

# Nasolabial Flap for Nasal Alar and Columellar Reconstruction in HIV Patient : Case Report

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## Introduction

Human Immunodeficiency Virus (HIV), since the first case was reported is recognized as a major risk factor for development of different types of malignancies. Squamous cell carcinoma (SCC) is one common form of cutaneous carcinoma that occurs in HIV Patients. SCCs were associated with immunodeficiency and had a twofold higher incidence rate in HIV-positive patient compared with HIV-negative patient<sup>1</sup>.

Surgical excision is the treatment of choice for cutaneous SCC<sup>2-3</sup>, which can causes the defect and disfigures on the face especially the area of the nose. The defects of the nasal ala and columella (Figure 1) after resection of skin cancer present a great challenge to the plastic surgeon. The need to provide adequate skin cover with similar colour match is compounded by the additional tasks of reconstructing the nasal lining and the support of the reconstructed alar margin. This often requires staged procedures with donor sites morbidities.

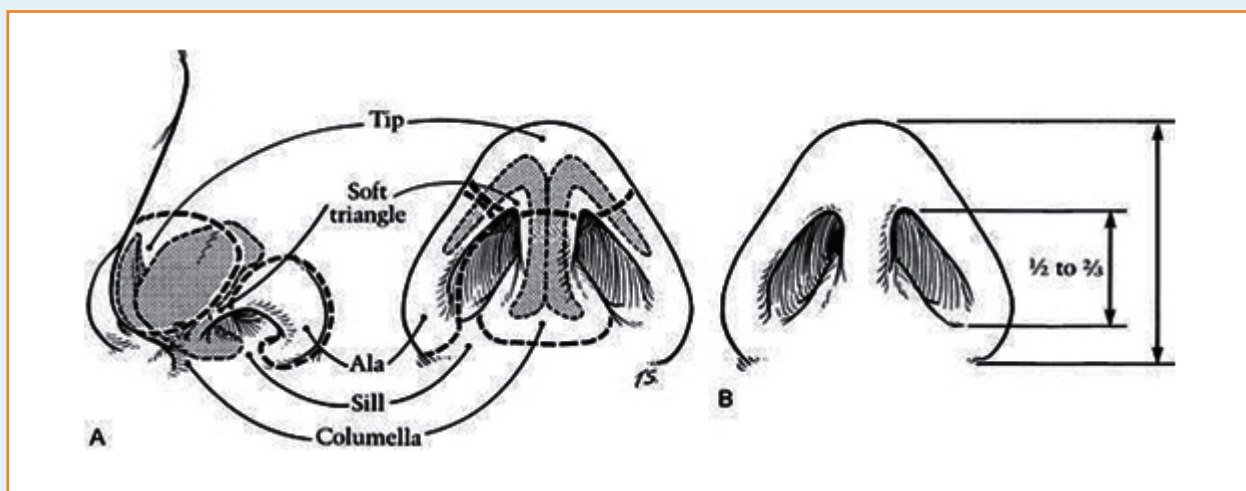


Figure 1. Anatomy of the nasal lobule. A. Subunits of the lobule and alar cartilages. B. Proportions of the nostril to the overall height of the lobule.

Several options exist in the armamentarium of the plastic surgical field, however the main choices remain one of these 3 flaps: the forehead, the superior based nasolabial and the medial - based nasolabial flaps. Distant flaps from the forehead often lead to a bulky repair of the ala. They are also accompanied by visible donor site scarring. Superior based nasolabial flaps are commonly used to reconstruct the external surface of the ala while another stage is needed to reconstruct the nasal lining with or without a cartilaginous frame. Medial - based nasolabial flaps are usually turned to reconstruct the nasal lining while another local flap or a full-thickness skin graft is used to provide the cover. The colour - match problem, the multi - staged procedures and the scarring at the alar rim are among the side effects of the previous nasolabial techniques<sup>4</sup>.

