Patients with facial paralysis present with a constellation of ocular manifestations. Ectropion resulting from downward displacement of the lower eyelid appears after loss of orbicularis tone and function. In addition, upper eyelid retraction, resulting in lagophthalmos and a decrease in tear production and/or proper tear distribution and channeling, may result in dry eyes and epiphora. Tear flow is impaired because of a dysfunctional orbicularis oculi muscle and a decrease in transportation of tears.

The goals of surgery for paralytic lower eyelid ectropion and lagophthalmos are to preserve visual acuity, improve corneal exposure, reduce ocular complaints, and restore facial symmetry. Initial management would include the application of an ocular lubricant, use of a moisture chamber, or possibly temporary tarsorrhaphy. When paralysis is expected to persist, a more permanent procedure is needed. The use of a laterally based tarsal conjunctival flap combined with a standard lower eyelid ectropion repair allows for correction of the constellations of symptoms observed in patients with paralytic ectropion in a single-stage surgical procedure. The technique can be viewed in the Video.

Description of Technique

This work was carried out according to the guidelines of the institutional review board. Written informed consent was obtained from patients in accordance with Health Insurance Portability and Accountability Act (HIPAA) regulations.

A lateral canthotomy incision is performed using a No. 15 blade. The inferior aspect of the lateral canthal tendon is severed with sharp dissection so that the lower eyelid is completely free from the lateral orbital rim periosteum. A full-thickness wedge resection of the lateral 3 to 4 mm of the lower eyelid tarsus is tailored to the degree of lower eyelid laxity.

The lateral internal tarsorrhaphy is performed in the following fashion. A retraction suture is placed on the upper eyelid centrally using 4.0 silk. The upper eyelid is then everted over a Desmarres retractor. A tarsoconjunctival flap is brought down in the usual fashion for a modified Hughes flap. The lateral tarsus is incised both horizontally and vertically, creating a tarsoconjunctival flap with a height of 3 to 4 mm, leaving only conjunctiva attached (Figure 1 and Figure 2). The horizontal dimension of the flap can be customized dependent on the degree of support and closure necessary. A horizontal incision is then performed in the lower eyelid tarsus just posterior to the mucocutaneous junction to form a groove for the tarsoconjunctival flap. The tarsoconjunctival flap is then sutured to the lower eyelid tarsus using a running 5-0 Vicryl suture.

The lower eyelid tarsus is then reanchored to the lateral orbital rim periosteum in a slightly higher position using 4-0 Vicryl suture in a horizontal mattress fashion. The skin is closed using 6-0 fast-absorbing gut suture.

Figure 1. Intraoperative Photographs

A, The lateral canthotomy incision has been made. B, A horizontal incision is performed in the lower eyelid tarsus just posterior to the mucocutaneous junction to form a groove for the tarsoconjunctival flap. C, A tarsoconjunctival flap is created by cutting free the upper half of the lateral 4 mm of the upper eyelid tarsus, leaving only conjunctiva attached. D, The tarsoconjunctival flap is dissected down. E, The tarsoconjunctival flap is then secured to the lower eyelid tarsus. F, The lower eyelid tarsus is then reanchored; image shows the final result of the tarsoconjunctival flap. See Figure 2 for artist depiction.
Figure 2. Paralytic Ectropion

A, Demonstration of the constellation of symptoms seen in paralytic ectropion. The lateral canthotomy incision is marked. B, A tarsoconjunctival flap is created by cutting free the upper half of the lateral 4 mm of the upper eyelid tarsus, leaving only conjunctiva attached. C, A horizontal incision is performed in the lower eyelid tarsus just posterior to the mucocutaneous junction to form a groove for the tarsoconjunctival flap. D, The tarsoconjunctival flap is dissected down. E, The tarsoconjunctival flap is then secured to the lower eyelid tarsus. F, The lower eyelid tarsus is then reanchored; image shows the final result of the tarsoconjunctival flap.

Discussion

Patients with paralytic ectropion with lagophthalmos that does not improve with medical management and supportive therapy often require surgical intervention to prevent corneal injury and preserve vision. Many techniques have been described in the literature to protect the cornea. The use of a tarsorrhaphy is common, and many modifications exist.\(^5\)\(^6\) Tarsorrhaphy procedures can be effective, but they are associated with a high incidence of dehiscence and may deform the eyelid margin, leading to trichiasis.\(^6\)\(^7\) These procedures can be cosmetically unappealing and difficult to reverse.\(^6\)

The high rate of complications seen with tarsorrhaphy has led to the use of other techniques aimed at correcting the lagophthalmos. The use of gold and platinum chain implants improves upper eyelid closure but does not address lower eyelid ectropion. In addition, significant disadvantages include residual lagophthalmos, pain, astigmatism, visible implant, and a notable rate of extrusion.\(^9\)\(^10\)

The use of our modified technique addresses both lagophthalmos and ectropion in a single-stage procedure. The tarsoconjunctival flap is inserted into a slot in the lower lid, thereby coupling the upper and lower eyelids to improve closure and facilitate orbicularis strength. The tarsoconjunctival flap is designed so that only a limited amount of the flap is visible, providing an excellent cosmetic result. In addition, the flap helps secure the ectropic lower eyelid with a secondary point of attachment rather than the single point typical with an ectropion repair alone (eg, tarsal strip procedure). In addition to providing enhanced fixation for the paralytic lower eyelid, this technique avoids the phimosis and cosmetic deformities associated with either a true tarsorrhaphy or induction of ptosis with a large eyelid weight. This procedure can be combined with use of an upper eyelid weight as needed for the degree of corneal exposure.

ARTICLE INFORMATION

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