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Case Report

Treatment of well-differentiated invasive squamous cell carcinoma of the skull and reconstruction by ultrathin anterolateral thigh flap

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ABSTRACT

Invasive squamous cell carcinoma is an aggressive form of skin cancer that requires radical surgical treatment and reconstruction. This article presents a clinical case of a 74-year-old patient with well-differentiated invasive squamous cell carcinoma of the skull, treated with surgical resection and reconstruction using an ultrathin anterolateral thigh flap. Reconstruction with an ultrathin anterolateral thigh flap is an effective therapeutic option that can offer numerous benefits and advantages for patients, improving their quality of life and their ability to carry out daily activities. This reconstructive technique allows for the restoration of the shape and function of the skull and face, minimizes morbidity and complications, and enhances facial aesthetics. Timely and effective treatment of invasive squamous cell carcinoma through reconstruction with an ultrathin anterolateral thigh flap can significantly improve the patient's survival and quality of life. In conclusion, the ultrathin anterolateral thigh flap is an excellent reconstructive option for patients with scalp defects secondary to extensive oncological resections.

Keywords: Squamous cell carcinoma, Reconstruction, Anterolateral thigh flap

INTRODUCTION

The treatment of defects on the scalp may be secondary to infections, radiation, trauma injuries or extensive oncologic resections, especially those originated by invasive epidermoid carcinomas, represent a challenge in the field of reconstructive plastic surgery.[1] The craniofacial region is a complex area that requires careful planning and execution to achieve optimal aesthetic and functional results. Reconstruction of craniofacial defects should consider functional, aesthetic and oncological aspects, favoring low morbidity surgeries to avoid delays in the application of adjuvant therapies.

In this regard, the selection of the appropriate reconstructive method is crucial to address the individual needs of each patient. Local flaps, such as pericranial or temporal flaps, may be insufficient to cover extensive craniofacial defects, especially in patients with previous surgery and radiotherapy.[2] In these cases, free flaps, such as the vertical anterior rectus or anterolateral thigh flap, may be a more suitable option to provide well-vascularized tissue and minimize morbidity.[3]

In this case report, we present the treatment of a well-differentiated invasive squamous cell carcinoma of the skull followed by successful reconstruction with an ultrathin anterolateral femoral flap. This reconstructive approach allowed us to achieve a satisfactory aesthetic and functional result, minimizing morbidity and optimizing the patient's quality of life.[2-4]

CASE REPORT

Female patient, 74 years old, with an important history: severe head trauma in childhood in the left temporal region. Her current condition began in June 2019, when she presented with a localised dermatosis in the left parietal region, measuring 2×3 cm, exophytic, with the presence of scaling and hyperemia, following a trauma in the area, which has shown continuous growth; she was treated with homemade emollients without improvement. She was treated with homemade emollients without improvement. She was referred by the health centre with a diagnosis of basal cell carcinoma. In October 2020, she went to the surgical oncology outpatient clinic where she presented a growth of the lesion, 10×10 cm in diameter, with a perilesional alopecic area that was painful to palpation. In the same month, an incisional biopsy of the cranial lesion was performed and an irritated hyperkeratotic seborrheic keratosis was reported. In November 2020, a new biopsy was performed, reporting a well-differentiated invasive squamous cell carcinoma. It was decided to be assessed by the radiation oncology Service, who administered radical treatment with radiotherapy at a dose of 69.96 Gy in 33 fractions, which was completed in February 2021.

In April 2021, she was evaluated by the plastic and reconstructive surgery service, who found a tumour in the scalp skin in the parietal area of 8×10 cm with adjacent scar tissue, angiotomography of the head and neck with 3D reconstruction was requested, reporting irregularity and nodular thickening in the epicranial soft tissues in the right temporo-parietal region, A flat and ulcerated lesion, not more than 5 mm thick, with cortical erosion of the outer table and sclerotic changes of the adjacent bone, without evidence of brain or meningeal metastatic activity, was visualized (Figure 1 A to C). The soft tissues of the neck, supra-and infrahyoid spaces, carotid arteries and jugular veins were normal. The patient was scheduled for resection of an invasive squamous cell carcinoma in the right temporo-parietal region and reconstruction of the defect using an anterolateral ultra-thin femoral flap.

