

Transconjunctival Approach for Involutional Entropion: Suggestions and Drawbacks

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Background: Most current surgical approaches in involutional lower eyelid entropion (ILLE) repair focus upon lower eyelid retractor (LER), mainly through transcutaneous approaches. We have opted to use the transconjunctival approach because of the hidden postoperative scar and the shortest reach to the LER. Here, based on our experience, we present our suggestions and note some of the drawbacks regarding ILLE repair by the transconjunctival approach.

Methods: Two surgeons performed entropion repair on 14 eyelids in 13 patients. Repairs were performed by a transconjunctival approach, where a part of the conjunctiva was at first incised with a scalpel, and the conjunctiva and LER were then separated at the lower edge of the tarsus with scissors. The anterior and posterior aspects of the LER were peeled off, and the LER was dissected into sheets. The LER was then fixed to the anterior–inferior border of the tarsus, and the conjunctiva was sutured. No postoperative gauze, tape dressings, or even suture removal were required.

Results: Mean operating time was 32.6 minutes. Recurrence was observed in one of 14 patients at an average of 6.6 months postoperatively.

Conclusions: We reported our suggestions and drawbacks of the transconjunctival approach for ILLE repair. We recommend sufficiently detaching the anterior–posterior aspects of the LER and fixing the LER to the anterior–inferior border of the tarsus. Drawbacks of this technique include the possibility of an insufficient correction in cases with a positive pinch test and medial traction test. Conversely, no further treatment or maintenance is required postoperatively. (*Plast Reconstr Surg Glob Open* 2023; 11:e5408; doi: [10.1097/GOX.0000000000005408](https://doi.org/10.1097/GOX.0000000000005408); Published online 16 November 2023.)

INTRODUCTION

Involutional lower eyelid entropion (ILLE) can cause ocular surface issues such as ocular discomfort, corneal disorders, and ocular inflammation with visual disturbances, and these can significantly affect the patient's quality of life.^{1,2} Further increase in cases is predicted with the aging of the population, and the demand for surgical treatment is expected to become even greater.^{1–3}

In the last decade, various surgical procedures targeting the lower eyelid retractor (LER) have been studied

and refined.^{4,5} These procedures are performed mainly through the transcutaneous approach; very few by the transconjunctival approach. Reasons for this include the narrow operative space, the need for practice, and resistance to making conjunctival sutures in the transconjunctival approach. Contrarily, because of the benefits of a hidden postoperative scar and the shortest distance to the LER, we have frequently used the transconjunctival method. Here, drawing upon our experiences, we report our recommendations and some of the drawbacks of our transconjunctival approach to ILLE repair.

SURGICAL TECHNIQUE

The procedure is performed under local anesthesia in the supine position. (See [Video \[online\]](#), which displays the procedure and techniques of entropion repair through the transconjunctival approach.) The conjunctiva and the lower eyelid are infiltrated with an injection of 1 mL of 1%

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Received for publication May 2, 2023; accepted September 14, 2023.

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DOI: [10.1097/GOX.0000000000005408](https://doi.org/10.1097/GOX.0000000000005408)

Disclosure statements are at the end of this article, following the correspondence information.

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Xylocaine with 1:100,000 epinephrine. With the lower eyelid retracted, an incision line is drawn on the conjunctiva at the level of the inferior border of the tarsus from the external lacrimal punctum to the external tarsus (Fig. 1A). Part of the conjunctiva is then incised with a scalpel, and the conjunctiva and LER are dissected at the lower edge of the tarsus with scissors (Fig. 1B). The anterior layer of the LER is peeled off, and adequate bipolar tissue hemostasis is made from the anterior layer of the LER to the orbicularis oculi muscle (OOM). The LER is separated between the conjunctiva and the posterior layer of the LER, which is dissected into sheets, taking care to leave only the conjunctiva (Fig. 1C). Then, a site 3 mm below the edge of the LER is fixed to the anterior–inferior border of the tarsus with 6-0 nylon thread at three points: central, medial, and lateral to the corneal ring (Fig. 1D). Finally, the conjunctiva is closed by three sutures with 8-0 polyglactin (Vicryl, Ethicon, Somerville, N.J.) (Fig. 1E). Gauze and tape dressing are not required after the surgery because there are no skin incisions.

PATIENTS AND METHODS

Between February 2022 and February 2023, two surgeons at our hospital performed ILLE repair using this transconjunctival approach in 14 eyelids of 13 consecutive patients. The 13 patients consisted of four men and nine women, with a mean age of 78.4 years (range, 72–98 years). Six of the 14 eyelids were right eyelids, six were left eyelids, and one patient had bilateral repair. Patients were each diagnosed with degenerative entropion caused by obvious age-related changes, excluding cicatricial entropion and trichiasis.