Single-stage procedures using nasolabial skin are also possible. A superior-based flap can be elevated with sufficient length to cover the external surface and then it is folded inside the nasal cavity to provide lining. The resultant repair is commonly associated with a bulky alar side wall and a visible donor site scarring. Single-stage medial nasolabial flaps are better suited for that purpose. The flap is raised as an island, based on the subcutaneous tissue and folded to repair both layers of the alar side wall. Two variants of the medial-based island nasolabial flap were published. In the first type, the proximal part of the flap provides the external surface reconstruction while the distal part is internally folded to provide lining. The resultant reconstruction is commonly associated with a bulky and unnatural ala. The second variant provides a better contour to the reconstructed ala. By raising the flap and turning it like the page of the book, the proximal part is used to reconstruct the nasal lining first. The distal part is then folded to cover the first layer and reconstruct the external surface. During suturing the first layer, the flap makes a natural 90 degree turn to orient its distal part for the final stage of the repair. As the distal part is folded to reconstruct the outer surface, the free margin of the ala is formed and is structurally strong enough to eliminate the need of a cartilaginous frame work of alar support<sup>5-6</sup>.

This technique of turnover medial-based nasolabial flap was used by several authors to reconstruct full - thickness alar defects with excellent results<sup>5-7</sup>. They however reported a high rate of revision surgery to reduce

the bulk of the reconstructed ala and to seat the ala in a more medial location. In the current study, a modification of the medial nasolabial turnover flap is introduced in an attempt to reduce the bulk of the flap. Primary thinning of the flap - preserving the subdermal plexus - was suggested by several authors and was performed in the current study to reduce the bulk of the lateral alar sidewall<sup>5-8</sup>.

### Case report

A 76 old male, known to have HIV infection for 15 years, presented with a history of right side nasal cavity mass for one month, which increased gradually in size, associated with ulceration and grayish discharge. On physical examination, there was a black - blown mass, about 0.5x1.5 cm arising from the ala to columella of right side of nasal cavity. The outer surface is firm and lobulated. There was no bleeding or discharge and there was also no facial or cervical lymphadenopathy found. The patient denied any history of previous heavy sun exposure nor radiation in form of radiotherapy. (Figure 2)



Figure 2. Pre-operative picture of HIV patient with Squamous cell carcinoma right nasal ala and columella.

Incision biopsy performed for the nasal cavity mass and histopathology examination showed exo and endophytic growth of the atypical keratinocyte that extend from the epidermis into the mild dermis. The atypical keratinocytes have large, pleomorphic and hyperchromatic nuclei. Dyskeratotic cells, horn pearls and squamous eddies are also present in the tumor mass. Diagnosis is well differentiated squamous cell carcinoma. Facial bone Computer tomography scan showed mild soft tissue thickening at right side of lower nose without obvious mass or necrosis. Mildly left sided deviation of nasal septum. (Figure 3)

