

# Burrow's Graft for Nasal Tip Defects as an Alternative to More-complex Reconstructive Surgery Following Mohs Surgery: A Case Presentation and Discussion

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## Abstract

**Background:** Following Mohs surgery, defects of the nasal tip are often repaired with complex flaps and grafts harvested from distant sites. Both of these options may result in increased complications or poor cosmetic outcomes compared to simpler options. **Objective:** Demonstrate the utility of the Burrow's graft as an alternative to other reconstructive surgery options for defects of the nasal tip. **Methods:** We present two cases in which Burrow's grafts were used to repair medium-to-large defects of the nasal tip. **Results:** Excellent cosmetic outcomes were achieved in both cases. **Conclusion:** The Burrow's graft is a great reconstructive option for medium-to-large defects of the nasal tip. Furthermore, it is a simple technique with quick closure time, has a relatively low complication rate, and offers reduced cost to the patient compared to outside referral for defect closure.

## Introduction

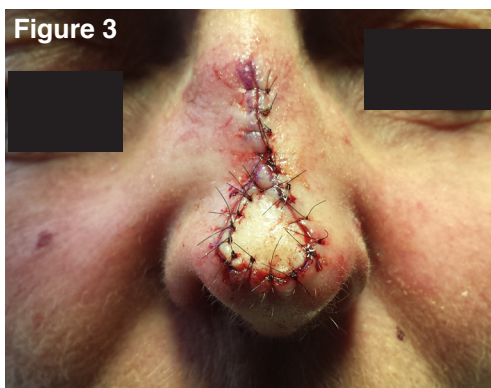
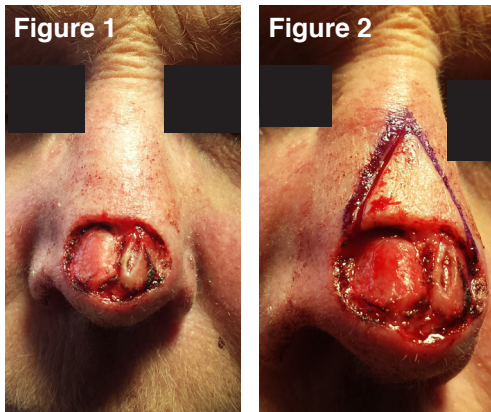
Because of its sun-exposed location and proliferative follicular constitution, the nasal tip is one of the areas of highest prevalence for non-melanoma skin cancers.<sup>1</sup> Unfortunately, even a small defect on the nasal tip following micrographic surgery can be challenging to repair with a cosmetically acceptable result due to the limited elasticity of the sebaceous tissue, convex topography and lack of donor tissue at the site. Patients frequently undergo extensive, often multi-stage reconstructive surgeries to repair these defects. Such reconstructive efforts range from forehead flaps, dorsal nasal or bilobed flaps, and skin grafts harvested from distant sites to more-imaginative repairs.<sup>2</sup> Due to a lack of time or skill on the dermatologist's part, and reimbursement issues (multiple-procedure reduction), next-day reconstruction or referral to a plastic surgeon are often the preferred avenues for accomplishing the required

repair. This exposes the patient to discomfort, infection risk,<sup>3</sup> high cost, and inconvenience.

The outcomes of these efforts range from excellent to unacceptable. Large flaps from the forehead, nasal dorsum or nasal sidewall may produce a bulky contour or "pin-cushioning" that patients find cosmetically distressing. They also leave long scars because of the need to recruit the flap from the donor site. Hematomas and infection are more likely with flaps because of the additional incisions required and the need to extensively undermine at times. A graft from a distant site like the post-auricular or supraclavicular skin is even more likely to frustrate a patient because it results in a

smooth, white "patch" that poorly matches the more sebaceous nasal skin. Other full-thickness grafts may poorly resemble the nasal skin in texture, actinic damage, and hair density. A standard vertical primary closure of the nasal tip produces acceptable results when the defect is small, but tends to flatten the tip in larger defects; it also tends to produce a wider scar on highly sebaceous noses than on less-sebaceous ones.

