



Management of Ectropion with Medial Canthal Tendon Laxity

Author

Dr Ali Al-Ammouri, MD, PhD

Ophthalmology Department

Hussein Hospital-Ministry of Health

Al Salt-Jordan

Abstract

Objective: Ectropion is usually associated with laxity of the medial and lateral aspects of the lower eyelid. The goal of this study is to outline management and surgical correction of ectropion accompanied by variable degrees of eyelid laxity.

Patients and Methods: A retrospective study of 15 patients with ectropion along with different degrees of medial canthal ligament laxity were managed according to the ectropion grades, classification and surgical approach were described in this study. Patients were followed up for 3, 6 and 12 months postoperatively.

Results: Tight fixation of medial eyelid opposed to lateral traction and correction of ectropion were accomplished in all cases. Aesthetic outcome was achieved in 12 cases, while epiphora was treated in 14 cases.

Conclusion: Surgical repair for ectropion should be directed according to the clinical findings which renders the outcome to be favourable.

Keywords: Ectropion, Lid Tightening, Medial Canthus, Lower Lid.

Introduction

Horizontal eyelid shortening, together with lateral tarsal strip procedure (LTS), has made ectropion repair simple with favourable aesthetic results^{1,2}. Lateral displacement of the medial eyelid is induced by LTS in cases where medial palpebral ligament (MPL) laxity is present³. MPL plication provides a counterbalance against lateral displacement in cases of moderate MPL laxity. In cases with severe MPL laxity, plication alone is not sufficient. The eyelid tissues become condensed medially, and the lacrimal canaliculus becomes either blocked or tortuous, which would consequently affect both the functional and aesthetic outcome. Resection of medial eyelid and

reconstruction of MPL is recommended for such cases, however the complex relation of the MP to orbicularis muscle fibres around the lacrimal drainage system renders this procedure more difficult⁴.

In this study, we present a surgical plan to address variable stages of MPL laxity associated with ectropion.

Patients and methods

Lower eyelid medial laxity was classified on the basis of its lateral distraction, lateral displacement, and the presence of punctal ectropion into stage 1 (mild MPL laxity), stage 2 (moderate MPL laxity) and stage 3 (severe MPL laxity). In both stage 1

and 2, they are subsequently divided to type 1a, 2a with no punctal ectropion and to type 1b,2b if punctal ectropion is present.

In this study the author described two surgical techniques; a modified reconstruction combined with plication of MPL via a medial spindle defect. The medial spindle and LTS procedures are described in the literature⁵⁻⁹.

The author suggested that the modified MPL reconstruction was better reserved for more severe forms of MPL laxity. The marsipulization of lower canaliculus in upward direction by making a single-snip procedure through a dilated punctum. The eyelid is split medially with an anterior lamellae and a posterior lamellae. Lateral to the lacrimal punctum, the lid is split at the grey line for 10 mm. Medial to the punctum; the split eyelid is then brought towards the floor and medially to the marsupialized canaliculus. Anterior eyelid with Medial and lateral flaps are from a fashioned anterior lid lamella after having it incised vertically at the level of the lacrimal punctum. The repaired posterior dehiscence found beneath the anterior flap is formed through excising the excess tissues from the posterior eyelid lamella as well as by tightening the medial horn of the lower lid inferomedially to the tarsus with absorbable 5/0 vicryl suture to reassure a firm attachment made to the level of posterior lacrimal crest.

The anterior eyelid lamella is repaired, and the orbicularis tarsus embracement mechanism is retightened. The medial and lateral anterior flaps are overlapped, and excess tissues are excised. The medial anterior flap is approximated and sutured to the anterior lateral flap onto the front of the tarsal plate. The tightened lamellae are realigned together at the eyelid margin with absorbable 6/0 vicryl suture. In this repair the orbicularis oculi muscle fibres help support the tarsal plate anteriorly. As the tarsus gets pushed against the globe in backward direction with each contraction of the orbicularis muscle fibres. Intubation of the inferior canaliculus is recommended to help maintain patency of the neo-

punctum. In cases of moderate MPL laxity we favorize incising the medial spindle with plication of the Posterior MPL.

A 3 × 3 mm posterior eyelid lamella elliptical defect is created with a pair of spring scissors. Once undermining the wound edges is completed, the medial horn of lower eyelid retractors is then identified and attached to the the tarsal plate inferomedial angle, thereafter, tightening of the medial and lateral orbicularis fibres to the defect edges. The upper wound slanting lips of the defect are counter sutured to the lower wound lips with double-armed vicryl 5/0 suture. The two ends are brought out to the skin surface at a level lower than that of the created defect and tied together to exert an additional inverting effect.

