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Pericranium grafts for exposed orbital implants: An observational case-series study

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ABSTRACT

Objective: The aim of this article is to highlight our experience with autologous pericranium graft in wide exposures (≥3 mm). The pericranium graft was taken from the parietal region of the scalp in six consecutive clinical cases of orbital implant exposure in anophthalmic sockets.
Material and methods: This is a prospective, descriptive case series study of patients who had orbital implant exposures and were treated with autologous pericranium graft.
Results: The average postoperative follow-up period was 10 months, and the mean time for conjunctivalization of the graft was 3 months. In all cases, complete conjunctivalization was achieved, and no re-exposure of the implant was observed.
Conclusions: The pericranium graft from the parietal region is an effective technique to treat both small and large orbital implant exposures with no comorbidity. Time to complete conjunctivalization is similar to that of other autologous grafts. It is a simple and convenient method for the oculoplastic surgeon that constitutes a good alternative for covering anophthalmic cavities. Further studies with more cases and longer follow-up are required to confirm the effectiveness of this technique.

1. Introduction

The use of orbital implants in anophthalmic cavities has been used for many years in oculoplastic operations. The aim of the orbital implants is to replace volume loss and to improve prosthesis motility. Conventional surgical techniques have been modified in order to reduce the complication rate (Kim et al., 1994; Sheikh et al., 2005).

The most frequent postoperative complication is the exposure of the orbital implant, which is secondary to a dehiscence of the covering tissue. The exposure results in a inflammatory reaction with chronic discomfort for the patient, and increases the infection and extrusion risk of the orbital implant (Sheikh et al., 2005).

Different factors have been attributed to orbital implant exposure, such as the implant size, position, surgical technique, cavity contraction, prosthetic material, etc. (Goldberg et al., 1992; Remulla et al., 1995; Kaltreider and Newman, 1996; Oestreicher et al., 1997; Christmas et al., 1998).

In the literature, both autologous tissue grafts, for example, temporalis fascia, fascia lata, dermal-fat graft, retroauricular myoperiostium, buccal mucosa graft, hard palate, pericranium, etc. have been described (Bosniak, 1987; Petrelli, 1990; Wiggs and Becker, 1992; Beaver et al., 1996; Sagoo and Olver, 2004), as well as use of heterologous tissue, essentially scleral graft, to repair these exposures (Helveston, 1969; Goldberg et al., 1992).

Autologous grafts require less time to become revascularized and integrated, as well as causing less inflammation postoperatively. However, they require more surgical time and an additional surgical incision in the graft harvest site (Beaver et al., 1996).

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The aim of this article is to highlight our experience with autologous pericranium graft in wide exposures (>3 mm). The pericranium graft was taken from the parietal region of the scalp, in six consecutive clinical cases of orbital implant exposure in anophthalmic sockets.

In the literature we found only one case-series study describing the results of this surgical technique (Sheikh et al., 2005). With our study, we aim to increase the scientific evidence of the efficacy of this surgical technique for the treatment of large exposures.

2. Material and methods

Prospective descriptive case series study of six patients who had orbital implant exposures and were treated with autologous pericranium graft. All of the surgeries were performed in two ophthalmology centers in Barcelona: Institut Català de Retina (ICR) and Bellvitge University Hospital, between January 2013 and April 2014.

All procedures were performed in the operating room under general or local anesthesia with sedation, according to patient characteristics and preferences of the surgeons.

First of all, the scalp skin is prepared with 10% povidone-iodine. Subsequently, the skin is marked by a longitudinal line (3–4 cm in length), starting over the midline on the parietal region toward the occipital area (Fig. 1).

Local anesthetic incision site infiltration is made with lidocaine 2% and bupivacaine 0.5% with adrenaline in the ratio of 1:2. The local infiltration aids in having less bleeding during graft dissection and helps postoperative analgesia for the patient, even if the operation is performed under general anesthesia.

A deep incision with a number 15 blade is performed, and a blunt dissection is carried to the subaponeurotic area; skin retractors or traction sutures will help to expose the pericranium area (Fig. 2).

Depending on the size of the defect, the graft size will vary, but in general terms, an average of 20 × 20 mm graft is enough. It is mandatory that the graft size be greater than the exposure, in order to prevent new exposures due to tissue retraction. The graft is gently dissected with a number 15 blade and a periosteal dissector (Fig. 3).

