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Dermatosurgery rounds: crescentic nasojugal flap (perialar crescentic advancement flap) for reconstruction of a cutaneous defect involving the nasal dorsum and the lateral nasal sidewall

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The case

A 68-year-old male presented to the dermatology department with a primary complaint of a tumorous formation measuring 1.5×1.5 cm and protruding above the surrounding skin. The lesion exhibited a central hyperpigmented nodule and visible telangiectasias. It involved multiple nasal cosmetic subunits, extending across the right inferior dorsum nasi onto the inferior portion of the right lateral nasal sidewall and bordering the right ala and nasal tip (Figure 1). Based on the clinical presentation, nodular basal cell carcinoma was suspected and surgical excision under local anesthesia was recommended.

Our choice

Nasal skin reconstruction presents a significant challenge due to the complex three-dimensional anatomy of the nose and its distinct aesthetic subunits, which must be carefully considered to achieve optimal functional and aesthetic outcomes.

Furthermore, the inferior portion of the right lateral sidewall lies immediately superior to the right alar rim, a structure that lacks rigid bony anchorage. Given the limited tissue mobility within these nasal subunits, primary wound closure may generate predominantly vertical and superiorly directed closure vectors, potentially resulting in alar retraction and consequent facial asymmetry.

Secondary intention healing was considered unsuitable because of the potential for pronounced fibroelastic wound contraction and the development of a “pincushion” deformity. The thick, sebaceous skin of the lower nose is particularly susceptible to unfavorable healing outcomes, including the formation of smooth, shiny, atrophic, and hypopigmented scars, with subsequent wound contraction and distortion of the surrounding sebaceous skin of the nasal tip and ala. These differences in surface texture, reflectivity, and pigmentation may result in a visible mismatch, thereby compromising the overall aesthetic outcome.

Full-thickness skin grafting was also considered unsuitable, as it would be unable to reproduce the distinct topographical transition between the adjacent nasal subunits and would likely result in differences in skin color, texture, thickness, and sebaceous pore density relative to the surrounding tissues. Furthermore, a skin graft would not provide the structural volume necessary to restore the three-dimensional contour of the right lateral nasal sidewall and achieve symmetry with the contralateral side.

The inferior dorsum represents a transition zone between the thin, mobile skin of the nasal dorsum and the thicker, highly sebaceous, adherent skin of the nasal tip. Advancing a uniform local flap across this boundary may disrupt the natural contour and biomechanics of these regions, potentially

resulting in a highly visible deformity, such as a depressed scar at the junction with the thick skin of the inferior nasal sidewall.

Local flaps, such as the bilobed or trilobed transposition flap, were not selected because the wide arc of rotation required for tissue transposition may predispose to pincushioning and contour deformities. Additionally, the geometric configuration of the flap may result in prominent circular scars across the central nasal region, potentially compromising the aesthetic outcome.

The Rieger flap, a rotation-advancement flap, was also not selected because its design would require extending the reconstruction into additional distinct facial aesthetic subunits, including the glabella, nasal sidewall, nasal dorsum, and medial canthal region, thereby increasing collateral tissue involvement and compromising the principle of preserving uninvolved aesthetic subunits.

Considering the potential complications of alternative reconstructive techniques, the anticipated tension vectors and the need for effective tension redistribution, as well as the goal of achieving a refined aesthetic outcome, reconstruction using a local advancement flap alone was considered the most appropriate option.

Reconstruction was performed using a full-thickness local advancement flap, which redirected contractile forces away from the nostril and achieved a satisfactory aesthetic outcome. Further refinement using a CO_2 laser treatment was recommended to the patient.

Procedure

Under local anesthesia with 1% lidocaine diluted in normal saline and a few drops of adrenaline, the formation was excised with an oval excision, with a surgical safety margin of 3 mm in all directions, resulting in a medium-sized circular defect.

The reconstructive region involves two distinct nasal aesthetic subunits characterized by different cutaneous biomechanical properties, including variations in tissue thickness, elasticity, mobility, and sebaceous composition. The inferior nasal dorsum is covered by relatively thin and mobile skin with limited sebaceous activity, whereas the inferior portion of the right lateral nasal sidewall comprises thicker, less elastic tissue with greater sebaceous density and firmer adherence to the underlying cartilaginous framework.

Therefore, surgical reconstruction using a crescentic nasojugal flap (perialar crescentic advancement flap) was selected.

The circular defect was subsequently triangulated at its superior aspect, resulting in a teardrop shape to facilitate flap mobilization during the subsequent stages of reconstruction and minimize the risk of dog-ear formation during advancement (Figure 2).

The flap begins with a sinusoidal incision along the inferior left aspect of the resulting teardrop-shaped defect, extending toward the left alar groove, curving around the nasal ala, and terminating at the nasolabial groove.

At the junction of the alar groove and nasolabial groove, where the nasal alar meets the nasolabial region, a half-moon or crescent-shaped wedge of redundant tissue was excised. Subsequent undermining was performed in the deep submuscular plane, superficial to the perichondrium and facial fascia (Figure 3).

Careful undermining was extended laterally onto the medial cheek to facilitate tissue mobilization. Following meticulous hemostasis, the cheek and lateral nasal tissues were advanced medially and slightly rotated into the defect (Figure 4).

Following confirmation of uniform horizontal tension redistribution, the remaining secondary defect was closed with interrupted 5-0 polypropylene sutures (Figure 5). Initial fixation sutures were placed at the perialar crescent site to secure flap positioning and ensure that the resulting scar aligned with the natural anatomical contours of the alar crease and nasofacial junction, thereby optimizing aesthetic integration.

No postoperative functional impairment was observed. The histopathological examination confirmed a micronodular basal cell carcinoma with histologically clear resection lines.

Comment

Reconstruction of nasal defects following excision of skin cancer presents a significant surgical and aesthetic challenge.[1]

The crescentic nasojugal flap can be used to reconstruct defects measuring up to 4 cm in diameter and is not limited to defects confined to the nasal tip subunit.[2] This technique can offer excellent functional outcome while preserving the integrity of the nasal aesthetic subunits and maintaining harmonious nasal contour.[2]

Compared with skin grafting and alternative flap techniques, such as the bilobed, trilobed, or the paramedian forehead flaps, which may represent unnecessarily extensive reconstructive approaches for defects of this nature, the crescentic nasojugal flap offers a simpler and more tailored reconstructive approach.[3] It provides an optimal balance between defect coverage, aesthetic integration of the surgical scars and the use of adjacent tissue with compatible cutaneous characteristics.[3]

The outcome

The outcome is shown in Figure 6: status post nasal reconstruction at the 2-month follow-up.

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Figure 1. Intraoperative view: designing the crescentic nasojugal flap (perialar crescentic advancement flap) over a tumorous formation involving multiple nasal cosmetic subunits, extending across the right inferior dorsum nasi onto the inferior portion of the right lateral nasal sidewall and bordering the right ala and nasal tip.



Figure 2. Intraoperative view: the circular defect is subsequently triangulated at its superior aspect, resulting in a teardrop shape.



Figure 3. Intraoperative view: undermining is performed in the deep submuscular plane, superficial to the perichondrium and facial fascia.



Figure 4. Intraoperative view: the cheek and lateral nasal tissues are advanced medially and slightly rotated into the defect.



Figure 5. Intraoperative view: the secondary defect is closed with interrupted 5-0 polypropylene sutures.



Figure 6. Status post nasal reconstruction: 2-month follow-up.

