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Dermatosurgical rounds: modified rhomboid transposition flap combining the Limberg and Dufourmentel techniques for reconstruction of primary defects following skin cancer excision in the zygomatic region

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The case

An 82-year-old female presented to the dermatology department with a primary complaint of an achromatic tumorous lesion measuring 1.5×1.5 cm, protruding above the surrounding skin, covered with hemorrhagic crust, with irregular borders, located in the right zygomatic region (Figure 1). Based on the clinical presentation, squamous cell carcinoma was suspected and surgical excision under local anesthesia was recommended. Additionally, a solitary formation was observed in the right parotid region, suspected to represent a lymph node conglomerate (Figure 1). A lymph node biopsy has been scheduled in another department for further evaluation.

Our choice

The cheek represents a central anatomical and aesthetic unit of the face, comprising the largest cutaneous surface and integrating significant vascular and neural complexity, while playing a key role in supporting overall facial harmony. Reconstruction of this unit is particularly challenging due to the risk of donor-site deformity and the potential for distortion of adjacent structures, including the eyelid and mouth.

The zygomatic region is an anatomically complex area that requires surgical precision to avoid injury to important structures and to preserve facial symmetry, including the transverse facial artery (a branch of the superficial temporal artery supplying the upper cheek and parotid region), the facial vein, the buccal branch of the mandibular nerve, and the zygomatic nerve.

Primary closure was not feasible due to the location of the defect on the most prominent projection of the patient's cheek, where closure would likely result in significant distortion. Healing by secondary intention was not considered, as a more single-stage, tissue-sparing, reconstructive approach was required, given the need for concurrent evaluation of the solitary formation in the right parotid region. Skin grafting was also deemed unsuitable due to the risk of graft retraction, which could lead to distortion of adjacent subunits, as well as suboptimal aesthetic outcomes related to color and texture mismatch.

The skin in the inferior part of the cheek demonstrated relative laxity, allowing for a more suitable reconstructive approach using a local transposition flap.

We present a case involving a medium-sized defect on the zygomatic subunit following surgical excision of a cutaneous lesion within the right cheek unit. Reconstruction was performed using a full-thickness modified rhomboid transposition flap, with an irregular rhombus design tailored to the patient's specific defect, combining the advantages of both the Limberg and Dufourmentel flaps to achieve a more patient-oriented approach.

Procedure

The lesion was carefully outlined. The flap design consisted of an irregular rhombus, approaching a square configuration with irregular angles. Additional incisions to achieve a geometrically perfect rhombus with strict angles were avoided to preserve as much surrounding tissue as possible.

The tumor, located on the lateral third of the zygomatic region within the right cheek facial unit, was preoperatively marked and excised with appropriate resection margins under local anesthesia using 1% lidocaine.

The resulting defect is configured as a rhomboid, characterized by two opposing acute angles and two opposing obtuse angles, similar to Dufourmentel's flap (Figure 2).

The defect determines the positioning of the flap base. In this case, the flap was designed in the lower lateral segment of the cheek to minimize the risk of mid-cheek distortion.

The short diagonal was extended, in accordance with the Limberg design. A broader pedicle (base) was made to ensure adequate vascular supply and to facilitate more favorable distribution of tension vectors. The designed flap base was carefully undermined and elevated in the subcutaneous plane (Figure 3), after which the flap was transposed into the primary defect. Tension vectors were equally distributed. An additional small Burow's triangle was excised at the most superior and medial aspect of the flap to facilitate a more refined contour. The resulting secondary defect was subsequently closed using single interrupted sutures (Figure 4).

The modified design offered several advantages: i) improved skin mobility; ii) utilization of a more square-shaped defect, thereby avoiding additional tissue excision required to achieve a geometrically perfect rhombus, as in the Limberg flap; iii) extension along the short diagonal, as in the Limberg design, accommodating the preferred inferior positioning of the flap; iv) a greater arc of rotation, consistent with the Dufourmentel flap; and v) reduced cutaneous distortion facilitated by the incorporation of a small Burrow's triangle. The vertical component of the final scar was accepted as a compromise, as it is less visible in a frontal view, and sufficient tissue laxity allowed for tension-free closure.

