

The Correction of Oriental Lower Lid Involutional Entropion Using the Combined Procedure

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Abstract

Introduction: Involutional entropion is a common lid malposition problem in the Chinese geriatric population. The major contributing factors of involutional entropion include disinsertion of the lower lid retractors and horizontal lid laxity. The combined procedure (lower lid retractor repair and lateral tarsal strip procedure) is a useful technique that tackles both the horizontal and vertical aetiologic components of this condition. The surgical technique of this procedure is described and the results and complications presented. **Materials and Methods:** A retrospective non-randomised study on 41 lower eyelids of 38 Chinese patients. The combined procedure was performed by a single surgeon over a 2 years 11 months period. Nine patients had bilateral lid surgeries. The clinical charts and operative notes were reviewed by an observer. **Results:** The mean age of the patients was 74.7 years (range 51 to 92 years). There were 14 males (36.8%) and 24 females (63.2%). The cases were followed up postoperatively for a mean duration of 13 months (range 3 to 48 months). Twelve lids had early postoperative overcorrection but the majority (8 lids) resolved spontaneously with good lid-globe apposition. Of the remaining 4 eyelids, 3 lids had persistent mild asymptomatic ectropion that did not require surgical treatment and only one required re-operation. **Conclusion:** The combined procedure is an effective means of repair for oriental lower lid entropion with low complication rates.

Ann Acad Med Singapore 2000; 29:463-6

Key words: Horizontal lid laxity, Lateral tarsal strip procedure, Lower lid retractor repair

Introduction

Involutional entropion is a frequent cause of ocular irritation in the local elderly patients. The inturning of the lid margin and the eyelashes result in corneal epithelial damage that may predispose to vision-threatening infection and irreversible corneal scarring.

The aetiologic factors implicated in the development of involutional lower lid entropion include horizontal lid laxity,¹⁻⁴ disinsertion or attenuation of the capsulo-palpebral fascia,^{1,5,6} overriding of palpebral orbicularis oculi^{3,7-9} and involutional enophthalmos.^{4,8,10} We believe that the first 2 factors are probably the most significant in the pathogenesis of this condition as the surgical correction of them were sufficient to correct the entropion in our experience. The third factor is most likely a consequence of tarsal plate tumbling due to the first 2 factors rather than a cause of the entropion. Enophthalmos probably plays a minor role, if at all, in the causation of this condition.

It is therefore logical to manage involutional entropion by correcting all treatable factors if feasible. Many treatment modalities have been described to treat one or more of

aetiologic factor(s). Any method, which tackles only one factor at a time, may not fully correct the pathology. In fact, many reports favour a trend towards using a combined procedure to achieve a horizontal and vertical tightening effect.^{1-3,7,11,12}

The combined procedure we have adopted consists of lower lid retractor repair and lateral tarsal strip procedure. It is a useful technique which addresses both the horizontal and vertical components in involutional entropion. The surgical technique is described. We present the results and complications of this procedure in Oriental eyelids.

Surgical Technique

The technique we use is a modification of that described by Wesley and Collins.¹ The surgery is done under local anaesthesia using 5% marcaine admixed with epinephrine (2 drops of 1:1000 epinephrine in 4 mL of marcaine).

A lateral canthotomy is performed with a number 15 Parker blade after clamping the lateral canthal angle with an artery hemostat. An inferior cantholysis is then done by cutting the inferior limb of the lateral canthal tendon with

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a Wescott scissors to mobilise the lower eyelid. This is followed by a lower lid blepharoplasty incision using the same scissors from lateral to medial aspect.

Careful dissection into the sub-orbicularis plane with the Wescott scissors is required to expose the lower lid retractor. The retractor can be recognised intraoperatively as a whitish-grey sheet below the inferior tarsal border after cutting the orbital septum (Fig. 1). It can be seen to move in the midst of the orbital fat when the patient looks up and down. Accurate identification of this structure is vital to the success of this operation. Its identification can be aided by gentle pressure on the globe to bulge forward the infra-orbital fat and the retractor. It is then dissected away from the lower tarsus. Three interrupted sutures of 7/0 Vicryl are then used to secure the retractor to the anterior surface of the lower one-third portion of the inferior tarsal plate (Fig. 2). One should avoid placing the sutures too high up the tarsus as this may result in undesirable postoperative ectropion.

The infero-lateral canthal strip is fashioned by making a full thickness horizontal incision about 5 mm below the inferior tarsal border. The amount of horizontal lid to be tightened can be gauged by pulling on the strip superiorly and laterally over the lateral orbital margin. If necessary, a small full thickness portion at the lateral end of the strip can be excised to augment the tightening effect. The anterior lamellar (skin, subcutaneous tissue and pre-tarsal orbicularis oculi) at lateral end of the strip is excised with Wescott scissors, leaving the anterior tarsal surface bare. The conjunctiva covering the posterior surface of the strip is removed with a number 15 Parker blade. The bare lateral tarsal strip is then sutured postero-superiorly to the periosteum over the lateral wall of the orbit approximately 3 to 4 mm behind the orbital rim (Fig. 3). Haemostasis is secured intraoperatively with gentle diathermy. The lateral canthal angle is reformed with one 7/0 Vicryl suture passing through the grey line of the upper and lower eyelids. The lateral skin incision is finally closed with interrupted 7/0 silk.

