

# Treatment of Entropion – A Modified Technique

Qirat Qurban<sup>1</sup>, Zeeshan Kamil<sup>2</sup>, Muhammad Tanweer Hassan Khan<sup>3</sup>  
<sup>1-3</sup>LRBT Teaching Tertiary Care Hospital Korangi 2½, Karachi – Pakistan

## ABSTRACT

**Purpose:** To study the results of a modified technique of Entropion correction at a Tertiary care hospital.

**Study Design:** Quasi experimental study.

**Place and Duration of Study:** Layton Rahmatullah Benevolent Trust (LRBT), a tertiary care teaching Eye hospital, Korangi, Karachi, for a duration of six months, from January 2018 to June 2018.

**Material and Methods:** Patients with senile entropion were included in the study. Patients with recurrent entropion, cicatricial entropion, chronic/acute ocular and adnexal infection were excluded. Three equally spaced double-armed 6–0 vicryl horizontal mattress sutures were used to close the skin and orbicularis muscle of the wound with a bite of the retractors in the center and a 5 mm silicone tube bolster placed in the superior loop. Post-operative treatment of antibiotics, anti-inflammatory drugs and topical lubricant eye gel were given. Patients were examined on 1<sup>st</sup> post operative day and then weekly interval for up to one month and thereafter every month for up to six months.

**Results:** There were 40 eyes of 30 patients with ages ranging from 50 to 65 years. Twenty (66%) patients had unilateral repair and 10 (33%) had bilateral repair done. No recurrence was seen in 39 (97.5%) eyes at the end six months after surgery. Out of the 40 patients, only 2 (5%) patients complained of heaviness which went away eventually with the disintegration of the external tamponade.

**Conclusion:** This modified technique of entropion repair using skin excision with retractor plication in the wound has a favorable outcome with minimum recurrences and complications.

**Key Words:** Entropion, entropion repair, Wies procedure, external tamponade.

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## INTRODUCTION

Entropion is of four types; congenital, acute spastic, involucional and cicatricial. It may occur unilaterally or bilaterally and tends to affect the lower eyelid more commonly than the upper eyelid. It is also found to be more prevalent among women (2.4%) than men

(1.9%) and has a prevalence of 2.4% in whites and 0.8% in blacks.<sup>1</sup> Entropion is also more common in Asians<sup>2</sup>.

Since, multiple anatomical defects are involved in causing entropion, numerous surgical techniques have been described to correct them, the most consistent anatomical factor discussed in the literature are horizontal eyelid laxity, lower eyelid retractor disinsertion and orbicularis oculi muscle override<sup>3</sup>. The horizontal eyelid stability of the lower lid is derived from the underlying orbicularis oculi, lower eyelid retractors, tarsus and canthal tendons. Laxity of these structures leads to the rotation of the lid margin. Analogous to the levator aponeurosis and Muller's muscle in the upper lid, the lower eyelid retractors

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Correspondence to: Dr. Qirat Qurban  
LRBT Teaching Tertiary Care Hospital  
Korangi 2½, Karachi, Pakistan  
Email: qirat\_89@hotmail.com

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provide vertical stability and the capsulopapebral head of these retractors surrounds the inferior oblique muscle, forming part of the Lockwood ligament, and fuse with the septum at the inferior border of the tarsal plate. Since, most traction on the lid is provided by the posterior layer of the lower lid retractors, laxity of these vertical stabilizing structures causes the lid to rotate inward. The extent of laxity which contributes to entropion is assessed via a pinch test which was described by Nishimoto et al<sup>4</sup>. Asamura et al assessed the overriding of preseptal orbicularis muscle onto the pretarsal in Asian patients<sup>5</sup>.

Entropion is managed according to the specific etiology, which includes conservative medical management and surgical management. The aim of medical management is to counter the adverse effects of misdirected lashes causing ocular surface damage secondary to irritation and includes the use of lubricants, contact lenses and Botulinum toxin. Definitive treatment includes surgical management and temporary office based procedure such as Quicker sutures, in which the surgeon explores and repairs the lower eyelid retractors via a skin incision. Alternatively, transconjunctival approach can be done to support the inferior border of the tarsus.<sup>6</sup> A little amount of pretarsal orbicularis oculi can be removed to prevent further overriding of the tarsus. If only horizontal eyelid laxity is involved, a medial or lateral canthal tightening procedure can be done. A lateral tarsal strip operation or wedge resection overcomes all three etiologic factors in involution entropion (horizontal lid laxity, attenuation or disinsertion of the eyelid retractors, and overriding by the preseptal orbicularis oculi muscle).

We describe a modified surgical technique for senile Entropion done at a Tertiary care hospital.

