

Double-triangular flap for reconstruction of a circular skin defect in the central frontal region

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The case

A 75-year-old female presented to the dermatology department with primary complaints of a tumor formation located in the center of the forehead, above the eyebrows. The adjacent skin was slightly sun-damaged, but no signs of surgical scars or malignancy were noted. A clinical diagnosis of basal cell carcinoma was established, and the patient was recommended surgical excision under local anesthesia.



Figure 1. Infiltrative basal cell carcinoma, staged T1N0M0R0, located in the center of the forehead, above the eyebrows.

Our choice

The tumorous lesion in the central frontal region was removed with a circular excision. The resultant defect is round, measured 36 mm x 38 mm, 4 mm deep, and displays exposed periosteum.

Circular defects of the frontal region, especially of this caliber, are a reconstructive challenge due to the complex and sensitive nature of the anatomical area. Neglected or left untreated, the tumor may progress over time, potentially resulting in local destruction and bone invasion. The selected reconstructive technique should prioritize the preservation of the eyebrows while also minimizing the tension around the forehead area, reducing distortion of the adjacent tissue, and providing better redistribution of it while preserving as much healthy tissue as possible. We must also consider the proximity of the sensitive anatomical region, which includes the supratrochlear and supraorbital nerves and arteries.

In the case presented, the circular skin defect following the surgical excision of the tumor was located in the central frontal region, above the patient's eyebrows. Due to the size and location of the defect, as well as the anatomical limitations, our team opted not to proceed with secondary wound healing or primary closure

with single interrupted sutures alone. The tension created would compromise the anatomical integrity of the forehead, leading to dysfunctional tissue and an aesthetically displeasing appearance. Therefore, we decided to proceed with a flap repair, utilizing the patient's surrounding healthy tissue. The flap tissue will maintain similar anatomical integrity and vascular supply, making it the most suitable option for ensuring adequate closure of the defect while also being of sufficient size.

After the primary tumor excision under local anesthesia with lidocaine, careful haemostasis was performed (Figure 2). The resulting circular defect was reconstructed with a double triangular flap. The double triangular flaps were created on both sides of the lesion, medially and laterally to the defect, with a length of 1.5 times the diameter of the initial defect (Figure 3). This was followed by careful dissection and undermining of the flap to the hypodermis, ensuring vascularization necessary for tissue viability. In this case, the pedicle consists of the subcutaneous tissue beneath the triangular flaps. The periosteum was left intact in case of flap necrosis. Then, the flap was positioned into the primary defect. After confirming minimal tension to the flap, we closed the secondary defect with single interrupted 4-0 poliglecaprone 25 sutures.

Removal of the sutures 14 days after the surgery was performed. The flap was healthy without any postoperative complications. After 3 months, the patient showed significant improvement (Figure 4a), and an aesthetically pleasing result was achieved 6 months post-surgery (Figure 4b).



Figure 2. Circular primary defect, measured 36 mm x 38 mm, 4 mm deep, with displayed exposed periosteum after surgical excision of infiltrative basal cell carcinoma. The double triangular flap that will be created was preoperatively marked.



Figure 3. Double-triangular flap prepared for primary defect closure.



Figure 4. a) 3-month follow-up; b) 6-month follow-up.

Comment

Given the patient's skin elasticity, the size of the primary defect, and the sensitive nature of the area, our team opted to employ a double triangular flap to repair the circular defect without disrupting the anatomical integrity of the area. Triangular flaps

offer versatility in closing medium-sized defects, typically ranging from 15 mm to 30 mm in size.¹ This technique is commonly used for reconstruction in areas such as the back, foot, hand, chest, and face.¹ The pedicle is relative to the size of the flap, ensuring excellent flap viability.¹ For forehead defects above the eyebrow, an effective option is the double-triangular subcutaneous pedicle skin flap.¹ The flap is based on a random arterial blood supply.¹ Vascular compromise or an unnatural appearance may result from a flap being overly thinned.² On the contrary, excessively thick flaps may appear too bulky, with reduced mobility.² Moreover, it may damage the underlying neurovascular structures or muscles.² The resulting scar should be oriented parallel to the relaxed skin tension lines.³ Considering the size and close proximity of the defect to the border between facial units, the selected technique appeared to be the most suitable despite the potential for triangular lines to create non-anatomical, diverging shapes on the forehead. However, in such cases, certain compromises regarding expectations may be necessary.

The double-triangular flap used in this case effectively redistributed the tension of the wound closure, leading to a good aesthetic outcome with minor hypertrophic scarring that will improve with time, intralesional steroid, or laser therapy.

The outcome

The outcome is shown in Figure 4.

References

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