

# The Use of the V-Y Cartilage Columellar Strut Graft and Precise Skin Contouring in Nasal Reconstructive Surgery in RSPAL Dr Ramelan Hospital: A Case Report

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## ABSTRACT

**Introduction:** The nose is one of the most prominent facial features. Defects resulting from trauma or tumors can cause problems in the normal function and shape of the nose. Surgical techniques for reconstruction vary widely but all has the same aim to restore function and shape. The authors created a technique using V-Y cartilage columellar strut graft and precise skin contouring of the paramedian forehead flap to restore the shape and function. **Case Presentation:** A 63-year-old female patient came to oncology clinic with a lump the size of a table-tennis ball on the nasal tip in the last 6 months. Pathologist confirmed basal cell carcinoma. Oncologist consulted to plastic surgery division for a joint operation to close the defect. On wide excision, the structures lost include alar rim, nasal tip, columella, half of dorsum nasal, most of the lower nasal, upper nasal, and partial septum cartilage. Paramedian forehead flap with flap thinning and precise contouring was elevated to provide the skin coverage and the cartilage structure lost was replaced with V-Y cartilage columellar strut graft harvested from ear. **Conclusion:** V-Y cartilage columellar strut graft provides strong support and shape. Precise flap contouring enhances aesthetic aspects and satisfies the patient. Further longer-term follow-up studies and more samples are needed to validate its effectiveness and refinement.

**Keywords:** basal cell carcinoma; nasal defect; nasal reconstruction, paramedian forehead flap; V-Y cartilage columellar strut graft

## INTRODUCTION

The use of the Forehead Flap has been around since around 700 BC when it was first used by the Indians. The advantage of using a paramedian flap is that it is rich in perfusion and gets a supply from vertically oriented axial blood vessels, where the paramedian flap can reach the columella and can be thinned aggressively if desired by the operator<sup>1</sup>.

Re-creating the nose is impossible, whatever nature has created we cannot reproduce. Therefore, the task of the reconstructive surgeon is to re-form the tissue that has been removed to give the visual impression of a normal nose<sup>1</sup>. Everyone wants to have a good and ideal face shape. Defects and changes in the facial area will reduce a person's self-confidence. Therefore, the importance of understanding the skin structure of the facial area and the aesthetic appearance of the facial area needs to be understood as well as possible<sup>2</sup>. The nose is the most prominent feature of the face that provides the main and defining characteristic of the face, a simple abnormality is easily spotted even by an untrained eye<sup>3</sup>. In nasal reconstruction, restoring a natural-looking nasal tip with optimal projection, rotation, contour and tactile quality is an absolute requirement of rhinoplasty<sup>3</sup>.

Nasal reconstruction is quite a challenging procedure because nasal reconstruction in more complex cases utilizes the use of flaps<sup>4</sup>. Several techniques have been developed to obtain good functional and aesthetic results in nasal reconstruction, one of which is the V-Y cartilage columellar strut graft technique which is harvested from the patient's ear. This case report describes the use of the V-Y cartilage columellar strut graft technique for nasal reconstruction and paramedian flap in closing nasal skin defects.

## CASE

A 63-year-old woman came to the oncology clinic at Dr Ramelan Central Naval Hospital Surabaya, with the main complaint of a lump the size of a table tennis ball on the tip of her nose for the last 6 months. The pathologist confirmed basal cell carcinoma based on the result. The oncologist consulted a plastic surgery division for a joint operation for wide excision and defect closure.

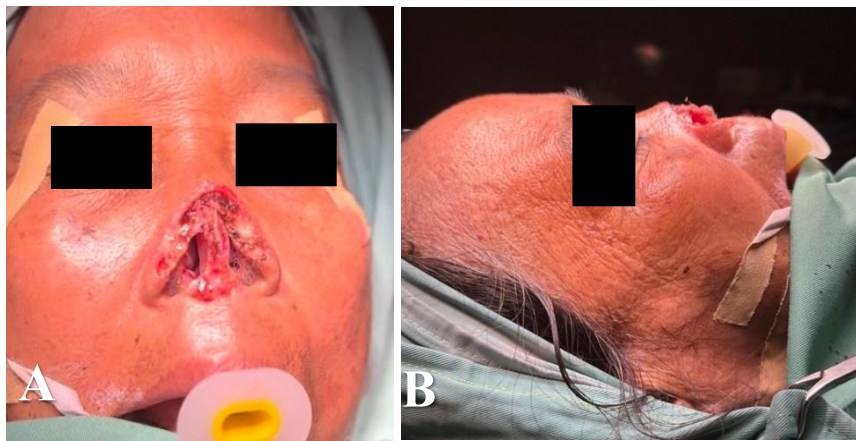


**FIGURE 1:** Patient's Condition before Surgery.

**MANAGEMENT**

The oncologist had excised a mass with the size of 3x4 cm, leaving a large skin defect. The structures that were lost involved the alar rim, nasal tip, columella,

half of dorsum nasal, most of the lower nasal, upper nasal, and partial septum cartilage. The defect was handled by the plastic surgeon.

