

Autogenous versus allograft fascia lata in frontal sling surgery - long-term results

C. GÜRDAL¹, U. ERDENER², M. ORHAN², M. IRKEÇ²

¹Ophthalmology Department, PTT Education and Research Hospital

²Hacettepe University Medical Faculty Hospital Ophthalmology Department, Ankara - Turkey

PURPOSE. *Either autogenous or allograft fascia lata frontal sling procedures can be used for the treatment of severe ptosis. We retrospectively evaluated the late outcomes of both approaches.*

METHODS. *Medical records of patients who underwent frontal sling ptosis surgery between 1978 and 2000, with a follow-up of one year or more were included in the study. Success rates and the complications of the surgery for autogenous and allograft fascia lata were recorded. The results were compared statistically.*

RESULTS. *Surgeries were performed with 82 autogenous or 43 allograft fascia lata. At last follow-up there were 71 eyes (86.6%) with good, 8 eyes (9.7%) with moderate, 3 eyes (3.7%) with poor results after autogenous fascia lata and 35 (81.4%), 3 (7%) and 5 (11.6%) after the allograft fascia lata frontal sling procedure. There was no significant difference between the two groups. Repeat surgery was carried out on three patients after autogenous and five after allograft fascia lata surgery. Two cases of preseptal cellulitis were observed, one abscess after autogenous and one lagophthalmus after allograft fascia lata sling surgery. All patients had slight edema early after surgery which resolved in a few days. Only one patient developed a hematoma at the site of the leg incision.*

CONCLUSIONS. *Although the long-term success rate with the autogenous fascia lata is slightly higher and this remains the first choice, allograft fascia lata is a good alternative in patients in whom fascia could not be harvested. (Eur J Ophthalmol 2003; 13: 202-6)*

KEY WORDS. *Frontal sling, Fascia lata, Autogenous, Allograft*

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INTRODUCTION

Ptosis can be corrected by various surgical procedures, the choice mainly depending on the levator function and the degree of ptosis. Of the numerous procedures described for severe ptosis, the one most commonly used is the frontal sling with fascia lata and it is one of the most popular techniques in patients with a levator function of less than 4 mm for many years. Fascia lata was first used by McArthur in 1901 for the treatment of inguinal hernia and Payr in 1908 first reported the use of this tissue in ptosis surgery (1, 2). It is prepared under general anesthe-

sia from a line extending from the lateral condyle of the femur up the lateral thigh. However, the difficulty, restrictions and complications of the harvesting procedure have led many surgeons to search for alternative materials. Allograft fascia lata is prepared from cadavers within 24 h death and after several serological tests, and is preserved with solvents or by freeze-drying. The donor tissue can be sterilised by gamma-irradiation (Tutoplast®). Although it has the important advantage of being ready to use, higher recurrence rates, risk of cross-infection and greater tissue reaction are the main drawbacks with this material.

Because of the wide use of fascia lata, its advan-

tages and disadvantages have been widely discussed for either autogenous or allograft forms. We evaluated the long-term results of both types of material in frontal suspension surgery done in the Ophthalmology Department of Hacettepe University Medical School.

MATERIALS AND METHODS

We reviewed the medical records of all ptosis patients who had undergone ptosis surgery between 1978 and 2000. Patients who had frontal sling ptosis surgery with fascia lata and a follow-up of more than six months were included. Age at surgery, procedure performed, levator muscle function, degree of ptosis, interpalpebral distance and marginal reflex distance (MRD) before and after surgery, and any complications, were recorded. Severe ptosis with little or no levator function (<4 mm) was the criteria for performance of the sling procedure.

The degree of ptosis was determined as mild when there was 2 mm or less drooping from the normal level (<2 mm from the limbus) and MRD 3 mm, moderate when there was 3 mm drooping and MRD 2 mm, and severe when there was 4 mm or more drooping and MRD less than 1 mm.

At the last visit, results were evaluated as follows: marked ptosis recurrence with a complete return to preoperative lid level or 3 mm of droop in one or both eyelids compared with the initial postoperative level or an asymmetry of more than 2 mm was rated as poor, incomplete return of ptosis of less than 3 mm or an asymmetry of less than 2 mm was defined as moderate and no recurrence or an asymmetry less than 0.5 mm as good (1).

The criteria for our choice of material was the patient's age, general condition, and whether consent to the harvesting procedure was given.