Our technique is different from the original technique described by Wesley and Collins in a few ways. Firstly, the original technique described making the subciliary incision first (for the lower retractor attachment to tarsus) followed by the lateral canthotomy incision (for the lateral tarsal strip procedure). We, however, started with a lateral canthotomy incision and then extending it medially to become a subciliary incision. Secondly, the original technique uses 2 different incisions but our technique uses only one incision.

Materials and Methods

Over a period from August 1992 to June 1995, 42

Chinese patients had this procedure performed by a single surgeon at the Singapore National Eye Centre. Only 38 patients (47 eyelids) were recruited in the study as 4 defaulted follow-up. Nine patients had bilateral lid surgery. None of the patients had previous eyelid surgery.

We conducted a retrospective study to analyse the results and complication rate of this procedure. Clinical charts and operating theatre notes were reviewed by a single observer to collect the data. The patients were followed up for a mean duration of 13 months (range 3 to 48 months) by the senior author.

Results

The mean age of the patients was 74.7 years (range 51 to 92 years). There was slight preponderance of females (63.2%) in comparison to males (36.8%). The surgery was done on 25 (53%) right lower lid and 22 (47%) left eyelid.

The majority of patients (72.3%) achieved immediate good lid positioning postoperatively (Figs. 4 & 5). Twelve eyelids (25.5%) had overcorrection. Of these, 8 lids had only transient ectropion that resolved spontaneously. Another 3 eyelids had persistent mild ectropion that was asymptomatic and did not require any surgical intervention. Only one remaining eyelid required re-operation.

The other postoperative complications encountered were minor and did not cause any ocular symptom in the patients. These included recurrent entropion and lid retraction in 1 case; mild wound dehiscence in 2 cases and horizontal lid laxity in another 2 cases. The postoperative complications encountered are summarised in Table I.

Our recurrence rate of 2.1% is comparable to some other entropion surgeries such as the Quickert procedure described by Collins et al⁹ (recurrence rate of 3.7%) and lower lid retractor imbrication with medial and lateral canthal tendon tucking procedure described by Schaeffer³ (recurrence rate of 2.7%).

Discussion

Involutional entropion develops as a result of the pathophysiologic process of ageing. It is noteworthy that any success in the surgical correction of this condition cannot be complete in view of its progressive nature. The combined procedure we used is an effective treatment

TABLE I: POSTOPERATIVE COMPLICATIONS

Postoperative complication	No. of eyelids
Transient ectropion	8 (17.0%)
Persistent ectropion	4 (8.5%)
Recurrent entropion and lid retraction	1 (2.1%)
Wound dehiscence	2 (4.2%)
Horizontal lid laxity	1 (2.1%)

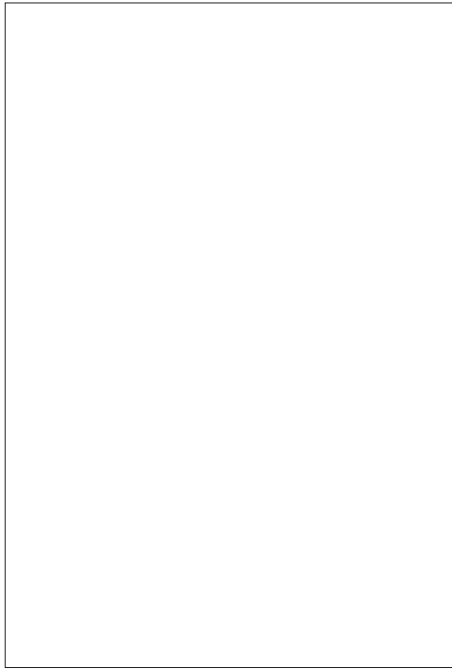


Fig. 1. The lower lid retractor can be identified as a greyish-white sheet below the lower tarsal border.

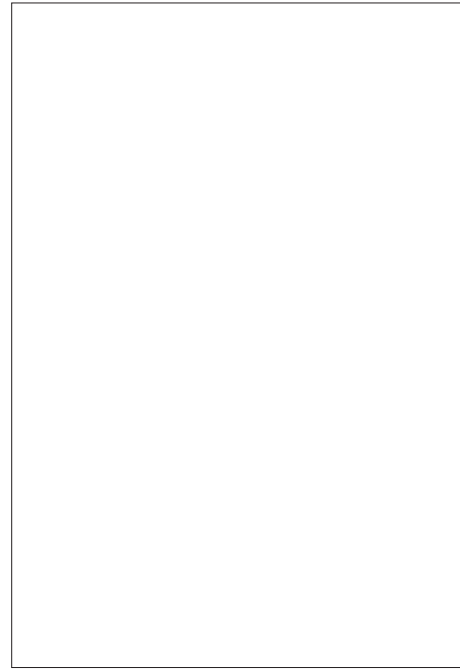


Fig. 2. The lower lid retractor is reattached to the lower one-third of the inferior tarsus to correct the dehiscence after the lateral tarsal strip procedure.

