A twist in the fold. Single-stage nasolabial rotation flap and intranasal stenting for a nasal ala defect following basal cell carcinoma excision. A case report

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Case Report

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Background: Reassembling the nasal alar subunit after oncological resection remains one of the most difficult aspects of facial plastic surgery. Basal cell carcinoma (BCC) is the most prevalent cutaneous malignancy of the face, and the nasal ala is particularly vulnerable. Excision often leads to significant defects and surgical planning needs to be carefully planned. A 65-year-old female patient with a long history of chronic hypertension developed a gradually enlarging, hyperpigmented tumor on the right nasal ala that evolved over the course of 5 years. Basal cell carcinoma was diagnosed by biopsy. The patient was subjected to a wide local resection resulting in a 2x2.5 cm full-thickness defect. An improved right nasolabial rotation flap, which contained a superiorly based flap, was transposed, and layered closure was achieved with 3-0 Vicryl and 3-0 Nylon. An intranasal stent was inserted and placed postoperatively to avoid cicatricial contraction and splinting of the reconstructed ala. Overall, the single-stage nasolabial rotation flap, and especially when augmented with postoperative intranasal stenting, possesses an excellent level of reliability, aesthetics, and functional integrity as a reconstructive technique of moderate and large nasal alar defects.

Keywords: Nasolabial fold, rotation flap.

Non-melanoma skin cancer is the most common type of malignancy worldwide, where basal cell carcinoma (BCC) is the major tumor that is diagnosed annually [1]. BCC develops most often in the head and neck region, owing to the cumulative exposure to ultraviolet radiation [2]. The lower third of the nose, specifically the nasal tip and the paired alae, presents the highest incidence within the complex geometry of the face. The unique convex geometry and prominent anterior position of the nasal ala make it the most likely site for the development of cutaneous malignancies and aesthetic issues of surgical extirpation.

Complete oncological eradication by broad local excision is the principal aim in the management of nasal BCC. However, the surgical defect created is an intractable problem, to reconstruct the tridimensional structural composite of the nose: an external cutaneous envelope, middle layer of supported fibrofatty tissue for support in middle, and inner mucosal layer. Defects of the nasal ala, especially those that reach > 1.5 cm length and that result in loss of full-thickness tissue, are notoriously difficult to recover [3].

The reconstructive surgeon must follow the aesthetic subunits to prevent scarring within the native shadows. The absence of an adequate degree of skin laxity renders primary closure contraindicated for such defects. Full-thickness skin grafts can often obtain poor color match and contour depression [4]. Local and regional flaps have thus become the gold standard. Where there is a 2x2.5 cm defect, the bilobed flap is not nearly enough as the local skin has little elasticity, which causes a heavy wound tension. Although the paramedian forehead flap (PFF) is a solid workhorse of a multi-staged surgical procedure for total nasal reconstructions, it requires a multi-stage surgical method and will invariably produce a visible donor site scar.

On the other hand, the nasolabial flap (NLF) has been shown to be a highly versatile and effective method for reconstructing abnormalities of the nasal ala. By taking advantage of the naturally redundant tissue of the medial cheek, the NLF creates a skin that is closely representative of the sebaceous consistency, thickness, and colour of the ala, yet the donor site can be mainly closed in the melolabial crease. The mass of the flap together with centripetal mechanisms for healing can cause strong contraction of the cicatrix. In order to