No postoperative functional impairment was observed. The histopathological examination verified low-grade G3 squamous cell carcinoma with clean resection lines.

Comment

Modifications to the Dufourmentel flap have been reported to yield improved outcomes compared to the classical design, although these techniques have been predominantly applied to the extremities¹⁻³ rather than the facial region, as in the present case. Modifications of both designs may allow for

further refinement of the technique and improved postoperative outcomes, including enhanced wound healing and a potentially reduced risk of recurrence.^{3,4}

The modified technique employed an irregular rhombus without strict geometric angles to preserve as much tissue as possible. In addition, the flap differed from the classical Dufourmentel approach by utilizing the short diagonal, as in the classic Limberg flap. By integrating these features, a modified rhomboid transposition flap was achieved, combining both classical techniques and allowing for a more patient-oriented approach.

We propose that this modification of the two classical techniques (Limberg and Dufourmentel) may represent a promising option for the closure of cutaneous defects within the cheek-facial unit, as well as in other anatomically suitable regions.

The outcome

The outcome is shown in Figure 4, illustrating the post-reconstruction status.

References

1. Imafuku K, Hata H, Yamaguchi Y, et al. Modified Dufourmentel flap, easy to design and tailor to the defect. *J Dermatol* 2017;44:68-70.
2. Yildar M, Cavdar F, Yildiz MK. The evaluation of a modified Dufourmentel flap after S-type excision for pilonidal sinus disease. *ScientificWorldJournal* 2013;2013:459147.
3. Menten BB, Leventoglu S, Cihan A, et al. Modified Limberg transposition flap for sacrococcygeal pilonidal sinus. *Surg Today* 2004;34:419-23.
4. Sebastian M, Sroczynski M, Rudnicki J. The Dufourmentel modification of the limberg flap: Does it fit all? *Adv Clin Exp Med* 2017;26:63-7.

Figure 1. Preoperative view: an achromatic tumorous lesion, measuring 1.5×1.5 cm, protruding above the surrounding skin, covered with hemorrhagic crust, with irregular borders, located in the right zygomatic region. Additionally, a solitary formation is observed in the right parotid region, suspected to represent a lymph node conglomerate.



Figure 2. Intraoperative view: the tumor, located on the lateral third of the zygomatic region within the right cheek facial unit, is excised with appropriate resection margins. The resulting defect is configured as a rhomboid, characterized by two opposing acute angles and two opposing obtuse angles, similar to Dufourmentel's flap.

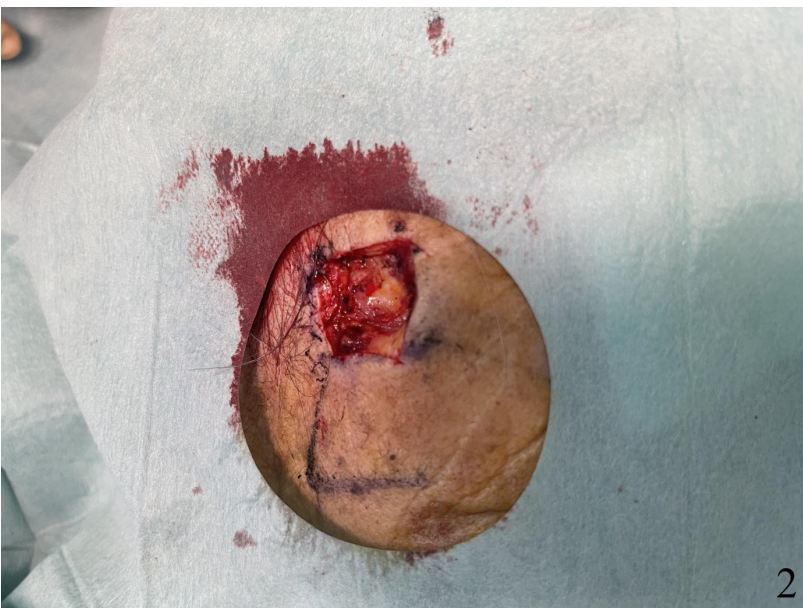


Figure 3. Intraoperative view: the designed flap base is carefully undermined and elevated in the subcutaneous plane.



Figure 4. Intraoperative view: the resulting secondary defect is subsequently closed using single interrupted sutures.

