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A case of melanoma in situ of the central forehead repair by V-Y advancement flap and Burow graft

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Abstract

Large defects on the face after Mohs surgery have posed significant reconstructive challenges. A 90-year-old man presented with melanoma in situ of the central forehead, which resulted in a 4.5cm×4.3cm defect after multiple stages of Mohs surgery. Although different approaches for forehead repair with nasal root involvement are possible, we demonstrate that the V-Y advancement flap and subsequent Burrow graft for nasal root repair represents a viable closure technique for large circular defects of the central forehead.

Keywords: Burow graft, in situ, melanoma, Mohs surgery, reconstruction, V-Y advancement

Introduction

Soft tissue defects after surgery can pose significant reconstructive conundrums. Approaches for repairing these defects include primary closure, skin grafts, local flaps, and free flaps. Many surgeons prefer using a local flap rather than a free flap or skin graft owing to better cosmesis, faster healing, less scar tissue, easier surgical method, and less risk for donor site morbidity. In particular, the V-Y advancement flap with a unilateral or bilateral pedicle has widely been used for reconstruction of facial circular defects with advantages including superior aesthetic results compared to other local flap methods because there is less scarification of surrounding tissue, and complications like dog-ears

or excess tension are avoided. Regardless of the flap method chosen, an ideal repair of a large facial defect maintains symmetry and minimally disturbs surrounding structures.

Case Synopsis

A 90-year-old man presented with melanoma in situ of the central forehead. Tumor clearance was achieved after eight stages of Mohs surgery, resulting in a large 4.5cm×4.3cm defect. (**Figure 1**) Further involvement of the nasal root complicated reconstruction, necessitating repair of two cosmetic subunits individually. A V-to-Y advancement flap repair was deemed appropriate for the wound's location and size. A vertically oriented flap was favored to avoid undesirable horizontal tension vectors which would lead to brow distortion.



Figure 1. Large defect after eight stages of Mohs surgery for melanoma in situ of the central forehead (4.5cm×4.3cm).



Figure 2. Immediate post-reconstruction of the central forehead defect after a V-Y advancement flap and Burow graft for the nasal root involvement.

After standard prepping and draping, incisions were made to the galea on the right edge and subcutis on the left edge of the flap. The flap was dissected out and these planes were maintained to preserve a laterally-based muscular pedicle containing perforators from the supratrochlear artery and as much frontalis muscle as possible. The flap was dissected laterally until adequate movement to cover the defect area was obtained. The flap was thinned to a small, well perfused pedicle, advanced with slight rightward rotation into the defect and ultimately, secured with 4-0 and 5-0 monocryl buried vertical mattress sutures. The epidermis was secured using 5-0 prolene running superficial sutures. The tail of the flap was trimmed for a Burow graft on the nasal root and the preserved skin was used to individually preserve the portion of the defect that encompassed the nasal root. The graft was trimmed and secured with interrupted and simple running 5-0 fast gut sutures. The patient was well-healed at two weeks post-operatively (**Figure 2**) and the repair had achieved a cosmetically acceptable result at the 6-month follow-up (**Figure 3**).

Case Discussion

Reconstruction of a large surgical central forehead defect, as in our case, can be successfully repaired

using a V-Y advancement flap with a laterally based, thin pedicle and subsequent Burow graft for the nasal root involvement with acceptable cosmetic and functional results. Potential side effects of this procedure for the patient include bleeding, significant swelling, bilateral eyelid ecchymosis, and infection, leading to a protracted healing course. Major drawbacks of this technique may include scarring, keloid formation, distortion of the defect beyond its original size or nearby anatomical structures, dysesthesias from damage to the terminal nerve branches, flap ischemia flap failure, or a poor aesthetic outcome. Given the laterality of the temporal branch of the facial nerve, there is lower concern for damage of motor function with central defects, but sensory function, specifically the supraorbital and supratrochlear nerves, will inherently be at risk. Care should be taken when dissecting laterally to avoid injuring the motor innervation to the forehead. Additionally, distortion of the natural hairline, normal forehead lines, and brow are a major feared sequelae for large reconstructions of the forehead.

Secondary intention healing was not utilized because of the high risk of anatomic distortion from wound contraction. Linear closure was not feasible

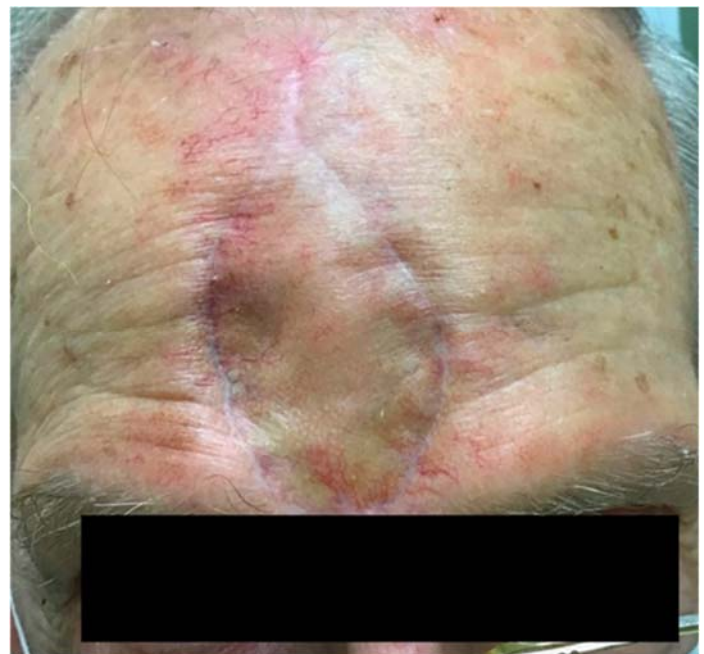


Figure 3. Large forehead defect closure with a V-Y advancement flap at 6-month follow-up visit demonstrating successful cosmesis.

for the defect's size and shape. A split or full-thickness skin graft may have been suitable, though less ideal given the potential for graft contraction, failure, and unpredictable cosmetic results. A V-Y flap optimizes tissue conservation, minimizing tension and avoids distortion, thus minimizing asymmetry and contractures [1,2]. In general, the length of the triangle of the V to Y should be at least 1.5 to 2 times the height of the defect. Our case was approximately twice the height of the defect. Another consideration for this type of reconstruction is to ensure adequate mobility is achieved by appropriately dissecting the frontalis, while taking care not to dissect past this muscle. This consideration demonstrates why this

type of flap is a feasible option for central forehead defects.

Conclusion

A V-Y advancement flap with a laterally based, thin pedicle and a Burow graft for nasal root involvement is a viable reconstructive option for large central forehead defects after Mohs surgery.

Potential conflicts of interest

The authors declare no conflicts of interest.

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