Double rotation for basal cell carcinoma reconstruction. A case report

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Case Report

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Background: Objective: To describe a case report of basal cell carcinoma surgical treatment with surgical resection using a double rotation flap technique.
Introduction: Basal cell carcinoma is a common skin cancer with a low risk of metastasis; it is frequently found on the head and neck due to ultraviolet radiation exposure. Partial or total scalp loss is an uncommon surgical scenario. Small defects (under 3 cm) can be closed under tension by approximating the edges. Larger defects present a challenge, as the scalp's lack of elasticity prevents primary closure. This article presents the case of a patient who underwent immediate scalp reconstruction using a double-rotation flap.
Discussion: Flaps are the preferred option for extensive defects involving all scalp layers and devascularized tissue. Given the 3 cm defect, a double-rotation flap was chosen; this yielded good results, preserving the symmetry of the frontal hairline without any postoperative complications.
Conclusion: The scalp is a challenging area for surgical planning; however, a sound surgical approach is essential to achieve definitive skin coverage—whether through primary closure or a flap—that ensures adequate tissue blood supply while minimizing aesthetic impact.

Keywords: Basal cell carcinoma, Plastic surgery, Double rotation flap, flap, resection, surgical.

Basal cell carcinoma is a common skin cancer with a low risk of metastasis; it is frequently found on the head and neck due to ultraviolet radiation exposure (1). In most previous studies, the scalp has been classified within the head and neck region due to its anatomical relationship. However, the scalp differs from other areas in its characteristics, as it consists of multiple layers and possesses a high density of pilosebaceous units (2).

Partial or total scalp loss is an uncommon surgical condition in modern practice. Its low incidence has likely contributed to limited surgical interest in its management. Defects smaller than 3 cm can be closed under tension by approximating the wound edges. Larger defects present a challenge, as the scalp's lack of distensibility precludes primary closure (3).

In this article, we present the case of a patient who underwent immediate scalp reconstruction using a double-rotation flap.

Case report

We present the case of a 65-year-old male. Regarding relevant medical history, he denied chronic degenerative diseases but reported a history of substance use, specifically smoking (10 cigarettes per day for the past 40 years). Surgical history included a hemicraniectomy following a traumatic brain injury in 2010, with no reported complications; other history was non-contributory to the current condition. He reported the onset of his condition in January 2024 with a rapidly growing, painless, exophytic mass in the right parietal region characterized by irregular borders; there was no associated weight loss or other accompanying symptoms. Initial assessment revealed an asymmetric, exophytic scalp lesion in the right parietal region measuring approximately 1 x 1 cm, with irregular borders, hyperpigmentation, ulceration, and signs of bleeding. Consequently, he was scheduled for surgery involving wide-margin resection of the lesion and intraoperative pathological analysis. Results showed a cutaneous tumor in the parietal region (epidermis with an erosive-appearing lesion, measuring 4 x 2.8 cm along its major axes) identified as nodular basal cell carcinoma, with surgical margins clear of the lesion.

SURGICAL TECHNIQUE

Preoperative diagnosis: Cutaneous tumor in the right parietal region

Procedure performed: Excision of the tumor in the right parietal region + coverage with a bilateral rotation flap.

After marking the 1 cm diameter defect and a 1 cm margin (resulting in a total diameter of 3 cm), a double rotation flap is outlined with a 9 cm circumference and a 4 cm base (Figure 1); following infiltration of the incision sites with 1:100,000 diluted epinephrine, the tumor is resected down to the pericranium (Figure 2), leaving a 3 cm defect; the rotation flaps are then mobilized in the subgaleal plane, rotated and advanced toward the center of the defect, and secured with 3-0 nylon (Figure 3).

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Figure 1. Top view and surgical marking of right parietal affected area



Figure 2. Top view of a patient after surgery.

Discussion

Almost all tumors treated by head and neck surgeons can be classified as high-risk. For these lesions, excision with clear circumferential and deep margins should be performed using cold-blade techniques and a 1 cm margin (4).

For extensive defects involving all layers of the scalp and devascularized tissue, flaps are preferred; these involve transferring tissue from a donor site to a recipient site while maintaining a vascular connection to the site of origin (5).



Figure 3. Top view of postoperative course of a patient who underwent scalp reconstruction with a double-rotation flap.

Given a 3 cm defect, and following the "1-2-3 rule" described by F. Russo in 2019—which states that reconstructing defects with a minimum span of 1–2 cm begins with one relaxing incision, defects of 2–3 cm begin with two incisions, and those of 3–4 cm begin with three incisions—a double rotation flap was chosen. If closure cannot be achieved with the recommended number of relaxing incisions, they can be extended to design rotation or transposition flaps (6). This approach yielded good results, preserving the symmetry of the frontal hairline without any postoperative complications.

Conclusion

The scalp is a challenging area for surgical planning; however, it is important to employ a surgical approach that achieves definitive skin coverage—whether through primary closure or a flap—ensuring adequate tissue perfusion while minimizing aesthetic impact.

Conflicts of interests

None declared by the authors.

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