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Single-Stage Reconstruction of Large Scalp Surgical Defects With Exposed Bone Using Matriderm Flex and Full-Thickness Skin Grafts, a Case Report

Pedro Gil-Pallares[1,2,3] | Manuel Almenara-Blasco[1,2] | Alba Navarro-Bielsa[1,2,4] | Yolanda Gilaberte[1,2,4]

[1]Department of Dermatology, Miguel Servet University Hospital, Zaragoza, Spain | [2]IIS Aragón, Zaragoza, Spain | [3]Universidad de Santiago de Compostela, Santiago de Compostela, Spain | [4]Universidad de Zaragoza, Zaragoza, Spain

Correspondence: Alba Navarro-Bielsa (582073@unizar.es)

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ABSTRACT

The reconstruction of full-thickness scalp defects with exposed bone can be challenging. A single-stage reconstruction could be the preferred option for patients with multiple comorbidities. We propose using a dermal regeneration template (Matriderm Flex) and full-thickness skin grafts. The approach shown in this case report allows for quick healing, less donor-site discomfort in comparison with dermatome-harvested skin grafts, and very good aesthetic results, matching the surrounding skin thickness.

The reconstruction of certain full-thickness scalp defects with exposed bone can be challenging. Secondary intention healing, local flaps or dermal regeneration templates (DRTs) are some possible options. However, some patients with multiple comorbidities may not be the best candidates for long or multiple surgeries, thus making single-stage reconstruction preferable. We present a single-stage reconstruction of a scalp defect with exposed bone using Matriderm Flex (1 mm) and a full-thickness skin graft (FTSG), which allows quick healing and a very good aesthetic result.

The presented example case is a biopsied moderately differentiated cutaneous squamous cell carcinoma on the scalp with perineural invasion (nerve involvement > 0.1 mm) and Clark level V (Figure 1). After conventional resection, including periosteum to ensure negative margins, a purse-string stitch was used to partially reduce the surgical defect and post-surgery bleeding (Video S1). Matriderm Flex 1 mm (52 × 74 mm) was placed and trimmed to fit the defect (Figure 2) and then rehydrated using saline. A defatted FTSG collected from the clavicular area was placed and it was fixed with a non-adherent bolster dressing using surgical staples and sutures. The bolster dressing was removed after 7 days, and only the centre of the dermal matrix and graft had a pale colour. At Day 14, the whole dermal matrix and graft showed good vascularisation, although the epidermis was lost, and 6 weeks after the surgery, besides some accidental erosions, a very good aesthetic outcome was achieved without leaving a depressed area (Figure 3).

Large surgical defects with bone exposure commonly require reconstruction with large flaps. Secondary intention healing usually takes various weeks until complete closure, especially in large defects. Grafts provide another option, preventing the extensive tissue movement needed for certain flaps and aiding in follow-up and early recurrence detection. However, they may not always survive in defects involving the periosteum. A bilayer DRT can be used in such cases, often followed by a skin graft a few weeks later. A DRT that allows immediate grafting could avoid a second surgery, and we found it to be a viable option even in bone exposure situations, especially for fragile patients for

FIGURE 1 | Cutaneous squamous cell carcinoma on the scalp. Tumour margins were identified with dermoscopy and appropriate surgical margins were marked.

FIGURE 2 | Matriderm Flex 1 mm placed over a 5 × 5 cm surgical defect with bone exposure. A purse-string suture was previously used to reduce the size of the defect.

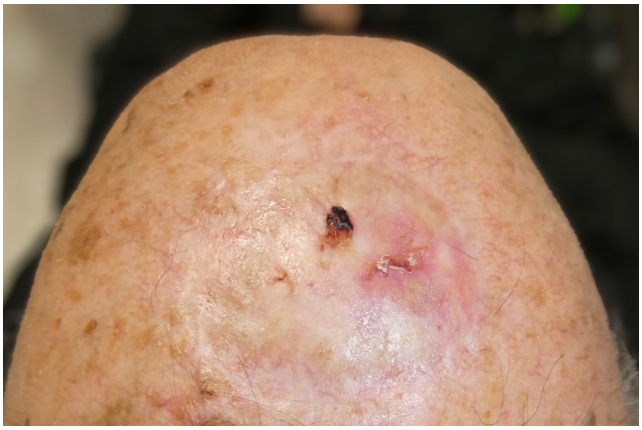

FIGURE 3 | Good aesthetic result 6 weeks after the surgery, except for some small crusts due to an accidental wound, matching the thickness and colour of the surrounding skin.

whom any surgery is not without risk, and also for patients who do not desire large flaps, two surgeries or secondary intention healing. Split-thickness skin grafts (STSGs) are recommended by the manufacturer of DRTs to complete the reconstruction, as well as previous reports [1]. However, we observed that FTSGs are also valid and do not require a dermatome, and some patients prefer them since they find the donor site healing to be less painful. Moreover, we also found a better aesthetic result with thickness matching the surrounding skin (Figure 3), contrary to what is often seen in STSGs, even when using a DRT [2].

Consent

The patient signed a written Informed Consent for the publication of recognisable photographs or other identifiable material, with the understanding that this information may be publicly available.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.