

Correction of congenital entropion of the lower eyelid: Incisional versus rotational surgery

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PURPOSE. When, at birth, the eyelid margin is rolled inward against the globe, the condition is referred to as congenital entropion. Upper eyelid involvement is commonly associated with a tarsal abnormality, while lower eyelid entropion is often associated with epiblepharon. Entropion does not resolve spontaneously, and may cause corneal pathology if untreated. The purpose of this study is to compare the two common techniques for the correction of congenital entropion.

METHODS. The authors performed a pilot study of 24 consecutive patients with lower bilateral congenital entropion to compare the results of incisional versus rotational surgery.

RESULTS. The rotational procedure was carried out in 14 patients; incisional surgery was performed in 10 patients. Twenty-one patients had good functional and cosmetic results. There were only three cases of relapse after 3, 4, and 3 months.

CONCLUSIONS. The authors consider both techniques satisfactory, but the procedure of choice, considering the age of the patients and previous studies, remains rotational sutures because of its simplicity, quickness, and low risk of complication. (Eur J Ophthalmol 2005; 15:536-40)

KEY WORDS. Congenital entropion, Lower eyelid, Rotational surgery, Incisional surgery

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INTRODUCTION

When, at birth, the eyelid margin is rolled inward against the globe, the condition is referred to as congenital entropion. This condition is often seen in association with other eyelid abnormalities, such as epiblepharon, absent or "kinked" tarsal plate, blepharophimosis, and, occasionally, microphthalmos. Upper eyelid involvement is commonly seen in association with a tarsal abnormality, while lower eyelid entropion is more likely to be associated with epiblepharon. It is important to distinguish epiblepharon from congenital entropion of the lower eyelid. Epiblepharon is often transient and benign, whereas entropion does not resolve spontaneously, and may cause corneal pathology if untreated (1). The precise etiology of congen-

ital lower eyelid entropion is unknown, but several theories have been proposed. Disinsertion of the lower eyelid retractor complex is considered to be the most frequent cause, but hypertrophy of the marginal fibers of orbicularis muscle or a deficiency of the tarsal plate have also been suggested (2-4). All these theories can be accounted for explaining the pathophysiology: eyelid retractor fibers, destined for the tarsal plate, are primarily deficient, thinned, or disinserted (2, 5). As a result, the tarsal plate becomes somewhat unstable and rotates inward, regardless of the presence of anterior retractor fibers attaching to the overlying dermis. If anterior fibers are present, a crease is observed; if they are not, epiblepharon is seen.

A number of surgical procedures have been proposed for the treatment of lower congenital entropion depending

on suspected cause. The purpose of this study is to compare two techniques, the less invasive rotational sutures (6) and the incisional procedure (7), both of which are used in the treatment of lower congenital entropion.

MATERIALS AND METHODS

We performed a pilot study of 24 consecutive patients with lower bilateral congenital entropion between February 2000 and March 2004 to compare the results of incisional versus rotational surgery. The small number of patients is due to the paucity of patients requiring surgery.

Inclusion criteria were presence of lower eyelid congenital entropion and absence of other abnormalities of lower eyelid requiring surgery. Exclusion criteria were previous ocular surgery and associated ocular and adnexal anomalies.

We randomly assigned the patients to one of the two types of surgical treatments: rotational sutures and incisional surgery.

Surgical methods were as follows: for the rotational suture procedure, after marking the normal position of the

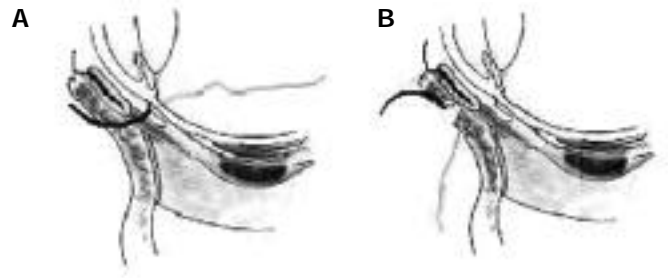


Fig. 1 - (A) Rotational sutures; (B) Incisional technique.

eyelid crease, one needle of a double-armed no. 5/0 polyglycolic suture (Vicryl) was passed 1 mm below the inferior border of the tarsus from the conjunctival side and brought out through the skin in the previously marked eyelid crease. The entrance of the suture on the conjunctival side was more inferior from the eyelid margin than its exit site on the skin. The suture was pulled tight to produce a mild ectropion of the lower eyelid (Fig. 1a).

