Modifying the Burow's triangles of traditional transposition flaps for the repair of adjacent nasal defects

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Background: Adjacent defects are commonly encountered during Mohs micrographic surgery for nasal skin cancers and often present a formidable reconstructive challenge.

Objective: This article will describe similar modifications of both the bilobed and nasolabial transposition flaps' Burow's triangles that allow for the repair of two adjacent defects of the distal nose using a single flap.

Methods: This is a report of two similar reconstructive cases after Mohs micrographic surgery requiring the repair of adjacent nasal defects.

Results: Both cases demonstrate the feasibility of this technique.

Limitations: This technique is based on two case reports.

Conclusions: Traditional transposition flaps' Burow's triangles can be effectively modified for the repair of properly selected adjacent wounds of the distal nose. (J Am Acad Dermatol 2010;63:836-41.)

Key words: adjacent wounds; bilobed; flap; nasolabial; reconstruction; transposition.

Once a patient has developed a skin cancer they have a 50% chance of developing another,[1,2] making the treatment of adjacent skin cancers a common occurrence. Reconstruction of adjacent wounds on the lower third of the nose presents unique challenges because of complex contours, skin texture, and the limited amount of available tissue reservoirs.

The bilobed transposition flap and nasolabial transposition flap have become reliable techniques for the repair of solitary wounds of the lower third of the nose because of their ability to preserve the native tissue contours through tissue relocation. This article will describe similar modifications of these traditional transposition flaps' Burow's triangles that allow for the repair of two adjacent defects of the distal nose.

From private practice, Beatrice Keller Clinic.
Funding sources: None.
Conflicts of interest: None declared.
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0190-9622/$36.00

doi:10.1016/j.jaad.2010.01.029

METHODS

Case report 1: Modified bilobed transposition flap

A 53-year-old man was referred for Mohs micrographic surgery for two adjacent basal cell carcinomas on the left nasal tip and left nasal ala. The tumors required 3 Mohs stages for the nasal tip and 4 Mohs stages for the nasal ala, resulting in adjacent 1.2 × 1.2 cm and 1.4 × 0.9 cm defects, respectively (Fig 1, *A*). Given the sebaceous quality of his nasal skin, the proximity of the two wounds, and the patient's reconstructive desires a modified bilobed transposition flap was designed to incorporate closure of both wounds using a third lobule derived from an adjacent Burow's triangle (Fig 1, *B*).

Case report 2: Modified nasolabial transposition flap

This 71-year-old man was referred for Mohs micrographic surgery for two adjacent basal cell carcinomas on the right nasal dorsum and right nasal ala. The tumors required one Mohs stage for the nasal sidewall and 3 Mohs stages for the nasal ala, resulting in adjacent 0.8 × 0.8 cm and 1.5 × 1.3 cm defects, respectively (Fig 2, *A*). The patient was unhappy with the results of a prior surgery on the

contralateral ala that was allowed to granulate resulting in alar notching. Given the sebaceous quality of his nasal skin, the proximity of the two wounds, and the patient's reconstructive desires a cartilage graft (Fig 2, *B*) and modified nasolabial transposition flap was designed to incorporate closure of both wounds using a second lobule derived from an adjacent Burow's triangle (Fig 2, *C*).

CAPSULE SUMMARY

- Adjacent nasal defects are commonly encountered during Mohs micrographic surgery and often present a formidable reconstructive challenge.
- This article describes similar modifications of the bilobed and nasolabial transposition flaps useful for the repair of two adjacent defects of the distal nose.
- The modified transposition flaps carefully adjust the shape, length, and position of the adjacent Burow's triangles to allow the closure of a second adjacent defect using the normally discarded adjacent Burow's tissue.

RESULTS

The postoperative course for both cases was largely uneventful. Sutures were removed at 7 days, and neither flap experienced any infection or necrosis. At 6-week follow-up, the patient with the modified bilobed transposition flap experienced a mild degree of pin-cushioning that resolved in time with simple massage (Fig 1, *C*). Similarly, the modified nasolabial transposition flap experienced pincushioning of the alar component of the flap at 6-week follow-up. This was treated with a single dose of intralesional triamcinolone acetonide (20 mg/mL concentration) and resolved entirely by his 3-month follow-up (Fig 2, *D* to *F*).

DISCUSSION

This modification of the bilobed transposition flap follows the majority of the traditional design principles well described by Zitelli and Baker[3,4] and subsequent authors.[4-8] These guidelines include limiting the defect size to less than 1.5 cm, using 45 to 55 degrees of transposition for each lobule, and sizing a primary lobule equivalent to the defect. The secondary lobule can be designed as small as 80% of the defect, which allows the pivot point of the flap to remain equivalent to the radius of the defect (Fig 3, *A*). If, however, the secondary lobule is designed to be equivalent to the original defect, then the arc's radius must increase to at least 1.6131258 times the radius of the defect to accommodate this larger lobule (Fig 3, *B*). Thus there is some design flexibility in the actual length of the rotational arc in the original design of Zitelli.[3] Cook[5] goes a step further and suggests further lengthening of this radius will allow for better flap movement and reduce the risk of residual redundant tissue at the central pivot point of the flap. The modified bilobed flap exploits this design flexibility by carefully adjusting the shape, length, and position of the adjacent Burow's triangles and resulting pivotal arc to allow the closure of a second adjacent defect using the normally discarded adjacent Burow's tissue.

It is best to initially approach the design of the flap based only on the larger and more anatomically critical of the two defects. Using the traditional design as a reference (Fig 3, *A* and *B*) the second adjacent and ideally smaller defect is incorporated into the design in terms of its relative size and position to the normally discarded adjacent Burow's triangle. Because the length, but not width, of each lobule of a bilobed flap can be expanded, the internal arc of the adjacent Burow's triangle can be extended to adequately cover the adjacent defect (Fig 3, *C*).

The necessary lengthening of each lobule including the adjacent Burow's triangle may require slight repositioning of the flap's vertex. As all of these lobules converge at this point, great care must be taken to keep the position of the pivot point in the looser skin of the nasal sidewall to allow for easier flap movement. To avoid distorting the nasofacial sulcus, the pivot point should always be kept off of the cheek. As the pivot point is shifted away from the original position, the vector of closure for the now quaternary defect must be reassessed to avoid potential alar displacement. The design actually creates 3 lobes of transposition with the smallest and shortest lobule filling the second defect at an orientation of 135 to 150 degrees from the closure of the quaternary defect. Each lobule still only travels 45 to 50 degrees and, true to the original design of Zitelli,[3] not one but two Z-plasties are actually created during the design and execution of the flap. This modification should not reduce the vascular pedicle of the flap as the retained Burow's tissue would normally have been excised and discarded. Great care should be taken to not extend the design of the new Burow's triangle of the second defect superiorly into the flap's pedicle (Fig 3, *C*).

This modification has tremendous limitations because of the importance of the relative size, shape, and position of the two defects both to each other and to the relative anatomy of the nose. Much like the traditional bilobed flap it totally disregards the