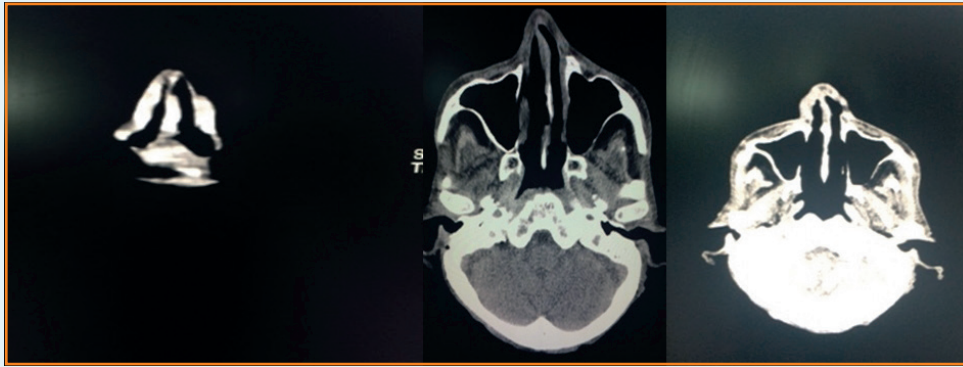


Figure 3. Computerize tomography facial bone. Surgical technique

All procedures were carried out under local infiltrative anesthesia with 2% xylocaine with adrenalin in a concentration of (1:200,000) and were covered by prophylactic antibiotics. Cefazolin was given in a dose of 1gm intravenously four times per day for 7 days and then oral Dicloxacillin 500 mg. was used for 7 days to prevent infection of the flap. Wide excision with the distance of 0.6 cm. in all direction was performed. The right nasal ala and columella including one part of upper lip was resected. The superiorly based nasolabial flap was outlined adjacent to the defect, elevated and then transposed into the defect, by raising the flap and turning it like the page of the book. The proximal end and superior part of the flap is used to reconstruct the nasal lining first. The distal end is sutured to the defect of columella, and then the inferior part of the flap folded to cover the first layer and reconstruct the external surface. As the inferior part is folded to reconstruct the outer surface, the free margin

of the ala and columella is formed and is structurally strong enough to eliminate the need of a cartilaginous frame work of alar support. Special care was taken not to include hair bearing facial skin in flap designing. The nasolabial flap was developed as a random flap based on the sub-dermal vascular supply. A 2:1 length to width ratio was maintained. The flap was designed to avoid resultant distortion of surrounding structures by widely undermining the skin of the cheek. The final suture line of the donor site was placed in the nasolabial crease. Suture materials used were 5/0 vicryl and 6/0 nylon. Removal of a Burow's triangle at the inferior extremity of the incision may be necessary in some patients with redundant skin to avoid a dog ear. Folded nasolabial flap was used for reconstruction of full thickness defect of the nasal alar and columellar region. The split - thickness skin graft was harvested from right thigh and used to replace the surgical defect of right upper lip with bolus tied over dressing.

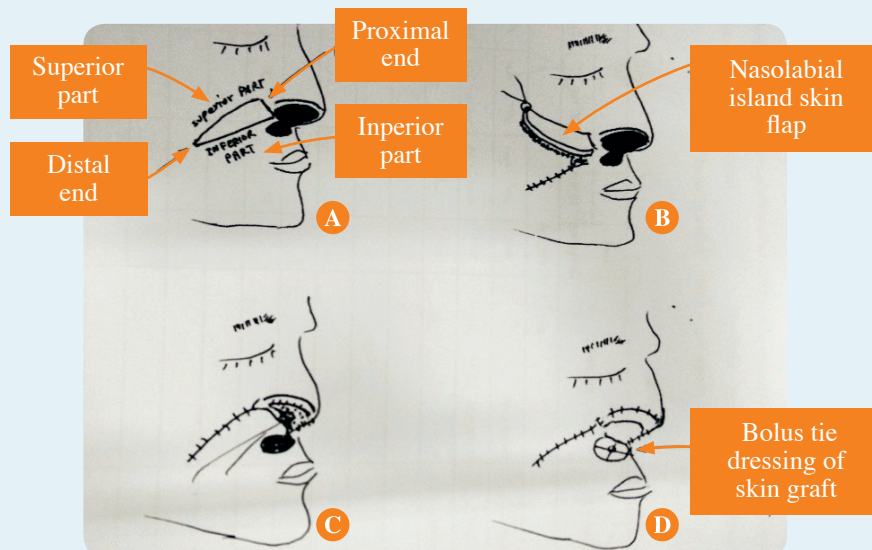


Figure 4. Operation technique

A. Resection of nasal ala and columella, one part of upper lip, design of nasolabial flap

B. Raising of subcutaneous pedicled nasolabial flap, closure of nasolabial defect

C. Inserting of superiorly part and proximal end of nasolabial flap for nasal lining and forming of columella

D. Folding of inferiorly part of nasolabial flap to cover the external surface and skin graft coverage the defect of upper lip with Bolus tied over dressing.

Patient was followed and observed for wound infection and color of the nasolabial flap in the ward. Stitches removal with assessment of the flap was done in 7 days. Patient was advised to avoid excessive sun exposure, touching, scratching or pulling the flap for at least six weeks.

