Island Pedicle Flaps for the Repair of a Nose, Cheek, and Lip Defect

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A 72-year-old woman presented with a basal cell carcinoma of the left lateral nasal ala measuring 1.0 × 1.3 cm. The tumor was excised with Mohs micrographic surgery. Two stages were required to clear the tumor, resulting in the full-thickness defect pictured below, measuring 1.9 × 1.5 cm (Figure 1). How would you repair this defect?

Figure 1. Surgical defect after two stages of Mohs micrographic surgery.

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Resolution

This defect involved three cosmetic subunits: the lateral nasal ala including the alar rim, the upper lateral cutaneous lip, and the medial cheek at the nasolabial fold. Thus, the repair required reconstruction of portions of all the involved cosmetic subunits while attempting to reconstitute the normal anatomic boundaries between them.

The nasolabial fold is an important facial sulcus, which anatomically defines the border between the cheek and the lip. When distorted, the resulting facial asymmetry is readily noted by others. The nasofacial sulcus that separates the nose from the cheek is likewise an important part of normal facial anatomy. Blunting of this normal structure from surgical repair is best avoided if possible. Long-standing tenets of reconstructive surgery dictate that the repair of a defect within a cosmetic unit or subunit should produce a superior cosmetic result. In addition, surgical scars should preferably be hidden within the boundaries between cosmetic units. Defects resulting after Mohs surgery, however, may cross the boundaries between cosmetic units, as in this case, creating a more difficult repair.

A number of options for repair were considered at the time of surgery. Healing by second intention in this area would likely have caused retraction of the ala, narrowing of the nostril, and possibly upward retraction of the upper cutaneous lip. This option would not have been cosmetically acceptable. A full-thickness skin graft was another option. This might have caused blunting of the nasolabial fold and alar groove, however. In addition, this defect involved more than just alar skin. A skin graft would not have given a good cosmetic result, as alar skin has unique textural and color characteristics distinct from those of the nearby lip and cheek. One graft over the entire area would surely not have blended in well with the surrounding skin. A third option was a nasolabial interpolation flap. This is a two-stage procedure, however, requiring an intermediate step where the pedicle is divided and may also have caused blunting of the nasofacial groove. A fourth option was a paramedian forehead transposition flap, but this is also a two-staged procedure, excessive for a defect of this size.

A closure using a combination of two random-axis adjoining island pedicle flaps was designed. We decided to close the defect on the upper lip with a flap from the same cosmetic unit. An island pedicle flap was incised inferiorly along the lateral lip. This skin was advanced medially and upward to reconstruct the upper lip as a V-to-Y closure where the alar groove would normally lie. The inferior aspect was closed primarily and the flap was sutured in place with both subcutaneous absorbable monofilament suture, poliglecaprone (Monocryl, Ethicon, Cincinnati, OH) and cutaneous nonabsorbable monofilament sutures (nylon; Figure 2). This flap closed the cheek and lip defect and significantly reduced the size of the original defect; however, the nasal alar defect still remained. The nasolabial fold was preserved and the alar groove was partially recreated at this point.

Closure of the lateral alar defect was accomplished with a slightly modified island pedicle flap from the...
medial aspect of the nasal ala and dorsum, where the leading edge of the flap involved the medial aspect of the alar defect and the trailing apex ran horizontally across the dorsal nose (Figure 3). A small portion of the superior border of this flap was not incised (Figure 4). This small portion of skin is actually cheek skin. This allowed a small degree of rotation of the flap, which made the new ala smaller inferi-

orly and enabled a more natural shape to the recreated ala. In addition, this also gave the flap another pedicle for vascular flow. Although mobilization of flaps on the nose may be challenging due to fibrofatty tissue, this is more easily accomplished on the medial aspect of the nose, especially where there is underlying musculature. This flap was more medially based, allowing adequate movement and closure of the defect. Primary closure of the tail of this flap was performed in the usual fashion without distortion of the nose. At the nasal point where the nasal flap was attached to the cheek/lip repair flap, the lip flap was deepithelialized to the upper dermis, so that dermis was sutured to dermis. The remainder of the flap was sutured in place using absorbable monofilament suture, poliglecaprone (Monocryl) and nonabsorbable monofilament suture (polypropylene and nylon; Figures 4 and 5). This second island pedicle flap completed recreation of the alar groove at the point where the two flaps meet. The postoperative course was uncomplicated and sutures were removed 1 week later with a very satisfactory cosmetic outcome seen at 2 months (Figure 6).

This closure did not require a two-staged procedure, as is necessary in a nasolabial transposition flap or
paramedian forehead transposition flap. The island pedicle flap is a random-axis flap that allows more diverse reconstructive options, as opposed to the pedicled forehead and interpolation flaps that rely on a single arterial supply. Interpolation flaps are larger and more complicated and require the patient to undergo an additional procedure to take down the pedicle in addition to more complicated wound care in the extended interim period. These adjoining island pedicle flaps enabled reconstruction of a difficult defect involving three cosmetic subunits in a single procedure with an excellent cosmetic and functional outcome.

**Conundrum Keys**

- This defect involving multiple cosmetic subunits required a two-step closure to better recreate normal anatomic boundaries.
- The use of adjoining island pedicle flaps allowed movement of adjacent skin for the best possible color and texture match.
- Each anatomic defect was closed using skin from the same cosmetic subunit.
- Preservation of the alar groove and nasolabial fold was of utmost importance in this repair to retain a normal appearance.

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