On 10 June 2021, the patient was admitted to surgery, where the lesion and the external lamina of the skull bone were resected by the oncology service, sent for transoperative study, which reported negative margins of more than 1 cm, subsequently a cruciate area of 8×10 cm was found. An anterolateral femoral flap was dissected using 1 perforator, the recipient area was dissected and anastomosed to the superficial temporal vein and artery. A keystone flap was performed in the donor area and later a full thickness graft was harvested and placed from the inguinal region to the donor area (Figure 2 A to I).

The patient remained in hospital for 8 days with good evolution and was discharged on 18 June 2021. During his outpatient follow-up 1 year later, adherent flap colour, capillary filling and temperature were observed, with no evidence of congestion or ischaemia (Figure 3 A to C).

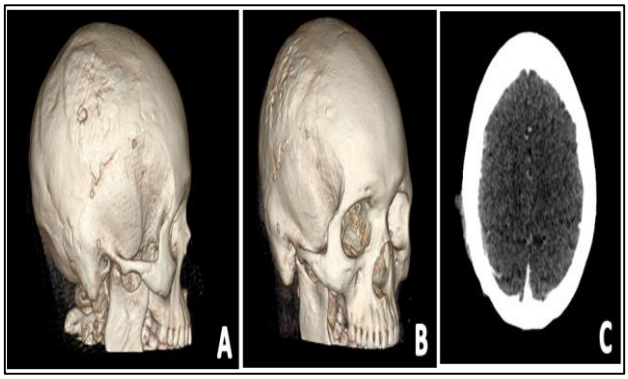

Figure 1 (A-C): Tomography of the skull with 3D reconstruction. Epicranial soft tissue lesion of approximately 3.5×1.3 cm in extent and thickness associated with sclerotic changes and right parietal cortical erosion.

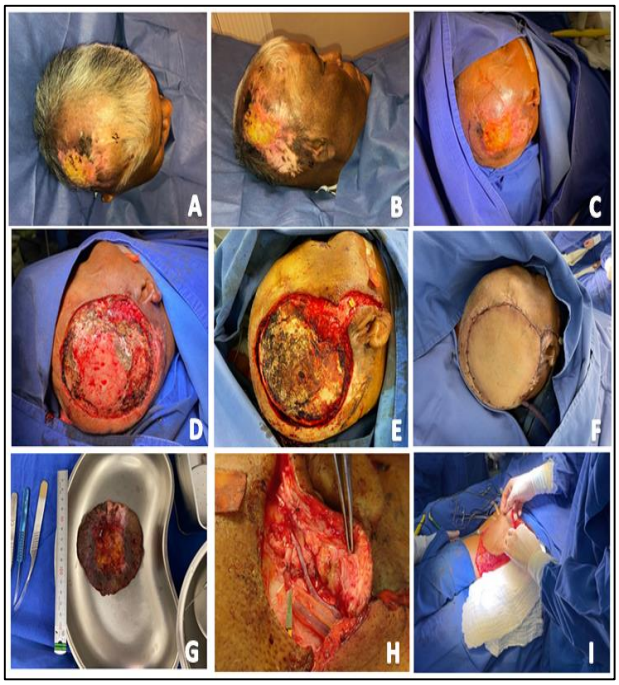

Figure 2 (A-I): Localised dermatosis is observed in the right parietal region, measuring 10×15 cm, asymmetric with irregular borders, with hypochromic, hyperchromic and hyperemic areas, with scaling in the central region. Surgical marking of the lesion with extension of the margins is observed. Resection of the lesion and removal of the external lamina of the skull. Dissection of the recipient area showing the superficial vein and the superficial temporal artery. Insertion of an anterolateral ultra-thin femoral flap with placement of a Blake-type drainage. Surgical specimen. Anastomosis of the vascular pedicle (1 artery: 1 vein) to the terminoterminal recipient site with 9-0 nylon for the venous vessel and 8-0 nylon for the arterial vessel. Dissection of the anterolateral femoral flap from the descending branch of the lateral circumflex femoral artery.

Figure 3 (A-C): Follow-up 1 year post-operatively showing a flap with good adherence without residual lesions or dehiscence.

