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Reconstruction of Large Nasal Alar Squamous Cell Carcinoma Defect Using a Superiorly - Based Nasolabial Flap

The nasal skin is the most common site of malignancy in the face accounting for as much as 25.5 percent by virtue of its location and propensity for direct exposure to ultraviolet radiation from the sun.¹⁻³ Among the various cutaneous malignancies, basal cell carcinoma is the most common, but other types of cancer such as squamous cell carcinoma, cutaneous malignant melanoma, and basosquamous carcinoma are also common.⁴ Following surgical resection of a malignant lesion, the defect calls for a reconstructive option that will restore aesthetics and function. We present a squamous cell carcinoma of the nasal alar skin which underwent excision and reconstruction of the defect using a superiorly - based nasolabial flap.

CASE REPORT

A 66-year-old man consulted at the outpatient clinic due to a nasal alar mass on the right. The mass started one year prior to consult as a pimple-like lesion on the right nasal ala. There was no history of manipulation or trauma to the aforementioned area. He consulted at a local hospital where he was given unrecalled antibiotics that did not cure the lesion. Instead, he noticed that it gradually enlarged, and a deep ulceration developed within the mass. This prompted consult at our outpatient clinic where a 3 x 2 cm ulcerating mass with crusting and necrotic areas was noted on his right nasal ala. (*Figure 1*) Anterior rhinoscopy showed an intact mucosa in the right nostril with no gross evidence of tumor involvement. There were no enlarged cervical lymph nodes palpated in the neck. A wedge biopsy revealed a well-differentiated squamous cell carcinoma. He claimed that he had no family history of cutaneous malignancy. However, he had a 20 pack-year history of smoking and was a heavy alcoholic beverage drinker. He previously worked as an electrician and denied chronic exposure to sunlight.

He consequently underwent excision of the right nasal alar mass with 5-mm margin. (*Figure 2A, B*) A histologic evaluation of the margins revealed that the borders and tumor base were negative for malignancy. The alar cartilage was not involved by tumor. Reconstruction of the defect was done using a superiorly - based nasolabial flap on the right. (*Figure 3A, B, C*) Two weeks postoperatively, the patient came in for follow-up with a healed, aesthetically - pleasing, and well-coaptated wound. (*Figure 4*) He remains free of any evidence of recurrence after 1 year.

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Presented at the Philippine Society of Otolaryngology Head and Neck Surgery Inter-Hospital Grand Rounds. November 15, 2018. Manila Doctors Hospital, Manila City.



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Philipp J Otolaryngol Head Neck Surg 2020; 35 (2): 55-58

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Figure 1. A 3 x 2 cm ulceration on the right nasal ala with areas of crusting and necrosis.



Figure 2. A. Skin markings for incision with 5mm margins from the site of induration; **B.** Defect after excision of the mass with borders and base negative for malignancy on frozen section.

DISCUSSION

Cancers of the face and of the skin in general are categorized either as melanoma and nonmelanoma skin cancers (NMSC).^{5,6} Nonmelanoma skin cancers are comprised of basal cell carcinoma (BCC) and cutaneous squamous cell carcinoma (cSCC) as the more common histologic types.⁶ Cutaneous SCC is the second most common skin malignancy after basal cell carcinoma and comprises 20 percent of all cutaneous malignancies.⁶⁻⁹ Risk factors for the development of cSCC include: chronic ultraviolet radiation exposure from the sun, frequent exposure to tanning lamps, HPV and HIV infections, inflammatory diseases of the skin, and previous burn scars.^{7,8,10} Our patient did not have any of the aforementioned risk factors.

Cutaneous SCC usually affects the head and neck region as it is commonly exposed to direct UV light from the sun.^{11,12} The ears, cheek, and frontotemporal area are the most common sites of head and neck cSCC, but the nose is also one of the major anatomical sites involved.^{13,14} Our patient developed cSCC of the right nasal ala. Lesions on the nose are included in Area H which constitutes high-risk lesions for recurrence and metastasis.¹⁵ The diagnosis of cSCC is primarily based on a complete history and physical examination, head and neck exam, and histologic diagnosis of the skin lesion.¹⁶ Staging of cSCC is based on the tumor-node-metastasis (TNM) classification by the American Joint Committee on Cancer (AJCC) for prognostication and predicting survival outcomes.¹⁷ Based on a wedge biopsy, our patient's tumor was Stage II (T2N0M0).

