

Review Article

Septocolumellar Anchorage in Secondary Rhinoplasty: A Cartilage-Sparing, Closed-Approach Strategy

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Abstract

Background: Secondary rhinoplasty is recognized as one of the most technically demanding procedures within the domain of facial plastic surgery. This complexity arises primarily from the presence of distorted anatomical structures, scar contracture, and compromised structural support resulting from prior surgical interventions. Such alterations frequently result in diminished nasal tip projection, malrotation, columellar retraction, deviation, and dysfunction of the internal nasal valve. Conventional revision techniques often require open surgical approaches and structural grafting, including the utilization of costal cartilage, thereby increasing both the complexity and morbidity associated with the procedure. **Purpose:** This study aims to assess the clinical efficacy and reproducibility of septocolumellar anchorage as a cartilage-preserving technique for the restoration of nasal tip support and biomechanics in secondary rhinoplasty, primarily conducted through a closed endonasal approach. **Methods:** A retrospective descriptive study was conducted involving 26 consecutive patients who underwent revision rhinoplasty between April 2022 and October 2024, subsequent to primary surgery performed by a different surgeon. The indications for revision included diminished tip projection or rotation, columellar retraction, tip deviation, and functional airway compromise. Surgical intervention was performed under general anesthesia, primarily employing intercartilaginous and hemitransfixion incisions. Following the release of scar tissue and mobilization of the lower lateral cartilages, septocolumellar sutures were anchored to the anterosuperior angle of the caudal septum to ensure stable tip support. Selective use of adjunctive septal cartilage grafts was implemented, while no costal cartilage grafts were harvested. The minimum follow-up period was 12 months. **Results:** The patient cohort ranged in age from 20 to 64 years, with a mean age of 42.7 ± 12.1 years, and an average of 1.34 prior rhinoplasty procedures. A closed surgical approach was utilized in 73% of the cases. Restoration of nasal tip projection, rotation, and alignment was successfully achieved in all patients, accompanied by a consistent enhancement in nasal airflow in instances where preoperative obstruction was present. No major complications, structural failures, or requirements for tertiary revision were reported. **Conclusions:** Septocolumellar anchorage represents a dependable and reproducible cartilage-sparing technique in secondary rhinoplasty. It offers predictable biomechanical control over nasal tip dynamics while minimizing tissue dissection and obviating the necessity for costal cartilage grafting in appropriately selected patients.

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Received: 15 September 2025; **Accepted:** 10 February 2026; **Published:** 25 February 2026



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Keywords

Septocolumellar Anchorage, Nasal Tip Biomechanics, Nasal Tip Support, Secondary Rhinoplasty, Closed Approach

1. Introduction

Secondary rhinoplasty has become increasingly significant due to the rising popularity of aesthetic surgery and the growing expectations of both patients and surgeons. Over time, it has evolved into a distinct and challenging field, marked by unique technical and clinical considerations [1]. To effectively address these cases, surgeons must thoroughly analyze and understand the patient's specific concerns and the underlying anatomical reasons necessitating reoperation. Some patients remain dissatisfied due to objectively poor surgical outcomes with visible deformities; however, in other cases, the result may be technically acceptable, yet the patient seeks an unattainable level of perfection. This discrepancy often leads to the need for secondary rhinoplasty or surgical revision when the outcome does not meet patient expectations, whether for functional or aesthetic reasons [2]. Secondary rhinoplasty is a significantly more demanding procedure. Although many of the surgical principles and techniques are similar to those used in primary rhinoplasty, their execution is considerably more complex due to the presence of scar tissue, soft-tissue contracture, and/or excessive resection of structural support elements [3]. These factors often require the use of costal cartilage grafts and an open surgical approach, both of which have become increasingly common in contemporary practice. In this study, we define "secondary rhinoplasty performed by another surgeon" as any revision procedure conducted by the author following a primary rhinoplasty performed by a different surgeon [4].