Preoperative examinations included the pinch test, a test to detect the presence of OOM overriding, the medial distraction test, and the lateral distraction test.^{6–8} The pinch test was judged to be positive when the distance from the globe to the lower eyelid margin was greater than 8 mm.⁶ To check for OOM overriding, the patients were instructed to look down and the upper eyelid was then lifted, followed by forced closure of the eyelids. By doing this, the OOM in front of the orbital septum could be seen to move to the anterior tarsal plate area.⁷ Positive medial distraction test was defined as the lower punctum pulled beyond the midpoint of the lacrimal caruncle when the lower eyelid was pulled medially.⁶ The lateral distraction test was judged to be positive if the lower punctum was pulled beyond the midpoint between the plica and medial corneal limbus while the lower eyelid was pulled laterally.⁸

All postoperative evaluation was conducted by the surgeon, who examined the subject in the clinic and evaluated symptom relief and recurrence of entropion. Patients with postoperative follow-up of less than 3 months were excluded. This study was approved by the research ethics committee of Wakayama Medical University (No.3402).

RESULTS

Preoperative examination results and follow-up periods are shown in Table 1, which shows OOM overriding in 12 of the 14 eyelids. There were also six positive medial

Takeaways

Question: What are your suggestions regarding a transconjunctival approach for ILLE repair?

Findings: We recommend sufficiently detaching the anterior–posterior aspects of the LER and fixing the LER to the anterior–inferior border of the tarsus, rather than at the lower edge of the tarsus.

Meaning: No further treatment or maintenance is required postoperatively in the transconjunctival approach. In cases with a positive pinch test and medial distraction test, however, we believe that a combined procedure should be considered.

distraction test results and two positive lateral distraction test results.

The mean operation time was 32.6 minutes (range, 18–45 minutes). Overall, there was a recurrence of entropion in one of the 14 patients in an average of 6.6 months (range, 3–15 months) postoperatively. The one case of recurrence 7 months after surgery was reoperated by transcutaneous approach (Fig. 2). Transient chemosis was present in all patients but did not persist for more than 1 month postoperatively in any cases. No patients had postoperative eyelid retraction or scleral show.

DISCUSSION

Combination procedures, mainly those targeting LER and including OOM excision and the lateral tarsal strip (LTS), are considered to reduce the recurrence rate.^{9–16} This is to address the major causative factors of the development of ILLE, which include vertical and horizontal laxity of the lower eyelid and OOM overriding.^{9–11} In reality, however, performing these multiple surgical procedures is complex and time-consuming. The recurrence rate with LTS only to address horizontal laxity has ranged between 17.4% and 22.0%,^{17,18} which was higher than the recurrence rate with simple LER advancement to address vertical laxity, which ranged between 2.0% and 4.3%.^{5,16} Accordingly, it is clear that correction of vertical laxity is essential in ILLE repair. OOM overriding is secondary to LER disinsertion and horizontal laxity, and is not a direct cause of the involuntional changes.¹ For example, it has been confirmed by temporary improvement of the ILLE by botulinum toxin injection into the preseptal OOM and because facial nerve palsy can cause ectropion.^{15,19} We therefore exclusively performed simple surgical procedures targeting the LER by the transconjunctival approach, which can reach the LER at the shortest possible distance.

Manipulation of the LER can be by a transcutaneous incision or by a transconjunctival approach.^{9,12,13} Advantages of the transconjunctival approach include no skin incision being required, with almost no external scarring (Fig. 3), relatively minimal intraoperative bleeding, and no need for suture removal. Meanwhile, a drawback is that the reported recurrence rate in the transconjunctival approach is higher than that in the transcutaneous