We carried out the incisional procedure by making an elliptical incision of 2/3 of the skin of the entire lower



Fig. 2 - Preoperative and postoperative (after 6 months) after rotational surgery.



Fig. 3 - Preoperative and postoperative (after 6 months) after incisional surgery.

eyelid, 3 to 4 mm below the lash line. After cutting away skin and orbicularis muscle, to expose the tarsal plate presence of tarsal abnormalities was noted. To evert the inferior eyelid margin and to create the new crease, a double-armed no. 6/0 polyglycolic suture (Vicryl) was passed through the skin of the inferior border of the incision, to the inferior margin of tarsus, and through the skin of the superior border of the incision (Fig. 1b). Follow-up visits were performed on days 1, 7, 90, and 180 postoperatively.

Postoperative care consisted of topical antibiotic ointment with tobramycin 0.3% three times a day for 5 days, and artificial tears for 1 month.

All surgeries were performed by the same surgeon (P.N.). The length of follow-up was 6 months; associated findings are presented in Table I.

RESULTS

Table I summarizes the preoperative and postoperative (180 days) parameters. There were 24 (48 eyes) patients, 18 female and 6 male, with a mean age at surgery of 29.9 months (ranging from 18 to 55 months).

All patients had bilateral lower eyelid congenital entropion, one had associated bilateral congenital ptosis, and three had corneal ulceration in one eye. Patients with corneal ulceration were treated with antibiotic ointment. Correction of ptosis was not performed in the same operative setting of congenital entropion. Lower eyelid entropion was limited to the medial half of the eyelid in 7 patients, to the medial 2/3 in 6 patients, and 11 patients had total involvement of the inferior eyelid. All patients but three presented an associated epiblepharon.

TABLE I - LOWER EYELID CONGENITAL ENTROPION PATIENTS DATA

Patient	Age at surgery, mo	Laterality	Extent of involvement	Epiblepharon	Associated findings	Type of surgery	6 mo follow-up
1	46	Bilateral	Nasal half OU	Present	None	RS	Normal
2	30	Bilateral	Nasal 2/3 OU	Present	None	IS	Normal
3	22	Bilateral	Total OU	Present	None	IS	Relapse
4	27	Bilateral	Nasal 2/3 OU	Absent	Congenital ptosis OU	RS	Normal
5	18	Bilateral	Total OU	Present	None	RS	Normal
6	55	Bilateral	Nasal half OU	Present	Corneal ulceration OD	IS	Normal
7	23	Bilateral	Total OU	Present	None	RS	Normal
8	17	Bilateral	Total OU	Present	None	RS	Normal
9	22	Bilateral	Nasal half OU	Present	None	RS	Normal
10	35	Bilateral	Nasal 2/3 OU	Present	None	IS	Normal
11	33	Bilateral	Total OU	Present	Corneal ulceration OD	RS	Normal
12	41	Bilateral	Nasal half OU	Absent	None	IS	Relapse
13	29	Bilateral	Nasal 2/3 OU	Present	None	RS	Normal
14	26	Bilateral	Total OU	Present	None	IS	Relapse
15	34	Bilateral	Nasal 2/3 OU	Present	None	RS	Normal
16	21	Bilateral	Total OU	Present	Corneal ulceration OL	RS	Normal
17	36	Bilateral	Nasal half OU	Present	None	RS	Normal
18	43	Bilateral	Total OU	Present	None	IS	Normal
19	46	Bilateral	Nasal 2/3 OU	Absent	None	RS	Normal
20	22	Bilateral	Total OU	Present	None	IS	Normal
21	31	Bilateral	Nasal half OU	Present	None	RS	Normal
22	19	Bilateral	Total OU	Present	None	RS	Normal
23	20	Bilateral	Total OU	Present	None	IS	Normal
24	23	Bilateral	Nasal half OU	Present	None	IS	Normal

OU = Bilaterally; RS = Rotational surgery; IS = Incisional surgery

The rotational procedure was carried out in 14 patients; incisional surgery was performed in 10 patients.

