

# Orticochea flap for scalp reconstruction after an electrical burn. A case report

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## Case Report

PLASTIC SURGERY



**Abstract:** **Introduction:** The treatment of substance loss in the scalp is a complex challenge for the plastic surgeon since the skin at this site lacks elasticity, an adequate aesthetic result must be offered and adequate coverage must be provided.

**Case report:** We present the case of a 27-year-old male who presented three years ago with an electric shock in the occipital area of the head with loss of scalp skin and bone exposure, without receiving treatment. He came to our unit because he presented purulent discharge and pain in the area of the lesion, as well as poor general condition.

**Conclusion:** The Orticochea flap is an acceptable and safe option for large occipital substance loss.

## KEY WORDS

scalp skin reconstruction, Orticochea flap, electrical burn.

## Introduction

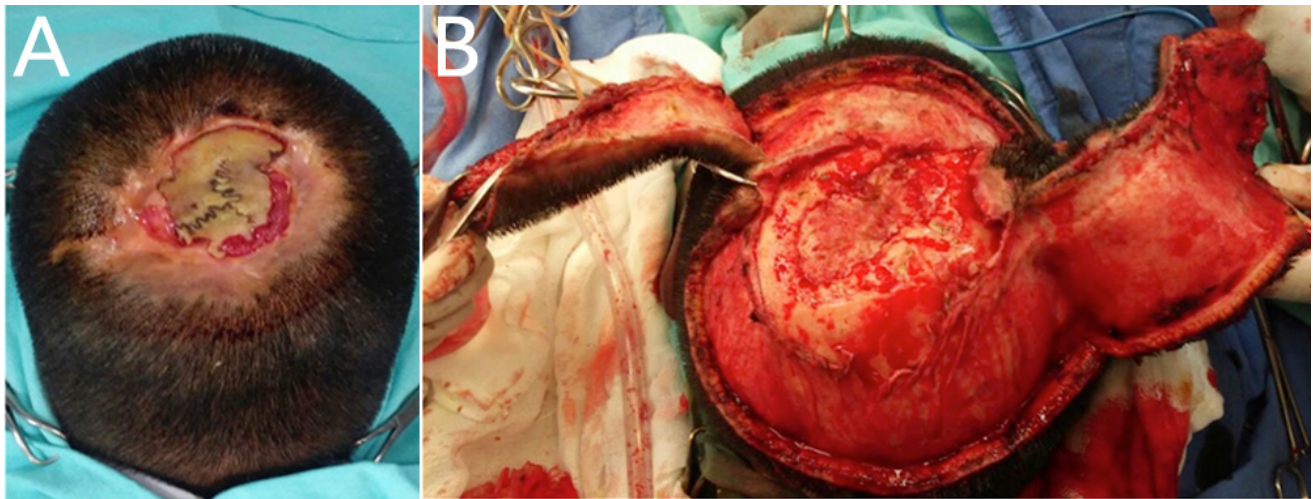
The history of scalp skin defects and their treatment dates back to 1696 with the French physician Augustin Bellostone who proposed granulation as the initial treatment step for the closure of these wounds.<sup>1</sup> With the subsequent development of plastic surgery techniques, other methods of reconstruction emerged and in 1967 Dr. Orticochea published his technique of 4 flaps for closure of large defects, which in 1971 was modified to only three flaps.<sup>2</sup> The treatment of loss of substance in the scalp is a complex challenge for the plastic surgeon since the skin in this site lacks elasticity, an adequate esthetic result must be offered (maintaining the hairline) and providing adequate coverage to avoid drying of the cranial vault, bone exposure and sepsis.<sup>3</sup> The choice of reconstructive technique is influenced by several factors. In a study involving 73 patients with scalp reconstruction, it was observed that the factors associated with worse results were preoperative radiation, cerebrospinal fluid leakage and neoadjuvant chemotherapy.<sup>4</sup> However, other patient-specific factors such as comorbidities, previous surgeries, patient preferences, size, location and thickness of the defect have also been implicated.<sup>5</sup>

## Case report

27-year-old male from Oaxaca with a history of marijuana use since he was 20 years old. He reports that three years ago he suffered an electric shock in the occipital area of the head with loss of scalp skin

