

Surgical Pearls

Midline Forehead Flap for Reconstruction of Cutaneous Nasal Defects

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The forehead flap is a workhorse for reconstruction of large cutaneous nasal defects, including from ala to ala. It is characterized by its dependability, consistent anatomy, robust perfusion pressure at the pedicle base, and excellent texture match. The *midline* forehead flap design has the advantage of a donor site scar in the midline of the forehead rather than paramedian, which is often less conspicuous. The curved pedicle also gives a slightly longer reach.¹

Preoperative Considerations

Defect analysis is crucial to surgical success and is dependent on some key points. The size and shape of the defect is described based on its relation to the aesthetic units of the nose and if the defect extends to other facial subunits, such as the cheek or lip. Often, the defect may have to be enlarged so that the resultant scar lies along the borders of these aesthetic subunits.² Variations in nasal topography must be noted; for instance, a prominent dorsal hump, a twisted nose, or a bulbous nasal tip may be corrected before designing the forehead flap to cover the defect. Function of the nose is then assessed, specifically for lateral nasal wall collapse or external nasal valve deficiency, to determine if alar batten grafts are necessary.



Video at
jamafacialplasticsurgery.com

Surgical Technique

The technique can be viewed in the **Video**.

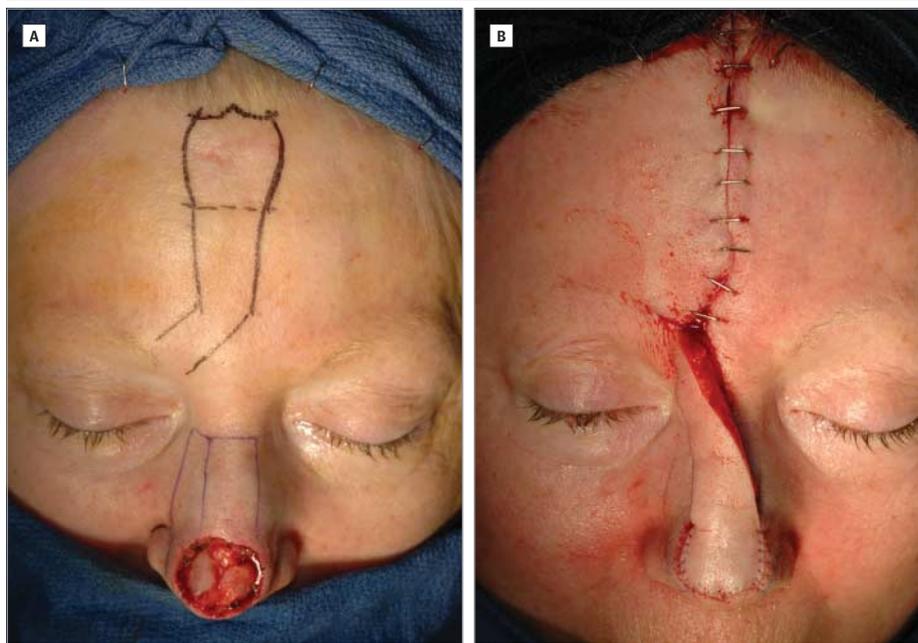
Defect Modification

The nasal aesthetic subunits are drawn directly on the nose at the onset of surgery. It is important to maintain straight lines and sharp corners at the junction of subunits. The defect is then modified in 2 ways. First, the existing defect is enlarged so that the resultant scars lie along the borders of aesthetic subunits, although the entire subunit is not uniformly excised. Enlarging the defect in the cephalad direction does not add additional length or morbidity to the forehead flap. Occasionally, the shape of the defect is modified by making it slightly smaller. Simple tissue rearrangement on the nose (eg, wedge excision) can move scars in favorable ways without enlarging the defect and, thus, the flap. Second, the depth of the defect is modified down to the perichondrium and periosteum. All edges are rebeveled away from the center to improve eversion.

Template and Design

A precise template of the defect is made from a suture packet, taking care to cut straight borders with crisp corners and to shape the 3-dimensional nature of the nose. It is then transferred to the exact midline of the forehead for tracing. The vertical height of the template must be carefully measured around the pivot point

Figure. Patient With a Cutaneous Nasal Defect



A, Defect marked out on the forehead taking to ensure crisp corners. The skin paddle is in the midline, and the blood supply is centered over the supratrochlear arteries and its collaterals. B, Status post-forehead flap inset. The forehead defect is closed primarily, and care is taken to ensure eyebrow symmetry.

of the medial eyebrow area. While the skin paddle is midline, the pedicle is unilateral, based on 1 supratrochlear artery and collaterals (Figure, A). Generally, a contralateral pedicle is designed to minimize rotation and kinking, unless additional reach is needed to the alar rim.

Forehead Flap Elevation

The incision is made inside the tracing to match the defect, and elevation begins in the subcutaneous plane for roughly 25% of the skin paddle. Dissection then transitions to the subgaleal plane for the remainder of the flap and pedicle. Additional thinning is then performed to best match the native nasal skin thickness. At the pedicle base, just above the supraorbital rim, the periosteum is elevated and included with the pedicle, providing more length and rigidity to this region. Pedicle dissection can extend below the eyebrow if additional length is required. For patients with extremely thick skin or clinically significant small-vessel risk factors, the skin paddle is elevated in the subgaleal plane with a planned intermediate stage for debulking.

Forehead Flap Inset and Donor Site

The forehead flap is secured with buried polydioxanone sutures and skin closed with fast-absorbing gut. Subtle modification may still be needed. The forehead defect is closed primarily after wide undermining in the subgaleal plane. Care is taken to ensure eyebrow symmetry (Figure, B). The standing cutaneous deformity at the apex of the donor site is excised vertically into the hair. Galeal closure is imperative with buried sutures. The pedicle edges are cauterized judiciously before being wrapped with a petrolatum gauze with bismuth tribromophenate, 3%. A head wrap dressing puts pressure on the donor site for 1 day.

Postoperative Management

The patient is seen the next day to remove the head bandage and clean the wounds. Patients are instructed to apply ointment on all wounds several times each day. Pedicle division is generally 3 weeks after the initial surgery. Smokers have been shown to have an increased risk for flap necrosis, and a 3-stage repair is indicated.³

ARTICLE INFORMATION

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