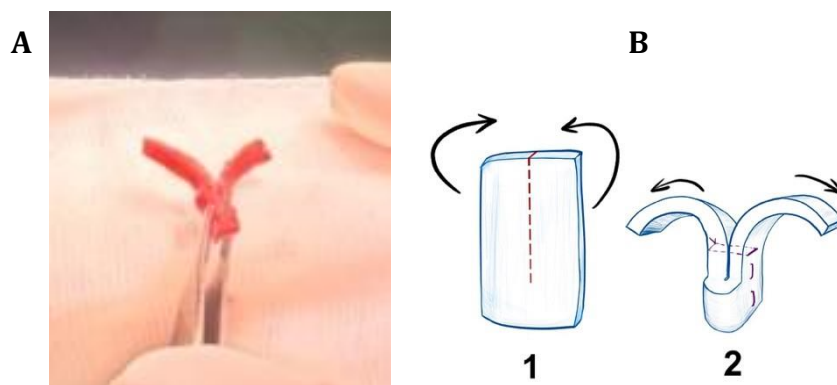


**FIGURE 2:** Post Wide Excision. (A) Front view. (B) Lateral view.

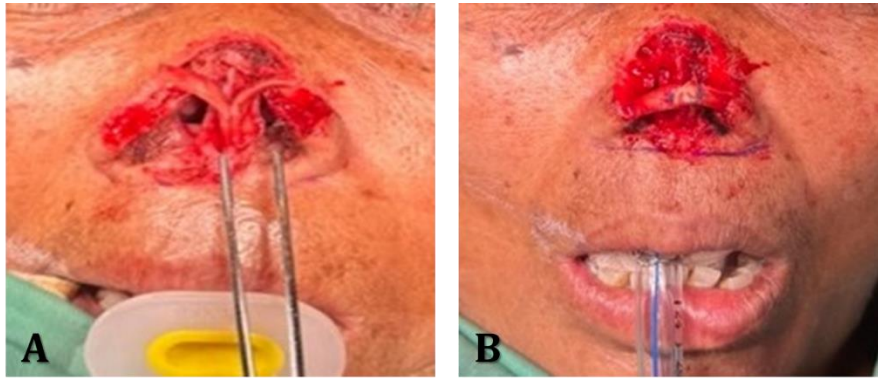
The author performed a V-Y columellar strut graft technique which was taken from the cartilage of the left ear to provide the anatomical structure of the nasal columella. and alar rim.

The loose distal ends are curved downwards to form letter Y (figure 3B). The ends of the lateral wings are sutured using nylon 5.0 to the lower lateral cartilage and the singular end is sutured to the septum to form the columella strut as shown in Figure 4.

Creating the V-Y columellar strut cartilage graft is by make incision from distal until a quarter of the cartilage and fold it into half.



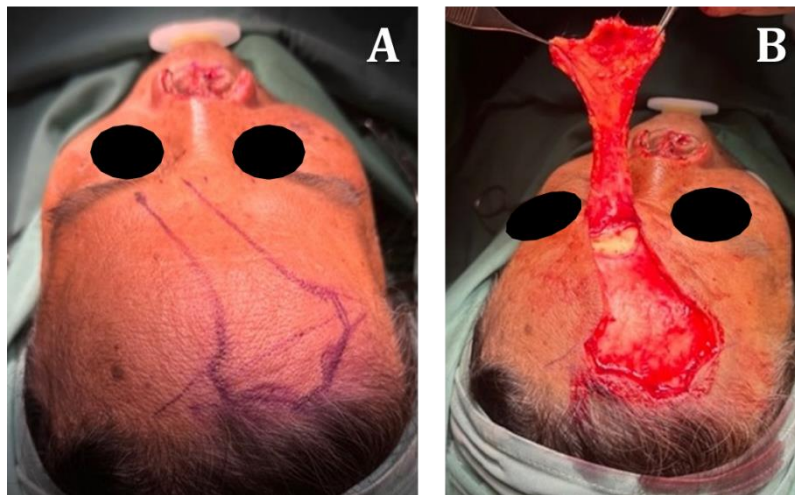
**FIGURE 3:** (A) V-Y columellar strut cartilage graft. (B) Steps to form the Y shape.



**FIGURE 4:** (A) V-Y Columellar strut sutured to the septum. (B) The wing ends of the VY cartilage strut are sutured to LLCs.

The remainder of the harvested cartilage graft is diced to fill in the void in the dorsum nasal left by the missing structures after wide excision. After the strut is inserted, paramedian forehead flap is used for defect coverage.