and bone exposure, without receiving treatment. She came to our unit presenting purulent discharge and pain in the area of the lesion, as well as poor general condition. Physical examination revealed a total loss of scalp skin measuring 10 x 12 cm in the posterior region with exposure of the parietal and occipital bone, from where fetid purulent material exuded (**figure 1A**). A simple and contrasted computed tomography was taken which reported loss of scalp skin in the posterior region and data of osteomyelitis of the exposed bones without involvement of intracranial tissue. Likewise, a culture of the secretion was taken with development of *Klebsiella Pneumoniae* BLEE and *Proteus mirabilis* BLEE, for this reason treatment with Ciprofloxacin and ertapenem was indicated for 8 weeks. Once the antibiotic regimen was completed and in the absence of infection data, curettage and removal of the affected bone with scalp reconstruction was recommended. The patient underwent a single surgical event in the first stage, removal of the affected bone tissue and curettage of the edges (approximately 8 cm x 9 cm), with preservation of the meninges. In the second stage, the reconstruction of the scalp skin was performed with an Orticochea type flap (**figure 1B**). It was necessary to use relaxation incisions, frontal galea dissection and anti tension stitches in order to cover 100% of the defect (**figure 2A**). Three days after the surgical event the patient was discharged with integrity of the flaps and in good general conditions with follow-up 2 weeks after the procedure with good results (**figure 2B**).

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**Figure 1.** A. Initial defect in occipital region. B. Flap helices for reconstruction.

### Discussion

The anatomy of the scalp skin identified by SCALP mnemonic (S, skin; C, subcutaneous tissue; A, aponeurosis or galea; L, loose connective tissue; P, pericranium)<sup>6</sup> is inelastic compared to the rest of the cervicofacial tissues; This is due to the fibrous junction that the galea forms with the frontalis muscle anteriorly and the occipital muscle posteriorly; as a consequence, most scalp skin flaps resist traction and transposition and often require more extensive tracings for defect closure.<sup>7</sup> Reconstruction with local tissue requires proper knowledge of the indications and contraindications of each technique to provide optimal reconstruction for each patient's conditions.<sup>8-11</sup>

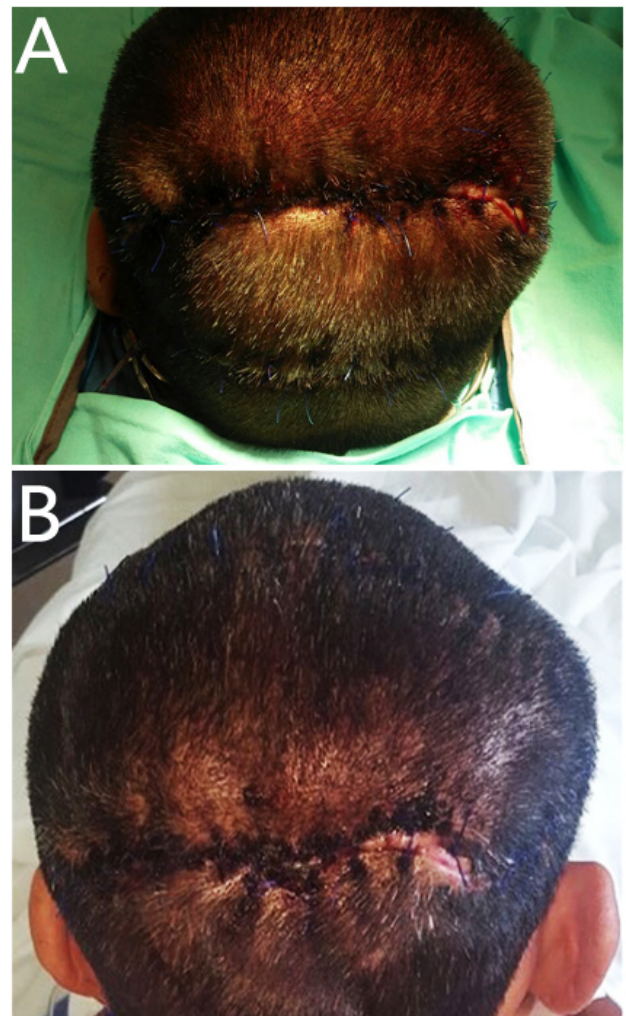
In our case, an Orticochea type flap was performed firstly because of the denuded area of skin, classified as a large defect and even more because of the remodeling and removal of surrounding alopecic skin that the patient presented. Secondly, this flap was decided because of the history of osteomyelitis with the need to remove occipital bone tissue and the need to cover the exposed meninges and the remodeled skull with a richly vascularized and full-thickness local tissue. At this point, the use of expanders was avoided due to the patient's infectious history and the use of partial-thickness grafts was avoided due to the absence of periosteum for proper integration of the grafts.<sup>12</sup>

Finally, it was decided to use local skin flaps because of the adequate functional (skin coverage) and cosmetic results.

### Conclusion

The choice of the appropriate reconstructive technique for scalp skin defects should take into account the intrinsic factors of the patient. The

Orticochea flap is an acceptable and safe option in large occipital substance loss due to the practicality of closure in a single surgical event, the acceptable cosmetic and functional results obtained by covering a skin and bone defect with local full-thickness skin.



**Figure 2.** A. Sutured flaps. B. Reconstructed scalp 2 weeks later.

### Conflicts of interests

There were no conflicts of interests.

### Acknowledgements

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