

# Maintaining Contour on Convex Surfaces: 2 Surgical Techniques for the Lateral Nasal Ala and Bald Scalp

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Maintaining contour on convex surfaces is important to achieve a good cosmetic outcome after Mohs micrographic surgery. Defects of the lateral nasal ala and bald scalp are noticeable if the surface contour is disturbed. We present 2 simple techniques designed to maintain the surface contour at these 2 sites after Mohs micrographic surgery and provide excellent cosmesis. One technique involves the use of an intramuscular hinged flap to restore depth to a deep lateral nasal ala defect to maintain its surface contour. The second technique uses a dermal island to restore the convex surface on a bald scalp.

Convex surfaces pose a unique challenge for facial reconstruction after Mohs micrographic surgery. Following removal of any skin tumor, a concave defect is present that needs to be repaired. In most cases, filling in the defect with adjacent tissue is sufficient to prevent an obvious loss of surface contour. However, in certain locations or for large defects, moving adjacent tissue may not be ideal for repair. Two instances in which a skin flap may not be optimal in the repair process include deep lateral nasal ala defects and large defects on the scalp of bald individuals. Adjacent tissue movement for lateral nasal ala defects may be problematic, as it can distort free margins and facial anatomy. Large scalp defects may lack the necessary tissue reservoir and/or skin laxity to

completely close the defect. In these circumstances, full-thickness skin grafts or multistage repairs may be used. For shallow defects, the placement of a full-thickness skin graft closes the defect and restores surface contour with good aesthetic outcome. However, if the defect is deep, the resulting outcome of a full-thickness skin graft is a loss of the natural contour of the area, leading to a depression with poor cosmetic outcome.<sup>1,2</sup> For deep lateral nasal ala defects, staged reconstruction is another option that often is employed, but this option may not be acceptable to some patients if a single-staged repair is preferred or if patients are concerned with the increased morbidity and length of time or number of visits required for complete repair.

As a result, we present 2 simple and easy-to-perform repair techniques that are used in our practice to restore the surface contours of the lateral nasal ala and the bald scalp. The first technique uses an intramuscular hinged flap together with a full-thickness skin graft to repair lateral nasal ala defects that are in close proximity to the nasolabial sulcus. The second technique uses a dermal island in conjunction with a full-thickness skin graft to

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repair the bald scalp. Both techniques employ different approaches to provide an in-depth scaffold for the full-thickness skin graft to maintain surface contour.

### **INTRAMUSCULAR HINGED FLAP TECHNIQUE WITH BUROW GRAFT FOR THE LATERAL NASAL ALA DEFECT**

The intramuscular hinged flap technique previously has been described and employed for large defects involving multiple cosmetic subunits.<sup>3-5</sup> This technique can be easily modified for smaller defects within a single cosmetic subunit and is quite amenable in the repair of deep lateral nasal ala defects (Figures 1A, 2A, and 2C) given the adjacent donor site of the medial cheek. The donor site not only provides a muscle source with a robust vascular supply but also a donor graft tissue that is well matched in color and texture.

The design of this repair involves marking the Burow graft with respect to the nasolabial and melolabial sulci (Figure 1A). The width of the resulting donor graft is equivalent to the distance from the expected nasolabial sulcus to the distal nasal ala defect. The skin overlying the hinged flap is then removed to the level of the subcutaneous fat. The fat immediately overlying the hinged flap is reflected back to expose the underlying muscle. A *u*-shaped flap slightly smaller than the defect size with its base at the expected nasolabial sulcus is then incised and elevated (Figure 1B). The thickness of the flap should approximately match the depth of the defect. The flap is then folded over into the defect with the hinge being the base of the flap. The flap should be sufficiently released so that no tension is exerted on the flap. The flap is then sutured in place using buried sutures (Figure 1C). The medial cheek is advanced to close the secondary defect. The edge of the medial cheek that abuts the base of the flap is anchored to the underlying musculature and subcutaneous tissue to recreate the nasolabial sulcus. The Burow graft is then placed over the intramuscular flap and is secured in place using only epidermal simple interrupted sutures (Figure 1D). The edge of the Burow graft that is adjacent to the nasolabial sulcus can either be sutured in place or allowed to heal by secondary intention. The skin and subcutaneous tissue along the melolabial sulcus are approximated primarily with deep and superficial sutures. At 4-month follow-up, the nasal ala contour is restored with maintenance of the nasolabial and melolabial sulci (Figures 1E, 2B, and 2D).

