to scar contracture, surgical intervention is challenging to repair the defect. This condition leads to poor eyelid-globe apposition, which can cause ocular surface exposure, excessive tearing, and chronic irritation *Objective:* To report a case and evaluate the effectiveness of combining a lateral tarsal strip with a U-plasty flap technique in correcting cicatrical ectropion following facial tumor excision. *Main ideas*: A 58-year-old woman developed cicatricial ectropion following a wide excision for facial tumor removal. The patient exhibited symptoms, including eye irritation, epiphora, and discomfort. Clinical examination revealed lower eyelid ectropion, dermatochalasis, and scar tissue contraction near the left lateral canthus and maxilla. The surgical approach involved a combination of a lateral tarsal strip procedure to address horizontal eyelid laxity and a U-plasty flap to repair scar-induced anterior lamella shortening. Results at the three-month follow-up indicated successful correction of eyelid malposition with mild residual ectropion but no corneal exposure or significant complications. The patient experienced a resolution of symptoms and showed good healing at the surgical site. *Conclusion*: The combined lateral tarsal strip and U-plasty techniques effectively corrected cicatricial ectropion, restoring eyelid function and achieving satisfactory aesthetic results. This approach may be considered as a reconstructive option in similar cases of scar-related anterior lamellar shortening.

Keywords

Cicatrical Ectropion, U-Plasty, Local Flap, Eyelid Reconstruction, Case Report

1. Introduction

A condition known as ectropion occurs when the eyelid rotates in an outward direction, causing it to be malpositioned. Typically, this takes place in the lower eyelid, although it may also take place in the upper eyelid. A portion of the eyelid or the full length of the eyelid may be affected by it. Both congenital and acquired occurrences of ectropion are possible instances. In situations of acquired ectropion, the condition may be classified into four distinct categories: involutional, paralytic, cicatricial, and mechanical. The development of cicatricial ectropion is typically the consequence of the ante-

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rior lamella being shortened. Patients who vancouversuffer from ectropion often have symptoms such as eye discomfort, lagophthalmos, epiphora, and keratitis. Scar contraction in the skin and subcutaneous tissue causes the anterior lamella to become shorter in patients with cicatricial ectropion, which causes the eyelid to move outward toward the outside of the eye. [1]

The management of cicatricial ectropion with anterior lamella lengthening by the use of a lateral tarsal strip, in conjunction with or independently of other surgical procedures, has been documented in a variety of surgical approaches. Cicatricial ectropion, on the other hand, is often accompanied with laxity of the horizontal eyelid when seen in clinical practice. [2] Through the use of a lateral tarsal strip and a local flap, this case report describes the treatment of a patient who suffered from cicatricial ectropion.

2. Case Presentation

A 58-year-old woman reported intermittent redness in her left eye, frequent tearing, and a sensation of pain and discomfort resembling the presence of a foreign object in the eye. The patient has experienced these symptoms for two months. Four months prior, the patient had surgery on the left side of the face for tumor excision. A wide excision was performed on the tumor area, extending to the region near the left lateral canthus. The patient initially reported a sensation of dry eyes, and over time, the left side of the facial skin felt pulled down, causing discomfort in the left eye area. The patient was then referred to the ophthalmology department for further management. The patient admitted to having a history of hypertension, which is controlled with the consumption of 10mg of amlodipine every morning. Other chronic disease histories are denied. Upon examination, the right and left eyes had a vision of 20/63 with no improvement using a pinhole, normal intraocular pressure, and lagophthalmos in the left eye with palpebra fissure at a size of 4 mm. On the left eyelid, in the superolateral part, there is dermatochalasis and ectropion in the inferior part of the eyelid. Figure 1. The conjunctiva and cornea of both the right and left eyes are within normal limits. On anterior examination, there were no inflammatory cells and grade 2 lens opacity in both the right and left eyes. A visible incision mark in the left nasofacial sulcus area measuring 6.8cm. In this case, we managed it with reconstructive surgery under endotracheal anesthesia. Before surgery, we carefully evaluated the direction of scar contracture to guide our flap design. The operation began with aseptic and antiseptic procedures on the surgical area using 10% povidone-iodine and covered with a sterile drape around the surgical area. Markers were placed on the inferior palpebral margin area towards the lateral side and from the inferior palpebra towards the caudal side using the U-plasty method.

