Involutional Ectropion: A Review of the Management
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In reviewing the recent (1981 thru 1984) literature on this subject, we will consider involutional (formerly senile) ectropion, tarsal (marginal) ectropion, which may be viewed as a special form of involutional ectropion, and ectropion in blepharoplasty.

MANAGEMENT OF INVOLUTIONAL ECTROPION

Medial Ectropion with Punctal Eversion: The recommendations of Wilkins and Patipa¹ included wiping the lower eyelid upwards and inwards, rather than downwards and outwards, to prevent any worsening of the condition once it has appeared, and to prevent recurrence after correction. For punctal ectropion, they recommended a posterior lamella fusiform excision, closed with a running cat-gut suture and supplemented with conjunctival thermocautery on either side of the incision. For medial eyelid ectropion, they recommended Smith’s lazy-T procedure² supplemented by a punctal one-snip³ procedure, so that if there is a slight undercorrection, the punctal aperture is more likely to lie within the tear film.

Wesley and Collins⁴ in briefly discussing the repair of medial ectropion due to medial canthal tendon laxity, recommended posterior lamella fusiform excision, and/or tightening of the medial canthal tendon, for milder cases. They expressed their view that in severe cases, “full-thickness lid resection including the lacrimal system may be required”; this procedure would be regarded as controversial by others, and the authors did not discuss their proposal further.

Smith, Bosniak, and Sachs⁵ recommended a posterior lamella fusiform excision for mild degrees, a lazy-T procedure for moderate degrees, a medial canthal tendon plication plus lazy-T procedure for marked degrees, and the addition of a temporalis muscle transfer to support the tarsal plate against the globe if the condition is extreme.

English and Kearney⁶ introduced a procedure for correcting mild and moderate degrees of ectropion of the inferior punctum. They developed this procedure because of the surgical risk to the inferior canaliculus, and the ocular irritation from sutures, even with buried knots, that they had found with the lazy-T procedure. They perform a lower eyelid full-thickness pentagonal excision, with the medial incision edge placed
just lateral to the inferior punctum. In closing the eyelid incision, they pass the marginal sutures anteriorly in the medial segment and posteriorly in the lateral segment to produce inward rotation of the punctum while correcting the horizontal laxity with the pentagonal excision. They reported a follow-up period of up to four years in 25 eyelids with “excellent results”; there was no evidence of eyelid notching.

Frueh and Schoengarth recommended that any medial canthal tendon laxity be treated with a nonabsorbable suture to hold the lower lacrimal punctum in its correct position without lateral or medial displacement. They emphasized that the closure of posterior lamella fusiform excisions should include suture passage through the inferior lid retractors, rather than simply through conjunctiva, to ensure satisfactory punctal rotation. For punctal ectropion accompanied by horizontal tarsal laxity, they recommended a lazy-T procedure. These authors observed that the lower punctum can migrate anteriorly within the eyelid margin relative to the meibomian gland orifices, making rotation of the inferior punctum back into the tear lake even more difficult. To these procedures they recommended the addition of a Lee medial canthoplasty, as advocated by Callahan, if necessary.

**Generalized Ectropion With the Medial Component Corrected:** Wilkins and Patipa recommended that if the entire lower eyelid is involved, a pentagonal eyelid resection be performed so that closure occurs at the junction of the central and lateral thirds. They recommended also Smith's modification of the Kuhn-Symonowsky procedure. For ectropion confined to the lateral portion of the lower eyelid, they advised Bick's lateral eyelid wedge resection using straight hemo-stats.

Wesley and Collins described what they termed the McCord procedure of lateral tarso-ligamentous resection with tarso-periosteal fixation, for correcting this condition. A full-thickness eyelid excision is performed at the lateral canthus after a lateral canthotomy and inferior cantholysis, shortening of 2 mm to 3 mm being sufficient to correct the laxity in most cases. The cut lateral end of the tarsal plate is attached with a nonabsorbable suture to the periosteum at the inner aspect of the orbital rim above the lateral orbital tubercle and therefore higher than the desired final position of the lateral end of the lower eyelid. These authors stressed the importance of performing eyelid resections at the lateral canthus, referring to the lateral canthal tendon stretching reported by Ousterhout and Weil to be a normal accompaniment of aging, and noted their belief that this procedure requires less extensive dissection than do tarsal strip or lateral canthal tendon tuck procedures. With follow-up ranging from six to 34 months, there was a satisfactory final outcome in all 85 eyelids in their series. They concluded that a nonabsorbable suture must be used to anchor the tarsal plate to the orbital periosteum, as use of absorbable poly-g lacatin 4-0 in three eyelids was associated with excessive postoperative sagging. In four eyelids, a lateral canthal granuloma occurring three to four months postoperatively necessitated removal of the nonabsorbable suture, without recurrence of the ectropion. Six of the 85 eyelids required secondary contour or position revision.

