



Application of modified Rintala flap in nasal tip reconstruction ☆,☆☆

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Abstract

Introduction: For nasal tip reconstruction, we must consider optimal results including color match, good tissue coverage, excellent flap viability, and good aesthetic result.**Methods:** In this study, 25 patients who had nasal tip skin tumors were included, and reconstruction of the defects by dorsal nasal advancement flap (Rintala) was done. The advantages and disadvantages of the Rintala flap were described for all patients with nasal tip basal cell carcinoma (BCC). All patients filled out the consent form before reconstruction and tumor surgery.**Results:** In this study, 25 patients (11 women and 14 men) ranging from 25 to 72 years old (mean, 53 years) underwent operation with dorsal nasal advancement flap (Rintala). Reconstruction of nasal tip defects after complete tumor excision was done with free margin. After sedation analgesia, we used bilateral parallel incision in both sides of the nasal sidewalls from corner to glabellar region; Burrow triangles are excised bilaterally in lateral to the base of the flap.**Conclusions:** In case of midline tip defects with 1.5 to 2.5 cm in diameter, a modified Rintala flap is a good choice for reconstruction of this difficult area. This is a superiority-based randomized flap that makes an aesthetic nasal tip after tumor excisions without any fear from ischemia or necrosis of the flap.

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1. Introduction

There are several options for nasal tip reconstruction after nasal skin tumor surgery. For nasal tip reconstruction, we must consider optimal result including color match, good tissue coverage, excellent flap viability, and good aesthetic result [1].

This advancement in dorsal nasal flap that is described by Rintala is a random nasal flap that was done in a single stage easily; furthermore, it leaves the scars in areas of natural shadow. Aesthetic results are acceptable, and it does not have morbidity of forehead donor site. Although this is a random pattern dorsal advancement flap, it has low risk of ischemia in distal part of flap. This flap is suitable for nasal tip skin

defects after basal cell carcinoma (BCC) excision. It has the advantage of providing the most similar type of skin to resurface the nasal tip [2].

2. Patients and methods

This was a prospective case series study that was done in the plastic surgery ward in Baqiyatallah Hospital in Tehran between 2009 and 2011. The advantages and disadvantages of Rintala flap were described for all patients with nasal tip BCC. All patients filled out the consent form before reconstruction and tumor surgery. We considered patient's wishes before choosing a reconstructive technique.

This study was approved by the ethics committee in Baqiyatallah Hospital. In this study, 25 patients (11 women and 14 men) ranging from 25 to 72 years (mean, 53 years) underwent surgical excision of tumors with safe margins and reconstructions with dorsal nasal advancement flap (Rintala). Reconstruction of nasal tip defects after complete tumor

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excision with free margin was done. We considered 4- to 6-mm margin for BCC and 6- to 10-mm for squamous cell carcinoma (SCC) of the nasal tip; all specimens were sent for frozen section, and safety margin was subsequently confirmed. We reported 21 BCCs and 4 SCCs. All patients after tumor excision had intact nasal cartilage framework. After sedation analgesia, we used bilateral parallel incision in both sides of the nasal sidewalls (Fig. 1) from corner of the defect to glabellar region to allow sufficient advancement; Burow triangles are excised bilaterally in lateral to the base of flap (Fig. 2).

We must advance the flap to close the defect without any tension. The flap was elevated in suprapariosteal plan; this is important to preserve blood supply and to prevent tissue ischemia. We also designed the flap longitudinally from the corner of defects. This modification was important because of prevention of pincushion. We chose this flap for median nasal supratip and tip defects with a diameter larger than 1.5 cm. For large defects, we used another local flap. After releasing and advancement of flap, repair must be done in 2 layers (subcutaneous and skin); this is important for prevention of wide scar and pincushion; in addition, we did not use lateral flap incision in the nasal-cheek junction because of probable swelling and flap pincushion.