DISCUSSION

Cutaneous squamous cell carcinoma is the second most common form of skin cancer and the most aggressive. It arises from malignant proliferation of stratified and non-squamous epithelial tissue, keratinocytes, with invasion of the dermis. Risk factors include cumulative exposure of the skin to ultraviolet light, advanced age, male sex, immunosuppressed patients, fair complexion and a history of actinic keratosis. This condition has precursor lesions called actinic keratoses, shows tumour progression and has the potential to metastasise throughout the body.[4]

Squamous cell carcinoma develops in sun-damaged skin, often from precancerous lesions. The most common sites for epidermoid carcinoma are the face, neck, bald scalp, extensor forearms, dorsum of the hands and shins. Clinically it is characterized by clear to erythematous lesions with varying degrees of scaling, crusting, ulceration and hyperkeratosis.[5]

The goals of treatment for squamous cell carcinoma are tumour removal, preservation of function and, ultimately, preservation of aesthetics. In patients with multiple actinic keratosis lesions or multiple tumour lesions in situ, local therapies (cryotherapy, curettage, electrodissection or methylaminolevulinic acid) or topical agents (imiquimod 5%, 5-fluorouracil 0.5%, 1% and 5%, diclofenac 2.75%, ingenol mebutate 0.05%) may be used. Surgical excision combined with reconstructive surgery is the treatment of choice and the most convenient and effective means to achieve cure of any invasive squamous cell carcinoma, as it allows confirmation of tumour type and evaluation of free margins after tumour resection and provides very high cure rates of up to 95%.[6] Radiotherapy is reserved for squamous cell carcinoma in elderly patients or those who cannot tolerate surgery, or when clear margins cannot be achieved surgically. Adjuvant radiotherapy is often used after surgery for very large tumours.[7]

The "reconstructive staircase" approach can be used to close small and medium-sized scalp defects. This approach can give the surgeon an idea of a reconstructive algorithm that can be used to close defects simply and with as little intervention as possible. However, this is not the case for more complex defects involving the skull or for patients with risk factors. It is important to assess the viability of the tissue surrounding the lesion, take into account subsequent treatments such as radiotherapy, and consider the intervening factors to create an appropriate reconstruction for each patient.[8]

If it is not possible to reconstruct a defect with local flaps, a more complex defect may be created as dissection of a more proximal recipient vessel may be required. For this reason, it is very important to assess complex scalp defects and choose a "reconstructive elevator" with vascularised free tissue transfer.[9]

The use of free flaps is a treatment option for large lesion lengths, defects associated with severe trauma, osteomyelitis, perilesional radiotherapy and previous failure of local flap reconstruction[9]. Several flaps have been described for reconstruction of scalp skin defects, including the latissimus dorsi, rectus abdominis, serratus anterior, omentum, radial and anterolateral femoral flaps.[10] Although local flaps have been shown to provide satisfactory results, the advantage of free flaps for reconstruction has been demonstrated in several studies.

The anterolateral femoral flap was first described in 1984. The anterolateral femoral flap has a wide variability in size. It has been harvested up to 33×14 cm and is suitable for the reconstruction of extremely large or near-total scalp defects in a single stage. Perforator sites are described within a 3 cm radius circle centred on the midpoint between the anterosuperior iliac spine and the superolateral corner of the patella in most cases. Primary closure of the donor area can be used for flaps up to 10 cm wide; grafting is required for larger flaps. The pedicle length is approximately 10 to 12 cm if the descending branch is dissected where it exits the lateral circumflex artery and is sufficient to reach the ipsilateral neck and achieve anastomosis without the need for a venous graft. For scalp, skull base and upper face reconstruction, the choice of recipient vessel is the superficial temporal artery and its associated veins. It is an ideal flap for the reconstruction of wide defects, with a large vascular pedicle and the versatility of design, as it can be harvested as an adipocutaneous, fasciocutaneous or chimeric flap.[11,12]

CONCLUSION

Squamous cell carcinoma is an aggressive variant of skin cancer that may warrant radical surgical treatment with reconstruction for extensive lesions. The ultra-thin anterolateral femoral flap is an excellent reconstructive option in patients with a scalp defect following extensive oncological resection.

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