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SHORT COMMUNICATION

Long-term persistence of fascia lata patch graft in glaucoma drainage device surgery

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PURPOSE. Conjunctival erosion in glaucoma drainage device surgery can be prevented by the use of patch grafts to cover the extraocular portion of the tube. Several materials can be used, among them human preserved fascia lata.
METHODS. The authors present a case of a failed Ahmed glaucoma valve due to encapsulation of the bleb, in which the fascia lata patch placed to cover the tube was removed 32 months later, during the implantation of a second glaucoma drainage device.
RESULTS. Histopathologic examination of the fascia lata patch demonstrated its persistence, without degradation or cellular infiltration.
CONCLUSIONS. Human preserved fascia lata is a suitable material for tube covering in glaucoma drainage device surgery, with long-term survival. (Eur J Ophthalmol 2005; 15: 412-4)

KEY WORDS. Fascia lata, Glaucoma, Patch graft, Drainage device

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INTRODUCTION

Glaucoma drainage devices (GDD) are commonly used in the treatment of complicated glaucoma. Conjunctival erosion with tube exposition is a severe complication which may lead to tube extrusion or intraocular infection and may compromise the success of the drainage device in the long term. To prevent this complication, the extraocular portion tube may be covered with a patch. In 1987, Freedman (1) described the use of sclera as donor material, and in 1993, Brandt (2) reported the alternative use of commercially prepared dura mater. Since then, several other allogenic tissues have been proposed, including fascia lata by Tanji et al (3) in 1996, pericardium (4), clear cornea (5), and even synthetic material, such as expanded polytetrafluoroethylene (ePTFE) (6).

We present a case in which a fascia lata patch, placed to cover the tube of an Ahmed glaucoma valve, was removed 32 months after the initial surgery. Histopathologic examination demonstrated the survival of the patch.

Case report

A 31-year-old woman with Cogan-Reese syndrome in her left eye was first seen in June 1999, presenting an acute glaucoma, and was treated surgically by implanting a glaucoma Ahmed valve on the upper temporal quadrant, using a fornix-based conjunctival flap, with a fascia lata patch graft (Tutoplast fascia lata, Byodinamics International, Tampa, FL) to cover the subconjunctival portion of the tube. Postoperatively, encapsulation of the bleb was observed and needling was proposed, but the patient was lost to follow-up. Two and a half years later, in December 2001, she consulted again due to pain and severe visual loss in her left eye. The visual acuity then was counting fingers, intraocular pressure was 30 mmHg, and there was marked corneal edema with anterior rotation of the intraocular portion of the tube and corneal touch. Valve replacement was proposed. The surgical procedure, performed 32 months after the initial surgery, included valve removal, lens extraction, and implantation of a new

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Ahmed glaucoma valve on the upper nasal quadrant, using a fornix-based conjunctival flap.

Marked scarring was observed around the Ahmed plate, forming a very thick capsule around it, which was removed along with the plate. The previous patch graft was located and removed and a new fascia lata patch graft was placed to cover the new tube, which was positioned in the posterior chamber.

Afterwards, the intraocular pressure stayed in the low teens, but visual acuity was severely decreased to hand motion due to glaucomatous optic atrophy. Corneal edema initially improved after the surgery, but later progressed to bullous keratopathy. The second fascia lata patch can still be visualized under the conjunctiva by optical examination with the slit lamp, and is present after 24 months of follow-up.

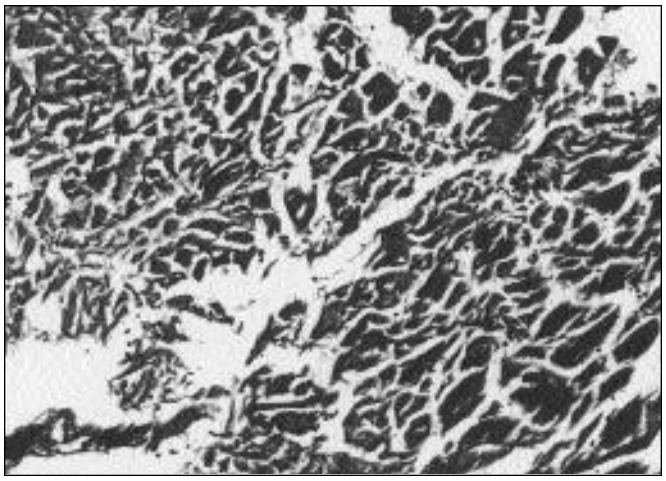

Fig. 1 - Fascia lata patch removed from the patient, constituted by an homogeneous acellular material (PAS, original magnification x125).

RESULTS

Histopathologic examination of the removed graft demonstrated the persistence of the fascia lata tissue, constituted by a homogeneous acellular material, without cellular infiltration (Fig. 1).

DISCUSSION

Human preserved fascia lata can be an adequate alternative to cover the tube in GDD surgery. Autologous fascia lata has been used in ophthalmology for many years, but the harvesting of autologous fascia lata requires a second surgical site, which adds to the surgical time and it has its own morbidity. Also, most ophthalmologists are not trained to harvest this lower extremity tissue. The sterilization process of the commercialized fascia lata, solvent dehydration and gamma irradiation, destroys the cells of the tissue, which consists of compact parallel collagen fibers that are thought to posses minimal antigenic stimulus. The material is easily trimmed with scissors to any shape and contour needed, and after it is rehydrated, it adapts smoothly to the sclera surface. To obtain an optimal result, the parallel fibers of the fascia lata must be oriented perpendicular to the longitudinal axis of the tube, to prevent splitting of the patch (3).

Other allogenic material, such as pericardium, has been used with good results in the short term (7). These materials are theoretically free of cell-mediated antigenic stimuli, due to the sterilization process, but tube erosion has also been described in them (7, 8).

Jacob et al (6) have compared the results in the short term of donor sclera patch and ePTFE in rabbits. Their study demonstrated thinning and resorption of the donor sclera patch as well as an increased macrophage response, which is indicative of the resorptive process occurring in the patch.

In the human eye, there are few histopathologic reports of patch grafts. Ayyala et al (9) reported a case in which the patch, constituted by donor sclera, was surrounded by a zone of granulomatous inflammation, with numerous multinucleated, foreign body giant cells, histiocytes, plasma cells, and lymphocytes. The authors hypothesized whether this exuberant foreign body granulomatous reaction could contribute to the bleb failure.

The potential for erosion of the glaucoma implant tube through any grafting material increases as postoperative follow-up lengthens, but there are no histopathologic studies in the long term of any type of patch graft. In the case we present, although there was marked fibrosis and the capsule around the Ahmed plate was very thick, the patch was found almost unchanged, without thinning or degradation, and unaffected by the inflammation and fibrosis secondary to bleb encapsulation. Nevertheless, this is an isolated case, so further studies should be done to confirm that the fascia lata patch may remain acellular with no degradation in every case.

In conclusion, donor fascia lata patch graft may be a convenient material for tube covering in GDD surgery, due to its reduced risk of infection transmission, lack of cell-

mediated antigenic stimuli, and, finally, long-term survival, as has been demonstrated by histopathologic examination in the case we report. Future research is needed to decide which of the grafts used in GDD surgery may offer the best results.

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