## MATERIAL AND METHODS

This Quasi experimental study was conducted at LRBT Tertiary Teaching Eye Hospital, Karachi, from January 2018 to June 2018. Thirty patients were enrolled in this study with age ranging from 50-65 years ( $58.57 \pm 2.1$ ). Inclusion criteria were patients between 50 – 65 years of age attending hospital outpatient department with senile entropion. Exclusion criteria were recurrent entropion, cicatricial entropion, congenital entropion, chronic/acute ocular and adnexal infections. Informed consent was obtained from all the patients. A proforma was used to record information.

Diagnosis of senile entropion was made on the basis of clinical examination. History of previous surgery, trauma or skin disease was specifically sought. Patients were enquired about their occupation, previous recurrent conjunctivitis, history of ocular diseases and surgeries, use of topical ocular medication, diabetes and hypertension. Best corrected visual acuity (BCVA) was recorded after refraction. Local examination of the entropion included medial and lateral canthal tendon laxity as well as the extent of horizontal lid laxity. Slit lamp examination included thorough examination of the palpebral conjunctiva, tear film, inferior corneal surface irregularities, as well as fluorescein staining of cornea. IOP measurement and fundus examination was carried out as part of the general ophthalmic examination. After examination, all the surgeries were performed under the microscope using local anesthesia by a single surgeon.

After all aseptic measures, a skin incision was marked 3 mm inferior to the lashes. Local anesthesia was induced across the whole length of the eyelid. A lid guard was placed to protect the globe. The lower eyelid was stabilized with '4-0' silk traction suture and clamped to the guard and drape. A Partial-thickness incision was made and a 2-3 mm strip of skin, depending upon the laxity, was removed along the entire length of the lower lid. The inferior fat pad was exposed with blunt dissection behind the preseptal orbicularis oculi muscle. The lower eyelid retractors were identified as a visible white fibrous tissue layer between the inferior fat pad and the conjunctiva. Three equally spaced double-armed 6-0 vicryl horizontal mattress sutures were used to close the skin and orbicularis muscle of the wound with a bite of the retractors in the center. A 5 mm silicone tube was introduced through each of the 3 suture arms initially. At the end both arms of the sutures were at the same level and were tied to each other. These sutures acted as an external tamponade. These sutures absorbed over the course of 3 to 4 weeks and the tubes disintegrated, leaving a good cosmetic appearance.

Post-operative treatment comprised of systemic antibiotics and anti inflammatory drugs along with the topical lubricant eye gel at night. All the patients were examined on 1<sup>st</sup> post-operative day and then weekly interval for up to one month and thereafter every month for up to six months. Total duration of follow-up in this study was six months.

Post-operative complication was observed in 2 (5%) patients, which included heaviness of lid margin;

which resolved spontaneously after disintegration of external tamponade. Data collection and recording was done using SPSS 21.

## RESULTS

Forty eyes of thirty patients underwent lower lid entropion repair via a modified technique. Twenty (66%) patients had unilateral repair and ten (33%) had bilateral repair done. Most of the patients in this study were between 50 – 65 years of age. Mean age was  $58.57 \pm 2.1$  years. Twenty (66.6%) patients were male and ten (33%) were females. 39 (97.5%) eyes showed no recurrence (Figure 1) at the end of the follow-up

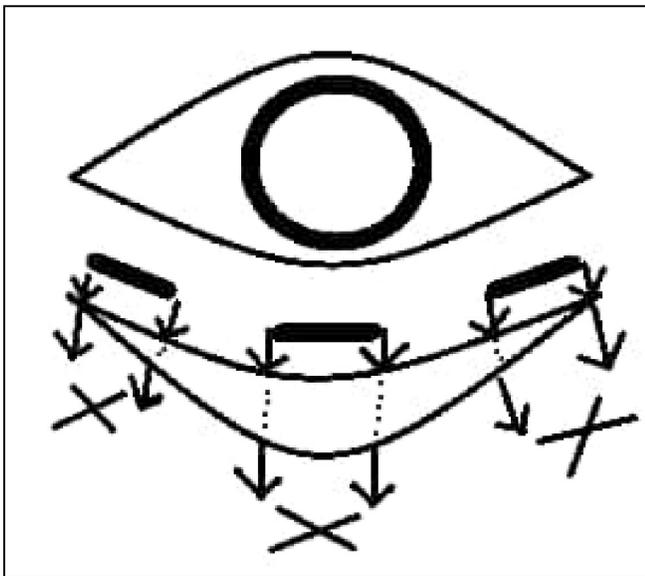
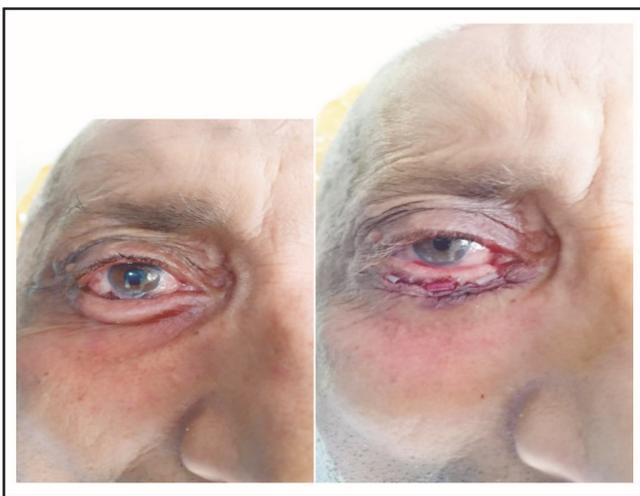