## Result

The subcutaneous pedicled nasolabial island flap is versatile for coverage defect of nasal ala and columella in full - thickness loss after surgical wide excision of squamous cell carcinoma in HIV patient. The color and texture match were good at reconstructed site. There was no complication in bleeding, infection or flap loss. Optimal function and aesthetic results was achieved. Donor site morbidity is minimal, surgical scar was linear pattern. Minimal deformation occurred in the alar groove and columella height.

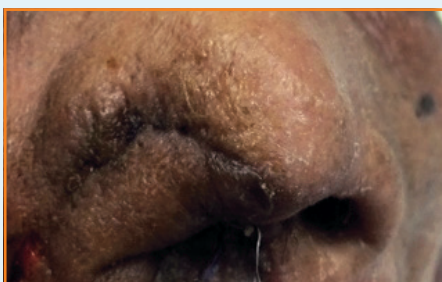


Figure 5. Post - operative picture of HIV patient shows right nasal alar and columella

## Discussion

Currently, the prevalence of HIV is rising progressively each year. This is attributable both to the increasing number of new diagnosis and improved efficacy of advancing medical therapy. Management of HIV - positive patients has become a part of routine surgical practice. The frequency of surgical complication did not differ significantly between HIV- negative and positive patient<sup>9,10</sup>. One of the most common skin cancer management is surgical wide excision and later reconstruction procedure for the defect, especially defect on the nose.

The nose is one of the important structures of the face; therefore a good aesthetic result of the nasal reconstruction is crucial. The nasal ala is a common site for the occurrence of skin cancer and often presents challenging surgical defects following surgical wide excision. Repair options should be individualized according to each patient and surgical defect. The nasolabial flap is a versatile flap described for use in the nasal ala and columella reconstruction. A modified application of the flap is described for total full - thickness defects of the alar margin<sup>8, 9</sup>. The reconstruction of columellar defect with a nasolabial flap is described<sup>11-14</sup>. I used a nasolabial island flap, subcutaneous pedicle, for the repair of nasal ala and columella defects and the results were considered as satisfactory.

The goal of the reconstruction of nasal ala and columella defects is to obtain minimum deformities at the donor - site and a donor area similar to the reconstructed area with respect to color and texture. The size of the defect also influences the choice of donor skin for reconstruction. Numerous techniques of nasolabial flap have been described for the reconstruction of nasal ala and columella defects<sup>11, 14-18</sup>. Many authors have used subcutaneously-based nasolabial flaps<sup>12, 14, 19- 20</sup>. In the case of a subcutaneously based flap, the dermal vascular plexus is disrupted, and the viability of the flap relies solely on the subcutaneous vessels. Fosko and Dzubow suggested that superior, subcutaneously - based pattern flaps are supplied by the musculocutaneous perforator branches of the superior labial artery and transverse facial artery<sup>21</sup>. They further recommended avoiding excessive thinning of the flap's pedicle<sup>22-23</sup>. I used the modification of the previous technique was published by Massoud<sup>6</sup> by folding the inferiorly part of the subcutaneous pedicled

nasolabial island flap to cover the lining layer of the flap and reconstructed the external surface that described different variations for ala and columella area reconstructions. In this article, nasal alar and columella reconstructions with a subcutaneous nasolabial island flap was performed on the HIV positive patients. There were no complications such as partial or total flap loss, bleeding nor infection. The aesthetic result was good in color texture match and the patient was satisfied. The scar tissue at the donor - site was minimal. Minimal deformation occurred in the alar groove and columella height.

## Conclusion

The advantages of this flap compared to other flaps commonly used for the repair of the defects in the alar and columella of the nose can be stated as follows: it is easily prepared, the procedure can be performed under local anesthesia; it requires only one operation; donor - side deformities are at minimum, and the colour and texture of the skin are very well matched. I recommend the use of the subcutaneous pedicle nasolabial island flap in the reconstruction of defects in the alar and columella of the nose in HIV patient.

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