Alexandria Journal of Medicine (2016) **52**, 347–352

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**Alexandria Journal of Medicine**

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# Esthetic rhinoplasty as an adjunctive technique in nasal oncoplastic surgery

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Received 28 October 2015; revised 10 December 2015; accepted 21 December 2015
Available online 15 January 2016

**KEYWORDS**

Esthetic rhinoplasty;
Oncoplastic surgery nose;
Basal cell carcinoma;
Squamous cell carcinoma;
Nonmelanoma skin cancer;
Nasal reconstruction

**Abstract** *Background:* The nose is a prime esthetic focus of the human face and it is a common site for nonmelanoma skin cancers. Esthetic reconstruction of nasal skin after tumor resection remains a problem. Beside conservative surgical excision of the skin tumor, this article presents a tactic for decreasing the size of the skin defect and optimizing its shape to facilitate reconstruction.
*Methods:* Throughout a period of seven years, thirty-five patients with nonmelanoma cancer of nasal skin were managed by a one stage surgical operation, which entails conservative tumor resection followed by performing an esthetic rhinoplasty that remodels the nasal skeleton in order to shrink the skin defect; making it more amenable to reconstruction by adjacent skin.
*Results:* Results were satisfactory for all patients in terms of adequate tumor resection and pleasant appearance of their noses.
*Conclusions:* Esthetic rhinoplasty is a useful adjunctive technique in nasal oncoplastic surgery.


## 1. Introduction

Facial features play an important role in human interaction. The nose; being the center point of the face, is a major contributor to the shape of the human face. The integrity of the nasal shape is a basic need for social interaction and an esthetically pleasing nose is a booster for self-esteem.

The skin of the nose is the commonest site of facial nonmelanoma skin cancer; namely basal cell carcinoma and squamous cell carcinoma.[1–4] Considering the complex topographic anatomy of the nose and the limited laxity of its skin, nasal defects that arise from surgical excision of those tumors are usually a challenge to esthetic reconstruction.[5–7]

This article advocates performing esthetic rhinoplasty as an adjunctive surgical step that optimizes the condition of nasal defects for favorable esthetic reconstruction.

## 2. Patients and methods

The tactic of adjunctive esthetic rhinoplasty was adopted in 35 patients referred for excision of non-melanoma skin cancer of the nose, from December 2007 to December 2014.

Surgery was performed under general anesthesia, with local infiltration of the perimeter of the surgical field with 1:10,000 norepinephrine. Excision of the tumor was carried out using loupe magnification and frozen sections histopathology to achieve minimal yet tumor-free surgical resection (Fig. 1).

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Peer review under responsibility of Alexandria University Faculty of Medicine.

http://dx.doi.org/10.1016/j.ajme.2015.12.004

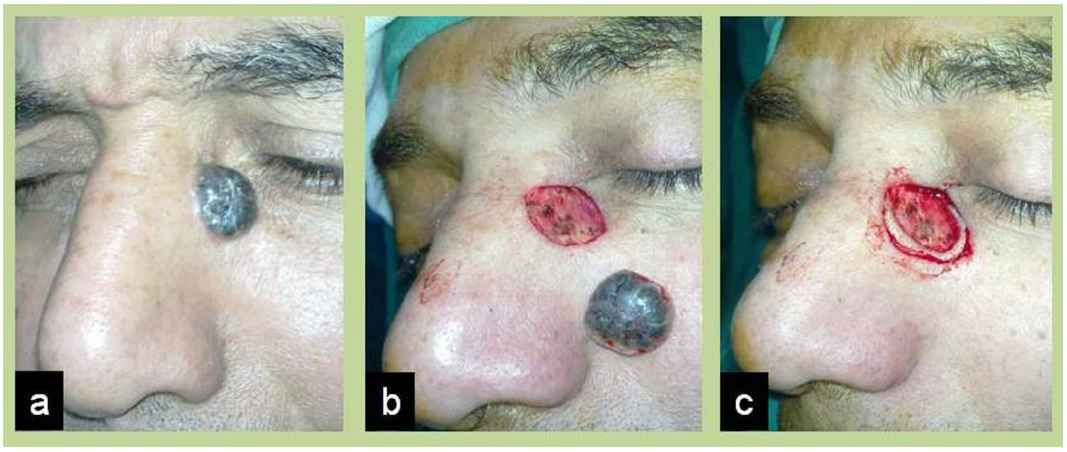


**Figure 1** Conservative resection of nasal skin tumor. (a) Basal cell carcinoma on lateral side of nose. (b) Excised tumor with 1 mm safety margin. (c) Additional rim excision dictated by frozen section histopathology.