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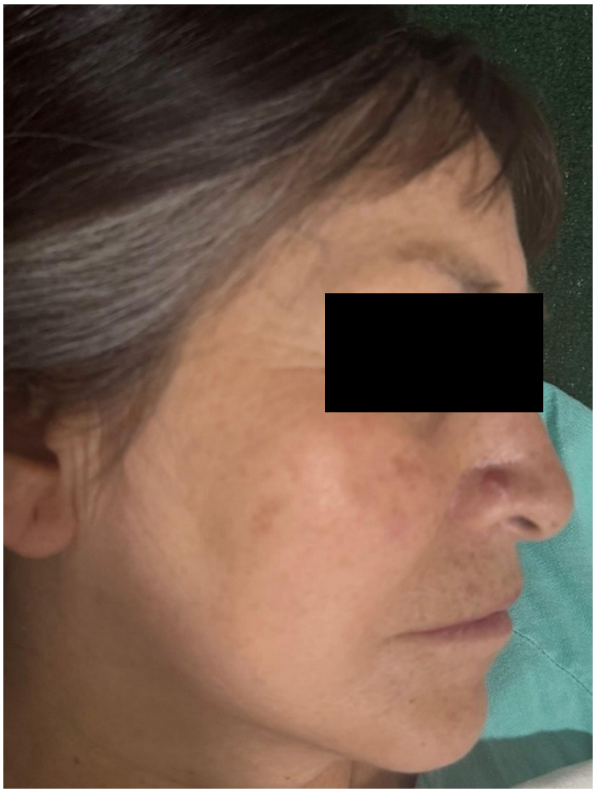

Figure 1. Preoperative presentation. A 65-year-old female patient exhibiting a 5-year evolution of a hyperpigmented, nodular lesion with irregular borders on the right nasal ala, confirmed as basal cell carcinoma.

definitively reduce this, use of a mechanical intranasal stent after the operation is considered an unyielding physical barrier to contracture.

Case report

Clinical Presentation: An 85-year-old male patient from Mexico City had an eight-year history of right infraauricular pruritic lesion. The patient was an outdoor construction worker with many years of experience demonstrating considerable long-term actinic exposure. He described progressive and increasing growth in the last year, a new onset of ulceration and bleeding producing a honey-colored crust. We had a very long and detailed medical history. He has a 20-year history of Type 2 Diabetes (now also treated using Insulin Glargine and Linagliptin, glucose level average 100-130 mg/dL). He suffered from Atrial Fibrillation (2024 diagnosis, managed on Amiodarone and Apixaban). He was later diagnosed in 2022 with unspecified dementia (quetiapine management). Then, he had arterial insufficiency and needed a right supracondylar amputation in 2025 (on Cilostazol and Atorvastatin). Surgical history included prior inguinal hernioplasty and amputation. He was receiving Clopidogrel 75 mg daily. His ECOG was

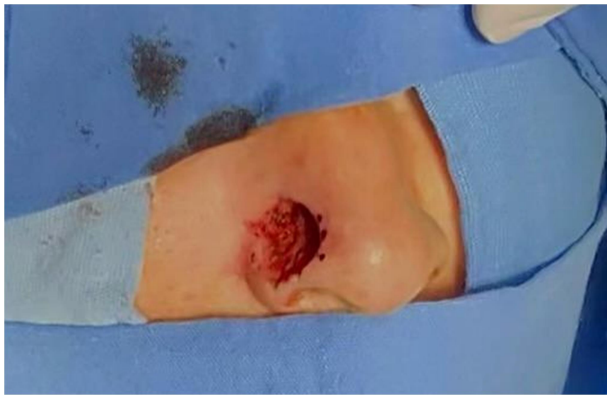

Figure 2. Intraoperative view of the surgical defect.
Following wide oncological excision, a substantial 2x2.5 cm full-thickness defect is visible on the right nasal ala, denuding the area down to the deeper planes.

2. Physical examination showed a large pearly-bordered ulcerative plaque, which was solitary and 2.5 x 2.6 cm in the right infraauricular región (Figure 1-2). The center was covered with a hemorrhagic crust. Dermoscopy revealed typical arborescent vessels and pigment globules at the periphery, and a homogeneous central crust. Complex Findings in Pre-operative Skin Biopsies in Pathology (Diagram B-13966-25) The first was BCC with a mix of solid and sclerodermiform types, mucinous areas, and focal perineural permeations. The second (RL25-06698) characterized aggressive nodular and adenoid BCC configurations with tumor involvement at deep and lateral surgical borders. Solar actinic damage was also extensive.

