

Giant basal cell carcinoma of the scalp: rotation advancement flap as a successful dermatosurgical approach

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Abstract

Giant keratinocyte tumors, in particular basal cell carcinomas of the scalp area, are a serious challenge for dermatosurgeons, oncologists, and maxillofacial and reconstructive surgeons. The scalp area is limited in terms of skin mobility, and its elasticity decreases with age. The size of the tumors in this area and the degree of infiltration of the underlying tissues are important for the therapeutic choice, from surgical removal, waiting for granulations to form, and placing a split skin mesh graft (at a later stage) to performing complex rotational/transpositional or advancement

flaps. Achieving an optimal aesthetic result is often the consequence of interventions carried out or based on the decisions of multidisciplinary teams. Alternatives, such as radiotherapy and targeted therapy with vismodegib, could be administered both preoperatively and postoperatively or as first-line therapy, depending on the tumor board decisions. We present the case of a 69-year-old female patient with a histopathologically proven preoperative giant basal cell carcinoma of the scalp that did not infiltrate the tabula externa. A preoperative ultrasound was performed to preserve the feeding flap arteries. Surgical treatment under general anesthesia was planned and subsequently carried out. During surgery, the surgical resection lines were in close proximity to the arterial vessels, but they remained preserved and ensured a subsequently unproblematic healing process. After the application of the rotational advancement flap technique under general anesthesia, an optimal cosmetic effect was achieved.

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Introduction

Keratinocyte tumors, whether basal cell or squamous cell carcinomas, have a tendency toward bone invasion and subsequent destruction.^{1,2} Although the estimated risk of 0.03% seems low, it must be acknowledged because, when left untreated, basal cell carcinomas can slowly but surely infiltrate the bone area.³ A major risk factor continues to be ultraviolet radiation; therefore, the head, neck, and scalp areas, as the most exposed ones in the human body, remain the most affected ones.⁴ The early eradication of cutaneous tumors in the scalp area ensures the achievement of an optimal and sustainable cosmetic outcome. Therefore, it should always be a priority.

Case Report

A 69-year-old female reported to the Dermatology Department with primary complaints of tumor formation on the scalp involving the frontal region. The primary complaints are about 2-3 years old. The lesion manifested itself for approximately 4-5 years. The dermatological examination showed a giant tumor-like formation with an irregular shape covered with hemorrhagic crusts, about 5-6 cm in size, located on the scalp in the fronto-occipital region (Figure 1 a-f). No allergies or any form of skin cancer in any family member means no history of trauma or malignancy in the area. The woman, of visible age corresponding to the passport, was adequate and afebrile. Overall, the skin and visible mucous membranes were pale pink; enlarged lymph nodes were not palpable. She presented with a request for a dermatological examination and a determination of a further diagnostic and therapeutic approach.

Preoperatively, an ultrasound was performed to locate and further preserve the two arteries, the superficial temporal artery parietal branch and the occipital one, which will ensure the future feeding of the flap.

The tumor formation located in the fronto-occipital area was preoperatively marked (Figure 1a). Under general intubation anesthesia, an elliptical excision with a surgical safety margin of 0.6 cm in all directions (Figure 1b), followed by preparation for reconstruction with an advancement rotation flap (Figure 1 c,d) with two feeding arteries, the superficial temporal artery branch and the occipital artery, was performed. The flap was formed in an occipital-frontal direction with rotation and adaptation of the wound edges in the periphery (Figure 1e). Smooth postoperative period with primary wound healing (Figure 1f). No subsequent complications occurred. Due to extreme postsurgical pain, ketoprofen 40 mg i.v. in sodium chloride 250 mL for 3-4 days was started. Outpatient follow-up and removal of the sutures 12 days after the surgery were performed, combined with daily dressings with povidone iodine 10% (Figure 2).

The postoperative histological finding showed a nodular type of basal cell carcinoma, stage 2 (T2N0M0), with a maximum size of 40 mm and a maximum thickness of 6 mm in the central part, with an extensive area of superficial ulceration, minimal peritumoral inflammatory infiltration, and absence of lymphovascular and perineural invasion. No evidence of locoregional and/or distant metastases was found.

Discussion and Conclusions

The treatment of giant basal cell carcinomas in the scalp area is a real challenge and requires consensus decisions, an interdisciplinary approach, but also an individual one. This is determined by i) the currently available therapeutic options; ii) the patient's willingness to undergo invasive or non-invasive treatment; iii) the oncology or surgical unit where the patient was admitted.

While the oncology units prefer radiotherapy and targeted therapy,⁵ the dermatological/surgical units emphasize the importance of invasive options such as complex rotational/transpositional or advancement flaps.^{3,6,7} For a number of patients, the operability of the tumor is of great importance. It depends on the general condition of the patient and the experience of the surgical team. This ensures an optimal surgical result even with operability risks due to the patient's comorbidities.

