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FEATURE ARTICLE

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Ectropion: Classification, Diagnosis, and Management

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Authors:
Leonid Skorin Jr, DO, OD, MS, and Rebecca Lange, OD

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ABSTRACT: Excessively dry or watery eyes are common patient presentations. Among the conditions that can cause these symptoms is ectropion, when an eyelid turns away from the globe. Ectropion can be congenital or acquired. Acquired causes include involutional, paralytic, cicatricial, and mechanical etiologies. Ectropion can be treated with lubrication, taping of the eyelid, or surgery. This article reviews the causes, assessment, and treatment of ectropion. A case describing the management of cicatricial ectropion by medical means also is presented.

KEYWORDS: ectropion, eyelid, epiphora, punctum

Older adults often present with excessive tearing (epiphora) or dry eyes. Ironically, these seemingly opposite symptoms are often related. Ectropion, or the malposition of the eyelid turning away from the globe, can be the cause of epiphora and dry eyes.[1] While this condition can range from a very mild medial ectropion to a widely diffuse ectropion spanning the entire lid, any presentation of the condition may cause symptoms.[2]

The important function of rewetting the corneal surface during each blink and keeping the eye moist and healthy belongs to the eyelids. For this task to be effective, both the upper and lower eyelids need to be properly positioned against the globe. Chronic exposure of the globe and palpebral conjunctiva can lead to reflex tearing and dry eye symptoms.[1] In such cases, the conjunctiva often becomes hyperemic and thickened, further contributing to symptoms.[2] Many patients have a mucoid discharge.[2] If an ectropion leads to the exposure of the punctum, this structure can become stenotic and further contribute to the symptoms of epiphora.[1] If the cornea remains exposed for any period of time, it increases the risk of epithelial breakdown, which may lead to infectious keratitis.[1]

To prevent lasting damage or further irritation, it is important that any eyelid abnormalities, specifically ectropion, be addressed as soon as possible.

CLASSIFICATION OF ECTROPION

Broadly, the causes of ectropion can be categorized as congenital ectropion or acquired ectropion. Congenital ectropion is much less common than acquired ectropion and usually accompanies other syndromes or conditions; Down syndrome and blepharophimosis syndrome are 2 of the more common conditions that can present with congenital ectropion.[3] Congenital ectropion usually involves the lower eyelids.

Acquired ectropion is much more common and is further classified as involutional, paralytic, cicatricial, or mechanical (**Table 1**).[4] Involutional ectropion is the most common acquired cause. The incidence of the condition increases with age. Involutional factors, including horizontal lid laxity and vertical lid instability, are present in these patients.[5] Patients with involutional ectropion initially might be asymptomatic, given that this is a gradually worsening condition. Upon examination, the amount of horizontal lid laxity, corneal exposure, and stenosis of the lacrimal puncta should be evaluated.[5] Involutional ectropion can be further classified as tarsal ectropion if complete eversion of the eyelid away from the globe has occurred.[5] This type of ectropion indicates a detachment of the lower eyelid retractors, and surgical repair requires both horizontal tightening and reattachment of the retractors.[5]

Table 1. Types of Acquired Ectropion

Type	Involutional	Paralytic	Cicatricial	Mechanical
Epidemiology	Older age; M=F	Any age; M=F	Any age; M=F	Older patients; M=F
Etiology	Older age	Palsy, stroke, tumor, surgery	Trauma, surgery, scarring, dermatitis	Mass (eg, dermatochalasis, edema, chalazion, eyelid tumor) pushes eyelid out
Examination	Eyelid sagging inferiorly and away from globe; look for amount of horizontal laxity, corneal exposure, punctal stenosis	Check for Bell phenomenon, corneal sensation, etiology of facial palsy	External scarring or possible skin changes	Asymptomatic or corneal irritation and redness
Special considerations	Tarsal ectropion—repair with horizontal strengthening and reattachment of retractors	Corneal sensation will determine severity	Rule out skin carcinoma	Determine degree of involutional changes and etiology of mass
Treatment	Lubricate if mild; treat with horizontal shortening and punctoplasty for long-term benefit	Depends on duration of paralysis—if resolution is expected, use lubrication, temporary tarsorrhaphy, or gold weight in upper eyelid; partial permanent tarsorrhaphy is used for cases in which resolution is less likely	Treat underlying skin condition; lysis of any deep scar tissue with horizontal strengthening; if severe, may need full-thickness skin graft	Excision of mass and correction of involutional factors of eyelid
Prognosis	Excellent; 5% to 10% recurrence rate after surgery	Variable, tends to recur over time if paralysis is permanent	Trauma cases do well; chronic cases have poorer prognosis	Good if mass is eliminated

