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Single-Staged Tunneled Cheek Interpolation Flap With Cartilage Batten Graft for Repair of Nasal Ala Defect

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ABSTRACT

Surgical defects located within 5 mm of the nasal alar margin are at risk for alar elevation or collapse of the external nasal valve during wound healing. To reduce the chance of such complications, free cartilage grafts may be used as part of the reconstruction. However, if the defect is large enough so that the free cartilage graft does not fill most of the defect, wound contraction can still lead to alar displacement. In these situations, skin may need to be recruited from either the forehead or cheek in the form of an interpolation flap to cover both the free cartilage graft and the residual cutaneous defect. Typically, such reconstructions require multiple procedures at separate time periods and pose prolonged wound care and an inconvenience to the patient. We describe a case of a 94-year-old male who desired an aesthetic reconstruction of a large nasal alar defect that required only a single operative visit. To simplify the repair into a one-stage procedure, a tunneled cheek interpolation flap was performed over a free cartilage graft.

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CASE REPORT

Reconstructive Conundrum A 94-year-old man with biopsy-proven nodular, pigmented basal cell carcinoma of the right nasal ala was referred for Mohs micrographic surgery for definitive surgical treatment. The tumor was completely removed after two stages, resulting in a right nasal alar full-thickness defect to the level of the mucosa. The wound diameter measured 1.8 cm x 1.8 cm and included a small through-and-through defect near the inferior portion of the wound (Figure 1). How would you repair this defect? **Resolution** The goal of the lateral alar wound repair is to maximally camouflage the scar, avoid blunting of the alar crease, and to minimize elevation of the alar rim due to cicatricial retraction.¹ Reconstructive options include various flap procedures (eg, bilobed flaps, V-Y advancement flaps, or forehead pedicle flaps), full-thickness and composite grafting, second intention healing, or a combination of techniques.² For a full-thickness deep alar defect, second intention healing presents several caveats, including poor cosmesis with anatomic distortion of the alar rim, as well as a large open wound that would be difficult for the patient to care for. Given the proximity of the defect to the alar free margin and the depth of missing subcutaneous tissue, a cartilage strut was considered necessary to prevent alar retraction and maintain the nasal aperture. Though free cartilage grafts coupled with second intention can do well, we thought the prolonged wound care necessary with this type of repair would be undesirable in a nonagenarian patient living on his own with no assistance. Full-thickness skin grafts placed over cartilage grafts have been reported in the past, but with such a deep wound, the high probability of graft failure steered us away from this option. A staged melolabial interpolation flap along the nasolabial fold was also considered; despite the advantage of simplicity, it was rejected due to the patient's desire for a single stage procedure.³ To simplify the repair into a one-stage technique and to decrease the chance of alar retraction, a cheek interpolation flap with a cartilage Batten graft was performed. **Procedure** The free cartilage Batten graft offers an architectural advantage by providing immediate

volumetric filling, allowing for less wound contraction and anatomic distortion.⁴ Conchal cartilage was harvested from the right ear through an anterior approach. First, the area was tumesced by injecting anesthetic (0.5% lidocaine with 1:200,000 epinephrine) in the perichondrial plane. Then, the appropriately sized cartilage was harvested from the right conchal bowl after perichondrial elevation of a rectangular skin flap. The harvested cartilage was placed immediately in sterile saline solution. The skin flap was laid back and sutured in place with absorbable simple running suture. A single basting suture was placed to prevent seroma formation, and to assure adherence and proper healing of the skin flap. The right nasal alar defect was minimally undermined. The through-and-through defect at the ala was repaired with a

single simple interrupted suture using 4-0 chromic gut. The cartilage graft was laid in place over the defect to provide structural support to the nose and tacked in place with the same suture material. An interpolation flap was designed and elevated from the right cheek along the melolabial fold. The pedicled flap was sharply dissected in the deep subcutaneous plane at the pedicle and progressively thinned away from the base (Figure 2). The flap was de-epithelialized over the pedicle, rotated 180 degrees at its base, tunneled under the alar-facial groove, and tacked in place over the defect on the right nasal ala with simple interrupted and simple running 5-0 fast absorbing gut sutures. Closure of the secondary defect resulted in cutaneous redundancy, which was removed as a Burrow's triangle. Closure of the donor defect was performed with a series of buried vertical mattress sutures using 5-0 polydioxanone and simple running suture using 5-0 fast absorbing gut. Care was taken to keep the base of the pedicle from being strangulated. At the end of the case, the interpolated flap appeared pink, well-perfused, and viable (Figure 3). A firm pressure dressing was applied over petrolatum ointment and a non-adherent pad (Telfa) to both the right ear cartilage donor site and the right nose with directions to remove them after 48 hours. Six hours after discharge the patient was evaluated for complaints of postoperative bleeding from within both nasal cavities. Nasal packing was inserted which arrested the bleeding without any further complications. The right alar defect was completely healed two months postoperatively. Although the technique bears a theoretical risk of residual fullness in the melolabial fold caused by the permanent buried pedicle, it was not observed in the current patient. The scar was revised with electroabrasion and fine-needle epilation of residual hairs within the flap, resulting in an acceptable cosmetic outcome and good patient satisfaction following a single stage procedure (Figure 4).

Conundrum Keys:

1. When repairing a surgical defect of the nasal ala, it is important to maintain aesthetic integrity of the nose such as avoiding blunting of the alar crease and retraction/notching of the alar rim.
2. Although a through-and-through defect of the nasal ala can present a reconstructive challenge, a composite cartilage Batten graft with a tunneled cheek interpolation flap can be a useful reconstructive option with the advantage of being a single-step procedure.

FIGURE 1. Photograph of the postoperative Mohs defect measuring 1.8 cm x 1.8 cm of the right nasal ala. The central aspect of the defect is through-and-through, extending full thickness into the nasal vestibule. Gentian violet markings indicate the melolabial fold.



DISCLOSURES

The authors have no relevant conflicts of interests to declare.

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