

Nasal Reconstruction with Glabellar Flap: A Report Case

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INTRODUCTION

The reconstruction of cutaneous defects on the nose represents a surgical challenge due to the three-dimensional complexity of the nasal structure and the need to preserve both respiratory function and facial aesthetics [4]. The nose, as the central element of the face, requires reconstruction that respects the aesthetic subunits to achieve an optimal result [4] [5]. Following the resection of cutaneous neoplasms, such as basal cell carcinoma, the primary objective is the restoration of skin coverage with tissue that possesses similar color, texture, and thickness characteristics to those of the recipient area [6]. In this context, the glabellar flap is established as a fundamental technique and a flap of choice for the reconstruction of defects located in the medial canthus and the superior nasal dorsum [5].

ANATOMICAL FUNDAMENTALS

The success of the glabellar flap lies in its robust vascularization and the similarity of the skin in the donor area to that of the superior nasal region. The blood supply to the glabellar and medial frontal region is primarily provided by the **supratrochlear artery (STA)**, one of the terminal branches of the ophthalmic artery [3]. Although small in caliber, the STA is crucial for forehead and glabellar flaps, as it ascends vertically through the corrugator and frontalis muscles, contributing to a rich subdermal plexus [3].

The skin of the glabella and nasal root is characterized by being thicker and more sebaceous than that of the mid-dorsum, making it ideal for replacing defects in the upper third of the nose [4]. This tissue similarity minimizes color and texture mismatch, a critical factor for the final aesthetic outcome [5]. The proximity of the donor site to the defect

allows for the transfer of tissue with a short vascular pedicle, which classifies the glabellar flap as a transposition or advancement flap with an axial or random base, depending on its specific design [6].

CLINICAL INDICATIONS

The glabellar flap is particularly indicated for small to medium-sized cutaneous defects (generally less than 2 cm) located in the **medial canthus** and the **superior nasal dorsum** [4] [5].

- 1 **Medial Canthus:** This is the primary and preferred indication, where the glabellar flap has proven superior to other techniques, achieving the highest score in expert surveys for its suitability and aesthetic result [5]. Its ability to fill the defect without distorting the canthal concavity is a key advantage [6].
- 2 **Nasal Root and Superior Dorsum:** It is an excellent option for defects in the *procerus* region and the high nasal dorsum, where the thick skin of the glabella provides the necessary volume and texture [1].

The decision to use a local flap, such as the glabellar flap, is based on an algorithm that considers the anatomical location and size of the defect [1]. In a large case series of nasal reconstruction, local flaps were a frequent reconstructive modality, with the glabellar flap specifically mentioned as the preferred option for the superior dorsum [1].

Surgical Technique

The glabellar flap technique involves the transposition of skin from the glabella to the nasal defect. The classic design is described as an inverted "V" or "Y" advancement flap [6].

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- 3 **Design:** The flap is designed with the base directed caudally, close to the defect, to take advantage of the vascularization from the supratrochlear and angular arteries [6]. The apex of the flap extends superiorly towards the glabella or forehead.
- 4 **Elevation:** The flap is elevated in a subcutaneous or submuscular plane, depending on the tissue thickness required for the reconstruction [6]. It is crucial to include the subdermal vascular plexus and, if possible, the supratrochlear artery to ensure the flap's viability.
- 5 **Transposition and Closure:** Once elevated, the flap is rotated or advanced to cover the defect. The donor site in the glabella is closed primarily, resulting in a vertical scar well-concealed in the midline [6].

A technical modification, known as the "flap in flap" technique, has been described for medial canthal reconstruction [6]. This variation uses an inverted "V" advancement flap (the main flap) and a secondary "V-Y" flap to release tension and maintain the natural canthal concavity, thus avoiding the complication of synophrys (eyebrow approximation) [6].

Complications and Outcomes

The glabellar flap is a technique with a favorable safety profile, but it is not without potential complications and aesthetic considerations.

Complications

The most common complications associated with nasal reconstruction in general, and applicable to the glabellar flap, include wound dehiscence, infection, and partial flap necrosis [4]. In large retrospective studies, the overall complication rate in nasal reconstruction is around 11.6% [4].

Specifically for the glabellar flap, aesthetic complications are the most relevant:

- **Synophrys (Eyebrow Approximation):** This is the classic limitation of the glabellar flap, caused by the tension generated when closing the donor site in the midline [6]. Technical modifications aim to mitigate this effect.
- **"Trapdoor" Effect or Bulging:** This can occur due to the thickness of the glabellar flap, which is sometimes excessive for the defect, or due to peripheral scar contraction [6].
- **Tip Necrosis:** Although the flap has good vascularization, the distal tip may suffer necrosis, especially if the flap is too long or if the patient presents risk factors such as smoking or advanced age [4].

Aesthetic and Functional Outcomes



Figure 1- Marking of the glabellar flap

The aesthetic results of the glabellar flap are generally excellent, primarily due to the color and texture match between the donor and recipient tissue [5] [6]. The flap provides an adequate contour for the nasal root and dorsum, and the resulting scar in the glabella is usually inconspicuous [6].

The functional prognosis remains favorable, as the glabellar flap is used in areas that do not directly compromise the nasal valve, ensuring the patency of the airways [4]. High patient satisfaction with cosmetic and functional results has been reported in case series using this technique for medial canthal and nasal dorsum defects [6].



Figure 2- Tumor resection and flap dissection

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Figure 3.- Flap rotation.

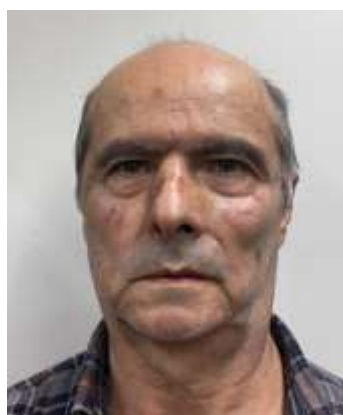


Figure 4.-3 months post surgery

Case report

A **62-year-old male** with no significant past medical history, including no known allergies, chronic degenerative diseases, prior trauma, or history of blood transfusions, presented with a progressive cutaneous lesion involving the nose. The patient reported **long-term occupational exposure to ultraviolet radiation** without consistent use of photoprotection.

The lesion had been present for approximately **two years prior to evaluation** and was localized to the **right nasal sidewall**. Clinically, it was characterized by **hyperkeratosis, erythema, intermittent urticarial changes, and episodes of spontaneous bleeding**. Dermatologic evaluation prompted a **diagnostic biopsy**, which confirmed the diagnosis of **basal cell carcinoma**. The patient subsequently underwent **wide local excision** of the lesion with immediate reconstruction using a **glabellar rotation flap**. Histopathological analysis of the surgical specimen demonstrated **tumor-free margins**, confirming complete excision of the neoplasm.

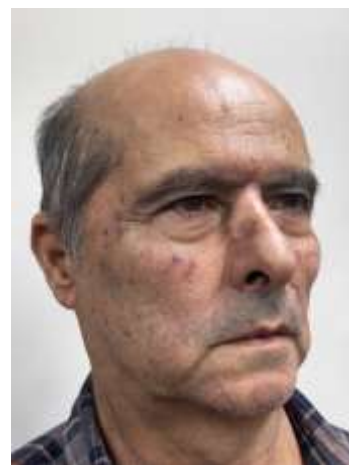


Figure 5.-3 months post surgery

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