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Lower eyelid suspension using polypropylene suture for the correction of punctal ectropion

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ABSTRACT

Objective: To evaluate the efficacy and complications of lower eyelid suspension with the modified Safdarjung hospital technique using 5:0 polypropylene suture for punctal ectropion.
Study design: Prospective case series.
Method: Thirty one eyelids in 19 patients with mild and moderate ectropion and all types of laxity including involutional and paralytic were included. All patients underwent lower eyelid suspension with the modified Safdarjung hospital technique. A 5:0 polypropylene suture was passed in the pre-tarsal plane between the attachments of the lateral and medial canthal tendons near their insertion at the orbital rim. Successful outcome was judged by the anatomical restoration of the apposition of the punctum to the globe in the upward gaze and the physiological relief of epiphora. The recurrence of lid laxity, overall lid/globe apposition and complications were also noted.
Results: At 1 year follow up anatomical success was achieved in 28 (90%) patients and functional success noted in 27 (87%) patients. Recurrence of lid laxity was noted in 2 patients. There was a suture exposure in one case and a suture granuloma in another case. The results did not correlate to the degree of ectropion and type of laxity.
Conclusion: Lower eyelid suspension using 5:0 polypropylene suture is a useful procedure for the treatment of involutional and paralytic punctal ectropion. It is simple and effective with minimal complications. However, the effect on scleral show and the concern related to suture material bio-degradation over years needs to be further evaluated.

1. Introduction

Epiphora due to involutional ectropion is commonly encountered in everyday practice. Horizontal lid laxity can be generalized or occur primarily at the medial or lateral canthus due to age related eyelid changes. Lower lid retractor disinsertion or laxity and lamellar dissociation are contributors of variable significance (Putterman, 1978; Frueh and Shoengarth, 1982). The resultant eyelid malposition leads to the eversion of the punctum resulting in epiphora. The exposed conjunctiva may develop inflammation and thickening with further accentuation of the ectropion. This condition can also be of cosmetic concern to the patients. Horizontal lid laxity can also occur in paralytic, cicatricial and mechanical ectropion (Collin, 2006).

The treatment aims to shorten the lid in the area of maximal laxity and bring it in apposition with the globe (Mustarde, 1991). If the laxity is generalized a pentagonal wedge resection is performed, combined with blepharoplasty if needed. If the lid laxity is maximal laterally and the lateral canthal tendon is elongated, the lateral tarsal strip or full thickness lid shortening is done laterally. With medial lid laxity full thickness lid resection, medial canthal suture or tarso-conjunctival diamond excision is employed in the medial part of the lid (Mustarde, 1991; Collin, 2006).

These procedures are associated with specific complications (Jordan and Anderson, 1989; Hsuan and Selva, 2004). An alternative technique termed the 'Safdarjung suture' whereby a horizontal non-absorbable suture is passed in the pre-tarsal plane from lateral canthal ligament to medial canthus to tighten the lid has been used successfully for treatment of epiphora in young adults (Malik et al.,

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2002). This study analyses the use of a "modified Safdarjung suture" in mild to moderate involutional and paralytic punctal ectropion.

The efficacy of this technique in relation to the generalized, primarily medial or lateral horizontal lid laxity was also assessed.

2. Materials and methods

All patients with mild to moderate lower lid punctal ectropion, who were operated with the modified Safdarjung technique at the Guru Nanak Eye Centre, New Delhi between February 2009 and August 2010, were included in this study prospectively. The minimum follow up duration was one year.

All patients were preoperatively evaluated for the presenting complaints, aetiology and severity of ectropion. Cases with mild to moderate punctal ectropion with generalized, medial or lateral laxity were included.

Syringing was performed to exclude lachrymal obstruction and patients with dry eye, conjunctivochalasis, anterior segment disease, trichiasis, blepharitis, skin scarring, lachrymal drainage abnormality and previous eyelid surgery were excluded.

The preoperative severity of ectropion was graded clinically in all cases. Punctal apposition failure in the upward and primary gaze was quantified as mild and moderate ectropion respectively (Sihota and Tandon, 2007). All these patients had either generalized or primarily medial or lateral horizontal lid laxity.

Generalized lid laxity was assessed by the pinch test (Bosniak and Zilkha, 1998) whereby if lid could be pulled more than 6 mm away from the globe it was considered to be lax. The medial canthal tendon laxity was assessed by the lateral distraction test (Olver et al., 2001) and if the punctum could be displaced laterally for more than 2 mm, the medial canthal tendon laxity was considered as to be present primarily. The lateral canthal tendon laxity was defined as lateral canthus movement of 2 mm or more towards the temporal limbus and shortening of the horizontal palpebral fissure on pulling the lid away from the globe (Bosniak and Zilkha, 1998). Written informed consent from all the patients was obtained before enrolment into the study. Surgery was carried out under local anaesthesia by senior author in all cases (Goel R).