3. Results

Twenty-five patients (11 women and 14 men) with malignant nasal tip skin carcinoma were included in this study, and reconstruction was done with modified Rintala flap. All patients were satisfied, and nasal defects were corrected in all cases. We had no complications such as wound infection and ischemic necrosis in the tip of the flap; however, this flap is a random pattern flap. We used subcutaneous 1/100 000 epinephrine with lidocaine 2% for reducing blood loss during operations; because of vasoconstrictive effects of this drug, we had some blanching of the flap tip that disappeared after operation. There are several important points that may help in creating better aesthetic results including correct design of the flap, suprapariosteal dissection, Burow triangle excision in base of the flap, 2-layer repair for prevention of scar widening, and tension-free flap advancement. In patients with previous dorsal nasal scar, we did not use this type of flap because of high frequency of flap necrosis. All the patients had satisfactory results, without recurrence of tumor at 1-year follow-up. Some patients, especially older patients, had 3- to 5-mm tip elevation and nasal shortening that were satisfying and

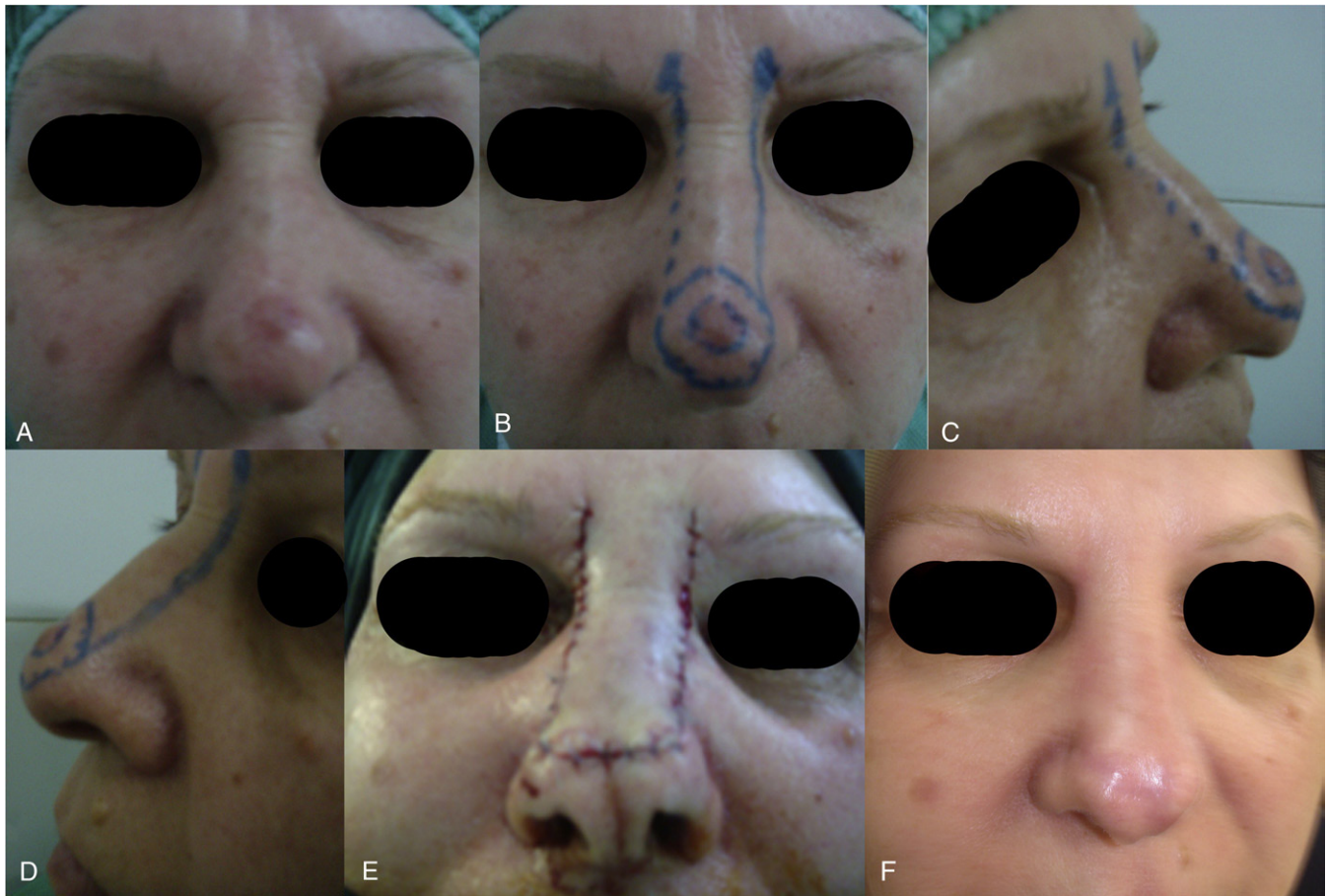


Fig. 1. A 55-year-old woman with nasal tip BCC. (A–D) Preoperative planning of modified Rintala flap. (E) Immediately after reconstruction. (F) Follow-up at 6-months.

