Reconstructive Conundrums in Dermatologic Surgery

The Nose

Edited by
Désirée Ratner
Joel L. Cohen
David G. Brodland

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Introduction

The Reconstructive Conundrum section of the journal *Dermatologic Surgery* first appeared in the year 2000. Edited by David Brodland, this section was intended to focus on teaching points related to closure type, defect site, and underlying anatomy. Photographs of the defect to be reconstructed, an immediate postreconstruction photograph, and two long-term follow-up views were required, and discussion of the closure specifically included the authors' thought process regarding the best option for repair, as well as possible alternative options and why they were not chosen. Historical details relevant to the case were often included in the presentation, and pearls relating to the specific closure or to reconstruction in general could be included in the discussion as well.

Over time, a wide variety of reconstructive conundrums have appeared in the journal exploring new directions with innovative repair options. Dermatologic surgeons in training, as well as more experienced practitioners, have found these manuscripts to be a valuable educational resource. The creativity of the surgeons authoring the conundrums, as well as the depth and breadth of their knowledge and experience, as demonstrated by the cases they present, is both impressive and inspiring.

Our trainees are always looking for texts and atlases illustrating reconstructive options for difficult defects. It occurred to us that a collection of the "best of the best" reconstructive conundrums might therefore be both interesting and useful as an educational resource to residents in dermatology, plastic surgery, otolaryngology, Mohs surgery fellows, and reconstructive surgeons still early in their careers. These physicians would most benefit from a book focusing on critical analysis of tissue defects and creative approaches to soft tissue reconstruction. Our intent in putting together such a text is to compile these cases for easy perusal as it is difficult at this point of time to view multiple conundrums consecutively and efficiently either electronically or in print, and it seemed to us that an "atlas-like" textbook would therefore be of value to these groups of readers. Because the nose is by far the site that tends to cause the most angst among reconstructive surgeons, as well as the most common site discussed in these conundrums, it made sense for the first group of cases to focus on complex nasal reconstruction.

While the reasoning and thought processes associated with the accomplishment of each closure are thoroughly discussed in each published conundrum, there are always alternative points of view which highlight additional points and "pearls". We therefore felt that commentaries by more experienced reconstructive surgeons would both complement and supplement the existing text.

To this end, we have compiled a series of 30 outstanding nasal reconstruction cases published in the Reconstructive Conundrum section over the past 10 years, grouped them by nasal subunits, and appended them to commentaries of our own. We have sought to include a diverse group of defects and reconstructions, and in some cases, we have included our own photographs of similar defects with contrasting closures to illustrate points relevant to a particular case.

We hope that you will find this compilation of nasal reconstructive conundrum cases both educational and inspirational and that you will enjoy reading them and thinking about them as much as we have.

Désirée Ratner, MD
Joel Cohen, MD
David Brodland, MD

PART I

Nasal Dorsum

1

CONUNDRUM 1

Combined Linear Closure and Burow's Graft for a Dorsal Nasal Defect

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An 80-year-old man with a history of nonmelanoma skin cancers of the head and neck presented for treatment of a basal cell carcinoma of the nose. Physical examination revealed a poorly defined, exophytic, ulcerated nodule of the mid-dorsal nose. Given the size, location, and ill-defined margins of the tumor, Mohs micrographic surgical excision was indicated. The tumor was excised in three stages with microscopic control. The final defect was full thickness of the dermis, sparing the underlying muscle and measuring 3.2 × 2.4 cm on the mid-dorsal, supratip, and lateral aspects of the nose (Figure 1). How would you repair this defect?

Figure 1 Anterior view of the nasal defect following Mohs micro-graphic surgery.

Resolution

This is an interesting case in that a large defect on the dorsal nose was created by tumor excision, resulting in a challenging reconstructive dilemma. Our patient was experienced with reconstructive options following Mohs micrographic surgery given his extensive history of facial skin cancers. His concern with the ultimate cosmetic outcome, coupled with his insistence on the ease of postoperative care and rapidity of healing, was the basis of the resolution of this reconstructive conundrum.

Perhaps the easiest option in this situation would be a full-thickness skin graft (FTSG). FTSGs are useful for larger skin defects, given their simplicity, good cosmetic outcome, and lack of distortion of adjacent structures. The disadvantages of full-thickness grafting include the need for a donor site offering enough similar quality of skin for coverage, the possibilities of poor graft take and

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poor color and texture match at the recipient site, and the need for a bulky bolster dressing for at least a week. In addition, given the depth and size of the defect at hand, a FTSG from the pre- or postauricular region may have resulted in a large secondary defect, which may have been difficult to close.

Second-intention healing is a time-honored method of healing that is especially useful for older patients with loose skin. Granulation and epithelialization of defects are often expected in 6 to 12 weeks, and the cosmetic results are often excellent. The advantages of this technique lie in its simplicity and lack of need for further surgical procedures for reparative needs. The disadvantages include the length of time for complete healing and the need for prolonged daily wound care. In addition, the cosmetic outcome following contracture of tissue with large defects is difficult to predict. As such, wound healing on convex surfaces such as the nose may result in hypertrophic scarring in the vicinity of free tissue margins and suboptimal outcomes.

A forehead flap for repair of large defects of the dorsal nose is another option for postoperative reconstruction. Many different designs of this two-stage flap have been described, but the paramedian or midline flaps are most commonly used and often give the best overall results. The vascular supply to these flaps is excellent, with good flap viability. A second procedure 2 to 3 weeks later is necessary to divide the resulting pedicle, and additional procedures may be necessary to debulk the flap further. A secondary donor site on the forehead is created that may be closed primarily but usually results in a visible scar. Second-intention healing may be necessary for larger secondary forehead donor sites. The main advantage of this reconstructive option is the large amount of skin that the forehead provides and its good color and texture match for nasal skin. Precise and detailed explanation of postoperative wound care and large bandages that may be necessary to cover what the patient may perceive to be a disfiguring flap on the face must be understood prior to pedicle take-down by the patient and family.

