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Research Article

A New Suture Technique for Entropion Repair

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Abstract

Purpose: The goal of this study is to describe a new suture procedure for the entropion.

Methods: This study is a retrospective consecutive single surgeon case series using the new suture technique for the entropion. Patients with involutional entropion underwent correction with this procedure was reviwed retrospectively. Patients were followed-up to 25 months after surgery. Also operation time, complications and recurrence were analyzed.

Results: Thirty four eyelids of 30 patients were evaluated. The mean operation time was 11,48 minutes. Mild ectropion was observed in one patient and resolved within 1 month. The cumulative chance of succes was 93%.

Conclusion: The new suture procedure is a minimally invasive surgery for involutional entropion with a high success rate.

Keywords: Entropion Surgery; İnvolutional Entropion; Quickert Rotational Suture; Minimal İnvasive Entropion Surgery

Introduction

Entropion is an eyelid malposition wherein the lower eyelid inverts to the eye globe resulting in ocular discharge, discomfort, foreign body sensation and blurred vision [1,2]. Horizontal laxity of the eyelid, dehiscence or disinsertion of lower lid retractors, overriding of the preseptal orbicularis muscle over the pretarsal orbicularis muscle and weakening of the orbital septum or protrusion of orbital fat can cause entropion either independently or in combination [3-5].

Varied surgical techniques are used to repair the entropion [3-7]. The aim of the surgery is to correct the position of the lower eyelid retractors or the horizontal eyelid laxity with low recurrence. The horizontal lid laxity can be fixed by a tarsal strip or full-thickness lower lid excision. The lower lid retractor disinsertion can be repaired by transcutaneously or transconjunctivally [6-10].

We developed a new suture technique for entropion repair. It is a quick and practical procedure which can be performed in a office. In this study, we reviewed the outcomes of this procedure with long following period after surgery.

Material and Methods

This retrospective study reviewed patients who were underwent 'the new suture technique' for involutional entropion between October 2016 and April 2019. Patients who had a follow-up period of at least 12 months after surgery were included in the study. The exclusion criteria were as follows; having previous lower eyelid surgery, having shallow lower lid fornix and having cicatricial entropion. The study was formed by 34 lower eyelids of 30 patients. All patients were operated by same surgeon (IO).

The study firmly conformed the tenets of the 1964 Helsinki declaration and was approved by the ethics committee.

All patients who applied to oculoplasty department of hospital, including patients with entropion in this study, agreed to allow the using of preoperative – intraoperative – postoperative photos or videos for education and scientific articles.

Data was analyzed including age, gender, laterality, preoperative assessment for eyelid laxity, surgery time, follow-up period, complications and success. Horizontal lid laxity was evaluated

with the snap back test. Surgery time was counted from infiltration of local anestesia to applying antibiotic eye ointment. Residual entropion, ectropion, postoperative corneal exposure, eyelid retraction or eyelid notching were described as a complication. In addition success was defined as cases representing no recurrence of the entropion. Patients were examined at 1, 6, 12, and 24 months postoperatively.

One ml of 2% lidocaine with 1:100,000 epinephrine was injected to both eyelid and conjunctiva for anesthesia. A silk suture (4/0) was used to tract the lower lid. Two seperate horizontal conjunctival incisions (about 3-4 mm lenght) were done 3-4 mm below the tarsal plate (Figure 1A). In addition, 2 separate horizontal skin incisions were made 7-8 mm inferior to the lid margin. These skin incisions were also about 2-3 mm lenght. The each conjunctival incision must be made in same vertical plane (line) with each skin incision. The lower lid retractor was identified from the each conjunctival incision and was separated from the conjunctiva. Then a double-armed 6-O Vicryl® was passed through the lower lid retractor (Figure 1B) and was taken out through the skin incision from inside the conjunctival incision (Figure 1C). Than it was passed through the lower external edge of tarsus was sutured on the surface of the preseptal orbicularis oculi muscle (Figure 1D). In some cases the skin incision was closed with 6-O Vicryl®. A surgical steri strip was attacted to the skin wound horizontally. Antibiotic eye ointment was applied to both lower fornix and the wounds on skin. Compression dressing was used in some cases.