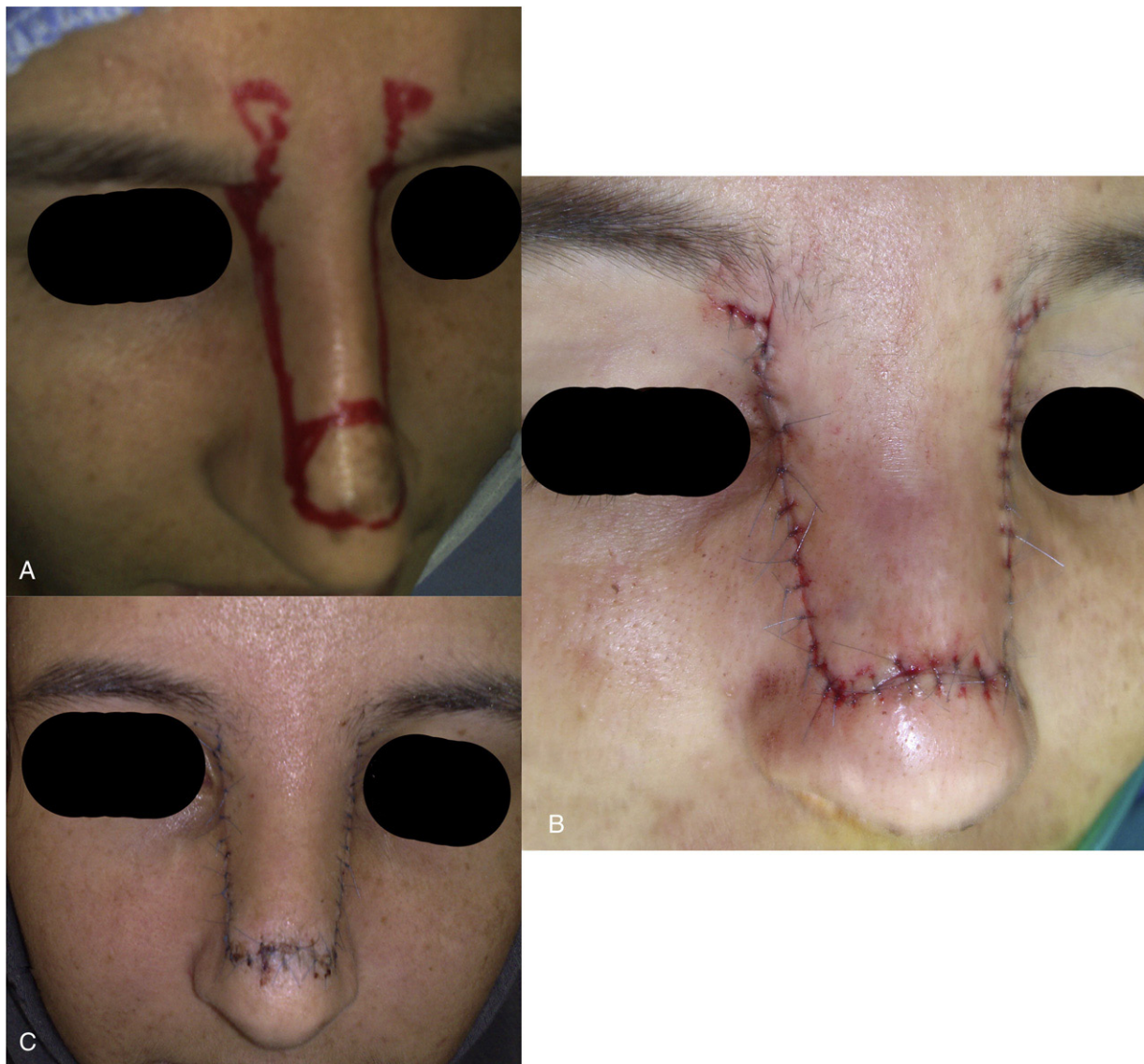


Fig. 2. A 25-year-old girl with morpheaform BCC of the nasal tip. (A) Preoperative view. (B) Immediately after reconstruction. (C) Follow-up at 1 week.

pleasurable because of droopy nasal tip in this group of patients. Because of 2-layer repair and correct designing of flaps, we did not find prominent scar or pincushion in our patients. Long-term results were satisfactory.