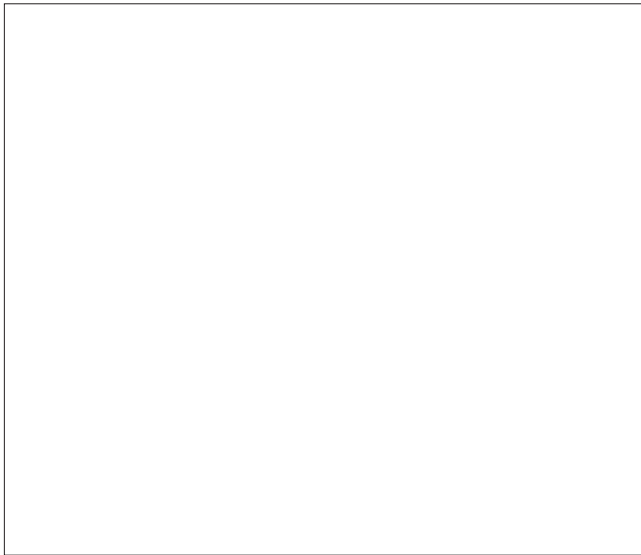


Fig. 3. Illustration showing the lateral tarsal strip anchored to orbital periosteum and inferior retractor attached to lower tarsus.



Fig. 4. Preoperative photograph showing involutional entropion in the lower eyelid.

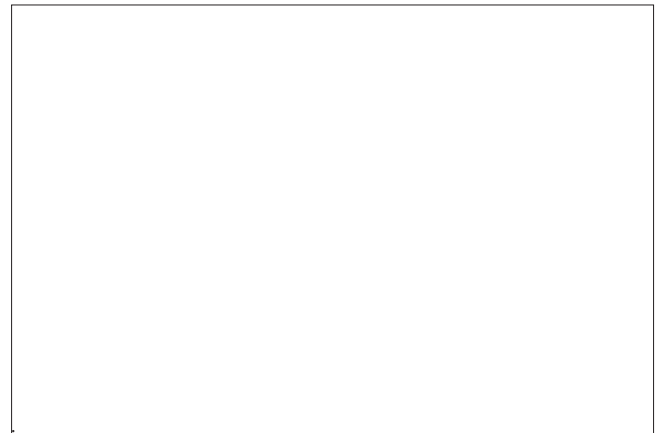


Fig. 5. Postoperative photograph showing the eversion of the eyelashes and good lid-globe apposition.

modality for involutional entropion. It corrects 3 of the 4 aetiologic factors contributing to development of this condition.

Firstly, the re-attachment of the lower lid retractors to the inferior tarsus corrects the disinsertion of the capsulopalpebral fascia. Tarsal thinning as demonstrated by Sisler¹³ predisposes the tarsus to rotate along its long horizontal axis¹⁴ and causes the lid margin to be rolled inwards. This rotation is even more likely in the presence of capsulopalpebral fascia disinsertion. This re-attachment stabilises

the tarsal plate inferiorly to preclude any outward and upward movement of its lower border.

Secondly, the lateral tarsal strip procedure tightens the lid horizontally without breaching the lid margin. Alternatively, the horizontal lid may be tightened by a full-thickness wedge resection. Nonetheless, this disturbs the lid margin and may cause cosmetically unacceptable notching if the cut ends are not properly aligned. The patient may also experience corneal irritation from the marginal lid suture. We believe that the lateral tarsal strip procedure is a more physiological correction of lateral canthal tendon laxity as compared to wedge resection. Although the latter corrects horizontal laxity, it may add strain onto an already weakened lateral canthal tendon.

Thirdly, the formation of a horizontal scar postoperatively may offer a tissue barrier to prevent the overriding of the pre-septal orbicularis oculi over the pre-tarsal counterpart. However, the latter aetiological factor may be less crucial to treat as some authors such as Bengier and Musch¹⁵ and Dalglish and Smith¹⁴ refute the opinion that it plays a significant role in the pathogenesis of senile entropion.

Horizontal lid laxity seems to be implicated as a major causative factor in involutional entropion. Many small series report a lower recurrence rate when surgical repair includes a horizontal lid tightening procedure.^{2,16-20} In a large series of Danks and Rose,²¹ recurrence was found to be significantly more likely when horizontal eyelid shortening was not included at either primary surgery or reoperation for recurrence or overcorrection. Nonetheless, another series by Van den Bosh et al²² reported that horizontal lid tightening only lowered the incidence of overcorrection but did not affect recurrence rate.

It is prudent to be aware that the aim of any entropion surgery is to prolong the period of non-recurrence and not to totally cure the disease. The chance of recurrence after entropion surgery may be reduced by the simultaneous correction of both vertical and horizontal causative factors.

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