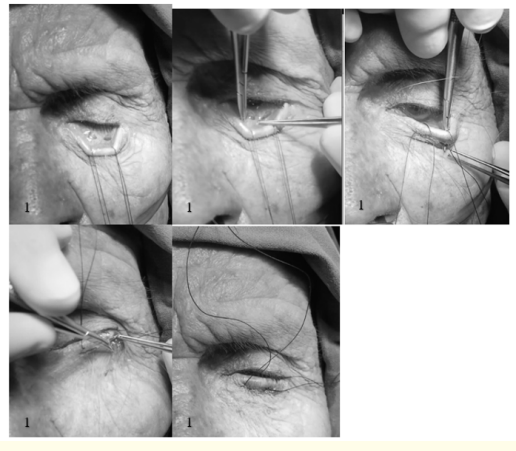

Figure 1: Surgical technique. 1A, two transverse conjunctival incision were created below the lid margin. 1B, lower lid retractor was reached with a double armed suture inside the incision. 1C, the suture was took out from skin incision after passing the tarsus. 1D, the suture was tied on the orbicularis oculi. 1E, the lid was everted. There was no need for both skin and conjunctival incisions.

Results

Thirty four eyelids of 30 patients underwent entropion surgery by using the new suture technique. Mean age at the surgery was 71,9 years old (range, 56-84 years old). There were 16 men and 14 women patients. Twenty six patients had unilateral surgery and 4 patients had bilateral surgery. Right and left eyes were affected in equal numbers (17/17). Eleven patients had horizontal lid laxity. Preseptal orbicularis oculi overriding occurred in 5 patients (Table 1). The mean follow-up period was 17,3 months (range 12-25 months). Mean surgical time was 11,48 minutes (range 9,30-14,45 minutes) (Table 2). One patient had a conjunctivitis at the second day after surgery (Figure 2A). One patient had mild ectropion in the early postoperative session, but resolved within the first month (Figure 2B). Two patients with hypertension had mild subconjunctival hemorrhage on the first day after the surgery. One patient had a recurrence in the first month after the surgery (Table 3). This patient underwent the same surgical procedure and was followed 20 months after the surgery. In the 20 months following period no recurrence occurred. Another patient had a recurrence at the 13th month after the surgery. The same surgical procedure was repeated. This patient was followed 12 months after the surgery. No recurrence was observed in this patient in following period. There were no cases of postoperative corneal exposure, eyelid retraction or eyelid notching (Table 3). Cumulative chance of succes the surgery with 25 months following period was 93% (Table 4).

Age at surgery, (mean year SD range)	**71,90 ± 5,43 (56-84)**
Sex (man/woman) (patient)	16-14
Laterality (R-L) (eyelid)	17-17
Bilaterality (patients)	4/30
Horizontal laxity (eyelid)	11/34
Preseptal orbicularis oculi overriding (eyelid)	5/34

Table 1: Demographics and findings at the eye examination.

Surgery time (mean ± SD range)	**11,48 ± 1,19 minute (9,30-14,45)**
Follow up period (mean ± SD range).	17,32 ± 4,21 month (12-25)

Table 2: Surgery and follow-up time.

Figure 2: Preoperative and postoperative photographs. 1A, conjunctivitis at second day after the surgery. 2B, mild ectropion at seventh day after the surgery. 2C, three months control after having the surgery.

Conjunctivitis, n (%)	**1 (2,9)**
Subconjunctival hemorrhage, n (%)	2 (5,8)
Mild ectropion, n (%)	1 (2,9)
Recurrence, n (%)	2 (5,8)
Residual entropion, n (%)	0 (0,0)
Postoperative corneal exposure, n (%)	0 (0,0)
Eyelid retraction, n (%)	0 (0,0)
Eyelid notching, n (%)	0 (0,0)

Table 3: Surgical outcomes (complications).