In comparison to "traditional" basal cell carcinomas, giant basal cell carcinomas show different clinical behavior, with a tendency toward more rapid and aggressive tumor growth and infiltration of the underlying extradermal structures.⁸ According to literature data, the frequency of giant basal cell carcinomas compared to other types of basal cell carcinomas does not exceed the limit of 1%.⁹

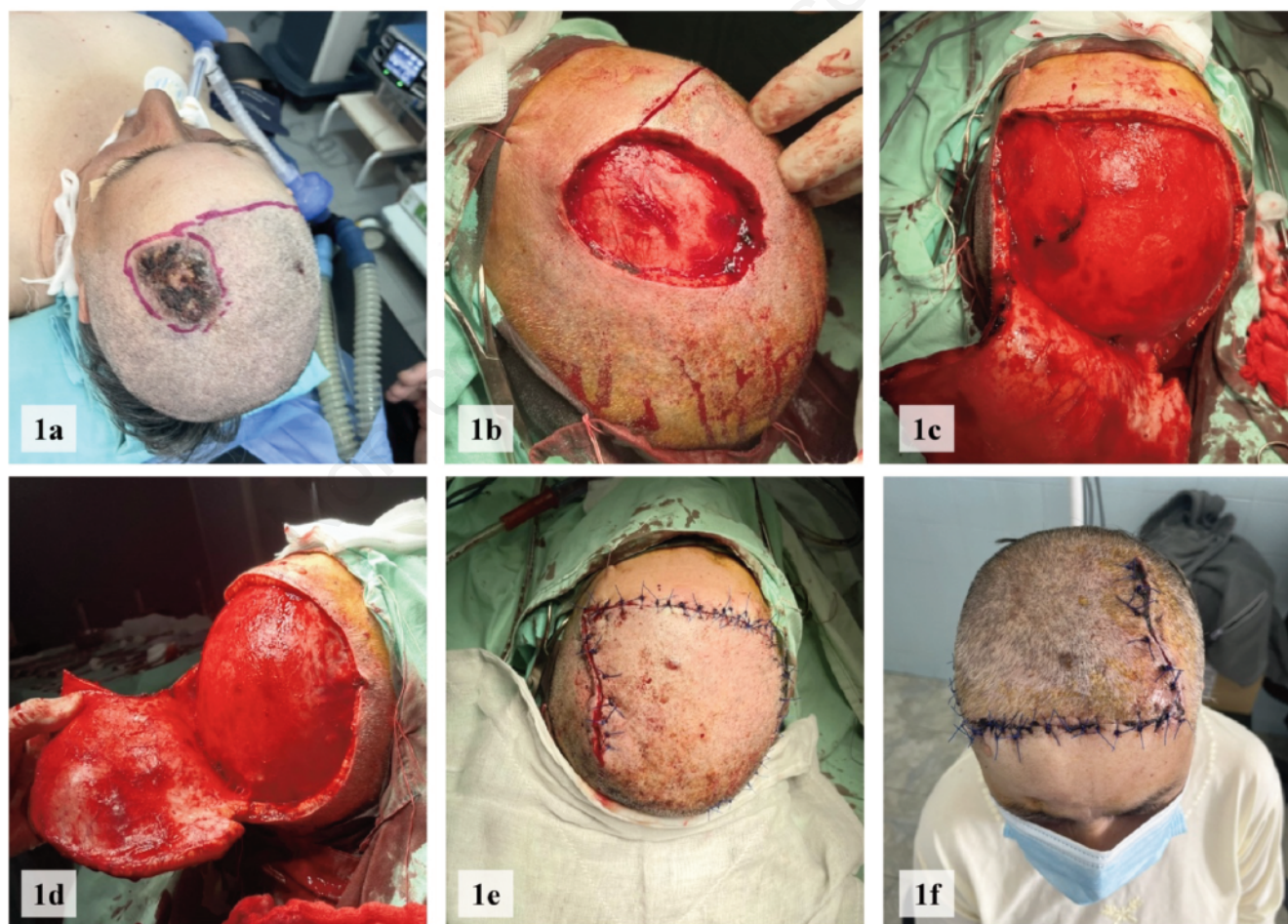


Figure 1. Giant tumor formation with an irregular shape covered with hemorrhagic crusts, about 5-7 cm in size, located on the scalp in the fronto-occipital region. **a)** Preoperative photograph of the tumor formation before surgical excision; **b)** intraoperative view: wide local elliptical excision of the formation; **c,d)** intraoperative view: preparation for reconstruction; **e)** intraoperative view: after flap mobilization and closure of the defect using interrupted stitches; **f)** postoperative photograph of the patient with closed defect and a good aesthetic result.

