The Superiorly Based Nasolabial Flap for Simultaneous Alar and Cheek Reconstruction

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Learning Objectives: After studying this article, the participant should be able to: 1. Understand the epidemiology of skin cancer in a patient with preexisting skin cancer. 2. Understand the indications for the use of a nasolabial flap and nonanatomic alar strut graft. 3. Describe the blood supply to the nasolabial flap.

The goals of reconstructing deformities of the face acquired secondary to skin tumors include optimizing donor-site aesthetics and reconstructing the area with similar types of tissue when possible. Multiple skin-cancer defects are often seen by the plastic surgeon and complicate the reconstruction, requiring more than one flap or skin graft. A case analysis of an innovative application of the nasolabial flap for reconstruction of a simultaneous medial cheek and alar-base nasal defect is presented. Concepts in nasal reconstruction are reviewed, and the authors’ approach to alar reconstruction is presented. (Plast. Reconstr. Surg. 108: 1727, 2001.)

Given that 35 percent of individuals with a basal- or squamous-cell cancer will develop a new skin tumor by 3 years after initial diagnosis and 50 percent by 5 years after, it is not surprising that patients may often present with more than one skin cancer.1,2 The plastic and reconstructive surgeon must reconstruct the areas affected, with minimal morbidity and optimal cosmesis. The head and neck account for the majority of basal-cell carcinomas, with the highest incidence occurring on the nose.3 The concept of subunits4 is kept in mind for nasal reconstruction, with preservation of key anatomic structures when possible. However, the subunit principle is sometimes transgressed when one adheres to a meticulous surgical technique and restores the facial contour. Local flaps and cervicofacial flaps are used for suborbital and preauricular cheek defects, whereas local and regional flaps are used for buccal-mandibular defects. In this article, we describe the use of a superiorly based random nasolabial flap to reconstruct simultaneous enucleated medial cheek and alar defects.

Analysis

An 80-year-old white woman with two adjacent defects of the cheek and nose presented for reconstruction after undergoing surgery using the Mohs technique for two basal-cell carcinomas (Fig. 1, above, left). Both defects involved full-thickness skin and did not involve underlying cartilaginous or skeletal structures. The defects were pared, and a superiorly based nasolabial flap was raised on a subcutaneous pedicle and 5-mm inferior skin bridge laterally (Fig. 1, above, center). An 8-by-3-mm nonanatomic alar strut graft was harvested from the ipsilateral conchal bowl and sutured in a pocket along the alar rim with 6-0 clear polydioxanone sutures. The flap was thinned to the subdermal plexus distally and, after hemostasis was achieved, the flap was transposed to cover the cheek and nasal defect and set in place with 6-0 nylon vertical mattress sutures (Fig. 1, above, right). Care was taken to preserve the intervening skin bridge representing the nasofacial aesthetic line. Nitroglycerin paste was used in the recovery room as prophylaxis, and the patient was instructed to continue applying the paste every 6 hours for 36 hours. Six weeks later, the patient was returned to the operating room, and the flap was divided, thinned over the lateral 50 percent of the ala, and inserted into both defects. Postoperative photographs...
Fig. 1. (Above, left) Patient with simultaneous defects of the cheek and nose. (Above, center) Nonanatomic alar strut graft and superiorly based nasolabial flap, with the pedicle at its most inferior portion. (Above, right) Insertion of the flap. (Below, left) Full-face view of the patient 6 months after the division and insertion of the flap. (Below, right) Oblique view of the patient 6 months after the division and insertion of the flap.

were taken 6 months after division and insertion of the flap (Fig. 1, below).

DISCUSSION

The nasolabial flap, the méthode française of nasal reconstruction, is a versatile flap described for use in nasal lateral wall, ala, columella, and intraoral reconstructions because of the laxity of the cheek. A modified application of the flap is described by Spear et al. and Kroll for total full-thickness defects of the alar margin. Our indications for the flap’s use in nasal reconstruction include defects of the ala and lateral wall of up to 2 cm in width, although such use depends on the laxity of the donor cheek. The blood supply for our flap was provided on the basis of a narrow subdermal plexus, which confirms
the random nature of the blood supply to the flap. Contrary to previous authors, who maintained that the flap derives its blood flow from the angular or facial arteries via perforators through the muscle, our case illustrates the robust viability of the flap on the basis of a small subcutaneous and subdermal blood supply as per Barron and Emmett and Hagerty and Smith.