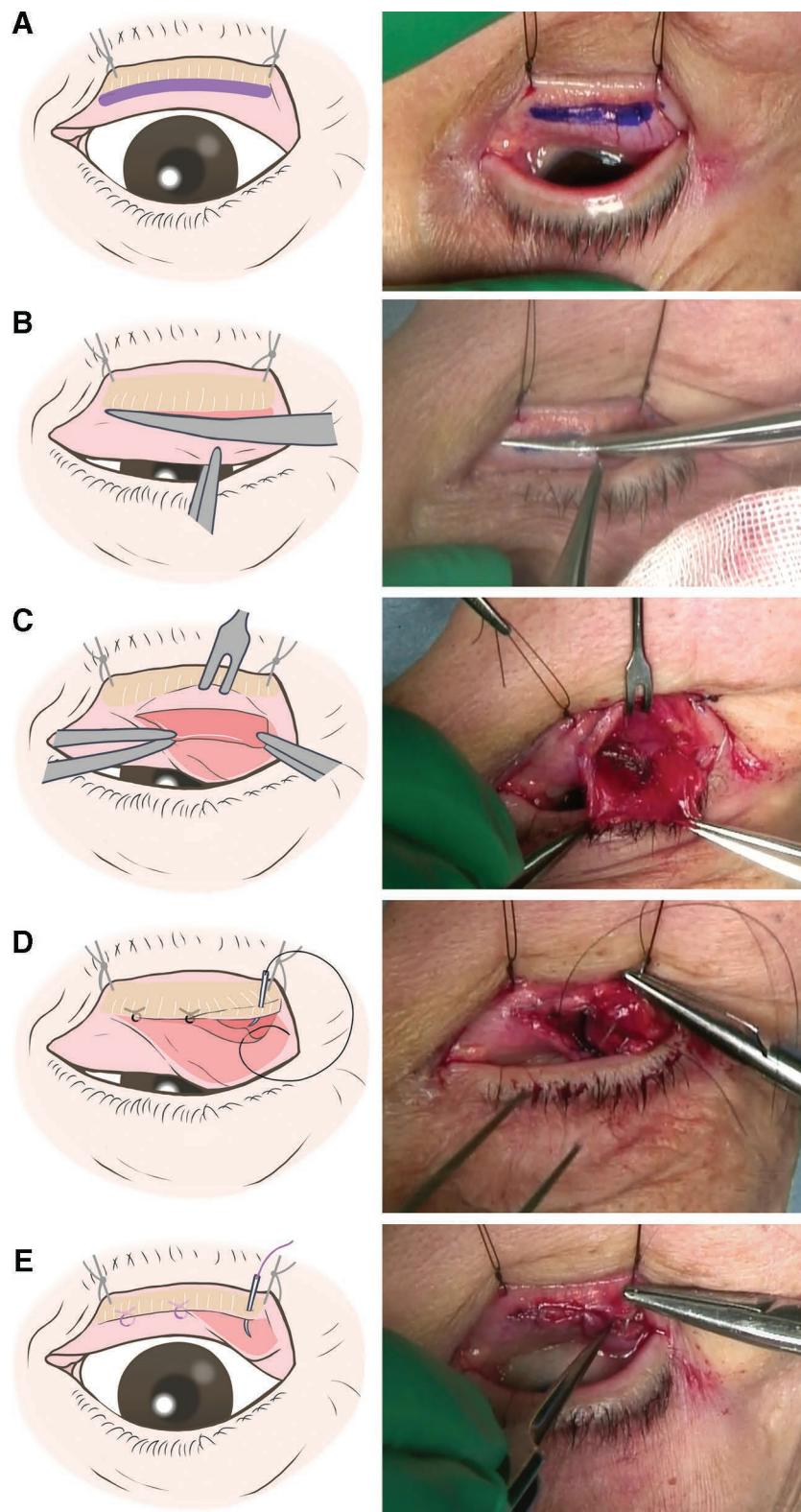


Fig. 1. An intraoperative view and schema of transconjunctival entropion repair. A, Conjunctival incision design at the level of the inferior border of the tarsus from the external lacrimal punctum to the external tarsus, with the lower eyelid retracted. B, Dissection of the conjunctiva and LER with scissors at the inferior margin of the tarsus. C, LER separated into sheets. D, Placing a suture at the anterior-inferior tarsal border. E, Placing a suture at the conjunctiva.

Table 1. Preoperative Examination Results and Follow-up Periods

Case	Age/Sex	Pinch Test	OOM Override	Medial Distraction	Lateral Distraction	Follow-up Period
1	73/M	9	+	+	+	4
2	73/M	8	+	+	—	7
3	72/F	6	+	+	—	8
4	75/F	4	+	+	—	7
5	79/M	9	+	—	—	6
6	78/F	8	+	—	—	3
7	78/F	8	+	—	—	3
8	88/F	7	+	—	—	9
9	98/F	7	+	—	—	5
10	73/F	6	+	—	—	13
11	77/F	6	+	—	—	6
12	78/F	4	+	—	—	9
13	76/M	5	—	+	+	3
14	80/F	6	—	+	—	9