Paralytic ectropion can result from a seventh cranial nerve palsy, stroke, tumor, or surgical complication.[5] This type of ectropion can occur at any age and is diagnosed based partially on history and partially on patient presentation. Other noticeable ocular and facial symptoms will likely be present. The severity of a paralytic ectropion is determined by the severity of the paralysis, corneal and conjunctival wetting, and corneal sensation. Less corneal sensation indicates a worse condition and worse prognosis.[5] When examining patients with suspected paralytic ectropion, the presence of an intact Bell phenomenon (the eyes move upward when the eyelids are held open manually and the patient attempts to close the eyes) should also be evaluated.[5,6]

Cicatricial ectropion can occur at any age and can be a result of a chemical burn, scar, or surgery. In this condition, there is a mechanical shortening of the anterior lamellae of the eyelid.[5] This anatomical shortening will cause the eyelid to be pulled down and can lead to an excess of tearing, because the tears will not drain through the puncta but instead flow over the eyelid margin.[5] Corneal exposure is also a risk factor for cicatricial ectropion.

Mechanical ectropion is much less common, because a specific offending anatomical agent must be present. Offending agents that can force the eyelid away from the eye include dermatochalasis, edema, chalazion, orbital fat, or an eyelid tumor.[5]

DIAGNOSTIC TESTS

Specific tests should be used when assessing an ectropion. First, it is a good idea to check the cornea for dryness and tear production. Fluorescein stain should be applied to the front surface of the eye to identify the degree of corneal exposure, lagophthalmos, or corneal defects.[6] A Schirmer test, which is a measurement of total tear production including basal and reflex tears, should be performed to quantify the dryness of the eyes.[7,8] The Schirmer test is done by folding a small paper test strip over the lower lateral lid margin of an unanesthetized eye. The amount of strip wetting is measured after 5 minutes.[7] A normal Schirmer test result is 10 to 30 mm of wetting in 5 minutes; a result of less than 10 mm is considered abnormal.[7] An in-office tear breakup time test should also be conducted to evaluate the quality of the tear film.[7] Fluorescein dye is instilled into the conjunctival sac and, using a cobalt blue light, the amount of time it takes for the tear film to lose its integrity is measured.[7] A result of less than 10 seconds is considered abnormal.[9] A slit lamp examination would be of additional benefit to identify the tear lake and any eyelid margin or punctal abnormalities.

Punctal eversion, or a punctum that is visible while the eyelid is resting at its baseline state, usually indicates the presence of a medial ectropion.[1]

The initial test to assess for eyelid laxity should be the distraction test. To perform this test, the lower eyelid should be grasped and pulled away from the globe. Significant eyelid laxity is present if the distance from the globe to the eyelid margin is greater than 10 mm (**Figure 1**).[7]

