Dermatosurgical rounds: shark island pedicle flap for skin defect of the alar crease area after basal cell carcinoma removal

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The case

A 67-year-old female presented to the Dermatology Department with a tumor formation located on the left lateral side wall of the nose, measuring 1.5/1.2 cm in size, which had been slowly growing over the past few years. The tumor exhibited a shiny, pink-colored surface with a dome-shaped appearance, irregular borders, and superficial telangiectasias, raising clinical suspicion for basal cell carcinoma. Additionally, there was no reported history of skin cancer in any family member or painful sunburns during childhood. The patient was recommended for surgical excision under local anesthesia for the suspected lesion.

How would you remove the lesion? (Figure 1)

Figure 1. Pink nodule with superficial telangiectasis suspected of basal cell carcinoma located on the left nasal side wall.

Our choice

The tumor formation on the left lateral side wall of the nose was excised with an oval excision with a surgical safety margin of 1-2 mm in all directions, which resulted in a primary circular defect (Figure 2). Given the complexity and sensitivity of the anatomical area, along with the tension generated by the defect, which can result in tissue dysfunction and an aesthetically displeasing appearance, primary closure with single interrupted sutures or secondary wound healing were not viable options. Additionally, the proximity to the anatomical structures, including the lateral nasal and angular vessels and the infraorbital, external nasal, and zygomaticofacial nerves, requires careful consideration. Considering the cosmetic subunit junction lines and the patient's skin elasticity, our team decided to reconstruct the primary circular defect utilizing a one-stage shark island pedicle flap technique. The primary objective of this flap is to achieve an optimal reconstruction that aligns with the natural concavities of the nasofacial sulcus and alar groove. Furthermore, the flap will preserve similar anatomical integrity, including vascular supply and innervation. The shark island flap incorporates two known techniques: a primary component (an advanced flap) and a rotational component. The distinctive "shark" appearance of the flap is created through a series of carefully placed incision lines. Initially, a caudal incision line is made, aligning with the alar facial sulcus and the nasolabial fold. Secondly, the distance between the alar sulcus and the medial defect edge is measured and transferred to the cranial border of the defect, ensuring enough width for the "shark's snout". To rotate the skin, the incision line is extended medially in a curve, just a few millimeters beyond the cranial wound edge, down to the caudal incision in the nasolabial fold. This part of the flap utilizes the adjacent skin of the left cheek. The resulting secondary defect resembles a "shark with its jaws open" (Figure 3). Undermining "the body of the shark" is performed cau-

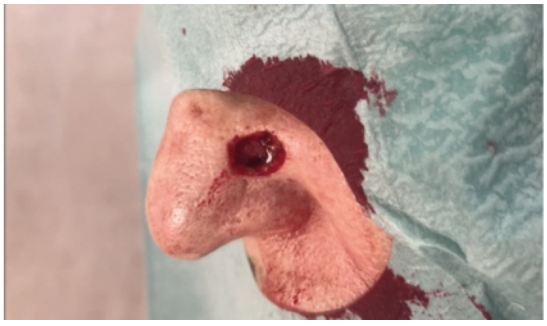

Figure 2. Primary wound defect after the excision of the tumor formation.

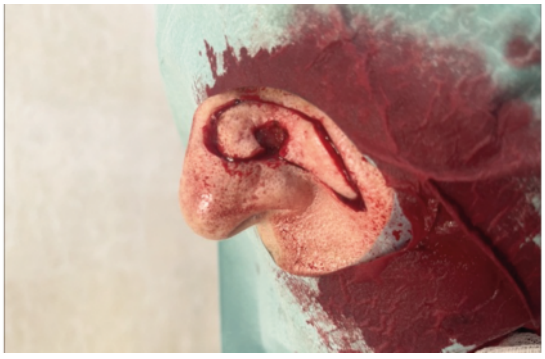

Figure 3. Secondary wound defect after reconstruction of the primary nasal side wall defect using shark island pedicle flap.

tiously to preserve the blood supply from the central vascular structures. Undermining is carried out carefully in both the "head" and "lower jaw" regions to prevent ischemia. Following this, the "upper and lower jaws of the shark" are carefully aligned and connected, aided by the flexibility provided by the deep incisions. The peripheral edges surrounding the "body of the shark" are undermined minimally, ensuring the subsequent integration of the two parts of the flap. The underlying cartilage is left intact, allowing the overlying skin to adapt naturally to the reconstructed area. The superior part of the flap will have an additional blood supply provided by the levator labii superioris muscle. Finally, the "shark's snout" is rotated 90 degrees to fit into the primary wound defect. The secondary wound defect is then closed using single interrupted sutures (Figure 4), with the initial suture placed at the inferior aspect of the "shark's snout". The histopathological examination confirmed a solid-type basal cell carcinoma, excised with clear resection margins. No postoperative complications were observed, and the flap remained healthy. Sutures were removed 14 days post-surgery, and after 1 month, an aesthetically pleasing result was achieved (Figure 5).

Figure 4. Single interrupted sutures used to close the secondary wound defect.

Figure 5. 1-month postoperative follow-up.

Comment

The nose is a complex facial unit with a rich vascular supply.[1] Although different reconstructive techniques can be used to repair a skin defect, recreating the alar crease remains challenging.[1] However, primary defects of the alar sulcus and perialar region are ideal candidates for repair using a shark island pedicle flap.[2] The procedure is conducted in a single operation, effectively restoring the natural facial contours and preserving the cosmetic units while minimizing the need for additional techniques, such as pexing sutures or graft/flap combinations.[3] The flap is a modified version of the subcutaneous pedicle island flap, incorporating an additional rotational component.[4] The flap's vascularization is provided by random blood supply throughout the subcutaneous pedicle, with additional supply from the levator labii superioris muscle. This dual blood supply will enhance the flap's viability.[4] The final outcome achieves a natural reconstruction of the lateral ala and alar facial sulcus.[3]

The shark island reconstructive technique is an excellent candidate for primary skin defects in the alar-perialar region, especially when preservation of the patient's facial structure and an aesthetically pleasing outcome are desired.

The outcome

The outcome is shown in Figure 5.

References

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