Results

In this study, we have addressed 15 patients with lower eyelid ectropion with variable degree of MPL laxity. MPL reconstruction was performed on 12 eyes of nine patients with severe medial ectropion. Three of them were referred following two previously failed lower eyelid shortening procedures. One patient had a history of facial trauma with lower canaliculus involvement and previous maxillofacial repair. Three patients had bilateral simultaneous surgery. Lacrimal duct was intubated in two eyes. Eight of 12 required LTS; however, two of them did not undergo this procedure simultaneously.

After MPL plication was performed via a medial spindle incision in 21 eyes of 15 patients, LTS was required in 17 of these eyes. A three-snip procedure was performed for 12 eyes alongside concomitant manipulation of punctal keratinization, with 2 eyes had Skin grafting performed. Patients were followed up for 3,6 and 12 months postoperatively. Firm medial eyelid fixation by counteracting lateral traction and ectropian correction were done in all cases. Epiphora was successfully cured in 14 patients. Favourable aesthetic results were achieved in 12 cases.

Discussion

Mild to moderate stages of MPL laxity associated with medial lower eyelid ectropion are treated successfully with different horizontal eyelid shortening procedures combined with shortening of the posterior lamella in vertical direction underneath the lacrimal punctum^{5,6}. Retro punctal cautery, medial spindle, lazy-T procedure, or posterior lamellar flap resection are well-established procedures that promote shortening of the lid posterior lamella^{3,7-9}.

Posterior MPL plication has no significant difference on short term from these traditional procedures. However, it could offer firm medial fixation against medial canthus lateral displacement when a lateral eyelid shortening procedure is required.

In moderate forms of MPL laxity plication or stabilization of posterior MPL is recommended, through a suture fixation between the periosteum to the tarsus medial edge at level posterior to the caruncle^{3,10}. This technique drawback that it ignores the repair of eyelid natural mechanics, It may cause symblepharon with consequent diplopia on abduction due to disruption of the medial canthus.

Ectropion associated with medial palpebral ligamentous laxity is considered challenging in severe forms. In 2003 Jordan et al. considered techniques suggested for severe repair were unsatisfactory⁴. In those scenarios plication without resection procedures. In situations where the medial canthus is found distorted and lengthened plication may cause medial bunching and crowding of tissues, which may lead to deformity of medial canthus, and blockage of lacrimal. In 1990 Edelstein et al.¹¹ described using periosteal flap whereas in 2001 Franzco et al.¹⁰ suggested trans-caruncular medial orbitotomy for a better MPL stability, but these procedures offered better outcomes for less severe MPL laxity grades.

The authors agree with the opinion of Jordan, Crawford, and Collin in that medial eyelid shortening or excision is the surgical intervention

of choice in cases with severe MPL laxity⁴. The most well accepted medial eyelid resection procedure for severe MPL laxity, which must consist of a medial eyelid full thickness resection with re orientation of the medial tarsal attachment towards lacrimal crest posteriorly by using nonabsorbable suture¹²⁻¹⁴. This technique necessitates an incision positioned posterior to the caruncle which permits proper exposure of the posterior lacrimal crest as well as it will help proper anchoring to the periosteum with nonabsorbable sutures to the medial edge of the resected tarsus. This technique does not address properly the rebuild of the lower eyelid stabilization mechanisms. Patients who undergo this technique can develop adhesions between the globe and the tarsal medial edge. There were postoperative cases reported with poor aesthetic results, limited abduction, granuloma formation by nonabsorbable sutures sometimes causing local tenderness and even deformity. Another technique using a medial tarsal strip aimed for MPL reconstruction was suggested in 1990 by Jordan et al. but it also failed to address the fine details of the medial canthal area. Because of the difficulty of posterior fixation, medial tarsal strip was sutured to the under surface of the anterior MPL. They reported the occurrence of a gap between the globe and the eyelid. This technique also could not maintain a patent lower canaliculus. It was reserved to patients with patent canaliculus¹⁵.