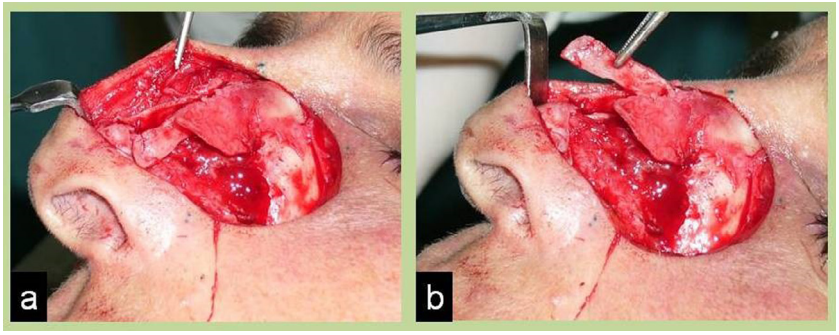


**Figure 2** Remodeling of nasal skeleton. (a) Exposure of nasal skeleton through the wound of tumor excision. (b) During resection of nasal dorsal hump.

After adequate excision of the tumor, and through the same wound of tumor excision or through the extra exposure provided by dissecting the flap that is planned for reconstruction, the nasal skeleton was remodeled using the necessary technique that suits each particular case, e.g. hump resection, L-shaped excision of cartilaginous septum, cephalic trim of lower lateral cartilages, lobular alar cartilage incision and overlay, lateral crural steal or overlay, and inter-domal tip refining sutures (Figs. 2 and 3).

Skin flaps that were used for skin resurfacing of the nose included bi-lobed flaps,[8–10] nasolabial transposition

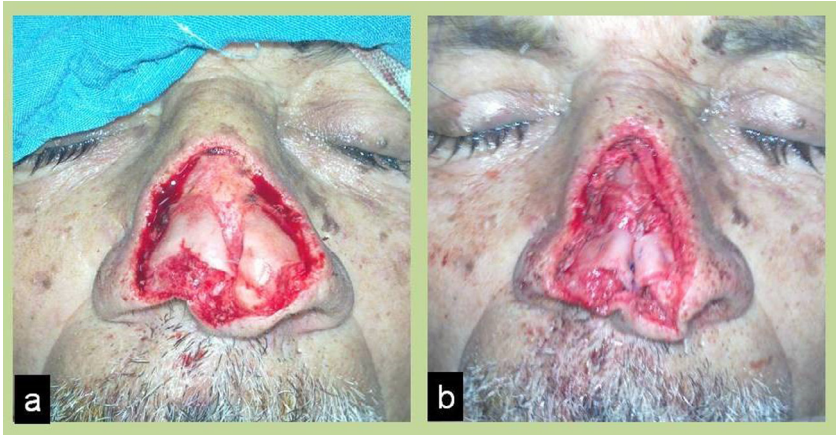


**Figure 3** Remodeling of nasal tip. (a) Skin defect before tip modification. (b) Skin defect after tip modification by cephalic trim of alar cartilages, lobular cartilage incision and overlay, lateral crural steal, and inter-domal sutures.

**Table 1** Distribution of flaps used for nasal reconstruction in the thirty-five cases.

| Type of flap | Number of patients | Percentage (%) |
|---|---|---|
| Bi-lobed flap | 7 | 20 |
| Nasolabial transposition flap | 6 | 17.14 |
| Propeller facial artery perforator flap | 5 | 14.29 |
| Axial frontonasal flap | 13 | 37.14 |
| Axial frontonasal + Propeller facial artery perforator flaps | 4 | 11.43 |

flaps,[11,12] Propeller facial artery perforator flaps,[13] and axial frontonasal flaps.[14,15]

## 3. Results

Out of the 35 patients treated by the abovementioned methods, 26 patients (74.3%) had basal cell carcinoma and 9 patients (25.7%) had squamous cell carcinoma. They were 21 male and 14 female patients. The age of patients ranged from 47 to 82 years and the mean age at the time of surgery was 59.9 years.