Our experience with vertical linear closures for defects of the dorsal nose has been outstanding, and, as such, it has become our closure of choice for midline and paramedian dorsal nasal lesions. The long-term postoperative cosmetic results are so good that we have tried to incorporate this closure for larger defects in this anatomic location. Tension resulting from closing larger defects on the nasal dorsum may cause elevation of the nasal ala. Usually, this elevation is temporary, with improvement and resolution over the next few weeks. When there is a slight permanent residual raising of the ala, patients perceive an enhanced cosmetic look and an ease of breathing through the nostrils, which may help with snoring problems at night. Another result of the midline closure is thinning of the nasal tip, which results from the removal of the inferior dog-ear from this region. This has also been perceived by patients as a potential cosmetic benefit.

When repairing defects of the nasal dorsum, undermining of the lateral sides of the defect can be done at the subdermal level or above the cartilage and bone of the nasal sidewall. At this deep level, the undermining can be safely carried out onto the maxillary bone and cheek. This undermining provides a large amount of movement of skin medially. When using this wide undermining technique, even larger defects can be closed on the nasal dorsum. The vertical closure technique is thus more versatile for defects of larger sizes, which can be closed with excellent cosmetic results.

When a defect on the nasal dorsum is so large that an attempt to close primarily is unsuccessful, the superior or inferior dog-ear can be used as an FTSG to complete the closure. We initially tried to close this defect as a vertical linear closure but found that the superior dog-ear was needed as an FTSG to complete the closure. This technique is demonstrated in this case report.

In this case, the large defect following Mohs micrographic surgery could not be closed primarily despite wide lateral undermining (Figure 2). We chose to reconstruct this defect with a linear closure combined with a local Burow's (dog-ear) graft. A dog-ear was removed superiorly, and the resulting defect was closed in a linear side-to-side fashion using 5-0 subcutaneous buried poliglecaprone (Monocryl) sutures (Figure 3).

The Burow's (dog-ear) graft was then sutured centrally into the area of the defect that could not be closed primarily. To graft the dog-ear, 6-0 nylon (Ethilon) running sutures were used (Figure 4), and a bolster dressing was applied. The bolster dressing and sutures were removed after 1 week; the graft was pink, with 100% take (Figure 5).

Four-week follow-up results are shown in Figure 6. Elevation of the nasal ala is imperceptible, and the nasal passages are widely patent (Figure 7). The use of

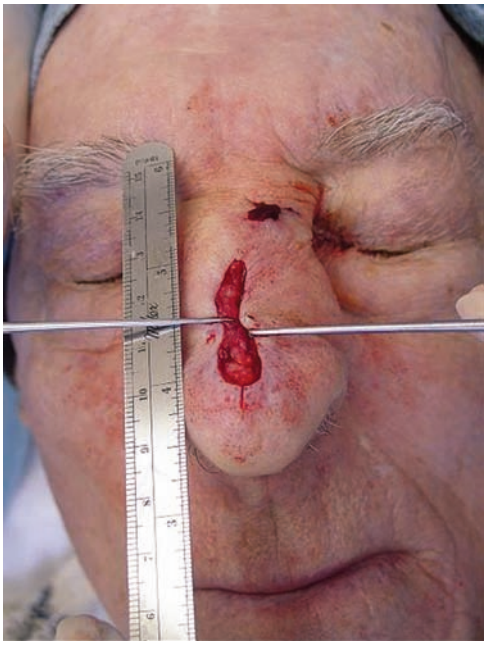


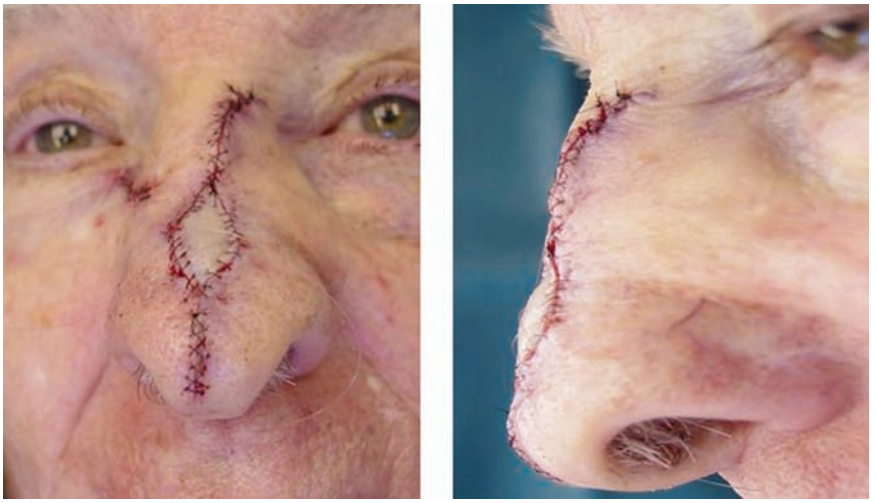
Figure 2 Anterior view showing inability to completely close the defect primarily.

Figure 3 Removal of superior and inferior dog-ears prior to use as a full-thickness skin graft centrally.

local-tissue skin grafts from the nose allows for excellent cosmesis, with precise color and texture match. The patient was very pleased with the appearance of his nose and has not required further follow-up for scar revision.

Conundrum keys

· Large defects of the nose can be particularly challenging, but there are a vast number of reconstructive options for repair.



(a) (b)

Figure 4 Anterior (a) and lateral (b) views of combined linear closure with a Burow's graft centrally.