Twenty-one patients had good functional and cosmetic results. Function was considered good if there were no tearing or corneal epithelial defects after fluorescein staining. Cosmetic results were considered satisfactory if no inversion of lashes was noted and if patients' parents considered the appearance improved.

In 21 patients we observed a normal orientation of eyelashes at the 1-day, 1-week, 3-month, and 6-month follow-up visit. The only remarkable observation was a slight ectropion at day 1 in all patients. There were only three cases of relapse (Patients 3, 12, 14) after 3, 4, and 3 months, respectively; these patients underwent incisional surgery. Results are summarized in Table I.

Figure 2 shows Patient 1, who underwent rotational sutures procedure, at the preoperative visit and final postoperative visit (after 6 months). Figure 3 shows Patient 2, who underwent the incisional procedure, at the preoperative visit and final postoperative visit (after 6 months).

DISCUSSION

Lower congenital entropion is rare and often associated with epiblepharon. It can lead to corneal abrasion if not treated. Whereas epiblepharon is known to improve with age, congenital entropion often persists. For this reason in case of congenital entropion, because of risk of corneal scarring and infection, surgery should not be delayed. The persisting chronic irritation can cause severe corneal damage with corneal vascularization (8). The most common cause of onset of congenital entropion is considered to be the disinsertion of lower-eyelid retractor complex; it is primarily the lower-eyelid retractor fibers, destined for the tarsal plate, that are involved. For this reason the tarsal plate is unstable and turns entropic regardless of the presence of the anterior retractor fibers destined for the skin. These anterior fibers are involved in the onset of epiblepharon (2, 6). Several treatments of congenital entropion have been proposed. Fox proposed an excision of a strip of skin and muscle to repair lower congenital entropion in two female siblings (3).

Cherubini suggested excision of the redundant skin and underlying orbicularis muscle with suturing either, employing a running subcuticular stitch of 6/0 nylon or fine interrupted catgut (9).

Quickert and Rathbun in 1970 proposed a placement of

sutures through the full thickness of the lower eyelid. For completeness, a Hippocrates suggestion to place a suture through a horizontal fold of skin just beneath the eyelid margin must be mentioned (10).

Rotational sutures roll the eyelid margin away from the globe but also form a cicatrization among the skin, orbicularis, and lower eyelid retractors correcting the underlying anomaly (6). In incisional technique the correction of entropion is obtained by asportation of skin and orbicularis and suture through skin and inferior tarsal margin (7).

Nevertheless, the exact nature of congenital entropion remains controversial. Bartley et al presented three cases of congenital entropion in which lower eyelid retractor complex was not apparently involved. However, no other causes were found and results were obtained by tightening the retractors (11).

O'Donnell and Collin (12) reported a series of 43 patients with congenital lower eyelid malposition and trichiasis (epiblepharon and entropion). Thirty-nine patients underwent surgery for persistent symptoms due to chronic eyelash-globe contact. The surgical procedures performed were a modified Hotz procedure, Quickert sutures, and Jones-type retractor plication. Surgery was effective in at least 90% of all procedures.

In conclusion, we report 24 patients with bilateral lower congenital entropion treated with rotational sutures or incision procedure. The results of either technique were satisfactory although the rotational sutures procedure was the easiest and least invasive. To our knowledge this is the first report comparing the two common techniques for the correction of congenital entropion. We consider both techniques satisfactory, but our procedure of choice, considering the age of our patients, remains rotational sutures because of its simplicity, quickness, and low risk of complication.

The authors have no proprietary interest in any aspect of the article.

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