The treatment of cSCC depends on whether the tumor is low-risk or high-risk for recurrence and metastasis.¹⁷ Low-risk cSCC are well-defined primary tumors in an immunocompetent person that are less than 20-mm in the trunk and extremities, less than 10mm in the cheeks, forehead, scalp, neck, and pretibial, and without prior history of site irradiation or presence of neurologic symptoms.¹⁵ These are managed by standard excision with 4- to 6-mm margins and depth to include the mid-subcutaneous adipose tissue.¹⁷ High-risk cSCC are tumors that develop in the face, genitalia, hands, and feet coupled with poor clinical factors opposite of the characteristics of a low risk cSCC.¹⁵ The lesion on our patient's nose was considered a high-risk cSCC. High-risk cSCC may be treated with standard excision and subsequent reconstruction as long as the margins are clear of malignant cells. However, the recommended treatment for high-risk cSCC is Moh's micrographic surgery (MMS) wherein a thin layer of tissue around and deep to the margins are removed and examined.¹⁷ If the removed tissue is positive for malignant cells, the process is repeated until the obtained specimen is histologically negative for tumor.¹⁸ MMS was not performed on our patient due to the lack of equipment and personnel in our institution to facilitate the procedure. Alternatively, a standard surgical excision



Figure 3. A. planning; B. elevation; and C. inset and suturing of the nasolabial flap onto the nasal defect.



Figure 4. Nasolabial flap two weeks postoperatively. Note that the symmetry, texture and contour of the nose are maintained.

was carried out with 5-mm margins from the site of erythema and induration. Histologic evaluations of specimens from the periphery and base of the tumor were all negative for tumor infiltration. The resulting circular defect involved the right nasal ala, inferior portion of the right nasal side wall, soft tissue facet, part of the nasal dorsum, and right half of the nasal tip. As we desired to perform a single-stage procedure, reconstruction of the defect was performed immediately. The American Academy of Dermatology recommends that when a standard excision is performed, skin grafting, linear repair, or healing by secondary intention should be the preferred methods of repair while reconstruction by tissue rearrangement may be performed as long as the histologic margins are clear.¹⁷

Reconstruction of the nose takes into consideration the different nasal aesthetic subunits.¹⁹ The subunit principle in nasal reconstruction is essentially the removal of the whole aesthetic subunit for defects with more than 50 percent subunit loss.²⁰ This technique allows the incision lines to be placed along the border of the subunit, thereby camouflaging the scar lines.²⁰ Despite the popularity of the subunit principle, other schools of thought on nasal reconstruction include half subunit replacement, the modified subunit principle, and the defect-only reconstruction which provide equally good outcomes.^{21,22} For this patient, we decided to preserve the defect as it was after we had obtained clear margins without strictly following the subunit principle. The defect already involved the entire right nasal ala but less than 50 percent of the tip, dorsum, and sidewall. Moreover, we wanted to preserve the remaining normal tissue and prevent the creation of a

larger defect which could necessitate a more complex reconstructive option and longer operative time.

After obtaining clear margins, the next step is to decide on what reconstructive option to use to cover the nasal defect. Since we had a relatively large defect the recommended reconstructive option was the forehead flap.^{3,7,22-24} The forehead flap is considered the gold standard for reconstruction of large alar, tip, hemi-nasal, and even total nasal defects.^{23,24} We chose to reconstruct the defect with a superiorly-based nasolabial flap instead of a paramedian forehead flap as we could not persuade our patient to undergo a second stage procedure on top of his concern over an apparent scar in the forehead. The nasolabial flap is usually recommended for skin-only alar defects of less than 2 cm in

diameter and is based on the perforators from the angular and facial arteries.²⁴ Although this type of flap has been recommended for small alar defects, it has been utilized to reconstruct defects up to 5 cm in diameter.²⁵⁻²⁷

In our patient, the large defect was adequately covered by the nasolabial flap while maintaining symmetry with the contralateral side of the nose. Because of its tendency to trap-door and contract, the flap recreates the natural convexity of the ala and restores the natural alar crease.^{3,24} Together with the matched skin color and texture of the donor site to the nose, this flap may be a good option and alternative for the reconstruction of large nasal alar defects involving adjacent subunits.

ACKNOWLEDGEMENTS

The author would like to thank Dr. Armando Chiong, Jr., Dr. Roberto Claridad, Dr. Charles Malapit, and Dr. Reden Aldea for their invaluable help in the planning and execution of the surgery and Dr. Karina Vel Dizon for presenting the case orally during the grand rounds.

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