Smith, Bosniak, and Sachs agreed with Frueh and Schoengarth that secondary cicatrization of the anterior lamella may occur in longstanding involutional ectropion. They recommended the following repairs: 1) for mild to moderate ectropion, a wedge resection at the junction of the central and lateral thirds with or without a skin reduction; 2) for moderate generalized ectropion, a lateral tarsal strip procedure, with or without adjunctive support by a strip of periosteum raised from the zygoma at the lateral orbital rim; 3) for marked ectropion, a lateral eyelid resection with a lateral tarsal strip procedure combined with a wedge resection or lazy-T procedure performed lateral to the inferior punctum; 4) for extreme or recurrent ectropion, a temporalis muscle transfer, to provide a sling support to keep the tarsal plate against the globe.

Frueh and Schoengarth recommended a full-thickness horizontal eyelid shortening at the lateral canthus, preferring this position to avoid the possibility of lid notch, suture, or misdirected eyelash irritation of the cornea. They also recommended Tenzel's lateral canthal sling procedure, and preferring this method in the presence of an anophthalmic socket, or a paralytic component to the ectropion.

Van der Muellen recommended that Smith's modification of the Kuhn-Symonowsky procedure be used with the tarsoconjunctival wedge resection placed laterally, and that inflamed pretarsal conjunctiva be excised in a horizontal strip at the same time. He was able to follow up a "few patients ... after several years" and found the procedure to have been extremely effective.

**Tarsal (Marginal) Ectropion:** This condition represents a special form of involutional ectropion; it was described as a specific entity by Fox in 1960. In this condition the lower eyelid is everted only in its tarsal region; the base of the tarsal plate remains against the globe with the body rotated forwards. Fox recommended correction by an eyelid-splitting procedure, with horizontal shortening of the anterior and posterior lamellae at separate points on the eyelid. Tenzel described use of his lateral canthal sling procedure combined with resection of the conjunctiva and lower eyelid retractors for the treatment of this condition. Puttermann described repair by an anterior approach with reattachment of Müller's muscle and the capsulopalpebral fascia to the inferior border of the tarsal plate. Kohn described the repair of what he termed mechanical ectropion, in 1979. The condition he described appeared to be the same as that which Fox, Tenzel, and Puttermann had termed tarsal ectropion.
Kohn used sutures to produce fibrosis and correct the ectropion.

Two further papers on this condition have appeared in the more recent literature. Wesley\(^2\) agreed with Puttermann\(^6\) that tarsal ectropion occurs if both the capsulopalpebral fascia and Müller's muscle detach from the tarsal plate. He also agreed with Puttermann that involutinal entropion occurs if Müller's muscle remains attached to the tarsal plate in the presence of detachment of the capsulopalpebral fascia. Neither Puttermann nor Wesley documented their clinical impressions with histological evidence. Wesley noted that he could frequently distinguish through the conjunctiva the disinserted border of the inferior retractors as a gray area several millimeters below the inferior border of the tarsal plate. For repair, he performed reattachment of the inferior retractors to the tarsal plate by a conjunctival approach with minimal excision of redundant conjunctiva. He added a horizontal shortening at the time of primary repair in 16 of the 17 eyelids of 17 patients reviewed in his report, for a good result in all 16; in the remaining eyelid, he did not perform a horizontal shortening as part of the primary repair, and needed to do so one week after it to retain a satisfactory result. With follow-up of six to 26 months, he found no recurrence and no case of secondary cicatricial entropion.