Medial ectropion repair with severe medial canthal laxity are considered technically challenging with no guaranteed favourable results. The repair mainly targets restoration of firm medial fixation with little consideration to fine anatomical and physiological details of the medial canthus¹⁶. MPL reconstruction in cases of ectropion associated with severe MPL laxity, as discussed in this study, exposes tissue planes through which layers of the MPL are surgically accessible. This approach enhances the tone of the superficial and the deep parts of the orbicularis, which keeps the lid in opposition to the globe. It provides a patent access for tears to reach the

lower canaliculus. It maintains natural-looking almond-shaped medial canthal angle; it uses local tissues within same operative field, which helps achieve a more natural healing with more reliable and aesthetic outcome. The MPL reconstruction has a few drawbacks, as it is a lengthy surgery, the vertical incision required does not interfere with the natural eyelid crease; simultaneous lacrimal intubation is required to avoid obliteration of lacrimal canaliculus. The correction of the medial eyelid position, prevents from epiphora as it avoids formation of a medial lacrimal pool, even with a blocked lower punctum. MPL reconstruction is considered a procedure predominately with fixation of the medial eyelid that helps restore the normal function and aesthetic appearance of medial canthus. If any remanent eyelid laxity following reconstruction of MPL it must be addressed with a lateral lid tightening procedure. Lateral eyelid shortening procedures were used very often in this series of patients. LTS procedure is the authors' work horse for the treatment of ectropion of the lower eyelid because it is directed to the restoration of the anatomical details by correction of the defect, it avoids lid notching, it maintains the lid skeleton represented in the tarsal plate, and it avoids iatrogenic phimosis^{17,18}.

Conclusion

MPL reconstruction and MPL tightening through a medial spindle defect are reliable techniques to achieve good aesthetic and functional repair for lower eyelid ectropion associated with moderate and severe MPL laxity.

References

1. Jordan DR, Anderson RL. The lateral tarsal strip revisited: the enhanced tarsal strip. *Arch Ophthalmol* 1989; 107:604–606.
2. Olver JM. Surgical tips on the lateral tarsal strip. *Eye* 1998; 12:1007–1012.

3. Collin JR. A manual of systematic eyelid surgery. 2nd ed. London, UK: Churchill Livingstone; 1989. 27–39.
4. O'Donnell BA, Anderson RL, Collin JR, Fante RG, Jordan DR, Retling P. Repair of the medial canthal tendon. *Br J Ophthalmol* 2003; 87:220–224.
5. Olver JM, Sathia PJ, Wright M. Lower eyelid medial canthal tendon laxity grading. An interobserver study of normal subjects. *Ophthalmology* 2001; 108:2321–2325.
6. Frueh BR, Schoengarth LD. Evaluation and treatment of the patient with ectropion. *Am J Ophthalmol* 1982; 89:1049–1054.
7. Tse DT. Surgical correction of punctal malposition. *Am J Ophthalmol* 1985; 339–340.
8. Smith B. The lazy-T correction of ectropion of the lower punctum. *Arch Ophthalmol* 1976; 94:1149–1150.
9. Hurwitz JJ, Tucker S. Posterior horizontal and vertical tightening to treat combined punctal ectropion with medial canthal tendon laxity. *Ophthalm Surg* 1990; 21:721–725.
10. Franzco IC, Franzco GA, Sharma S, Franzco MT. Transcaruncular medial orbitotomy for stabilization of the posterior limb of the medial canthal tendon. *Clin Experiment Ophthalmol* 2001; 29:85–89.
11. Edelstein JP, Dryden RM. Medial palpebral tendon repair for medial ectropion of the lower eyelid. *Ophthalm Plast Reconstr Surg* 1990; 628–3.
12. Crawford J, Collin JR, Moriarty PA. The correction of paralytic medial ectropion. *Br J Ophthalmol* 1984; 68:639–641.
13. Sullivan TJ, Collin JR. Medial canthal resection: an effective long-term cure for medial ectropion. *Br J Ophthalmol* 1991; 75:288–291.
14. McCord CD, Nunery WR. Reconstruction of the lower eyelid and outer canthus. In:

- McCord CD, Tanenbaum M. *Oculoplastic surgery*. New York: Raqven Press; 1987. 107–109.
15. Jordan DR, Anderson RL, Thiese SN. The medial tarsal strip. *Arch Ophthalmol* 1990; 108:120–124.
16. Goldberg RA. Oculoplastic surgeons think mechanically. *Arch Ophthalmol* 2001; 119:756–757.
17. Anderson RL, Gordy DD. The tarsal strip procedure. *Arch Ophthalmol* 1979; 97:2192–2196.
18. Nowiniski TS, Anderson RL. The medial spindle procedure for involutional medial ectropion. *Arch Ophthalmol* 1985; 103: 1750–1753.