The septocolumellar suture technique is a reliable method for positioning and reshaping the nasal tip in rhinoplasty. This approach involves placing a loop suture between the medial crura and the caudal septum to maintain, enhance, or reduce the projection and rotation of the nasal tip. Successful application of this technique requires thorough preoperative analysis and consideration of the nasal septum's strength and position. Grafts may be used for additional support and definition. The septocolumellar suture technique plays a crucial role in achieving the desired nasal tip aesthetics in rhinoplasty [5]. In rhinoplasty, most complications and undesirable outcomes are associated with the nasal tip subunit, often due to changes in the proportions of the medial crus and caudal septum. During the procedure, the nasal tip should be considered the focal point, guiding the treatment of the other nasal subunits [6, 7]. These techniques offer the advantage of maintaining the structural integrity of the nasal tip, thereby reducing distortion during the healing process [8]. The septocolumellar suture is a loop suture connecting the medial crura to the caudal septum. Depending on its depth and direction of penetration into the

septum, this suture can either enhance or reduce the projection and rotation of the nasal tip, as well as alter the visibility of the columella [9].

The characteristics of the nasal septum are crucial in this suture technique. Consequently, a twisted or fragile caudal septum may not be suitable for this method unless it is surgically reinforced before applying the suture [10-14]. This article presents a case series that details the use of a specific suture technique in secondary rhinoplasty, highlighting the positive clinical outcomes achieved through an endonasal approach. Notably, this technique was employed without the need for costal cartilage grafting and showed a low incidence of complications.

2. Materials and Methods

A descriptive and retrospective study of a series of 26 cases of patients undergoing a revision or secondary rhinoplasty between April 2022 and October 2024 was conducted. Inclusion criteria comprised patients with a history of one or more previous rhinoplasties, by another surgeon, who had loss of nasal tip support, inadequate rotation, or columellar retraction, functional issues or a combination of these findings. Demographic and surgical data were tabulated in Microsoft Excel. A descriptive statistical analysis was performed by calculating means and ranges for age and the number of previous procedures.

Technical Description of the Procedure

All procedures were conducted under balanced general anesthesia, following standard antiseptic preparation and local infiltration with lidocaine and epinephrine. An endonasal approach was employed, combining intercartilaginous and hemitransfixion incisions, along with bilateral marginal incisions to access the nasal tip and alar cartilages. Tip reshaping was accomplished through controlled lateral crural modification using 5-0 PDS sutures, ensuring a minimum lateral crural width of 7 mm was preserved. New domes were defined laterally to the original domes, and cartilage contouring was achieved through partial-thickness incisions and suture stabilization. Dome refinement involved a Gruber-type suture and intradomal sutures to enhance tip definition while maintaining internal nasal valve function. Septocolumellar anchorage was performed using 5-0 Prolene sutures placed at the cephalic border of the middle crura and anchored to the anterosuperior angle of the caudal septum, providing stable tip support and preventing postoperative tilting. Additional lateral crural sutures were placed to improve the horizontalization of the alar

cartilages and optimize the internal nasal valve angle. When necessary, septal cartilage grafts—including an intercrural strut and a shield-type tip onlay graft—were used to further enhance tip support and definition. No costal cartilage grafts were utilized.

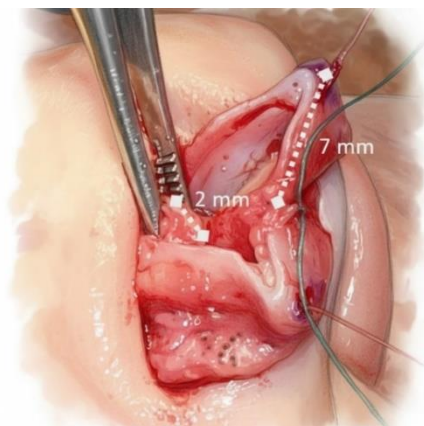


Figure 1. The septocolumellar suture is positioned 7 mm from the newly formed domes and 2 mm superior to the anterosuperior septal angle.

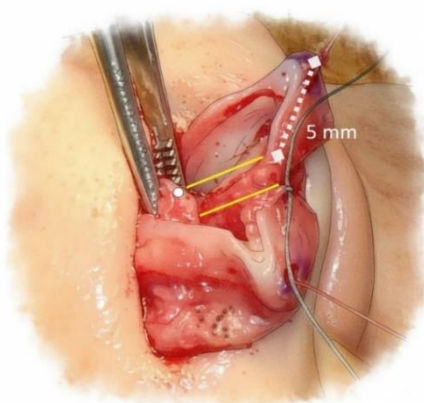


Figure 2. The second suture is positioned 5 mm from the newly formed domes and 2 mm caudally within the septum, specifically at the anterosuperior septal angle.