The flaps used for nasal skin reconstruction in these 35 patients were 7 bi-lobed flaps, 6 nasolabial transposition flaps, 5 Propeller facial artery perforator flaps, 13 axial frontonasal flaps, and 4 combined axial frontonasal and Propeller facial artery perforator flaps (Table 1).

Co-morbid conditions included hypertension, diabetes mellitus, smoking, and previous history of nasal skin cancer surgery.

Minor complications occurred in 4 patients in the form of minimal tip necrosis of the axial frontonasal flap, which healed well by secondary intention without any need for scar revision.

Results of esthetic rhinoplasty were totally satisfactory to most patients, i.e. they accepted the new shape of their noses very well.

Throughout the follow-up period that ranged from 6 months to 7 years (mean 41.5 months), there was no recurrence of the tumors.

Figs. 4–6 depict examples of the outcome of esthetic rhinoplasty as an adjunctive technique in nasal skin cancer surgery.

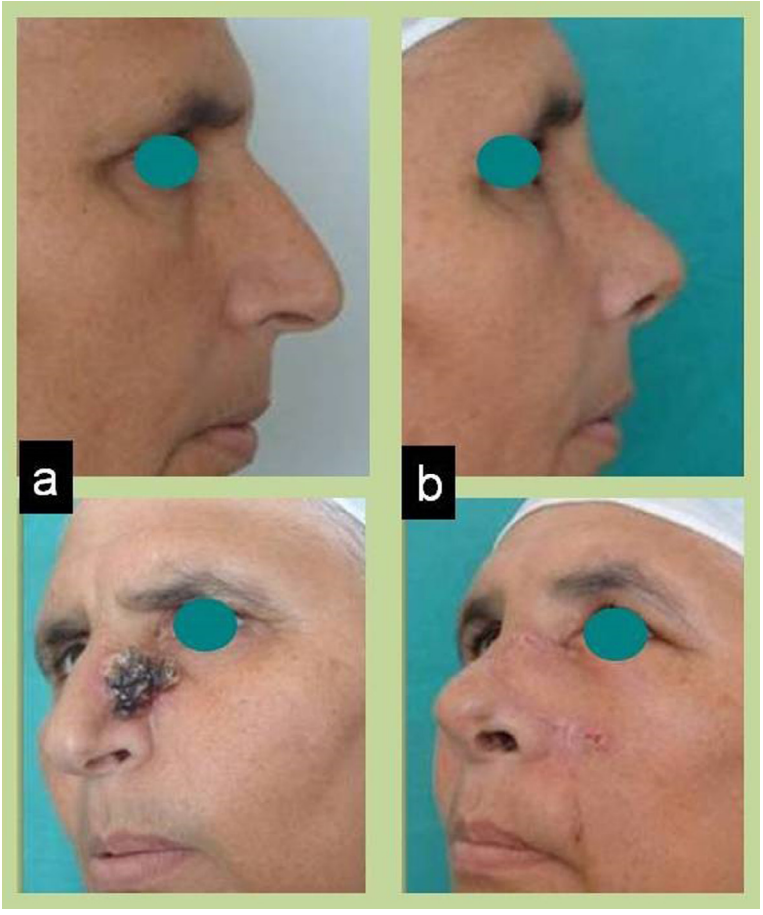


**Figure 4** Example (1) for adjunctive esthetic rhinoplasty in nasal oncoplastic surgery. (a) Pre-operative views of a nose harboring basal cell carcinoma at the left side. (b) Post-operative views after tumor excision, esthetic rhinoplasty, and reconstruction by transposition nasolabial flap.