Frueh and Schoengarth observed that tarsal ectropion is uncommon, pointing out, however, that it may be the most difficult element of eyelid pathology to diagnose in ectropion, and be easiest to detect when horizontal laxity is absent or has been repaired. They noted that if tarsal ectropion is manifest, then the dehiscence or disinsertion of the inferior retractors will be sufficient to reduce the lower eyelid excursion measured from upgaze to downgaze. To correct the condition they recommended a transconjunctival approach to have the resulting scar help further to invert the eyelid. They recommended closure of the tarsal plate-inferior retractor layer with 5-0 polyglycolic acid suture and closure of the conjunctiva as a separate layer with 7-0 chromic cat-gut sutures without the excision of any conjunctiva.

**ECTROPIATION AND BLEPHAROPLASTY**

Four recent papers contributed further to this subject. Rees\(^2\) wrote on the prevention of ectropion in performing lower eyelid blepharoplasty, and suggested that factors in addition to the excessive removal of skin, muscle, and fat contribute to the development of ectropion. He emphasized hypotonicity of the lower eyelid, with shrinkage of the tarsal plate, and recommended that a preoperative eyelid snap back test be performed in all patients aged 40 or more. He observed that a full-thickness eyelid wedge excision has proven to be a useful method of repairing post-blepharoplasty ectropion, and that its prophylactic value has not been generally recognized. He advocated placement of the wedge excision so that the incision closure is at the junction of the central and lateral thirds of the eyelid, with resection of up to 7-mm width of full-thickness eyelid within the area of the tarsal plate, which structure he acknowledged has undergone some shrinkage. In his text, he stated that he does not close the conjunctiva as a separate layer, but in the accompanying diagram it is shown so with the knots exposed on the palpebral conjunctival surface where they could abrade the eye. He did not favor eyelid suspensions at the lateral canthus, such as those recommended by Tenzel\(^2\) and Hinderer,\(^2\) "since there is the risk of deformity at the lateral canthus when performed by other than the most experienced surgeons," except in those patients who exhibit vertical shortening of the lower lid in addition to horizontal laxity. Rees felt that those who criticize the wedge resection procedure claim it decreases the size of the inter-palpebral fissure and therefore the apparent size of the eye, but did not mention the possibility of eyelid notching, suture, and eyelash problems, which other authors\(^7,11,23\) believe are contraindications to performing eyelid horizontal shortening in the position Rees recommended.

McCord and Shore\(^2\) noted that middle-aged to older patients are extremely prone to lower eyelid malposition after blepharoplasty. As a routine part of lower eyelid blepharoplasty in these age groups, therefore, they perform horizontal eyelid shortening at the lateral canthus, with nonabsorbable suture reattachment of the cut edge of the tarsal plate to the periosteum of the inner aspect of the orbital rim level with the pupil. They noted that the incision of the ligamentous portion of the tarso-ligamentous sling is the underlying cause of eyelid horizontal laxity in aging,\(^2\) it is logical to perform the tightening in this region, rather than resect within the tarsal plate which has not been shown to undergo lengthening as a normal part of aging. The studies of eyelids in aged persons by Ousterhout and Weil,\(^12\) Hill,\(^2\) Wesley, McCord and Jones,\(^27\) and Huang, Anayo and Lewis,\(^28\) support this claim. McCord and Shore found this method of horizontal lower eyelid tightening superior to mid-eyelid resection and orbicularis oculi muscle flap procedures.\(^29,30\)

Dortzbach\(^31\) also recommended a horizontal shortening of the lower eyelid, if laxity is present, during blepharoplasty, performing the shortening right at the lateral canthus, and reattaching the tarsal plate to the lateral canthal tendon and the periosteum at the lateral orbital tubercle with 4-0 polyglycolic acid sutures. Wesley and Collins\(^4\) recommended routine use of McCord's lateral eyelid shortening, with tarsal fixation to the periosteum of the inner aspect of the lateral orbital rim, as part of a lower eyelid blepharoplasty. They advocated use of the same procedure to correct post-blepharoplasty ectropion. They noted their belief that the eyelid is weakest at the lateral canthal tendon, and that eyelid excisions placed other than in this position can be likened to removing the stronger links.
rather than the weaker links in order to tighten a chain.

**CONCLUSION**

The surgical procedures for the treatment of involutional ectropion have been refined and supplemented by some new ones. Most authors emphasize that each eyelid must be assessed thoroughly so that the components of the treatment plan can be individually outlined, staged, and performed in such a way that the potential for successful repair is maximal.

**REFERENCES**