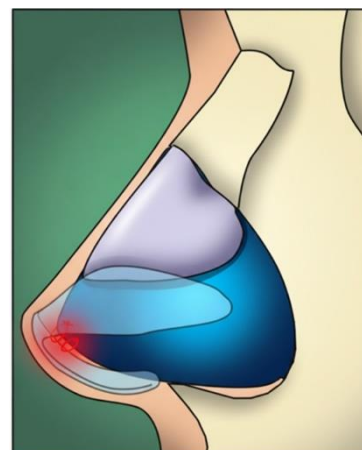


Figure 3. Illustration of the ultimate configuration of the septo-columellar sutures.

3. Results

The series included 26 patients between 20-64 years old, with a mean age of 42.7 years ($SD \pm 12.1$). Most patients had a complex history of previous surgeries, with an average of 1.34 previous surgeries per patient; highlighting one case with 4 previous interventions and two patients with 3. In 73% of cases ($n=19$), an endonasal closed approach was used using intercartilaginous and hemitransfixion incisions. After dissection of the scar tissues and release of the lateral cruras, structural stabilization was performed using the septocolumellar suture technique. A satisfactory restoration of the tip projection, rotation and the nasal function was achieved in all cases. There were no major complications in none of the cases nor the need for surgical revision even after an observation period of 12 months postoperative. Below we illustrate the results with two of the cases observed.

Case 1: This is a case of a 48-year-old patient with a history of 3 previous rhinoseptoplasties associated with a ptotic nasal tip and nasal obstruction. In this case, a rhinoseptoplasty was performed with a closed endonasal approach, increasing its nasal projection and rotation, as well as achieving a satisfactory correction of laterorrhinia and improving its valve collapse and nasal obstruction. [Figure 4.](#)



Figure 4. Before and after surgery Case 1 pictures A-Frontal view, B-Basal view, C-Lateral view.

Case 2. This case is of a 58-year-old female patient with a history of two previous rhinoseptoplasties, presenting an over-rotation of the nasal tip, right deviation and valve collapse.

Figure 4A. A rhinoseptoplasty with a closed endonasal approach was performed, allowing a counterrotation of the nasal tip and improving the deviation of the tip and its nasal permeability. **Figure 5B.**



Figure 5. Before and after surgery Case 2 pictures A-Frontal view, B-Basal view, C-Lateral view.

4. Discussion

The nasal tip represents one of the most complex regions to address in plastic surgery. Several factors must be considered during surgical planning; some of these are intrinsic to the alar cartilages, including their shape, definition, and symmetry. Additional critical factors include the shape and strength of the nasal septum, the upper lateral cartilages, and the ligament attachments [11].

There exist numerous suture techniques for the positioning and reshaping of the nasal tip. For the surgeon, it is crucial not only to master the technical aspects of each technique but also to understand their potential indications and side effect [15].

In this context, certain techniques employ the cephalic borders of the lower lateral cartilages sutured over the caudal septum, akin to the "Hezarfen wings," to enhance tip projection. However, this approach may result in the potential side effect of a visible supratip defect [16].

Among the most dependable suture techniques for managing the nasal tip is the septocolumellar suture. Despite the existence of various nomenclatures for this suture, the fundamental principle of the technique consistently involves placing a suture that connects the two middle crura to the caudal septum [17, 18]. An essential aspect of the technique involves the septo-columellar suture, where the surgeon initially performs the stitch and knot binding the medial crura, subsequently securing it to the caudal septum. Unlike traditional techniques that rely on bulky support grafts, septocolumellar anchoring acts as a dynamic pivot point that not only positions the tip, but tightens lateral structures, improving internal valve opening indirectly. This approach also prevents the cephalic displacement of the medial crura and mitigates the risk of columellar retraction [3, 15].