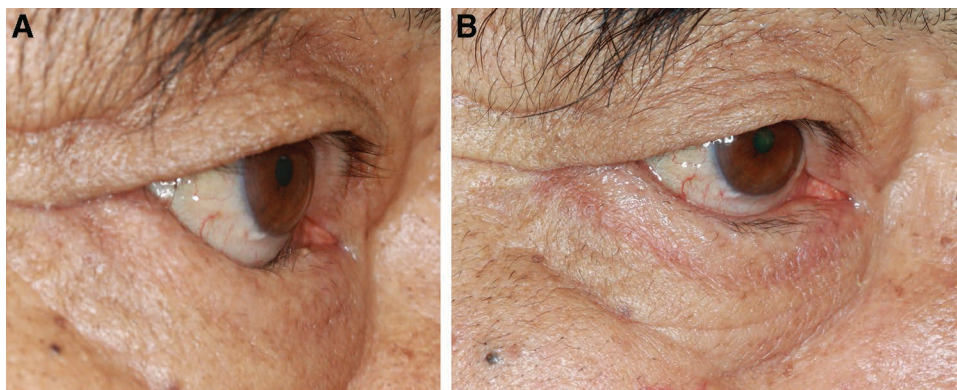


Fig. 2. Clinical photograph of a 73-year-old man (case 2). Preoperative examination showed a pinch test of 8 mm, positive medial distraction test, and negative lateral distraction test (A). Seven months after surgery, recurrence was observed mainly on the lateral side. The patient underwent reoperation by transcutaneous approach (B).

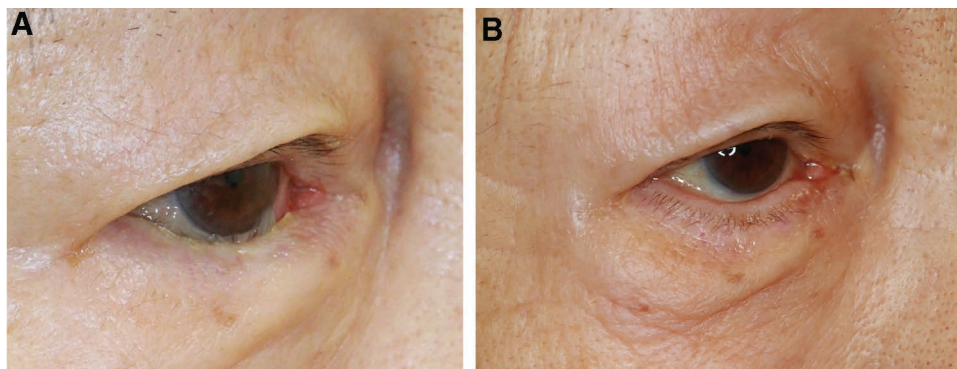


Fig. 3. Clinical photograph of an 88-year-old woman (case 8). Preoperative examination showed a pinch test of 7 mm and the overriding of the orbicularis muscle (A). Six months after involuntional lower eyelid entropion surgery by the transconjunctival approach, no recurrence was observed, and excellent aesthetic results were achieved (B).

approach.^{5,9–15} This higher recurrence rate is presumably caused by inadequate shortening of the LER and fixation to the tarsus.

We present some suggestions regarding the transconjunctival approach for ILLE repair according to our experience. Firstly, we recommend incising the conjunctiva

and dissecting the LER at the level of the inferior border of the tarsus. This can easily expose the anterior aspect of the tarsus. Secondly, there should be sufficient detachment of the anterior and posterior aspects of the LER to allow adequate scar formation around the LER. It is believed that this causes cicatricial shrinkage around the

LER, and this corrects some horizontal laxity.⁸ Thirdly, we recommend using nonabsorbable threads for fixation of the LER and to fix it to the anterior–inferior border of the tarsus rather than at the lower edge of the tarsus. We had just one case of recurrence with only LER procedures, despite OOM overriding being observed in most cases.

Meanwhile, as a drawback, there could be insufficient correction in cases where the pinch test is positive and the medial distraction test is positive, as in our case 2, which had recurrence (Fig. 2). A combination with LTS should be performed because the external correction is insufficient. Scheepers et al described the importance of addressing horizontal laxity,²⁰ and combined surgery based on the degree of horizontal laxity is expected to be applied in more cases in the future. Also, our case 1 had a positive pinch test and positive medial distraction test and lateral distraction test, and this was a concern for potential recurrence. However, because of the difficulty in visiting the hospital, the follow-up was limited to 4 months postoperatively, and the patient was told to consult the doctor again if any ocular symptoms, such as pain or tearing, occurred.

Future studies will examine the indications for the transconjunctival approach in cases of abundant excess skin and severe OOM overriding. We intend to accumulate more cases and to establish an algorithm for selection of surgical procedures based on preoperative examinations, such as how much horizontal laxity should be combined with LTS or other techniques.

CONCLUSIONS

We reported our suggestions regarding the transconjunctival approach for ILLE repair with some of the drawbacks. We recommend sufficient detachment of the anterior–posterior aspects of the LER and to fix the LER to the anterior–inferior border of the tarsus. There are remaining drawbacks of the approach, such as the need for combination of some procedures in cases with a positive pinch and medial traction test, and indications for cases with abundant excess skin and severe OOM overriding. Conversely, no further treatment or maintenance is required postoperatively.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

ACKNOWLEDGMENT

We acknowledge proofreading and editing by Benjamin Phillis at the Clinical Study Support Center at Wakayama Medical University.

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