Sutureless Entropion Surgery: A New Technique.

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Background and Objective:

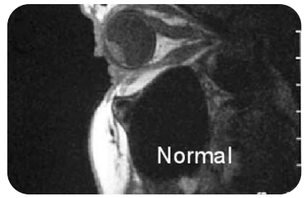
Involutional entropion is commonly believed to be due to horizontal lid laxity, orbicularis oculi override and inferior eyelid retractor laxity or dehiscence.[1,2,3] We believe that septal laxity with pre-aponeurotic orbital fat prolapse and overriding of the preseptal orbicularis muscle to be the main contributors to entropion.

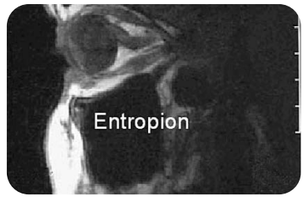
Our cine-MRI studies have shown that the anterior and posterior lid lamellae in patients with entropion do not move together as a unit with lid excursions (figure 1).[4] When the eye looks down in patients without entropion, both the anterior and posterior lamellae move with it. In patients with entropion the lid excursion is the same or more than in normal lids but due to septal laxity there is forward prolapse of the orbital fat allowing overriding of the preseptal orbicularis muscle and subsequent development of the entropion.

In order to address septal laxity and treat entropion we have devised a simple technique using radiowave energy to induce pre-septal inflammation and hence tightening of the septum.

Materials and Methods:

One hundred consecutive patients with involutional entropion were enrolled in the study. Local anaesthesic (lignocaine 2% with adrenaline 1/80 000) was used to subcutaneously infiltrate the lower lid. A dual radiowave frequency unit (Ellman International, New York) with a specially designed tungsten electrode was used to make 3 transverse subtarsal incisions of 1-2mm length (figures 2 and 3). The electrode probe was then inserted vertically through these incisions in a suborbicularis plane taking care not to distort the normal anatomical position of the lid margin with respect to the globe (figure 4). Radiowave frequency was applied to the septum at each of the 3 positions (for 15-25 seconds) until subclinical ectropion was induced. Post-operatively the patients were treated with topical dexamethasone 0.1% drops qds for 2 weeks. Patients were followed post-operatively at 1 week, 1 month, 6 months and 1 year. Success was defined as no recurrence of the entropion at the end of the follow-up period.





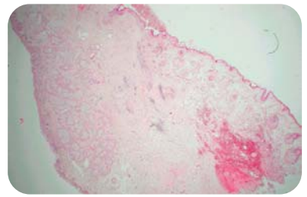
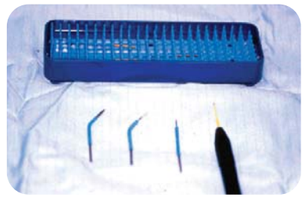


Figure 1: Sagittal MRI cuts with patient in downgaze comparing a normal lid with one with entropion and pre-aponeurotic fat prolapse.



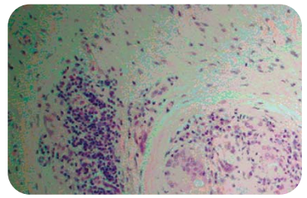


Figure 2: Ellman Surgiton Radiowave frequency machine and handpiece with specially designed tungsten electrode.

Figure 3: Transverse sub-tarsal incisions being made with probe.

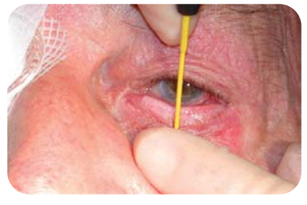


Figure 4: Position of probe during delivery of radiowave energy.

Figure 5: Technique being performed in a seated upright patient.

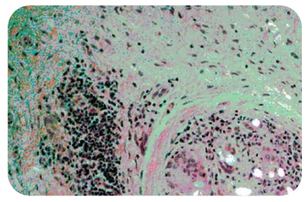


Figure 6: Low power histological cross-section of eyelid showing granulomatous inflammation in preseptal tissues along tract of probe insertion (A). Higher power view of granuloma (B). Refractile foreign bodies seen within the granuloma (C).

Results:

One hundred and fourteen eyes of 100 patients were treated: 51 were right eyes, 35 were left eyes and 14 were bilateral. There were 42 females and 58 males enrolled and the mean age was 78 years-of-age with a range of ages from 50 to 95 years-of-age. Thirty-one of these patients had had previous lid surgeries to treat entropion.

Thirty-five of the procedures were performed sitting upright in a chair while the rest were performed with the patient reclining (figure 5). Anti-coagulant medications were not ceased. The procedure took on average 5 minutes to perform.

The mean follow-up was 9 months (range 2-15 months). There was a 78% success rate (89 eyes) at the end of follow-up. Overcorrection with ectropion was seen in 8 eyelids. This was corrected with lid massage in 3 patients and wedge resection in 5 patients. Recurrent entropion occurred in 17 eyelids (14%). This was corrected by repeating the radiowave frequency technique in 14 patients and performing a Quickert procedure in the other three. The excised sections of lid in these cases were submitted for histological examination. Granulomatous inflammation was found along the tract of the probe with small granulomas noted to surround refractile foreign bodies thought to represent small retained fragments of tungsten from the electrode (figure 6).

Discussion:

Radiowave energy creates tissue resistance and heat which shrinks and reposits the pre-aponeurotic fat and induces scarring and tightening of the septum.

We have found the technique effective in treating involutional entropion and is especially useful in patients who are infirm, unable to tolerate a reclined position or are anticoagulated. It has a good success rate, is easily tolerated by patients and has a good cosmetic outcome. In those cases of recurrence the technique was able to be repeated easily.

Conclusions:

The procedure is quickly and easily performed in any patient but is ideal for treating unfit surgical candidates in an upright sitting position. It is suitably used as an office procedure and is sutureless, inexpensive and fast.

References:

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4. Cabala J, Beigi B. MRI study of lower lid. Presented at ESOPRS 2000, Paris. Financial Disclosure:

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