An anesthetic injection of pehacain in the area is to be incised. The eyeball is covered using a corneal protector. The incision on the eyelid margin of the lower eyelid towards the lateral side for 21 mm until the lateral canthus area, then an incision towards the superior side for 10 mm, followed by a lateral canthotomy. After the inferior tendon is visible, an incision is made on that tendon. Next, the anterior and posterior lamellae were dissected, and a tarsal strip was taken from the posterior lamellae. The strip was pulled towards the lateral orbital rim to measure the strip length that needed to be cut. The cutting is done at the end of the strip after the strip has adequate tension. The cut strip is sutured to the lateral orbital rim towards the superotemporal direction to prevent recurrent ectropion. In this case, the strip was cut 2mm.

The new lateral canthus was sutured using Prolene 5.0. On the superotemporal eyelid, an incision was made to remove excess skin due to dermatochalasis. Figure 2. Continued with an incision at the U marker in the left maxillary facial area, measuring 11 mm towards the caudal from the starting point of the incision at the inferior palpebra margin, then 16 mm laterally and 13 mm caudally. An undermining was performed on the skin flap. The lower eyelid was supported using the frost suture technique, which involves placing a skin suture through the lower eyelid and gently taping it upward toward the skin near the U-plasty incision site. Frost suture provides vertical traction, helping to reduce tension on the surgical area and supporting proper eyelid positioning during the early healing phase. The skin flap was carefully designed to avoid excessive tension, and the frost suture gave extra support to help balance the forces between the skin closure and the underlying orbicularis muscle. During the surgery, the eyelid was also lifted to its normal position to make sure there was no leftover pulling or tightness before the wound was closed.. After ensuring no tension on the lower eyelid, the incision wound was sutured again after confirming no tension on the scar tissue. Post-operatively, the patient was given oral antibiotics, cefadroxil 2x500mg, methylprednisolone 3x16mg, and chloramphenicol 0.2% + hydrocortisone 0.5% ointment 3 times daily on the surgical wound area. The first examination was conducted 24 hours post-operation; no bleeding was found, and there was mild edema in the ocular area.

The patient complained of still having difficulty opening eyes and experiencing pain. An adequate tension was observed on the lower eyelid, and the surgical wound was dry. At the 1-week post-operative control, the patient no longer complained of symptoms such as red and watery eyes or a foreign body sensation. Figure 3. The lower eyelid's position was excellent, with no indications of infection; mild ectropion was present. However, serious corneal exposure was absent. One month post-procedure, the patient has no complaints and is satisfied with the result. Figure 4. At five months postoperatively, the patient reported no recurrent symptoms related to the left eye. Upon evaluation, a minimal ectropion was observed. However, the patient did not experience any of the previous symptoms associated with the condition, and no necrotic tissues were observed at the surgical wound site.

Figure 1. *Image of the left eye's lower eyelid when the patient's first initial visit.*

Figure 2. *Incision at the margin of palpebra inferior followed by lateral canthotomy and cutting excess skin of superior palpebra.*

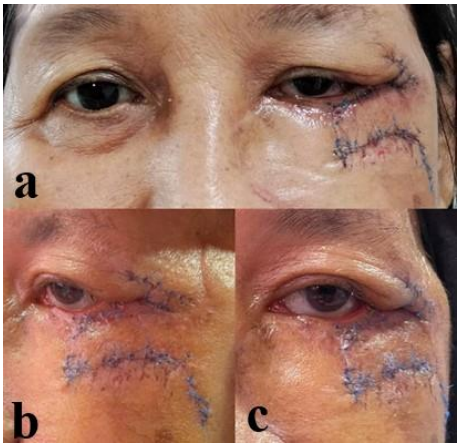

Figure 3. *Mild edema and adequate tension of inferior palpebra 24 hours post-procedure (A) one-week post-procedure with the satisfaction of lower eyelid position, but there was a mild ectropion with no complaints of symptoms and corneal exposure, lateral (B) anterior (C).*