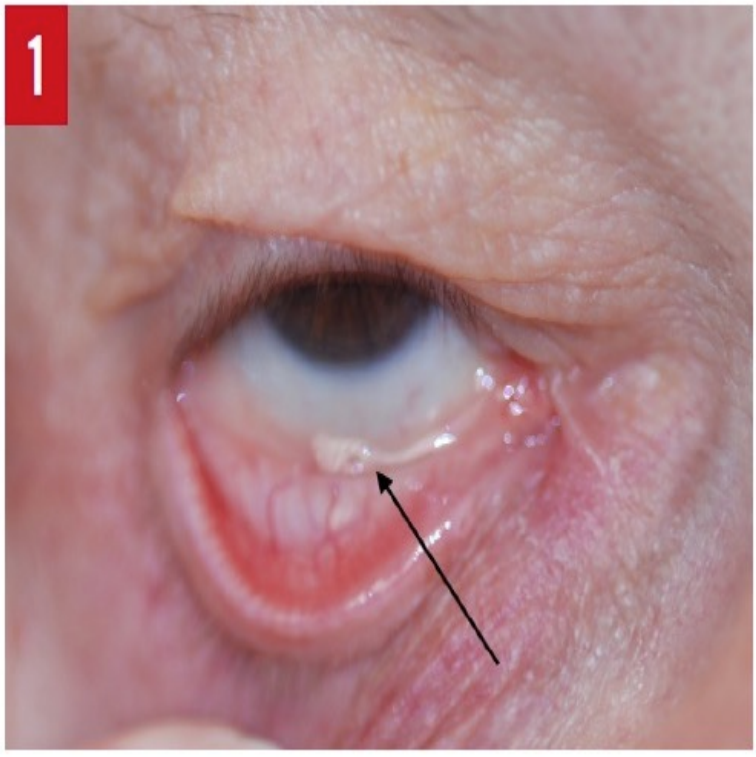

Figure 1: *The distraction test is performed to evaluate involutional ectropion. Note the white band of mucus in the lower cul-de-sac (arrow).*

Eyelid laxity should be further assessed with the snap-back test.[8] The snap-back test is conducted by pulling the lower lid away and down from the globe.[7,8] The lid is held in this position for several seconds and then released, and the time it takes for the lid to return to its original position is recorded (**Figure 2**). If this happens only after the patient blinks, this should be noted as well. The longer the eyelid takes to return to baseline, the more laxity is present.[8] Laxity can be graded on a 0 (normal) to IV (severe laxity) scale (**Table 2**).[8]

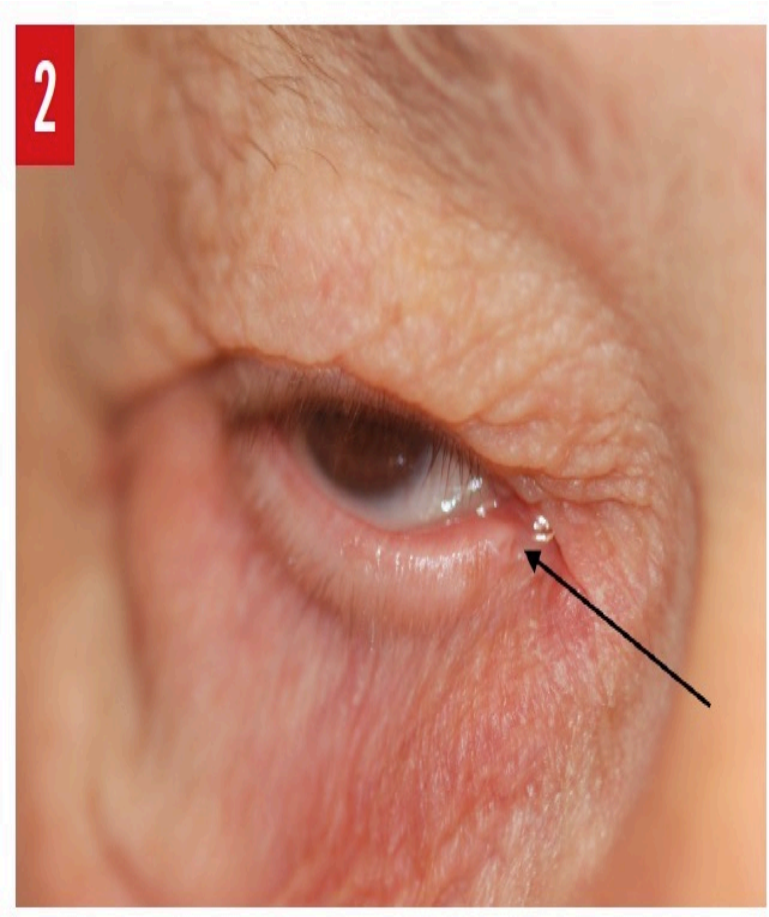

Figure 2*: The eyelid position 1 second after release during the snap-back test. Note the punctal eversion (arrow) and the medial eyelid margin not apposed to the globe.*