Post-treatment interval (month)	**Number of lids at the interval**	**Number of recurrence during the interval**	**Chance of succes**	**Cumulative chance of succes**
0-12	34	1	0-9705	0-9705
13-15	31	1	0-9677	0-9305
16-19	20	0	1-0	0-9305
20-25	9	0	1-0	0-9305

Table 4: Cumulative chance of anatomical succes of the procedure.

Discussion and Conclusion

The horizontal or vertical lid laxity, the lower lid retractor weakness, the orbicularis oculi override and the weakening of the orbital septum can cause entropion either independently or in combination [11]. Several surgical procedures are used to fix involutional entropion but there is not any gold standard procedure.

The lower lid retractor weakness in entropion is fixed by transconjunctivally or transcutaneously. In transconjuctival entropion repair (TER), lower lid retractor is sutured to lower edge of the tarsal plate through a long conjunctival incision from punctum to lateral edge of the lid [12]. In addition the TER has low recurrence rate [13,14]. Our surgical technique is a modified transconjunctival approach, aims to reinsert the lower lid retractor and makes anatomical restitution of eyelid anatomy like the TER. In the our technique, the conjunctival incision is smaller than the TER and there is no need to suture the conjunctival incision. So this technique is less invasive then the TER. In this technique the suture was tied above the orbicularis oculi after passing through the lower edge of tarsal plate. Thus, it decreases the overriding of orbicularis oculi and may tightens the orbital septum. The TER has not any effect on the overriding of orbicularis oculi. Therefore our technique may be powerfull than the TER.

The horizontal lid laxity may be corrected by lateral tarsal strip (LTS) which is another popular procedure in entropion surgery. Although the LTS is more successful procedure than tightening the lower lid retractors [15], it has some complications including disruption of the lateral canthal angle and lateral skin webbing [16]. Full-thickness excision of lower lid is also used to fix horizontal lid laxity but eyelid notching is a common complication after the surgery.

There is a practical procedure named Quickert suture technique (QS), which is a full-thickness eyelid everting suture. The QS tightens the lower lid retractors and makes a scar tissue between the retractors, orbicularis oculi muscle and skin. This scar tissue helps to evert the lower eyelid [6]. QS can be performed at the bedside or in the office which takes about 10-15 minutes under local anestesia. However QS is a comfortable surgical procedure for both surgeons and patients, it has high recurrence rate (22-49%) [8-10]. The our technique is a practical procedure and can

be performed in a office between 10-15 minutes like the QS. Beside the QS, it has low recurrence rate. In this study, there was only one case who recurred in early period after the surgery. Apart from this recurrence, there was no recurrent case within the first 12 months following the period. Therefore, we thought that the suture passing from the lower lid retractor to the tarsus and orbicularis muscle was loosely attached. This procedure was repeated in recurrent patients and no recurrence occurred in the following period. This procedure allows for reoperation in recurrent cases. It can be also combinated with other procedures such as the LTS. Our tecnique can be applied in involutional and spastic entropion but not in cicatricial entropion. Because, this technique needs deep fornix.

Our surgical procedure takes about 10-15 minutes and requires little amount of local anestesia (One ml of 2% lidocaine with 1:100,000 epinephrine). Therefore lid edema after the surgery is less than the other procedures Also compression dressing is not used in most of cases. This makes the patients more comfortable. At the second day visit, most of the patients did not have any complaints (Figure).

This study is limited by its retrospective nature and shares all the limitations of a retrospective study and represents a relatively small sample size. A prospective, randomized longitudinal study would allow a better comparison of this procedure with other procedures.

This surgical procedure is technically minimal invasive and easy like the QS procedure and it is as affecttive as the TER. The most of ophthalmologist who do not have enough experience about oculoplastic surgery can perform this procedure. Also given the efficiency and short surgical time of this procedure with the good long term results, this procuder can be a good option for oculoplastic surgeons in entropion surgery.

Declaration of Interest

The author reports no conflicts of interest. The author is responsible for the content and writing of the article.

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