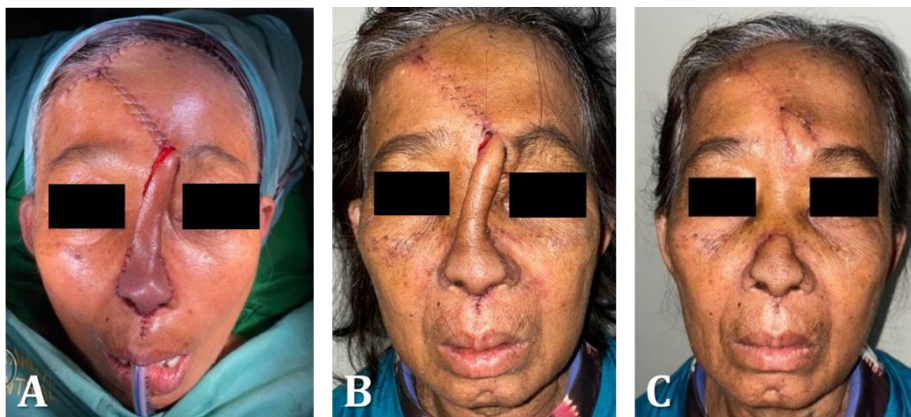
The distal ends are thinned and folded inwards to cover the VY strut and thus forming the smooth alar rim and columella. Excess skin is excised as needed and sutured to the skin using nylon 5.0 and vicryl 4.0 at the inner nasal mucosa.



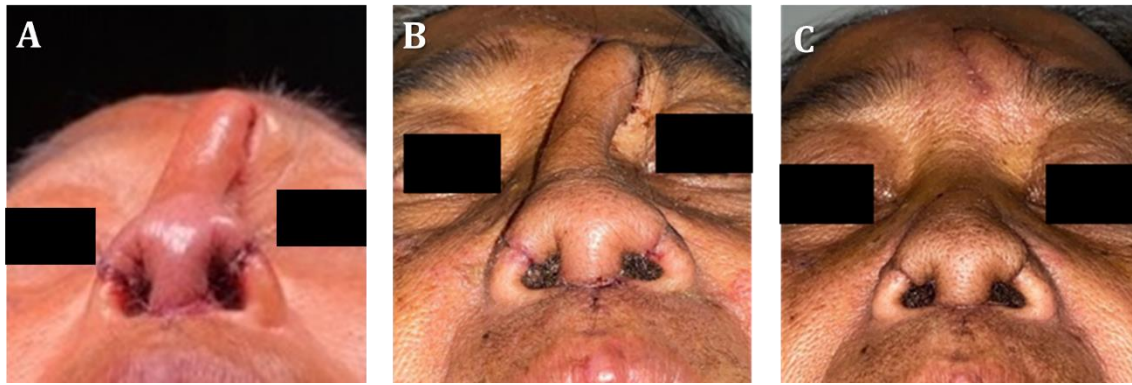
**FIGURE 5:** (A) Design and (B) Elevation of Paramedian Forehead Flap.

The flap donor area is primarily closed using a combination of rotational and advancement flap. The use of skin graft is avoided to provide better aesthetic result. After surgery, close observation is

carried out on the patient to monitor the vital signs and viability of distal flap area. The second stage operation to separate the pedicle was done on the third week from the first operation.



**FIGURE 6:** Operation result in frontal view. (A) Post operation. (B) Post suture removal. (C) Post flap pedicle separation.



**FIGURE 7:** Operation result in worm view. (A) Post operation. (B) Post suture removal. (C) post flap pedicle separation.

## DISCUSSION

Nasal reconstruction must be meticulous and proper as it involves the most prominent part of the face. Precise skin contouring is vital because the opposite or contralateral side of each subunit (e.g. ala, hemi-tip) is very clearly visible if there are differences<sup>1</sup>.

In order to achieve an appearance that is close to normal, the goal is to restore the quality of regional skin, subunit lines and 3-dimensional contours as much as possible to the condition before the defect<sup>1</sup>. The forehead flap or what we call the paramedian flap is used in patients with indications to repair more extensive damage to the nasal tip and alar nasal tip when simpler techniques cannot provide adequate coverage<sup>4</sup>. A flap adjacent to the donor area can provide adequate supply and sufficient blood vessel thickness. If the resulting wound defect is very large, it can exceed the mobility limits and size of the flap, especially in the nose area<sup>5</sup>. Not all paramedian flaps can be used in all patients with the same case. Paramedian Forehead Flap is contraindicated in patients who do not want multiple-staged surgery, or in patients who are unable to maintain hygiene and in patients who cannot maintain the surgical area without interference<sup>5</sup>. Patients with active infections, heavy smoker, and low compliance are contraindicated with the Paramedian Forehead Flap method<sup>1,5</sup>.

V-Y Cartilage Columellar Strut Graft is a versatile method that can be adjusted to various abnormalities in the nose<sup>3</sup>. In addition, this technique is also easy to apply, reproducible, and can provide more natural ends compared to rigid fixation techniques<sup>3</sup>. It is able to give a natural look of the alar rim on top of providing a strong structure of the columella and alar rim curve.

## CONCLUSION

The use of V-Y Columellar Strut Cartilage Graft can be a consideration in nasal reconstruction for functionality as well as in aesthetic aspects. Closing the skin defect using the Paramedian Forehead Flap with precise skin contouring not only provide near anatomical shape that is close to the original nose, but also helps the patient's psychosocially.

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