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A Novel Technique of Harvesting Temporalis Fascia Autografts for Correction of Recurrent Blepharoptosis

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**Precis:**
This manuscript describes the use of temporalis fascia grafts to correct recurrent blepharoptosis after failed silicone slings. The surgical technique is simple and produced good corrections in the 6 ptoses presented.
Abstract

Patients with poor levator function require ptosis correction by a sling procedure. A variety of synthetic materials are available for this suspension, nonetheless there is a recognized complication rate.\(^1\) We present four patients (six eyelids) with failed silicone slings who were managed with temporalis fascia autografts and describe a novel technique of harvesting the temporalis fascia. Follow up time ranged from 5 to 31 months. Average improvement in palpebral aperture was 3.6 mm (78%).

Autografts are less prone to infection and extrusion than alloplastic materials. Harvesting temporalis fascia has a number of advantages over the use of fascia lata and outcome has been shown to be effective. Although we recommend the use of autogenous material for slings whenever possible, if alloplastic materials are used and subsequently fail, then temporalis fascia is our preferred solution.
Various techniques to correct brow ptosis have been described including use of autologous slings (fascia lata, temporalis fascia, plantaris tendon, palmaris longus, homografts (umbilical vein, irradiated fascia lata) and artificial materials (silicone, prolene, Mersilene mesh).\textsuperscript{1,2,3} We present a novel technique of temporalis fascia harvest in four patients and propose its use in the context of failed silicone slings.

**METHODS AND MATERIALS**

Four patients (six eyelids) underwent temporalis fascia frontalis sling procedures for the correction of recurrent ptoses following failed silicone slings. Three patients had congenital ptosis, and one had meningitis as an infant.

The reasons for failure were found at operation; 2 slings had broken, 1 sling had become detached from the tarsus, 2 slings had slipped and the last had ‘bowstringed’.

The procedures were performed under general anaesthetic. The site of the incision is infiltrated with 2\% lidocaine and epinephrine 1:200 000. A 3 cm incision is made in the temporal region behind the hairline. The deep temporalis fascia is exposed and a 5.5 cm by 1.5 cm area is marked and harvested. (Fig.1)

The brow surgery begins with a 1.5 cm incision through the scar from the silicone sling surgery. A second incision is made in an upper lid skin crease and the anterior border of the superior tarsus is exposed. A 1.5 cm preseptal tunnel is bluntly dissected from the eyelid to the brow. The temporalis fascia is sutured to the tarsal plate as a 1.5 cm wide band. (Fig. 2). The fascia is then fed through the tunnel exiting through the brow
incision. A test pull is used to assess the required lid elevation and the fascia is sutured to both frontalis and dermis.

All operations were performed by the same pair of Consultant surgeons.

Ethics committee/IRB approval was not required for this study.

RESULTS

Follow up ranged from 4 to 30 months. All patients were male and ages ranged from 29 to 62 years.

Results are shown in Table 1. Preoperative levator function averaged 4.0 mm.

Preoperative palpebral apertures averaged 4.6mm and postoperative apertures averaged 8.2mm. Mean improvement in aperture was 3.6mm (78% improvement).

In patient 2 the frontalis suspension was revised and raised 2 weeks postoperatively. No postoperative complications occurred at the site of temporalis fascia harvest.

DISCUSSION

The initial choice of silicone slings in the cases described was due to silicone’s advantageous properties: it is elastic, thus allowing eyelid closure, it’s readily available and the slings are adjustable postoperatively.

However, silicone slings do occasionally fail and in this situation rather than repeat an already failed procedure both surgeon and patient preference is often for a reliable alternative. It is in this context that we believe temporalis fascia has its role.
The use of temporalis fascia for ptosis surgery was first described by Neuhaus and Shorr in 1983. They studied a wide variety of materials in the context of oculoplastic reconstruction and found autografts, specifically temporalis fascia and muscle the most reliable and least reactive material. In addition autografts are inexpensive.

Fascia lata harvesting poses a number of disadvantages. The procedure requires a second operative field and repositioning of the patient on the table. Post operative discomfort is increased and over time the thigh scar may widen. Ophthalmologists have a better knowledge of the temporal region than of the thigh and the harvesting technique is similar to temporal artery biopsy. The temporal scar is hidden within the hairline and an additional scar on the thigh is avoided.

Neuhaus described a large coronal incision and blunt dissection to the zygomatic arch and orbital rim, and elevation of the fascia and periosteum together in a single plane. The technique we describe is considerably simpler with a small incision and without extensive anterior dissection or periosteum elevation. The incision can be hidden within the hair line even in patients with male pattern baldness and the scar settles very well. The simplicity, safety and minimal risk of complications of the temporalis fascia technique is supported by Fan’s series of 22 eyelids and Kokot’s et al series of 12 eyelids.

Silicone slings do occasionally fail and temporalis fascia slings are a simple and effective alternative to failed silicone slings. Advantages include a single operative field, a hidden postoperative scar and promising early results. We propose their use in this group of patients.
REFERENCES


Table 1.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age</th>
<th>Sex</th>
<th>Etiology</th>
<th>Previous surgery</th>
<th>Pre-Op Palpebral aperture</th>
<th>LF</th>
<th>Post-Op Palpebral aperture</th>
<th>Follow-up (months)</th>
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<tr>
<td>1</td>
<td>29</td>
<td>M</td>
<td>R Congenital</td>
<td>3 months</td>
<td>4.0</td>
<td>4.5</td>
<td>7.0</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>32</td>
<td>M</td>
<td>L Congenital</td>
<td>2 years</td>
<td>3.0</td>
<td>3.0</td>
<td>7.5</td>
<td>27</td>
</tr>
<tr>
<td>3</td>
<td>62</td>
<td>M</td>
<td>R Congenital</td>
<td>2 years</td>
<td>3.0</td>
<td>3.0</td>
<td>8.0</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L Congenital</td>
<td></td>
<td>5.0</td>
<td>5.0</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>40</td>
<td>M</td>
<td>L Meningitis</td>
<td>2 years</td>
<td>6.0</td>
<td>4.5</td>
<td>10.0</td>
<td>22</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>R Meningitis</td>
<td>3 years</td>
<td>7.0</td>
<td>6.0</td>
<td>11</td>
<td></td>
</tr>
</tbody>
</table>

Figures

Fig. 1 A rectangle of temporalis fascia 5.5cm by 1.5cm is marked.

Fig. 2 The temporalis fascia is sutured to the tarsal plate as a wide band, 6/0 Vicryl.
Ophthalmic Plastic and Reconstructive Surgery

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N. Yoshii, N. Henderson 

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