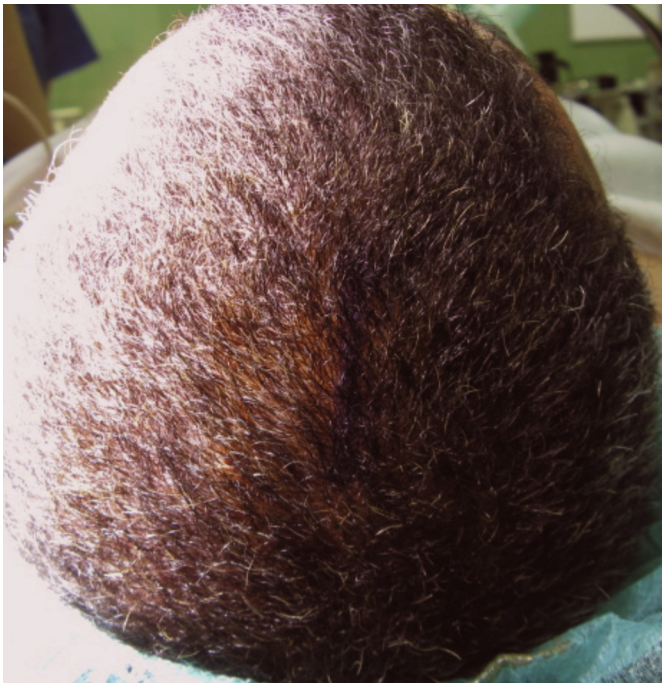

Fig. 1. The skin is marked by a longitudinal line on the donor site.

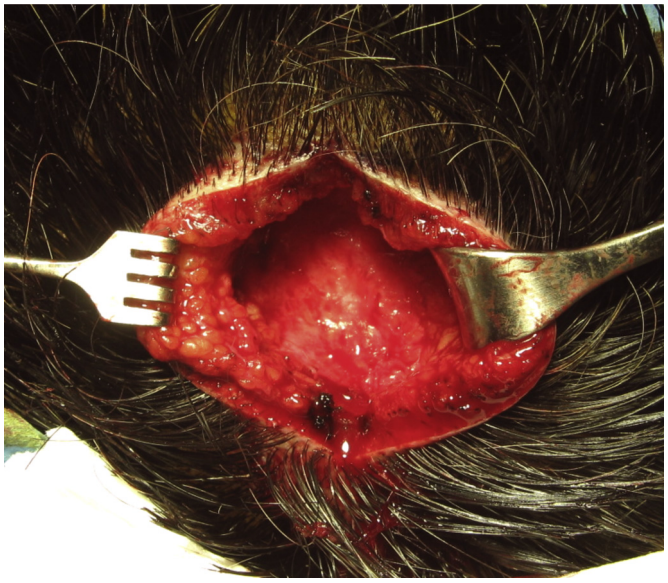

Fig. 2. Exposition of the pericranium area.

The donor site is closed in layers with 4-0 vicryl for subcutaneous tissue and 4-0 nonabsorbable suture for the skin. A compressive bandage is placed in the donor area for 24 h to reduce postoperative swelling.

On the exposure site (Fig. 4), the conjunctiva and the Tenon are dissected with a Wescott scissors, removing the capsule around the exposure. The oversized graft is placed in a pocket between the Tenon capsule and the exposed implant. The graft is fixed using horizontal mattress sutures with 6-0 vicryl (Fig. 5). This graft placement permits the conjunctiva to grow over the pericranium graft progressively during the postoperative period.

In our study, all patients received antibiotic with topical steroid ointment 3 times a day until full reconjunctivalization. Patients

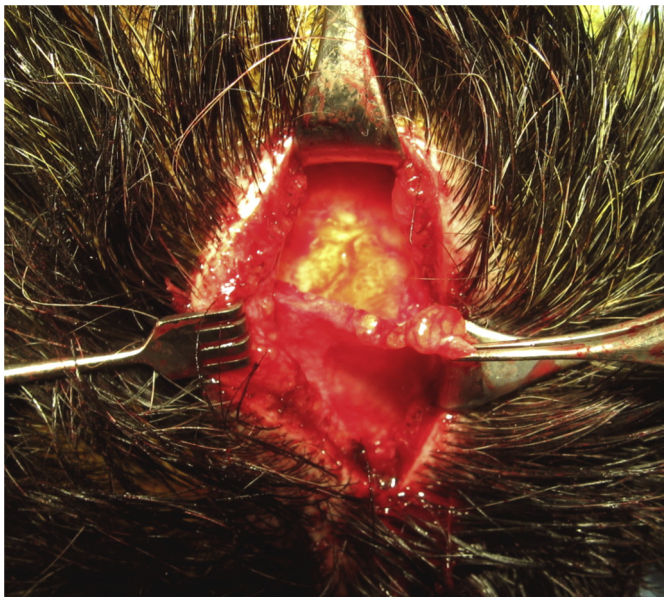

Fig. 3. Dissection of the pericranium graft.