The surgical technique for autogenous fascia lata was performed under general anesthesia. A fascia lata strip was prepared through a longitudinal incision above the lateral condyle of the femur, extending 3.5 cm up the lateral thigh. With the help of the stripper a 10-cm long, 8 mm wide fascia was obtained. Commercially prepared, gamma-irradiated cadaveric fascia lata (Tutoplast) was used for patients in whom the harvesting could not be done.

Two stab incisions were made 2-3 mm above the lid margin and three further stab incisions were made above the eyebrow. After preparing the connecting tunnel with dissection scissors, the fascia lata was passed through and fixed with 6.0 vicryl sutures. After skin closure a frost suture was placed and the eye was padded until the next morning. All patients used artificial eye drops for two weeks and antibiotic ointments for five days.

Statistical analysis was done using the Mann-Whitney U and Wilcoxon signed rank tests.

RESULTS

Medical records of ptosis patients were examined and 126 patients with more than six months of follow-up after frontal sling surgery either with autogenous or allograft fascia lata were included in the study. The patients' mean age at surgery was 9 years (2-66 years), and the median follow-up was 7.5 years for autogenous and 3.5 years for allograft fascia lata, ranging from 1 to 20 years. The ptosis was congenital in 72, traumatic in 20, prosthesis in 13, myogenic in 10, neurogenic in 8, and postsurgical (eyelid tumor excision and plastic surgery) in 2 eyes. Only 24 cases were bilateral.

Levator function and the degree of ptosis were the criteria for deciding on the operative technique. The median levator function was 3.0 mm for both groups. The frontal sling procedure was performed with autogenous fascia lata in 82 and allograft fascia lata in 43 eyes. The mean/median interpalpebral distance before and after surgery was 4.54/5.00 mm and 7.74/8.00 mm for autogenous, and 5.07/5.00 mm and 8.3/8.00 mm for allograft fascia lata. The mean MRD before and after surgery were 0.35 and 2.8 mm for autogenous and 0.42 and 3.2 for allograft fascia lata. Although there was no difference between the results for the surgical materials, a significant difference was observed in the change of the interpalpebral distance and MRD before and after surgery ($p < 0.05$)

Post-operative results were initially good except in one patient with an allograft fascia lata. At the last follow-up visits there were 71 eyes (86.6%) with good, 8 eyes (9.7%) with moderate, and 3 eyes (3.7%) with poor results using autogenous fascia lata, and respectively 35 (81.4%), 3 (7%) and 5 (11.6%) using allograft fas-



Fig. 1 - Autogenous fascia lata frontal sling procedure: Pre- and postoperative pictures.



Fig. 2 - Allograft fascia lata frontal sling procedure: Pre- and postoperative pictures.

cia lata (Figs. 1-3) Three patients with autogenous and five with allograft fascia lata had repeat surgery within the first six years. The distribution of the time of recurrences is shown in Figure 4.

There were two cases of preseptal cellulitis in the early postoperative period, which recovered with early systemic antibiotic therapy, one suture abscess after autogenous and one lagophthalmus after allograft fascia lata. The lagophthalmus resolved in three months without intervention and the patient was on lubricating medications to prevent corneal problems during this period. All patients had slight periocular edema which resolved spontaneously. No cross-infection or serious reaction to allograft fascia was encountered. One case had a hematoma at the site of the leg incision. No severe scar formation developed in any of the patients.

DISCUSSION

The success of ptosis surgery lies in selecting the most appropriate procedure. If the ptosis is severe (≥ 4 mm) and the levator muscle function poor (≤ 4 mm), the frontal sling procedure is considered best.

Many materials have been used for this procedure (synthetic, fresh and autogenous, or banked allograft human fascia lata), but autogenous material has been preferred by many surgeons for several years (3). It is considered a permanent "living suture" (4) and may ensure longer lasting repair of the ptosis (5, 6). However, harvesting percutaneous fascia lata may be complicated by hematoma, infection of the wound, vastus lateralis herniation and scar formation (7, 8). Furthermore it is not recommended before three years of age. This prompted Crawford, who was the pioneering



Fig. 3 - Patient with traumatic ptosis and prosthesis: **a)** before surgery; **b)** early postoperative; **c)** 28 months after surgery.

surgeon in fascia lata frontal sling surgery, to investigate the use of preserved fascia lata for this procedure. He reported his success rate with banked fascia lata as being over 90% (5, 9, 10). Wilson and Johnson found there was a significant proportion of late recurrence of ptosis in patients using banked fascia lata (11). Their mean follow-up was 7.2 years, and the number of failures rose with the length of follow-up, the success rate falling from 90% at 2-3 years to 50% at 8-9 years. On the other hand Beyer and Albert reported early failure in only two of 38 patients (5%) (3). They had no late recurrences, but their follow-up was only three years.