Table 2. Tests for Assessment of Eyelid Laxity

Test	Grade 0 (normal)	Grade I	Grade II	Grade III	Grade IV (severe laxity)
Snap-back test	Returns to position immediately	~2-3 sec to return to position	~4-5 sec to return to position	>5 sec to return to position	Never returns to position, may continue to hang down
Medial canthal laxity test	0-1 mm displacement	~2 mm displacement	~3 mm displacement	>3 mm displacement	Does not return to baseline
Lateral canthal laxity test	0-2 mm displacement	2-4 mm displacement	4-6 mm displacement	>6 mm displacement	Does not return to baseline, even with blink

Medial canthal laxity should also be evaluated. The medial canthal laxity test is conducted by pulling the lower lid laterally away from the medial canthus (**Figure 3**).[8] Displacement of the

medial punctum is then measured. The greater the amount of displacement, the more laxity is present.[8] Displacement for a normally positioned eyelid is approximately 0 to 1 mm.[8] Medial canthal laxity uses the same graded scale as the snap-back test (0 to IV) (**Table 2**).[8]

***Figure 3**: The medial canthal laxity test is performed to evaluate involutional ectropion.*

The measurement of lateral canthal laxity of an ectropion should also be measured. To test this, pull the lower lid medially away from the lateral canthus (**Figure 4**).[8] Measure the amount of displacement of the lateral canthal corner.[8] The greater the displacement, the more the laxity.[8] Once again, a graded scale is used to quantify this measurement (**Table 2**).

***Figure 4**: The lateral canthal laxity test is performed to evaluate involutional ectropion.*

TREATMENT

Treatment depends on the type of ectropion. When it is mild, congenital ectropion is managed conservatively with lubrication in the form of artificial tears and ointments.[1] When it has progressed, a tarsorrhaphy (a partial suturing of the eyelids together), horizontal eyelid tightening, or skin grafting may be required.[1]

Mild cases of involutional ectropion also can be treated initially with lubrication. Further in its progression, involutional ectropion should be treated with a horizontal shortening by doing the lateral canthal strengthening procedure for long-term results.[5] The treatment of paralytic ectropion depends on the duration of the paralysis. Temporary treatments are acceptable if the paralysis is expected to resolve. However, if the paralysis is more long-standing, a permanent partial tarsorrhaphy is suggested.[5] Cicatricial ectropion is first treated by addressing any underlying dermatologic condition.[5] Horizontal tightening with lysis of any deep scar tissue is suggested, while full-thickness skin grafts are usually reserved for the most severe cases of cicatricial ectropion.[5] Mechanical ectropion is treated by excising the offending mass or correcting the factors contributing to the mechanical pulling away of the eyelid from the globe.[5]

The most commonly used surgical technique to tighten the lower eyelid and repair the ectropion is the lateral canthal strengthening procedure.[9] (View the accompanying **Video** to watch Leonid Skorin Jr, DO, OD, MS, surgically repair an ectropion.) This procedure shortens the eyelid at the lateral canthus. A significant tightness of the lid can be achieved from a small amount of resection at the lateral canthus.[9] To achieve this, the upper and lower eyelids are split at the lateral canthus down to the periosteum.[9] The lower canthal tendon is severed in order to fully free the lower eyelid.[9] The eyelid is then pulled laterally to overtighten the eyelid slightly and the excess tissue.[9] Using the periosteum as an anchor, the eyelid is then reapproximated at the lateral canthus to the appropriate tightness with several interrupted sutures.[9] If punctal stenosis and eversion also are present, a 3-snip punctoplasty is done for the stenosis. A medial spindle procedure is then performed to reapproximate the punctum against the globe.[9]

ECTROPION CASE REPORT

An 83-year-old man presented to the eye clinic with a sore, red eye that had been bothering him for the past month (**Figure 5A**). He had tearing that had been interfering with his vision, and his eyes were also stuck shut in the mornings. The tearing was worse in his right eye. At initial presentation, his vision was 20/50 –1 in the right eye and 20/40 +2 in the left eye.