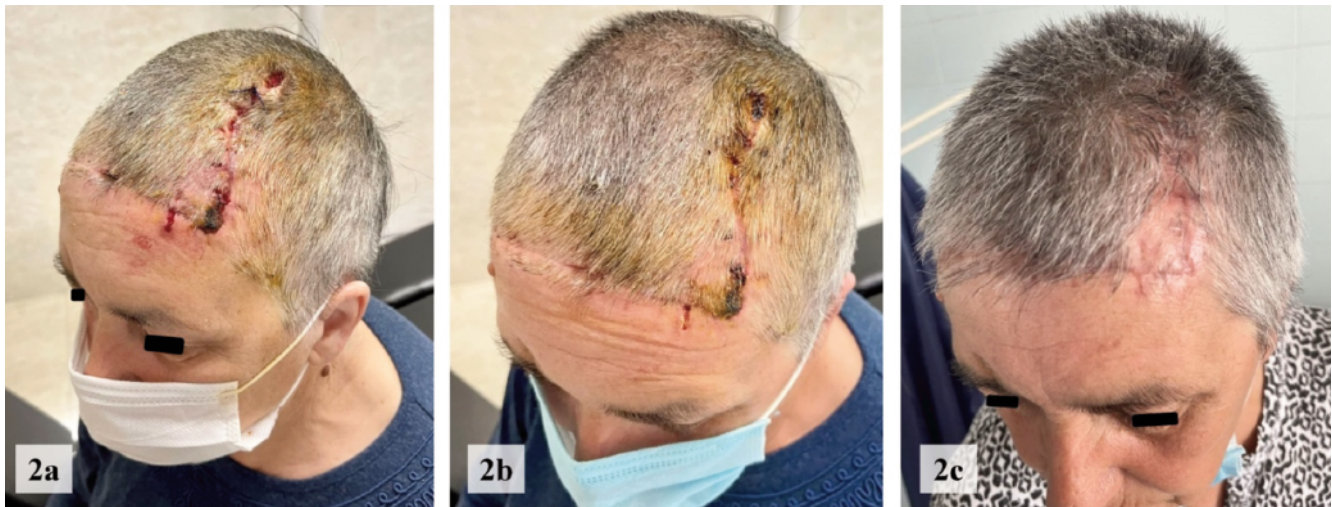


Figure 2. Outpatient follow-up with primary healing wound and good aesthetic outcome.

According to the tumor, node and metastasis classification, these tumors are characterized as stage T3.¹⁰ The pathogenesis of the disease remains a mystery, and it is assumed that the problem of its occurrence lies primarily in the neglect of the initial symptoms by the patients themselves for long periods of time, between 10 and 20 years.⁸

According to other experts, the reason for the appearance of giant basal cell carcinomas, in addition to neglect, is the inadequate treatment of smaller tumors, which subsequently can progress to larger ones.¹⁰ 80% of giant basal cell carcinomas involve the head and neck or areas exposed to intense ultraviolet radiation, and about 10% affect the torso.¹¹

In terms of prognosis, the histological finding plays an important role. Based on the result, we can predict the tendency of tumor growth and locoregional recurrences. According to the literature data, nodular and superficial-growing basal cell carcinomas are less aggressive than morpheiform, micronodular, and metatypical histological variants.¹²

Giant basal cell carcinomas show a tendency for lymphogenous and hematogenous metastases.¹³ The hematogenous metastases could affect the parenchymal organs and bones,¹³ thus leading to myelophthitic anemia.¹⁴ According to some experts, there is no correlation between the histological type of giant basal cell carcinoma and the development of metastases.¹⁴ Other expert groups have linked the size of the tumor or its diameter with the tendency to metastasize.¹⁰ 75% of metastatic giant cell carcinomas are larger than 10 cm in diameter and tend to have deep infiltrative growth.^{10,15}

Surgical treatment remains the preferred option. Wide surgical excision with a minimum resection margin of 3-5 mm is recommended for lesions with larger diameters.⁸ Moss micrographic surgery guarantees, with control of the resection margins, the absence of local recurrences in 99% of all cases.¹⁶ Chemotherapy and radiotherapy used as monotherapy are not sufficient in terms of achieving good control of tumor growth.⁸

The advanced rotation flap technique used by our team led to the complete eradication of the tumor and the achievement of an optimal cosmetic result. Preoperative ultrasound, marking the arterial vessels during the application of a rotational/progressive scalp flap on such a scale, ensures the preservation of the skin flap.

Early detection of the lesions within the dermatological

screening programs, combined with aggressive surgical eradication (with surgical safety resection margins), followed by close long-term follow-up for cancer surveillance, may help obtain a better prognosis of the disease.

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