Wasserman et al compared various suture materials in frontal sling surgery (12). Over a five-year period, they followed up the incidence of infection and granuloma, and recurrence of ptosis in 102 eyes where autogenous, tissue-banked fascia lata, monofilament nylon, plaited polyester, horizontally stretched polytetrafluoroethylene (PTFE) and polypropylene suture materials had been used. In all materials except PTFE, infection or/and granuloma developed in at least 10% of the cases. PTFE was removed in five out of 11 patients on account of a suspected infection. Ptosis recurred in 31.4% of all patients within a median of 24 months after surgery. Wasserman et al concluded that autogenous fascia lata is the material of choice in frontal suspension surgery for congenital ptosis.

Esmaeli et al used irradiated banked fascia lata for frontal suspension surgery in 132 eyelids and evaluated the recurrence rate and post-operative complications (13). Their follow-up ranged between 6 and 15 years and 21% of recurrences developed within

an average of 3 years (1-7 years). Donor fascia lata was used in two patients.

We evaluated the late results of allograft and autogenous fascia lata. Our success rate with autogenous fascia lata was 86.6%, and 81.4% with allogenic fascia lata. This is lower than that of Crawford because of the longer follow-up. We did not observe any in-

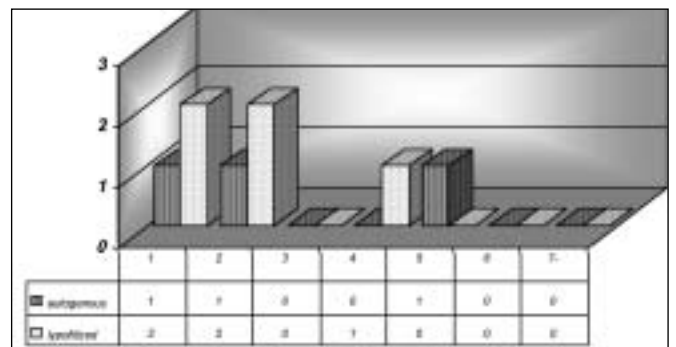


Fig. 4 - The distribution of recurrences after different types of ptosis surgery.

crease in the failure rate such as Wilson and Johnson reported.

O'Reilly et al, in their retrospective study with a mean follow-up of 42.9 months, showed that repairs with stored fascia lata were lasting (14). Nearly all failures with banked fascia lata occurred early in the postoperative period, usually within 3-6 months after implantation. They reported partial recurrences in 10 of 29 eyelids within 18 months of surgery for congenital ptosis using stored fascia lata and stated that the eyelid remained stable after 18 months.

Beyer and Albert investigated the histopathological state of stored fascia lata in six cases 5- 36 months postoperatively. They found well preserved, morphologically intact fascia lata with no evidence of absorption or infection. All specimens had slight fibroblast and vascular infiltration. Histopathologic documentation of morphologically intact banked fascia lata 5, 9, 16 and 36 months after implantation in isolated cases supports the view that ptosis repair with banked fascia lata may be permanent (3).

In our series most of the recurrences were in the first two years. Although there were fewer recurrences in the autogenous group, the difference was not significant. We observed no recurrences after the sixth year. This also supports the histopathological findings from a clinical point of view.

Harvesting autogenous fascia lata - as mentioned before - has very few complications. We found only one postoperative hematoma and slight scar formation, about which the patients showed no concern. No infection was observed at the site on the leg where fascia had been harvested. The risk of cross-infection and reaction and a higher risk of recurrence are the main concerns regarding lyophilized fascia lata. In our series we did not observe any cross-infections or serious reaction to allograft fascia lata.

When the patients are examined carefully and the procedure is selected appropriately, the long-term results are good with all techniques. Although success rates were higher with autogenous fascia lata, lyophilized fascia remains a good choice of sling material, especially in small children and those who do not accept the harvesting procedure. Patients and their families should always be informed about the possible need for repeat surgery.

Reprint requests to:
Canan Gürdal, MD.
Dicle Cad No: 65
Beysukent Eskişehir yolu
Ankara, Turkey
gurdalcm@yahoo.com

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