Figure 4. *One month after the procedure. The patient claimed to be satisfied with the surgical results.*

3. Discussion

Cicatricial ectropion is caused by the shortening of the anterior or middle lamella, which causes strong traction downward, most often due to skin scarring after trauma, inflammatory processes, or surgery in the facial area. Persistent ectropion requires secondary surgery management to correct the issue. [3, 4] Tarsorrhaphy, wedge excision, and canthopexy are some surgical procedures that can treat laxity in the lower eyelid. Other surgical procedures include lateral tarsal strips, local flaps, full-thickness skin grafts, medial spindle procedure, Bick's lateral canthoplasty, superotemporal skin transposition, and medial canthoplasty. [5-7] Meanwhile, techniques such as laser, hyaluronic acid, and topical tazarotene represent minimally invasive methods. [8] In this case report, both a lateral tarsal strip and a local flap were conducted.

The principles of management for cicatricial ectropion involve three steps: releasing the tension on the eyelid margin, shortening the elongated eyelid margin to restore it to its anatomical position, and correcting the anterior lamella deficit. [9] In cases of mild cicatricial ectropion, the scar can be released with an advancement flap, sufficient to correct eyelid malposition. [10] In the case presented, two distinct techniques were utilized for treatment. The first was the lateral tarsal strip procedure, which addresses horizontal eyelid laxity frequently observed in elderly patients due to involutional changes. Additionally, scar tissue contributes to increased tension on the canthal tendon, a condition most pronounced in the lower eyelid. The horizontal laxity becomes more evident after the release of vertical contraction through an incision in the scar tissue. Moreover, tension generated during the wound-healing process can exacerbate ectropion. A lateral tarsal strip procedure combined with a flap represents a viable management strategy for addressing horizontal eyelid laxity. [1]

The lateral tarsal strip (LTS) is the most commonly employed procedure by surgeons to treat ectropion. LTS corrects persistent and severe eyelid eversion by reducing the horizontal length, enhancing the eyelid's tone and the anatomical position of the lateral canthus. The LTS procedure is safe, fast, and easy to combine with other techniques. This technique has advantages, which are long-term durability and the ability of the technique to address ectropion more effectively. [4, 11] Following lateral tarsal strip, 97% of cases were resolved with anatomical improvement. The majority of complaints, like epiphora and others, improve significantly after surgery. [12] The second procedure involved a local advancement flap of the U-Plasty type in the left maxillary facial area to correct ectropion of the lower eyelid caused by scar tissue in the area after tumor excision. The U-plasty technique is an advancement flap where the skin tissue will be pulled to the area experiencing the defect. U-plasty is an unipedicle advancement flap because the tissue remains connected to its original area on only one side, which keeps the blood flowing into it.

At the end of the tissue, after being incised in a U-shape, the right and left areas are incised into small triangular shapes referred to as Burow triangles. The purpose of this incision is so that when a flap is performed on the area at the tip, it does not form bulging. This technique performs flaps in the forehead, cheek, and nose areas. [13] In this case report, the patient experienced scarring on the left cheek where the tumor resection was performed on the face. The U-plasty technique was chosen because the cheek area has looser skin, making it a good site for flap surgery. In this technique, the flap must be performed from the lateral side of the face towards the medial side. This reduces the likelihood of pulling on the lower eyelid or folds near the nose. The advantage of this technique is that the skin color and texture are the same as the area where the flap will be performed, and it provides flexibility to hide the scars. [13] In this case, the patient underwent a lateral tarsal strip to restore the lower eyelid and prevent ectropion. After ensuring that the position of the inferior palpebra was in place and there was no more ectropion, a flap was performed. The Frost suture technique was selected during the lower eyelid flap procedure due to its effectiveness as a straightforward technique to help prevent the development of ectropion after surgical manipulation of the eyelid. [14] During the post-operative check-up, the patient was delighted with the results obtained because the patient no longer experienced the complaints previously felt, and the surgical wound appeared neat and well-maintained. Previous research has shown that patient satisfaction is higher with aesthetic results and functional effects using a local flap than a full-thickness skin graft after facial skin cancer resection. [15]