In dermatologic surgery, a wise paradigm to follow is to perform the least complex procedure that will result in the best possible outcome with the fewest attendant risks and adverse events. In other words, "Bigger isn't always better," and "Just because we can, doesn't mean we should." In our experience, one simple option for repairing defects of the nasal tip is a Burrow's graft, which takes advantage of the relative laxity of the skin of the nasal bridge.<sup>4</sup> For defects too large to perform a vertical primary closure, a single Burrow's triangle may be excised from the skin superior to the defect and then used as a graft following closure of the Burrow's triangle defect. We present two patients with sizable defects of the nasal tip repaired with Burrow's grafts recruited from nasal-dorsum skin.



### Case 1

A 68-year-old female underwent three stages of Mohs surgery for an infiltrative BCC of the nasal tip, resulting in a 1.6 cm x 2.2 cm defect with exposed cartilage at the base (Figure 1). After discussing repair options with the patient, a Burrow's triangle was excised from the nasal dorsum immediately superior to the defect (Figure 2). The secondary defect created by removal of the Burrow's triangle was closed with 6-0 polyglactin 910 (Vicryl®) sutures, thereby reducing the size of the primary defect by approximately 50%. After trimming the Burrow's triangle (graft) slightly to conform to the shape of the defect, the graft was sutured to the defect with numerous interrupted 6-0 nylon sutures (Figure 3). The site was covered in petrolatum and a pressure bandage, and the patient was prescribed cephalexin 500 mg orally three times a day for 10 days. One week later, the sutures were removed, and three weeks later the site had nearly completely healed, with one small area of necrosis that was still granulating (Figure 4). Three months later, the surgery site was completely healed and nearly undetectable (Figure 5).

## Case 2

A 73-year-old female underwent five stages of Mohs surgery for an infiltrative BCC of the nasal tip, resulting in a 1.5 cm x 1.7 cm full-thickness defect (Figure 6). After discussing repair options, a Burrow's triangle was excised from the nasal dorsum immediately superior to the defect and used to repair the defect in the same manner as in Case 1 (Figure 7). A week later, at suture removal, there was a black area of necrosis over the inferior aspect of the graft (Figure 8). At three months, there was still some residual redness, but the surgical site was barely detectable (Figure 9).

## Discussion

The Burrow's graft is a simple, perhaps underutilized repair technique that takes advantage of the skin adjacent to the defect site, where a Burrow's triangle might otherwise be removed for another repair option.<sup>5</sup> Mohs surgery on the nasal tip can be anxiety-provoking for both the patient and the dermatologist, especially if multiple stages are required to remove the tumor and if the resultant defect is larger than 1 cm. In such a circumstance, when the patient has spent several hours in the dermatologist's office or surgical suite, and the closure of the defect looms as an even bigger challenge than the skin cancer removal, "punting" the patient to a facial plastic surgery colleague for repair of the defect on a subsequent day is often the most appealing course of action. For the patient, however, this only prolongs the experience and may add further anxiety due to unfamiliarity with the new physician, the need for anesthesia and inherent additional costs. While most dermatologists who perform Mohs surgery have the skill to perform more-complex flaps to repair nasal tip defects, the time required and additional risks incurred might not be worth the incrementally smaller reimbursement due to the multiple-procedure reduction rule. Furthermore, the variability in outcomes from larger flaps might dissuade a dermatologist from attempting a more "heroic" closure.

In our experience, the Burrow's graft is an ideal option for treating medium-to-large nasal tip defects because it allows for relatively quick closure with consistently reproducible and excellent cosmetic results. One major advantage of the Burrow's graft is that it requires little constructive planning compared to a bilobed, dorsal-nasal or forehead flap. There is ample skin laxity at the donor site (the nasal bridge), which allows for large grafts to be harvested without making closure of the donor site difficult. To the contrary, one major advantage of this technique is that the larger the harvested Burrow's triangle, the more the donor-site closure secondarily reduces the size of the Mohs defect. In many cases, this beneficial effect reduces the size of the defect by half. That reduction rarely compromises the overall anatomy of the nose to the extent that primary closure might (e.g., flattening of the nasal tip). This reduction in defect size significantly simplifies closure when compared to larger flaps that tend to create multiple secondary defects and longer scars without necessarily diminishing the defect size.<sup>6</sup> Unlike grafts harvested from distant sites, Burrow's grafts taken from the nasal bridge closely match the original nasal tip skin in color, sebaceous density, actinic damage, and texture. This has the potential to produce a nearly perfect cosmetic result, unlike other grafts, which, in our experience, typically produce very poor cosmetic matches.