4. Discussion

There are several options for nasal tip reconstruction after BCC excision. Basal cell carcinoma is the most common skin malignancy in the nose, and there are several procedures for tumor excision and reconstruction. Nasal reconstructive method in the tip area and lower third of the nose is distinctly different from the proximal two thirds. Treatment of these defects is a challenging problem, and recommended reconstructive method is still controversial. The difficulty comes from the limited mobility and availability of the

overlying skin. Options for nasal tip and supratip reconstructions include primary repair, secondary intention (very small defects), local flaps (bilobe, nasolabial, and banner), full-thickness skin graft, and Rintala and dorsal nasal flaps for larger defects. Furthermore, for defects that these local flaps are insufficient, a good choice is forehead flap in multiple stages; this flap is a workhorse in nasal tip reconstruction. The bilobed flap can provide good skin coverage in a wide range of partial thickness defects of the nose [3]. It provides the best possible color match for acceptable-sized defects, up to 1.5 cm. Nasolabial flap is well suited for the reconstruction of an entire alar subunit [4]; the contra lateral ala should be used as a template from which to fashion the pattern for the new ala. Any reconstruction of an entire ala should include a cartilage graft for support [5].

Reiger or dorsal nasal flap offers excellent 1-staged closure for medium to large (1-3 cm) full-thickness defects of

the distal and middle third of the nose; it is a laterally based rotation advancement flap [6]. Full-thickness skin graft can be very useful for most nasal tip defects with minimal compromise of proper matching of color texture and consistency with adjacent nasal skin [6]. Skin grafts are best suitable for reconstruction of the upper two third of the nose, where the nasal skin is thinner and contours are flatter [7]. Midline forehead flap is the flap of choice for significant defects of the nasal tip and nasal ala, where surface coverage only or both lining and coverage are needed. This is the flap of choice for defects too large to be repaired by local flaps [6]. Although this is the flap of choice for larger nasal defects, we need multistage operation for nasal reconstruction.

Rintala flap is a superiority-based midline flap; good tissue coverage and excellent flap viability, color match, and nasal contour make this flap a good alternative for reconstruction of large nasal tip defects without using forehead flaps [8]. Although this flap nowadays is less used in nasal tip reconstructions, our experiences showed good results in nasal tip reconstructions.

We performed 25 nasal tip reconstructions to cover tumor resection defects with dorsal nasal advancement flap that was introduced by Rintala. We used a modified form of this flap for reconstruction; dissection was done in supraperiosteal plane with sufficient release by using tension-free flap. In addition, we used this flap for midline nasal tip defects, and all flaps were repaired in 2 layers including subcutaneous and skin; this is important to prevent an excess scarring and pincushion of the flap in longtime. According to Boudard [9], for the median region of nasal tip, the Rintala mid dorsal flap appears to give better results. Our results showed that this flap had good color match, texture, and thickness for nasal tip defects.

A skin graft is generally not considered the ideal replacement for nasal skin, in particular, for the thick sebaceous skin of the nasal tip, ala, lower sidewalls, or dorsum. The basic concern with using a skin graft is the resultant patchwork appearance caused by color mismatch and contour defects [10]. The tip is the aesthetic focal point of the nose, and irregularities in color, texture, and thickness are easily noted [11]. The modified nasal flap provides an additional option for reconstruction for the closure of central

and lateral nasal tip and supratip defects of up to 2 cm in diameter [12]. It is extremely important that reconstruction of facial defects preserves the integrity of complex facial function and expressions as well as facial symmetry and a pleasing aesthetic outcome [13].

5. Conclusions

In case of midline tip defects with 1.5 to 2.5 cm in diameter, a modified Rintala flap is a good choice for reconstruction of this difficult area. This is a superiority-based randomized flap that makes an aesthetic nasal tip after tumor excisions without any fear from ischemia or necrosis of the flap.

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