Surgical procedures can lead to various complications. Following cicatrical ectropion repair, issues such as abnormal eyelash growth and incomplete correction may arise. Evaluating the adequacy of skin grafts or flaps to resolve vertical skin shortages, considering potential disinsertion of the lower lid retractors, and correcting horizontal eyelid laxity at both the medial and lateral canthus to ensure optimal outcomes. A common complication like trichiasis can result from inflammation and contraction of the palpebral conjunctiva, causing eyelashes to grow inward. This complication often resolves on its own within weeks or months. If trichiasis persists, treatments such as marginal rotation, cryosurgery, electrolysis, or excision of misdirected follicles may be necessary to alleviate ocular irritation. [16]

The patient also got hydrocortisone ointment as a prophylactic measure againts scar hyperplasia. The patient was educated on the potential for progressive development. Should the scar tissue continue to proliferate, the patient was informed about the subsequent therapeutic option of an intralesional corticosteroid injection. As a final intervention, in instances where the scar significantly impairs function or presents a considerable aesthetic concern, surgical revision will be considered. [17]

In this case report, there are several limitations to be acknowledged. Ideally, a tear film assessment should have been performed to determine the presence or absence of dry eye syndrome before and after the surgical procedure. Additionally, due to limitations in time and location, follow-up was only possible for a maximum duration of three months, as the patient had returned to their hometown. The patient, however, reported no further complaints following the procedure. In addition, a longer-term follow-up is necessary to assess any residual effects after the surgery.

4. Conclusions

In this case, the combination of a lateral tarsal strip and U-plasty techniques effectively managed cicatricial ectropion caused by scar contraction after tumor excision. The approach addressed horizontal laxity and anterior lamella deficiency, improving eyelid function and aesthetic outcomes. Patient satisfaction was high, with minimal complications, demonstrating the effectiveness of this surgical strategy for similar cases.

Abbreviations

LTS Lateral Tarsal Strip

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Author Contributions

Reynaldo: Conceptualization, Writing – original draft, Writing – review & editing

Ariawan Priguna: Conceptualization, Supervision, Writing – original draft, Writing – review & editing

All authors contributed equally to this work, conceptualizing the case report, collecting patient data, drafting the initial manuscript, conducting literature review, and revising the final manuscript. All authors have read and approved the final version of the manuscript.

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

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Data Availability Statement

The data supporting has been reported in this manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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Biography

Ariawan Priguna is an Ophthalmologist specializing in Reconstructive Oculoplasty. He obtained his medical degree and completed his residency in ophthalmology at Universitas Padjadjaran. He continued his training in a fellowship program in Reconstructive Oculoplasty, also at Universitas Padjadjaran. Dr. Ariawan is currently practicing at RSPAD Gatot Soebroto, Jakarta, where he focuses on oculoplastic and reconstructive procedures involving the eyelids, orbit, and lacrimal system. His clinical interests include eyelid malpositions, orbital tumors, and aesthetic oculoplastic surgery.

Reynaldo is a general practitioner who graduated from Universitas Kristen Krida Wacana. He is currently undertaking an internship program in the Department of Ophthalmology at RSPAD Gatot Soebroto, Jakarta, Indonesia. He is actively learning and gaining experience in the field of ophthalmology as part of his preparation to pursue a residency program in ophthalmology in the near future.