2.1. Surgical technique

(Fig. 1) Aseptic preparation and draping of the eyes were carried out and a local infiltration of 2% lignocaine with 1:100000 adrenaline was administered into the lower eyelid, medial canthal angle and along the lateral orbital wall.

A horizontal incision of 2 mm was made over the lateral orbital wall. The orbicularis muscle was dissected to expose the lateral canthal tendon. A 5:0 polypropylene suture (Prolene®, Ethicon Inc) was tied to the attachment of lateral canthal tendon and adjoining periosteum at lateral orbital rim. A 3 mm vertical incision was then placed medially to the medial canthus and the anterior and posterior limb of medial canthal tendon was exposed though. A spatula was inserted between the lid and the globe. The lower punctum was cannulated with a lachrymal probe to avoid injury. The other end of the 5:0 polypropylene suture was mounted on a long straight needle and passed through the length of the lid in the pretarsal plane, keeping it as close to the lid margin as possible. The needle was then taken out at the medial incision behind the anterior limb of medial canthal tendon and traction was applied on the suture to cause, tightening of the lid margin to the globe. The straight needle was replaced with a semicircular one and the 5:0 polypropylene suture was tied to the attachment of posterior limb of medial canthal tendon and adjoining periosteum at posterior lachrymal crest. Dipping of the lower punctum into the lachrymal lake was observed. The orbicularis muscle was closed with 6:0 polyglactine suture (Vicryl®, Ethicon Inc) and skin incisions were closed with 6:0 silk suture. Postoperatively, the patients received systemic antibiotics and anti-inflammatory drugs and topical antibiotics and antiseptics over sutures for a week. The 6-0 silk sutures were removed after six days.

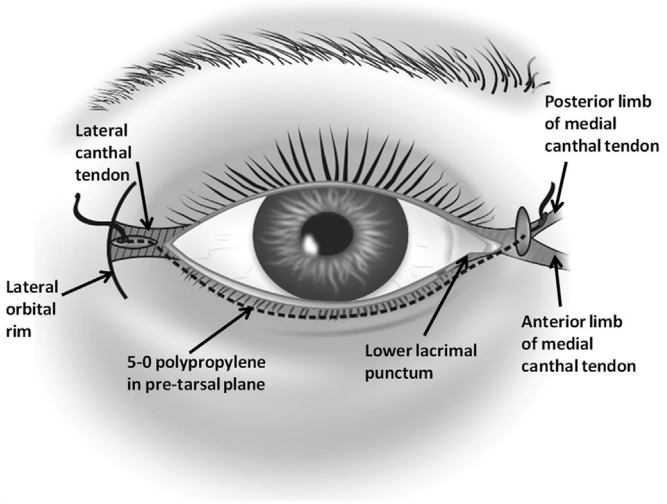

Fig. 1. Diagram illustrating "modified Safdarjung technique". A non-absorbable suture is first tied near the attachment of lateral canthal tendon at orbital rim, then passed in pre-tarsal plane medially, and finally tied to posterior limb of medial canthal tendon near lachrymal crest.

2.2. Outcome measures

Anatomical success was defined as the restoration of apposition of lower punctum to the globe in the upward gaze and functional success was defined as absence of epiphora on follow up at one year.

The patients were reviewed on first postoperative day, at one week, every month for three months and every three months ever after. At each visit the patient's symptoms, position of the lower punctum, recurrence of laxity and any complications were noted.

Statistical analysis was carried out using McNemar's and Fisher's exact test.

3. Results

Thirty one eyes of 19 patients were included with an age ranging from 42 to 72 years with a mean of 58.4 ± 4.5 years. There were 11 males and 8 females. The main symptoms of the patients were eye watering, a foreign body sensation and irritation. The mean duration of the symptoms was 12 ± 2.5 months. Table 1 illustrates the severity of ectropion and type of horizontal lid laxity in the eyes included in the study. There were 12 patients with bilateral and 4 patients with unilateral involutional ectropion; three patients with unilateral paralytic ectropion were also included. There were a total of 10 eyes with mild and 21 eyes with moderate ectropion. There were 11 eyes with generalized laxity, 9 with medial and 11 with lateral laxity. Three eyes with paralytic ectropion exhibited lagophthalmos without scleral show.

Restoration of the anatomical apposition of the punctum to the globe in upwards gaze was established in 28 (90%) of eyes at the one year follow up (p value < 0.0001; McNemar's test). In three patients, punctal apposition was not achieved in primary gaze due to under correction. This included one eye with mild ectropion with