### **DERMAL ISLAND TECHNIQUE WITH BUROW GRAFT FOR THE BALD SCALP**

The dermal island technique in conjunction with a Burow graft works extremely well for scalp defects that are large

and lack the necessary skin laxity for a primary closure or would otherwise require a large flap repair. The key component of the dermal island technique is preservation of the dermis during Mohs micrographic surgery. If the tumor involves the deep dermis necessitating its removal, then other repair options will be needed. Therefore, the dermal island technique works best for repair from removal of large squamous cell carcinoma in situ and superficial basal cell carcinoma. Consequently, it is critical for the surgeon to stay shallow, if possible, for the initial layer of Mohs surgery to maintain a dermal island.

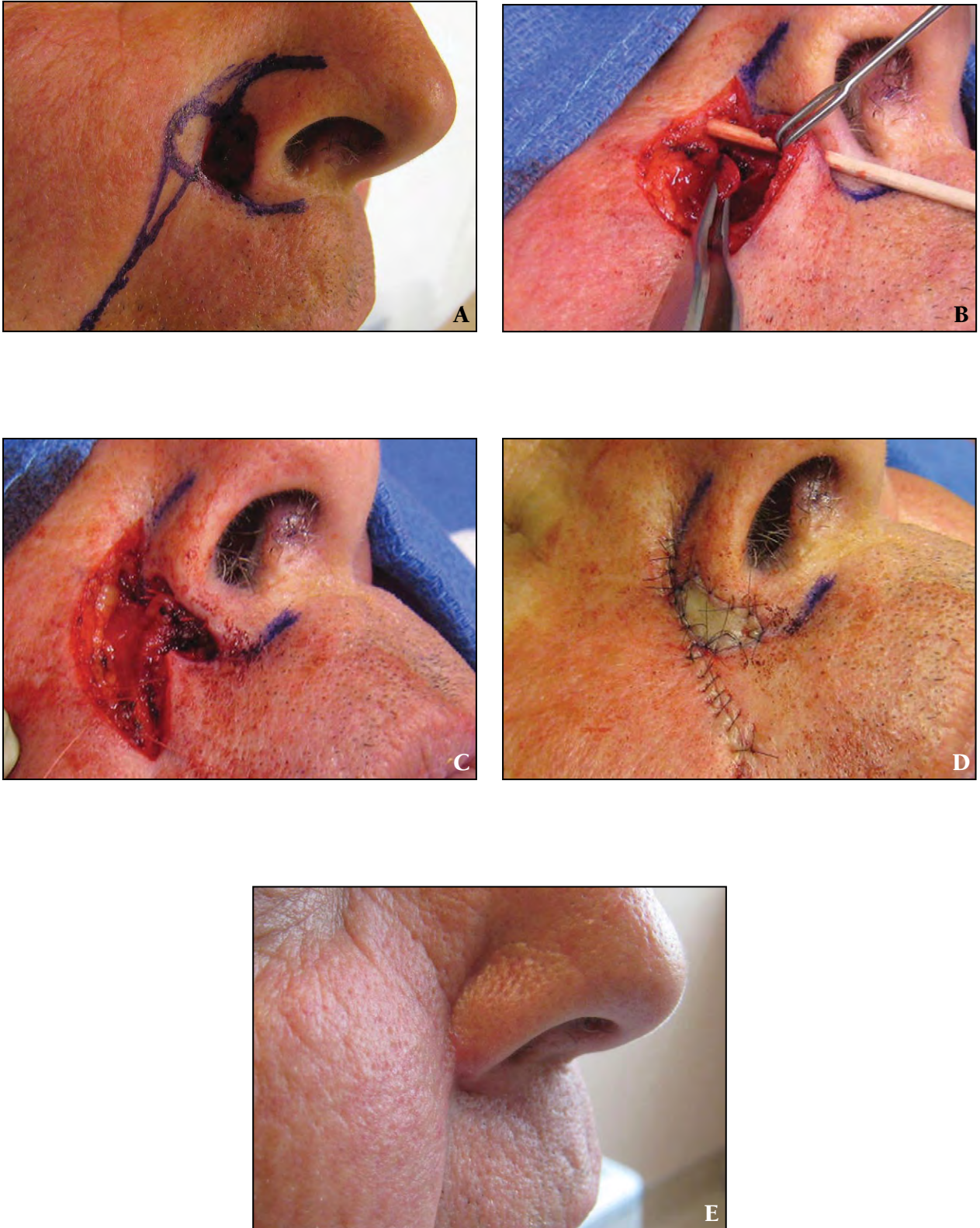
After clearance of the tumor and preservation of a central dermal island measuring approximately one-fourth to one-third of the original defect size (Figure 3A), the Burow triangle is planned and marked (Figure 3B). The incision to release the Burow triangle is made deeper than the level of the dermal island. The Burow triangle is removed and the area is undermined broadly to release as much tissue as possible, which will allow for primary closure of the Burow defect around the central dermal island. The poles of the defect are then sutured together from both ends until the edges of the defect are adjacent to the dermal island. The thinned out Burow graft is then placed over the dermal island and secured in place using epidermal sutures only (Figure 3C). At 4-month follow-up, the scalp has maintained its convex contour (Figure 3D).

