

The Dorsal Nasal Flap for Reconstruction of Large Nasal Tip Defects

A 49-year-old male was referred for nasal reconstruction following Mohs micrographic resection of a basal cell carcinoma. The patient had undergone three stages of Mohs surgery, and physical examination revealed a 2.0 x 2.0-cm

defect of the nasal tip and supratip centered off to the patient's right side. The defect involved the full thickness of the nasal skin but underlying nasal perichondrium and tip cartilages were not disturbed (Figure 1). How would you manage the defect?



Figure 1. Mohs nasal tip defect measuring 2.0 x 2.0 cm in greatest diameter.

Resolution

Reconstructing large surgical defects of the nasal tip and lower third of the nose presents a unique challenge for the surgeon because of its cosmetically prominent location. Treatment options include second-intention healing, full-thickness skin grafts, various local flaps, and the paramedian forehead flap. Owing to the unique texture and color of nasal skin, it is always preferable that like-tissue be replaced by like-tissue. Scars are best placed at the junction of aesthetic facial units, while reconstruction should adhere to nasal "sub-unit" principles.

Before contemplating various reconstructive options, however, there are certain patient-dependent physical characteristics that are worth mentioning that can affect one's decision when choosing a reconstructive technique. First, what is the texture of the nasal skin? Thick sebaceous nasal skin often results in a poor texture and contour match when utilizing skin grafts for reconstruction. However, a thin-skinned patient with a fair complexion (Fitzpatrick I or II) will often do quite nicely with skin grafting. The depth and size of the defect will also determine the location of the skin graft donor site. Other variables include patient's age, comorbidities, and cosmetic expectations. Some patients may be very willing to undergo a two- or three-staged distal flap reconstruction, while for other more elderly patients this may not be a viable option. Finally, I consider the actual size of the nose along with skin laxity. Mobilizing large flaps in a younger patient with a petite nose is often difficult and can cause nasal distortion and asymmetry. However, in an elderly patient with a larger nose many considerable defects can be closed with local tissue rearrangement. Moreover, correction of tip ptosis can be obtained in the senile nose, which to the patient may not only be cosmetically appealing but could also improve the nasal airway.

Because of the size of the defect and the high cosmetic expectations of this patient, second intention healing was not considered. A full-thickness skin graft is a very reasonable option and

highly considered. For female patients who can utilize makeup for camouflage, a skin graft is often a very good option. However, in the male patient if the graft healed with pigmentation differences or skin texture differences, the outcome would be less than ideal. Local flaps are always my primary choice on the nose; however, size often dictates whether they can be utilized. Once defects approach the 2-cm mark, it becomes difficult to rotate local tissue. My primary flap choice in nasal reconstruction is the modified Zitelli bilobe flap,¹ which works particularly well with more laterally based nasal defects. However, when defects are located centrally over the tip, one often gets some nasal asymmetry or alar distortion when trying to rotate larger flaps. A paramedian forehead flap is an excellent choice for this patient; however, my personal philosophy is that I am hard-pressed to perform a forehead flap for a skin-only defect. For defects that are through and through, or involve the alar rim requiring cartilage reconstruction, I am quite comfortable performing forehead flaps. However, for skin-only defects I am not convinced that the combination of donor site morbidity plus a two-to three-staged procedure is a reasonable trade for the cosmetic outcome.

The dorsal nasal flap is a local flap that utilizes nasal skin for a single-stage reconstruction. It involves rotation advancement of dorsal nasal skin from the upper two-thirds of the nose and glabella to the lower nose. The dorsal nasal flap is used for defects of the distal third of the nose that are at least 5 mm away from the alar rim. I use a broad random pedicle that is typically based ipsilateral to the lesion to improve flap rotation. Incisions are marked before infiltration with local anesthetic. Flap design starts above the inner canthus and extends into glabellar frown lines, but should avoid extending well above the medial brow if possible (Figure 2A). The skin of the dorsum, through the defect, is undermined in a submuscular plane with Kaye scissors before flap incision. Using a No. 15 blade, the skin-muscle flap is incised; however, in the glabellar region only skin is elevated with the flap. Meticulous hemostasis is



Figure 2. (A) Flap design: donor incision within glabellar frown lines with limited cranial extension. Lateral incision at nasofacial junction. Obliquely marked standing cone deformity excision ipsilateral to flap pedicle. (B) After closure of defect.

Figure 3. (A) Six month follow-up. (B) Oblique view with sidewall scar

achieved with bipolar cautery, making sure not to injure the undersurface of the flap. If more advancement or rotation is required, the skin incision can be lengthened to the level of the medial canthal ligament. The lateral incision should be placed at the nasofacial junction, making sure not to violate the nasal sidewall subunit. A small amount of lateral undermining in the cheek region is performed to decrease flap tension by advancing cheek skin. Excision of the standing cone deformity is performed in an oblique direction to the defect on the ipsilateral side of the flap pedicle. Flap contour and inset is optimized by sculpting the undersurface of the flap and thinning the soft tissue of the recipient bed. The glabellar donor site is closed in a V-Y fashion. All incisions are closed in two layers, with 5-0

monocryl subcuticular and 6-0 nylon for skin (Figure 2B). Particular attention with meticulous skin eversion is performed at the tip level and lateral nasofacial junction, making sure to allow for discrepancies in skin thickness. Tension is minimized at the distal aspect of the flap to prevent alar retraction or asymmetries secondary to flap tension (Figure 3). I routinely evaluate for incisional interface dermabrasion at 6 weeks post-operatively; however, this was not required in this particular case.

The dorsal nasal flap was originally described by Gillies² as a bishop's miter flap. However, it was Rieger³ who in 1967 published his design that popularized the flap for its use in defects of the nasal tip. I prefer the nasal dorsal flap for larger distal nasal defects because it is a

one-stage reconstruction that replaces like-tissue with skin of similar kind.⁴ Reconstruction of nasal skin defects should use remaining nasal skin whenever possible to preserve the unique color and texture of the nose.

Conundrum Keys

- Placing donor site incisions in glabellar frown lines while minimizing cephalad extension to the level of the medial brow.
- Lateral incisions at the nasofacial junction, making sure not to violate the nasal sidewall subunit.
- Obliquely marked standing cone deformity excision ipsilateral to flap pedicle.
- Contouring the undersurface of the flap and soft tissue recipient bed before flap inset.
- Meticulous flap closure with 5-0 monocryl for deep tissue and 6-0 nylon for skin, making sure to allow for discrepancies in skin thickness.
- Consider postoperative dermabrasion at 6 weeks for mild contour correction.

References

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