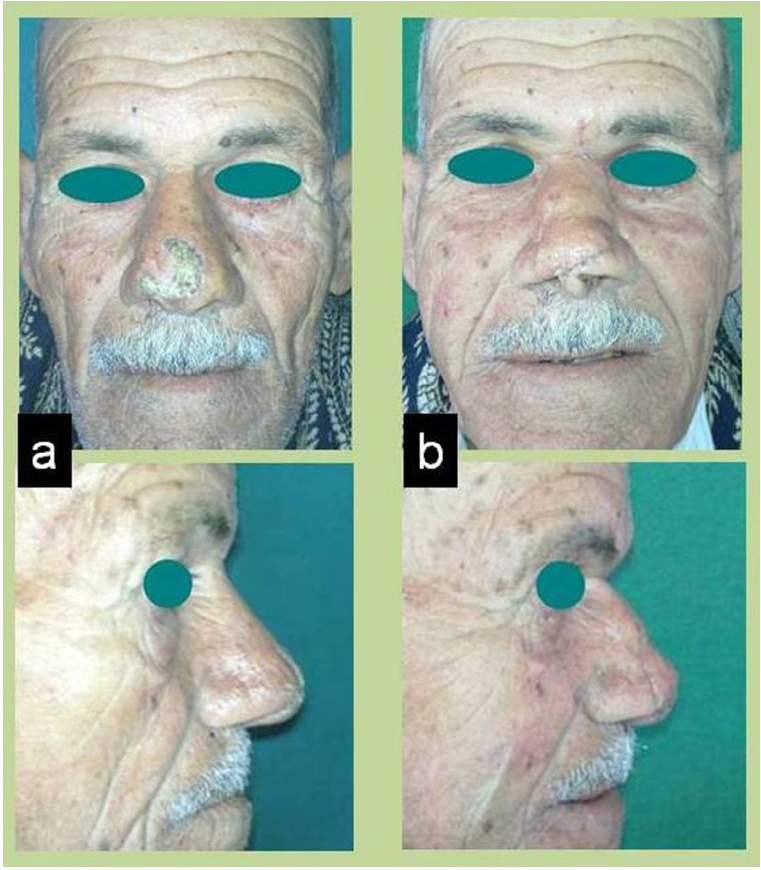


**Figure 5** Example (2) for adjunctive esthetic rhinoplasty in nasal oncoplastic surgery. (a) Pre-operative views of a nose harboring squamous cell carcinoma at the tip. (b) Post-operative views after tumor excision, esthetic rhinoplasty, and reconstruction by axial frontonasal flap.

## 4. Discussion

The fact that the nose is a major esthetic focus of the face poses a great challenge to the plastic surgeon during reconstruction of skin defects resulting from excision of nasal skin cancer.[6,7,16,17] Many studies discussed the parameters, methods, and complications of surgical treatment of non-melanoma skin cancers.[18–25] Several factors are involved in preoperative analysis and planning of the surgical strategy. These factors include availability, color, texture, and contour of the adjacent skin, the topographic nasal subunit principle of Burget and Menick,[26] the general co-morbid conditions, and the patient expectations. Yet the pivotal factor that governs the choice of the reconstructive modality is usually the size of the defect. The larger is the defect the less the likelihood of perfect esthetic reconstruction will be.

A known strategy to limit the size of tumor resection is the use of frozen section histopathology during surgery.[27,28] By virtue of the frozen section technique that was used for all the 30 patients enrolled in this paper, it was possible to cut down the safety margin of tumor resection to an average of 2.5 mm, with no recurrence at all throughout a mean follow-up period of 41.5 months. Besides, accuracy of frozen section histopathology was proved in all cases by standard hematoxylin and eosine (H&E stained sections) histopathology that revealed free resection margins and depths in all cases.

The aim of our work was to present another tactic for an extra diminution of the size of the defect by performing esthetic rhinoplasty as an adjunctive step after conservative tumor resection. This technique does not add any extra incisions to the nose (trans-columellar or infra-cartilaginous), but makes use of the exposure provided by tumor resection and by dissecting the flap(s) that would be used in reconstruction. Remodeling of the nasal skeleton does not only diminish the size of the skin defect but also optimize its shape and orientation for the best possible esthetic reconstruction.

The larger and broader is the nasal skeleton the more benefit this technique can yield, i.e. this technique works best for patients with large noses, not only in terms of the amount of shrinkage of the skin defect but also in the significant reduction to the overall size of their noses. Those patients get the benefit of esthetic reconstruction of the cancer defect plus a "bonus" esthetic rhinoplasty.

## 5. Conclusions

Esthetic rhinoplasty as an adjunctive step during resection of nasal skin cancers is a useful technique, which optimizes the condition of the skin defect for favorable reconstruction and optimizes the overall esthetic appearance of the nose, especially in patients with large noses.


**Figure 6** Example (3) for adjunctive esthetic rhinoplasty in nasal oncoplastic surgery. (a) Pre-operative views of a large central nasal defect after multiple recurrences of basal cell carcinoma. (b) Post-operative views after tumor excision, esthetic rhinoplasty, and reconstruction by axial frontonasal and propeller facial artery perforator flaps.

## Conflict of interests

The author declares that he has no conflict of interest, and has not received any financial or material support.

All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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