

## Case Report

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# Nasolabial Flap and Simultaneous Cartilage Graft for Nasal Alar Reconstruction- A Case Report

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### Abstract

*A case of full thickness defect involving left ala of nose reconstructed with nasolabial flap for the coverage of skin and mucosal lining, along with simultaneous insertion of septal cartilage, which completes the reconstruction.*

**Key words:** Nasolabial flap, cartilage graft

### Introduction

Nasal reconstruction is always challenging due to its aesthetic as well as functional importance. The uninvolved contralateral subunit is used to create a template for reconstruction<sup>1</sup>. The appropriate reconstruction depends on involvement of subunit and size of injury as well as the layers involved.

The nasolabial flap is a small but useful flap for reconstruction of nasal ala, sidewall, columella, and intraoral reconstruction<sup>2-5</sup>.

This flap was originally advocated by Dieffenbach for the partial reconstruction of nasal alar defects. "Reconstruction of the alar rim necessitates the addition of cartilaginous support to prevent the external nasal valve

collapse that may result in difficulty breathing<sup>6</sup>.

### Case History

A 38 year old male presented with full-thickness defect of the left alar subunit following human bite 20 days back. The patient was initially managed conservatively in a local hospital to allow the wound to heal by secondary intention. He was then referred to our unit for nasal reconstruction. Patient was counselled regarding the procedure and informed written consent was taken for surgery under general anesthesia.

After wound excision, a nasolabial flap was designed along the ipsilateral nasolabial fold. Nasal bleeding was controlled by applying

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pressure and bipolar electrocautery. A template was made for the missing cartilage. Submucosal resection was performed to obtain septal cartilage according to the measurement of the template. After harvesting, cartilage was preserved in a saline soaked gauze. The nasolabial flap was harvested from distal to proximal manner as previously outlined. Viability of the flap was checked at distal margin. The lateral aspect of cheek was undermined and the donor site was closed primarily. The cartilage was trimmed to fit into the defect and fixed with 5-0 prolene. The distal portion of the nasolabial flap was thinned by excising fat and subcutaneous tissues and folded on itself to form the lining of the newly reconstructed ala. The tip of the flap was sutured to nasal mucosa with interrupted suture using 5-0 vicryl. Lateral edges of the flap was sutured to outer skin using 6-0 prolene. A nasal tube was applied on affected side and fixed to base of columella to maintain the nasal opening. Dressing done with petroleum impregnated gauze. Flap monitoring was done daily and check dressing performed on 3<sup>rd</sup> postoperative day. Patient was discharged after the initial dressing and advised to follow up after 21<sup>st</sup> postoperative day for flap division and final inset.

On division and inset, the pedicle was excised sharply and the donor site was closed primarily with remaining portion of flap base. The flap inset with nasal skin was done using 6-0 prolene by interrupted suture. (Fig.1)

### Discussion

Full thickness defects in nasal ala and soft triangles bears a considerable challenge in reconstruction. Several methods of possible reconstruction includes chondrocutaneous graft, simultaneous cartilage graft and local or distant flap coverage, composite free flaps from the helical root<sup>7</sup>.

A chondrocutaneous composite graft can be used reliably for full-thickness defects of the alar rim up to 1.5 cm. The graft naturally retracts over time and thus while designing the graft it is preferable to take 10-20% larger than the defect size to get a more natural result<sup>8</sup>.



Figure 1.(a) Full thickness defect involving left ala of nose. (b) Defect reconstructed by nasolabial flap and cartilage graft, donor area closed primarily. (c) Postoperative view at 3 weeks (d) After flap division and final flap inset.

A composite chondrocutaneous graft initially survives on plasma imbibition from bed. Inosculation occurs after 3 days and angiogenesis occurs after approximately 5 days when the new blood vessels grow into the graft. Because of the poor nutrient supply and the higher metabolic demand of composite grafts, the metabolic needs of the graft has to be reduced immediately after grafting<sup>6</sup>. Metabolic demand can be reduced by cooling

it with ice packs (every 2 hours for 15-20 minutes at a time in one series)<sup>9</sup> or limiting graft size. Necrosis, poor graft appearance, skin color mismatch can be problematic in composite graft cases.

Among the local flaps, bilobed flap is not suitable for full thickness defect. Superiorly based nasolabial flap can be used as a turnover flap for mucosal lining as well as skin cover<sup>7</sup>. Nasolabial flap can be done in one or two stages. Staged procedure gives a better aesthetic outcome.

Distant flap transfer from the forehead is needed to reconstruct very large, even near-total, defects of the nose<sup>10</sup>. The disadvantage of this flap is that the donor defect is much more obvious and the delicate contours of the nose become obliterated. Multiple secondary procedures, including debulking are needed to achieve an acceptable result<sup>8</sup>.

Many authors have performed alar reconstruction with composite free flaps from the helical root. The major limitation of the free flaps from the helix is that the pedicle length is short, for which some surgeons use vein grafts to reach the recipient vessels<sup>11</sup>.

Constantine et al. (2013) summarize alar rim/soft triangle defects reconstruction based on the layers involved. In Type I defects (the skin is intact with cartilaginous and mucosal lining defects), a composite graft from the conchal bowl was used to provide support and lining. In Type II defects (the mucosa is intact with an absence of cartilage and overlying skin), a nasolabial flap with an underlying cartilage graft was used. In Type III defects (all three tissue layers are affected), a paramedian forehead flap was used in conjunction with a cartilage graft to reconstruct all three layers<sup>12</sup>. But in this case, we reconstructed a type III defect with nasolabial flap and simultaneous cartilage graft with good outcome.

The nasolabial flap has many qualities that make it ideal for nasal reconstruction. Importantly, the tissue of the cheek has similar color and texture to that of the nose, and its proximity provides for easy transposition of the flap. Also, there is very little donor-site deformity<sup>13,14</sup>. The flap's main vascular supply is by means of a rich subdermal plexus, bestowing the flap with a high level of viability and a capability to tolerate bold thinning and contouring<sup>15</sup>. This characteristic gives the surgeon a very unique piece of tissue to use for reconstruction. This soft tissue flap gives excellent aesthetic results and is subject to secondary contracture, making it ideal for mimicking the convexity of the alar subunit of the nose.

Alar defects can be reconstructed successfully with nasolabial flap and simultaneous cartilage graft. Adequate planning of the flap with appropriate sized cartilage can provide a better aesthetic result and prevent cicatricial distortion of nasal alae.

### Conclusions

Nasolabial flap is a good choice for reconstruction of alar defects due to its reliable vascularity and possibility of thinning the flap for coverage of mucosal lining as well as nasal skin. Nasolabial flap with a simultaneous cartilage graft from nasal septum is an excellent option for reconstruction of alar defects.

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