Postoperative immediate clinical evaluation of the rotated flap showed excellent perfusion, color matching, capillary refill time normal, and surface temperature appropriate [1]. Evidence of venous congestion or arterial insufficiency was absent confirming the preservation of the robust vascular pedicle during the subcutaneous dissection [2]. As seen in the immediate postoperative result, there is a meticulous flap inset, concealment of the donor site closure, and the vital intranasal stent [Figure 4].

The clinical evolution of the patient was very optimal due to adequate, uncomplicated cicatrization. Under general anesthesia with orotracheal intubation, a precise geometric pattern of the defect was templated and subsequently transferred to the adjacent right medial cheek. A superiorly based nasolabial rotation flap was established and carefully raised in subdermal plane to avoid injury to the mimetic facial musculature, with remarkable tissue mobility and consistent vascular pedicle integrity [Figure 3-1, Figure 3-2]. The flap was then rotated medial and transposed

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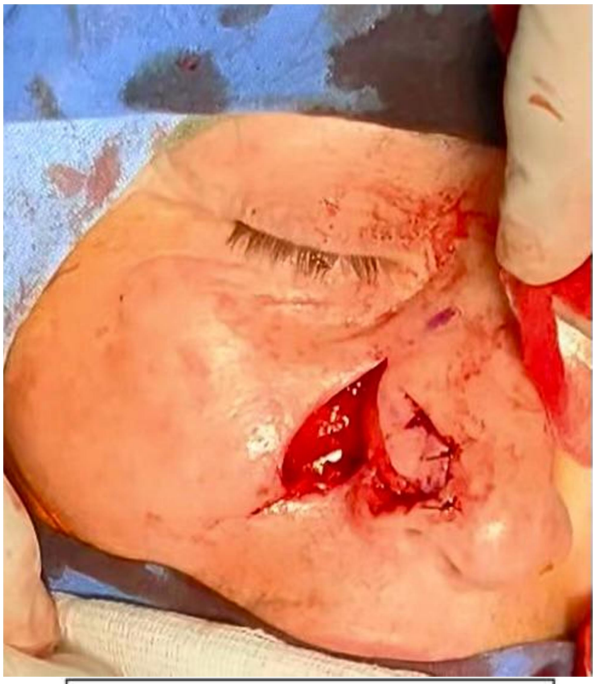

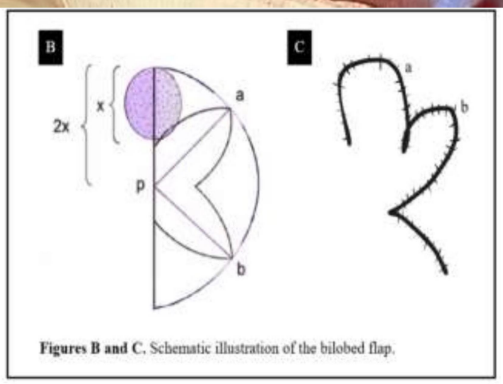

Figure 3.1. Intraoperative view of flap elevation and rotation. **Figure 3.2.** Schematic illustration of flap. The right nasolabial rotation flap has been carefully dissected superficial to the facial musculature and rotated medially toward the alar defect, demonstrating robust vascular pedicle integrity.

across the 2x2.5 cm alar defect. Insetting was performed by a multiple-layered method of closure

Discussion

A 2x2.5 cm full-thickness defect of the nasal ala is a large size surgical decision point representing a complex surgery threshold which brings significant aesthetic and functional implications to minor operative choices [1]. In order to fully understand the success of this single-stage structure, a computational interpretation of flap selection is urgent to take into account the algorithmic component of flap selection. In cases with larger defects > 2.0 cm, a number of modern reconstructive publications discuss whether we need the Nasolabial Flap (NLF) or Paramedian Forehead Flap (PFF) for its indications. [2]

