The superiorly based bilobed flap for nasal reconstruction

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Background: The laterally based bilobed flap is commonly used for the reconstruction of small- to medium-sized defects of the distal portion of the nose; However, when this flap is used to repair defects that are larger, more cephalic, or more lateral on the nose, there is a risk for lower nasal distortion. Reorienting the base superiorly preserves the advantages of the traditional design while minimizing this risk.

Objective: To demonstrate the design, execution, and efficacy of the superiorly based bilobed flap.

Methods: A retrospective review examined all superiorly based bilobed flaps performed by 1 surgeon (J.C.) in 2000-2016 after tumor extirpation by Mohs micrographic surgery at a single institution.

Results: A total of 41 surgical defects were closed with 40 flaps between June 2000 and August 2016 (1 patient had 2 defects closed with a single flap). Of the tumors, 55% were located on the nasal dorsum, and the median of the longest postoperative tumor axis was 1.4 cm. Follow-up was available for 40 flaps, and no infections, hematomas, or episodes of full-thickness necrosis were observed.

Limitations: Data were collected retrospectively from a single institution without a standardized assessment tool for aesthetic outcomes.

Conclusion: The superiorly based bilobed flap is useful for nasal reconstruction. (J Am Acad Dermatol https://doi.org/10.1016/j.jaad.2017.09.014.)

Key Words: bilobed flap; facial reconstruction; Mohs micrographic surgery; nasal reconstruction; superiorly based bilobed flap; transposition flap.

The laterally based bilobed flap is commonly used for the aesthetic and functional repair of small- to medium-sized nasal defects of the supratip and lateral nasal tip.[1,2] For these defects, the bilobed flap offers distinct advantages over alternative repairs: access to an adjacent tissue reservoir with similar aesthetic qualities, predictable flap viability, and the reduced morbidity of a single-stage procedure.[3] In the traditional design, the vascular inlet, or base, of the bilobed flap is located laterally, where tributaries of the angular artery provide a robust vascular supply to nourish the flap.[4] This design harvests the available lax skin of the nasal dorsum to repair more distal nasal defects and is the criterion standard in lower nasal repair for many surgeons.[1,4]

However, with the traditional design, it may be a struggle to deliver reproducible aesthetic success for nasal defects with a diameter larger than 1.0 cm, wounds located on other parts of the nose, or patients with thick skin on the nasal dorsum. In such circumstances, the closure of the flap's terminal

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donor site on the nasal dorsum or sidewall may introduce a significant risk for permanent lower nasal distortion (Fig 1). To circumvent this problem, we reoriented the base (or pivot point) from a lateral to a superior location and moved the terminal donor site from the nose to the paranasal cheek. This preserves the geometric advantages of the traditional bilobed flap while harvesting an aesthetically similar donor site with less risk for anatomic distortion. Herein we report our experience with the superiorly based bilobed flap for the reconstruction of nasal defects.

CAPSULE SUMMARY

- The laterally based bilobed flap has anatomic restrictions that may limit its utility for nasal reconstruction.
- Reorienting the base superiorly moves the terminal donor site off the nose and decreases the risk for lower nasal distortion.
- The superiorly based bilobed flap preserves the advantages of the traditional design and expands the utility of this flap.

METHODS

The Medical University of South Carolina Institutional Review Board approved this study (Pro00058644). We performed a retrospective review of all Mohs micrographic surgery defects repaired with a bilobed flap by a single surgeon (J.C.) after tumor clearance between June 2000 and August 2016. All Mohs micrographic surgical procedures were performed with clean technique, and all closures were performed with sterile technique.[5]

All Mohs micrographic surgical cases and subsequent repairs during this period were recorded in a commercially available database (Microsoft Access, Microsoft Corporation, Redmond, WA, and Malachite Corporation, Durham, NC). The database was searched for all adult patients (18 years or older) who had a bilobed repair of a surgical defect on the nose. Postoperative photos were then reviewed to determine the location of the base (lateral, medial, superior, or inferior). All cases with a superiorly based design and documented follow-up were included in our study. Data were collected on tumor sublocation, tumor type, tumor size at presentation, postoperative defect size, postoperative prescriptions, and surgical complications, which included hematoma, infection, flap necrosis, and nasal valve dysfunction (as recorded in the patients' medical record during the 4 months after surgery). Follow-up photos taken at 4 months or later were reviewed for all flaps to determine aesthetic results.

As with any bilobed flap, correct design is critical to achieve operative success. Flaps were designed as a random pattern transposition, as described by Zitelli, but with the vascular base, or pivot point, oriented superiorly toward the mid glabella or ipsilateral medial canthus (Fig 2).[4] A Burow triangle from the surgical defect is directed toward the pivot point and should be both perpendicular to the alar margin (to avoid contralateral alar distortion on flap inset) and long enough to form a 30-degree angle, eliminating redundant skin at the point of rotation.[6] The widths of the primary and secondary lobules are designed nearly equivalent to the width of the primary defect. This decreases secondary motion and the concomitant risk for nasal distortion while also limiting the risk for pincushioning, which occurs more often when the lobules are oversized. The primary lobule is designed on the part of the nose abutting the surgical defect, and the amount of skin available on the nose to create this lobule generally limits the size of the defect that can be repaired, as extending this lobule onto the cheek could blunt the nasofacial sulcus. The secondary lobule is then placed on the paranasal cheek adjacent to the melolabial fold as in a nasolabial transposition flap—with its inferior edge within the melolabial fold and a Burow triangle extending caudally.[7] This placement ultimately hides the incision lines in the melolabial fold with minimal aesthetic penalty. The flap's arc of rotation should be adjusted to place the secondary lobule as described, and as with all rotating flaps, the surgeon must account for some shortening of the lobules as a result of pivotal restraint.

As in a traditional bilobed flap, we excise the Burow triangle extending from the surgical defect first to allow for more accurate placement of the primary lobule.[6] The primary lobule is then incised and raised in the submuscular plane while beginning at the nasofacial sulcus, the secondary lobule is undermined in a subcutaneous plane. The entire surgical defect should be widely undermined to minimize the trapdoor effect.[7] Hemostasis is attained with electrocoagulation, taking care to not damage the sebaceous nasal skin. The tertiary defect is first closed to "push" the primary and secondary lobules toward their desired positions. Use of a periosteal suspension suture to anchor the advancing cheek to the pyriform aperture may be helpful to decrease tension on the flap but is not typically required. The secondary lobule is then lifted into position, rather than slid, to avoid blunting the nasofacial sulcus.

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