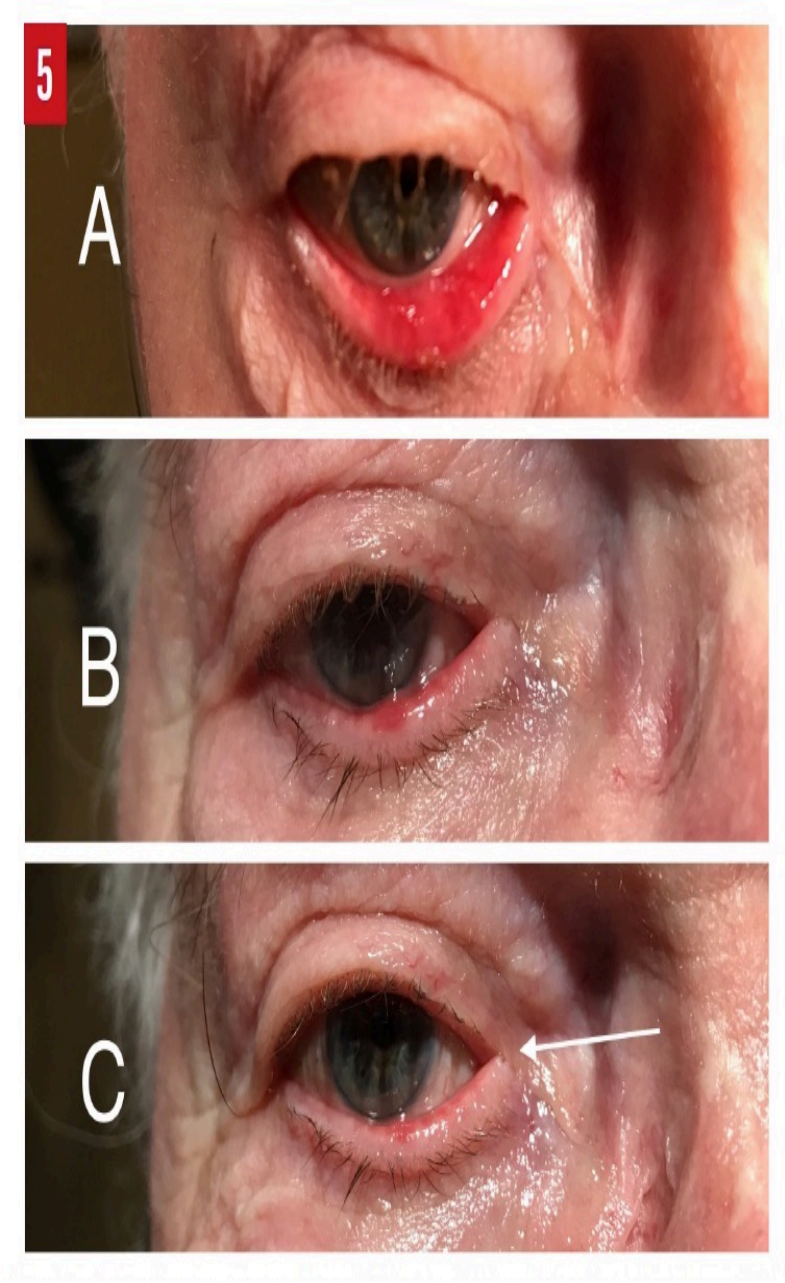

***Figure 5**: The patient's ectropion at initial presentation (A), 4 weeks after the initiation of medical treatment (B), and 7 weeks after initiation of medical treatment (C). Note the residual medial and punctal ectropion with puncta visible (arrow).*

Based on this examination, he received a diagnosis of cicatricial ectropion, worse on the right lower lid than on the left lower lid. He was given neomycin/polymyxin B/dexamethasone ophthalmic ointment to use 3 times a day and was instructed to massage his eyelids in an upward direction.

At a 4-week follow-up appointment, there was mild improvement in the eyelid laxity and the outward turning of the lid (**Figure 5B**). The patient's visual acuity was the same as at the initial presentation. He was instructed to continue applying the ointment 3 times a day.

At a follow-up visit 7 weeks after initial presentation, the eyelid had noticeably less outward turning from the globe, less hyperemia, and an overall improved appearance (**Figure 5C**). At that point, the patient was essentially asymptomatic and was satisfied with the treatment outcome. There was still some residual medial ectropion, which could be surgically addressed.

Leonid Skorin Jr, DO, OD, MS, *is an ophthalmologist at the Mayo Clinic Health System in Albert Lea, Minnesota.*

Rebecca Lange, BS, *is a fourth-year optometry student at Pacific University in Forest Grove, Oregon.*

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