Fig. 1: Horizontal mattress sutures with silicone bolster superiorly.



period. One (2.5%) patient ended up with recurrence of previous disease, who was re-operated after three months of initial surgery. Only 2 (5%) patients complained of heaviness of lid margin until the external tamponade disintegrated.

## DISCUSSION

Senile entropion is most commonly defined as a form of spastic entropion occurring in the lower eyelid of elderly people, attributed to the spasm of orbicularis muscle frequently causing significant ocular discomfort. The aim of entropion correction is directed towards the prevention of ocular irritation, recurrent bacterial conjunctivitis, reflex tear hyper secretion, superficial keratopathy and risk of ulceration and microbial keratitis<sup>7,8</sup>.

Jones narrated lower eyelid retractor plication and advancement as a surgical treatment for entropion. Jones also suggested that lower eyelid retractor laxity was analogous to a levator aponeurosis dehiscence<sup>9</sup>. Collin and Rathbun studied patients with entropion versus normal eyelids evaluating the lower lid retractors on the basis of histology. In the specimens of entropion patients, they found that the lower lid retractors and orbital septum only came to within 3.5 mm of the inferior border of the tarsus versus 1.5 to 2.5 mm in normal lids<sup>10</sup>. Moreover, a larger amount of orbital fat was present in the entropion samples compared to the normal lids indicating a retractor dehiscence<sup>11</sup>. The tarsal plate has been shown to invert in entropion where the lower border rotates superiorly and anteriorly and the upper border rotates inward<sup>10</sup>. In a number of patients, the junction of the inferior border of the tarsus with the lower lid retractors has an acute angulation as compared to a normal eyelid.

It was the physicians' knowledge of the involuntional pathophysiological and anatomical changes of the inward rotation of the lower lid margin, that was dictating the current clinical and surgical repair practice prior to the publication of high level evidence<sup>12</sup>. Various methods have been described for treating involuntional entropion<sup>13,14,15</sup>. Wies, in 1954, introduced his procedure for vertical lid laxity but this resulted in over correction of 10% and recurrence of 11% at the end of 6 months follow up.<sup>8</sup> Carrol et al combined above procedure with horizontal shortening which resulted in almost no recurrence at follow up of 33 months<sup>16</sup>. Some authors, such as Collin stated a

3.7% recurrence rate for the combined procedure<sup>17</sup> and Rougraff observed a recurrence of 1.6% for indirect retractor attachment with everting sutures combined with the tarsal strip procedure<sup>18</sup>. Dryden reported recurrence rate of 2/12 patients who underwent correction of vertical lid laxity in the form of retractor plication with the Jones procedure<sup>19</sup>.

In this study, a modified surgical technique was performed for the repair of senile entropion which showed 2.5% recurrence at the end of follow up period, whereas, Sobky et al<sup>20</sup> shows 7.1% recurrence rate. Baboridis et al<sup>21</sup> mentioned recurrence rate of 17%. Males were predominant over females in this study, whereas in several other studies by Baboridis, females were predominant. Damasceno et al showed that prevalence of females was 2.4% as compared to males, which was 1.9%<sup>22</sup>. On the contrary, Abdel Fatteh et al showed 20 male patients in comparison to 6 female patients<sup>23</sup>. In this current study, no overcorrection was encountered whereas Sobky et al<sup>20</sup> ended up in 6.7% rate of overcorrection.

Limitation of our study is that it was a small scale study and the follow up period was only six months. Larger sample size with longer duration of follow up will further prove the efficiency of this procedure.

## CONCLUSION

This modified technique of entropion repair using skin excision with retractor plication in the wound has a favorable outcome with minimum recurrences and complications.

## Ethical Approval

The study was approved by the Institutional review board/Ethical review board.

## Conflict of Interest

Authors declared no conflict of interest

## Authors' Designation and Contribution

Qirat Qurban; Associate Professor: *Concept, study design, Manuscript writing.*

Zeeshan Kamil: Senior Consultant Ophthalmologist: *Concept, study design, Final review.*

Muhammad Tanweer Hassan Khan; Consultant Ophthalmologist: *Concept, study design, Data Collection, final review.*

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