### **COMMENT**

Maintaining surface contour is an important aspect of any surgical repair procedure, especially in the head and neck region where the slightest deviation from the norm can be apparent. We presented 2 separate simple techniques that may be used to maintain the convex contour of the lateral nasal ala and the bald scalp.

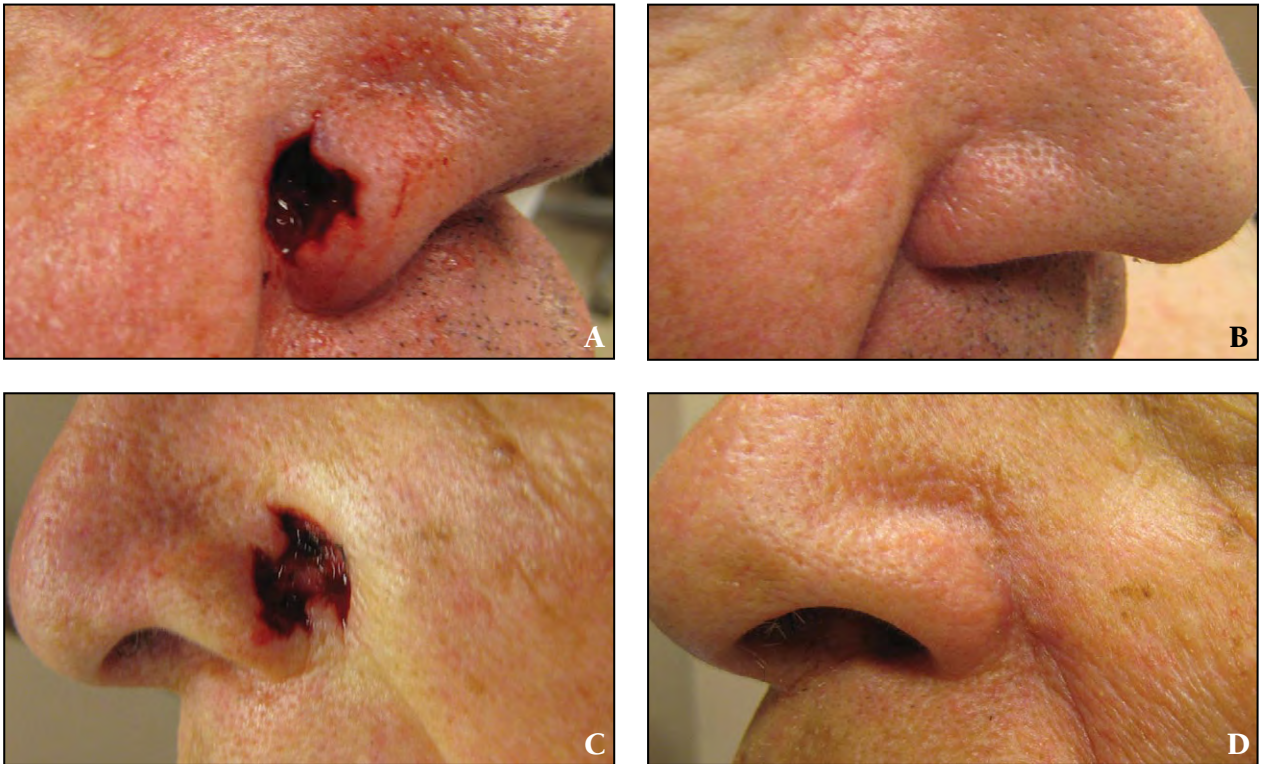
The intramuscular hinged flap technique combined with a Burow graft is an extremely useful procedure in correcting deep nasal ala defects that are adjacent to the nasolabial fold. It is advantageous over other techniques for a number of reasons: (1) It maintains surface contour by restoring depth to deep nasal ala defects. (2) It is a single-stage procedure, making it less time consuming for both the patient and the surgeon relative to an interpolated flap. (3) There is a higher likelihood of graft survival given the newly created soft tissue vascular bed generated by the intramuscular hinged flap. (4) In conjunction with a cheek advancement, this technique also can be used to repair defects that extend beyond the lateral nasal ala into the cheek region.<sup>5</sup> The surgeon also should be aware of this technique's limitations. There is an increased risk for bleeding given the anatomic location and the requirement for an intramuscular hinged flap. Within the anatomic location of the nasolabial and melolabial sulci runs