The junction of cheek and nasal side wall represents a gentle transition zone that is difficult to reconstruct. This nasofacial area is thus best not violated if possible, as in the case presented, in which the thin intervening segment of skin was preserved. The nasolabial flap’s random blood supply permits aggressive defatting in nonsmoking subjects. A more conservative defatting of the subcutaneous tissue in smokers is necessary unless the patient has refrained from smoking for 4 weeks or longer. When adhering to the concept of subunits, one may achieve excellent results when reconstructing entire subunits; however, the reconstructive surgeon may transgress aesthetic subunits by meticulous attention to detail: for example, when contouring the flap for a match in thickness to the adjacent area and using evertting simple vertical mattress sutures. Another important concept with alar-subunit reconstruction is the use of nonanatomic alar strut grafts. We typically use nonanatomic alar contour grafts for lesions within 5 mm of the alar rim. This prevents notching and cicatricial distortion of the nose as the reconstruction heals. In the case presented in this study, cartilage was harvested from the ipsilateral ear. We also advocate the liberal use of nitroglycerin paste. Information in the literature regarding the use of the paste is conflicting. Evidence for a benefit to topically applied nitroglycerin has been provided by several authors. Others have reported that it is not beneficial to the viability of skin flaps and Dunn et al. recently demonstrated in particular that no benefit was shown to one dose of nitroglycerin used 1 hour after surgery. However, we have found that nitroglycerin applied every 6 hours for a 24- to 48-hour period did show some benefit. If the patient experiences symptoms of dizziness or headache while using the paste, its use is discontinued.

Important concepts of the use of the nasolabial flap for alar reconstruction include the following:

- The preservation of the nasofacial aesthetic line when possible
- Its optimal use in nonsmokers
- Its best results when used for defects involving part or all of the alar subunit or the lateral side wall (≤ 2 cm in width)
- The use of a nonanatomic alar contour graft for lesions within 5 mm of the alar rim
- The precise fit of the donor flap into the recipient site, as well as adequate debulking and the obliteration of any dead space with transfixation sutures (through and through) to prevent pin-cushioning
- The maintenance of a 2-mm isthmus lateral to the ala on the cheek for optimal cosmesis

The plastic and reconstructive surgeon is often presented with a patient who has multiple defects secondary to skin cancer. In this article, we presented a unique application of a nasolabial flap used for a simultaneous cheek and nasal defects, with preservation of the nasofacial aesthetic line.

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REFERENCES

Self-Assessment Examination follows on page 1731.
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1. THE NASOLABIAL FLAP MAY BE USED TO RECONSTRUCT ONE OF THE FOLLOWING:
   A) Lateral nasal side wall
   B) Ala
   C) Columella
   D) Intraoral defects
   E) All of the above

2. OF INDIVIDUALS WITH A SKIN CANCER, THE FUTURE INCIDENCE OF SKIN CANCER IS:
   A) Ten percent at 5 years
   B) Thirty percent at 5 years
   C) Fifty percent at 5 years
   D) Seventy-five percent at 5 years
   E) None of the above

3. BLOOD SUPPLY TO THE NASOLABIAL FLAP IS PREDOMINANTLY:
   A) Axial via the facial artery
   B) Random via the subcutaneous and subdermal plexus
   C) Axial via muscular perforators from the angular artery
   D) Random via fasciocutaneous vessels
   E) None of the above

4. NONANATOMIC ALAR STRUT GRAFTS SHOULD BE CONSIDERED FOR:
   A) Defects of the ala within 5 mm of the alar rim
   B) Defects of the ala within 1 cm of the alar rim
   C) Defects of the lower lateral cartilages
   D) Defects of the middle crus of the lower lateral cartilages
   E) None of the above

5. THE HEAD AND NECK ACCOUNT FOR THE MAJORITY OF BASAL CELL CARCINOMAS. WHICH STRUCTURE HAS THE HIGHEST INCIDENCE OF BASAL CELL CARCINOMA?
   A) Lip
   B) Ear
   C) Cheek
   D) Nose
   E) They are all approximately equal

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