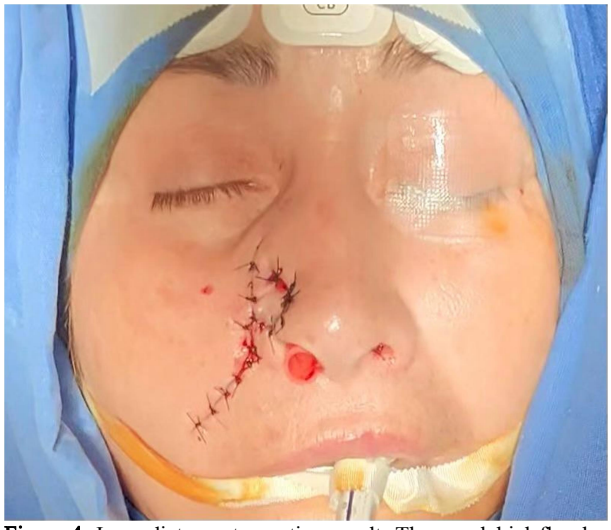

Figure 4. Immediate postoperative result. The nasolabial flap has been meticulously inset using deep Vicryl 3-0 sutures and Nylon 3-0 for the skin. The donor site is closed primarily within the melolabial fold. An intranasal stent is visibly placed within the right nasal fossa to ferulize the reconstruction and proactively prevent cicatricial contraction.

Recent systematic reviews confirmed that single-stage nasolabial flap has very promising aesthetic performance, superior to most sophisticated procedures. Although the PFF is the gold standard for subtotal or total nasal issues [3], it has been reported that the NLF is considerably more time-saving, bypasses subsequent division surgery and has significantly less obvious donor site scarring [4]. Also, although contemporary improvement makes the bilobed flap an ideal single stage option, the optimal application of the flap for defects smaller than 1.5 cm is not suitable (thereon any other available approaches were used for defects less than 1.5 cm) and it is highly risk for geometric distortion with ischemia during the flap's mobilisation for 2.5 cm defects [5].

The NLF has the unique ability to have excellent clinical success due to its vascular geometry. The flap is superficial to the facial musculature and therefore captures this dense subdermal vascular plexus rich in perfusion from constant perforating branches coming from the facial and angular arteries [6]. This strong dual vascular provision affords unmatched vascular resilience, reducing the danger of marginal necrosis even after extensive contouring [7]. One of the essential factors contributing to the successful functional outcome identified in this case was immediate intraoperative intranasal stent usage [8]. After a large 2.5 cm void heals, myofibroblasts infuse the wound bed, and the surrounding tissue is pulled inward by vectors of scar contraction and threatens to obliterate the aperture of the nostril [9]. Nasal stents are essential mechanical spacers. They prevent the raw material,

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which is healing, from sticking up (synechiae) and offer structural resistance to the pull of the contracting scar inward. The stent forces the malleable tissue to cross-link collagen about a rigid luminal mold so that the functional patency of the upper airway is maintained [10].

Conclusion

Reconstruction of a moderately large 2.5 cm full-thickness defect of the nasal ala after resection of a basal cell carcinoma requires sophisticated knowledge of facial anatomy and tissue biomechanics. This clinical report provides strong support that a superiorly based nasolabial rotation flap is an ideal, effective, resilient, and single-stage surgical answer. If the surgeon recruits redundant and perfectly matched tissue of the medial cheek, then he can regenerate the three-dimensional architecture of the nasal ala in an exquisitely integrated way to be ideal. Importantly, this modality's success amplifies exponentially with the insertion of an intranasal stent. The stent offers the ultimate mechanical resistance that protects the anatomical dimensions of the nostril, helping to prevent catastrophic conditions such as luminal stenosis and external nasal valve collapse.

Conflicts of interests

The authors declare that there are no financial, personal, or institutional conflicts of interest that could have influenced the work reported in this manuscript.

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