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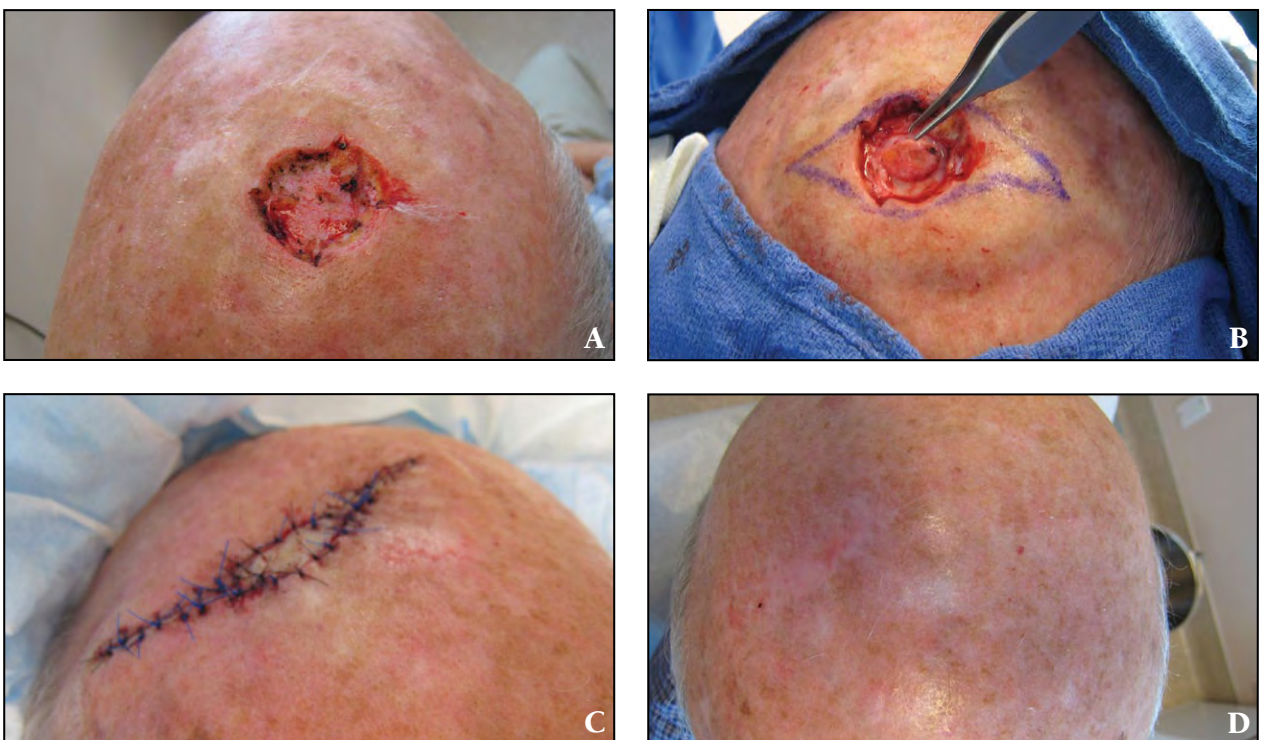


**Figure 1.** The design of the repair for a deep defect after Mohs micrographic surgery involving the lateral nasal ala (A). The intramuscular hinged flap was incised and elevated (B). The hinged flap was sutured into the defect using buried sutures (C). The Burow's graft was placed over the intramuscular hinged flap and was secured in place using epidermal simple interrupted sutures (D). The lateral nasal ala defect was restored at 4-month follow-up (E).





**Figure 2.** A deep defect after Mohs micrographic surgery at the lateral nasal ala before (A and C) and 4 months after utilizing the intramuscular hinged flap technique with Burow graft (B and D).



**Figure 3.** A large scalp defect after Mohs micrographic surgery with preservation of the dermis (A). The design of the repair (a Burow triangle) and release of the dermal island from the surrounding tissue (B). Closure of the defect was achieved with the Burow graft overlying the dermal island using epidermal sutures (C). The scalp maintained its convex contour at 4-month follow-up (D).

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the tortuous angular artery, which may bleed profusely if nicked or damaged. Furthermore, muscular tissue is highly vascular and achieving hemostasis can be difficult and time consuming when it is cut. It also is not as time efficient as other simpler repair choices, such as secondary intention, primary closure, or skin graft, but it will produce superior aesthetic outcomes to these other repair options for deep lateral nasal ala defects.

To restore the surface contour from medium to large defects on the scalp, the dermal island technique in conjunction with a Burow graft has allowed us to circumvent the resulting depression that often occurs from full-thickness skin grafts. Similar to the hinged flap technique, the dermal island technique has a number of advantages: (1) It maintains the surface contour on the scalp by utilizing a dermal island on which the Burow graft can be placed. (2) There is a higher likelihood of graft survival given the presence of a vascular dermal bed rather than periosteum. (3) It is a simpler procedure than performing large flaps and therefore has a lower risk for morbidity. The procedure is limited, however, by the need to maintain a dermal island. If the tumor invades deeply, the

surgeon may not be able to preserve enough dermal tissue to restore the surface contour.

## CONCLUSION

In conclusion, we find that intramuscular hinged flaps and dermal islands, both in conjunction with Burow grafts, help maintain surface contour and enhance overall cosmesis after tumor removal by Mohs micrographic surgery.

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