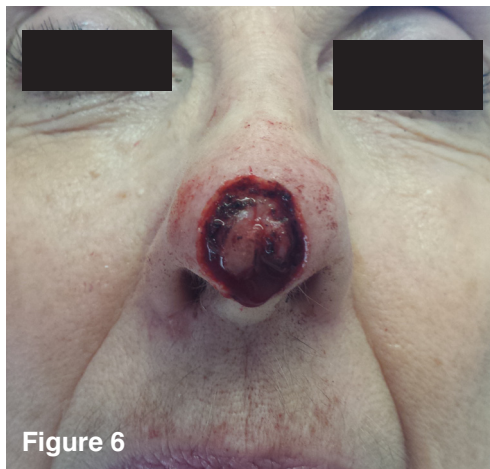


Figure 6



Figure 8

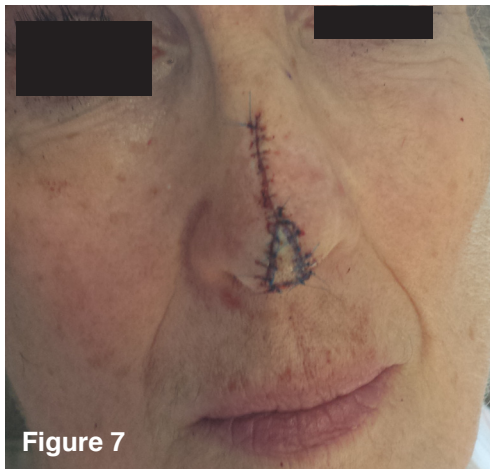


Figure 7



Figure 9

The conventional wisdom in surgical dermatology regarding skin grafts is that meticulous graft preparation, graft thinning, soaking in saline, and bolster placement over the graft all improve graft survival and ultimately surgical outcomes.<sup>7</sup> From the dozens of Burrow's grafts we have performed in our clinic, we have not seen a clear correlation between these tenets of "graft dogma" and real life outcomes. Anecdotally, even for undersized grafts that require more suturing or stretching and for grafts placed over cartilage (as in Case 1), we haven't appreciated a significant difference in final cosmetic result compared to cases of optimal graft placement. It may be that because of the dense proliferative follicular composition, the rich vascularity or the optimal "tissue-match" of the graft to the recipient site, there are simply better cosmetic outcomes. In fact, we have noticed that despite a high percentage of these grafts experiencing a superficial graft necrosis, in the majority of cases the result is very good to excellent. Even with full-thickness graft necrosis, the cosmetic outcome is usually very good. In any instance of graft necrosis, the patient should be instructed to leave the eschar in place, and keep the entire site moisturized with a thick layer of petrolatum. Oral antibiotics may assist in healing and partial graft survival.

As with all techniques, cosmetic outcomes with the Burrow's graft can occasionally be less than acceptable. Most of these result from full-thickness graft necrosis, leaving the final scar either thin and papery overlying the cartilage, or depressed, with a defined border at the juncture with the normal nasal skin.<sup>8,9</sup> Dermabrasion or laser resurfacing can improve both of these unwanted effects. In extreme cases, the scar can be excised and another closure attempted. Because of the reduction in defect size

prior to graft placement when the Burrow's defect is closed, excising a scar from a Burrow's graft leaves a much smaller defect than the original Mohs defect. In all cases, the physician should wait at least six months before attempting any corrective measure.

## Conclusion

Nasal tip defects following Mohs surgery can be a daunting problem for dermatologists given the time constraints of a busy practice and the inherent complexity of the common repairs for these defects. With physician and patient anxiety factored into the situation, it is sometimes easiest (but often not best for the patient) to simply refer to a facial plastic surgeon for repair on a subsequent day. As demonstrated by these two cases, the Burrow's graft can be a time-efficient, relatively simple alternative to more-complex repair options. Because of these factors, and because of the consistently excellent cosmetic outcomes, the Burrow's graft should be considered whenever a medium or large nasal tip defect results from Mohs surgery.

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