In the current study, the most prevalent preoperative deformity of the lower third was identified as a hyporotated or

drooping nasal tip, a finding consistent with Rettinger's observations [6]. However, existing literature more frequently reports irregular or asymmetric nasal tips as the primary deformity in this region [4, 5, 12]. Regardless of the specific manifestation, the success of rhinoplasty particularly in revision cases, relies heavily on the restructuring of the lower third. Modified support elements must possess both the appropriate shape and sufficient structural integrity to adequately support the overlying skin and soft tissues. A framework lacking adequate support is prone to distortion or collapse under the weight of soft tissue and scar contracture forces [13, 14]. Re-orientation and repositioning of the tip cartilages result in more predictable and aesthetically favorable outcomes. Notably, many deformities necessitating revision surgery are potentially preventable through a conservative surgical approach [13, 15]. Techniques employed to stabilize the nasal base include the placement of a columellar strut, suturing of the medial crura to the caudal septum (tongue-in-groove technique), or the use of a caudal septal extension graft [16, 17]. Once a stable base is established, refinement of the lobule can be achieved using interdomal sutures or fixation of grafts to the caudal margins of the medial and intermediate crura [16, 17]. These principles are essential to achieve adequate projection, rotation, and contour of the nasal tip. Following rhinoplasty, scar tissue invariably forms around the tip structures, with a tendency to contract and deform the cartilages if they are not adequately supported. Surgical expertise is therefore crucial to fully understand and manage these biomechanical forces. As experience increases, emphasis should consistently be placed on preserving native tip anatomy, avoiding radical resections and unnecessary sacrifice of structural tissue [18].

In the upper and middle thirds of the nose, deviation was identified as the most significant deformity and the most prevalent finding in both regions, consistent with the observations of Yu et al [5] and Rettinger [6]. Rettinger reported that 49% of patients exhibited deviation in at least one nasal third, often

involving combined deviations. Given the nose's central and symmetrical position on the face, even minor deviations are readily noticeable, which accounts for why patients with slight deformities frequently seek correction for optimal aesthetic outcomes. Conversely, Vuyk et al [12], identified deviation as a less common deformity in the upper and middle thirds, instead emphasizing issues of excessive or insufficient dorsal resection. A conservative surgical approach is generally preferred, as undercorrection can be more easily addressed through additional procedures, whereas aggressive resections increase the likelihood of secondary surgeries necessitating multiple grafts to restore nasal support, structure, and contour, thereby heightening surgical complexity and risk. These considerations have led to a gradual shift in rhinoplasty techniques from resection-based methods to those emphasizing repositioning and restructuring existing tissues. [17, 19-25]. Careful resection of support structures, combined with the strategic use of cartilage grafts for stabilization, has been shown to prevent many post-rhinoplasty complications [13, 14, 19]. In accordance with these principles, our series included 26 patients aged 20–64 years (mean 42.7 ± 12.1 years), most of whom had a complex surgical history (mean 1.34 prior procedures). A closed endonasal approach was employed in 73% of cases, utilizing intercartilaginous and hemitransfixion incisions. Following meticulous dissection of scar tissue and release of the lateral crura, structural stabilization was achieved using the septocolumellar suture technique. This method consistently restored nasal tip projection and rotation while preserving nasal function. Notably, no major complications or need for further revision were observed during a minimum follow-up period of 12 months, supporting the effectiveness of a conservative, structure-preserving strategy in revision rhinoplasty.

5. Conclusion

The anatomical characteristics of the nasal septum, especially the caudal portion, hold significant importance in nasal tip suture methods. The caudal part of the septal cartilage is vital in influencing the flexibility of the septocolumellar suture and the final shape of the nasal tip.

Septocolumellar suture in secondary rhinoplasty proves to be a highly effective and reproducible strategy, even in cases with multiple previous interventions. The main advantage of this approach is the ability to restore the dynamics of the nasal tip and its structural support by a closed approach, minimizing the dissection of soft tissues already compromised by scars. This method's versatility allows it to be used in both closed and open rhinoplasty surgeries, consistently ensuring structural stability, support, and shaping for the final placement of the nasal tip.

This technique significantly reduces reliance on costal cartilage grafts, decreasing donor site morbidity and surgical time. The preservation of the existing caudal septal cartilage is crit-

ical to the success of the anchorage. In conclusion, the septocolumellar suture represents a valuable tool in the facial plastic surgeon's arsenal to meet the biomechanical challenges of the secondary nose, offering consistent aesthetic results and optimal functional recovery.

Abbreviations

ENT	Ear, Nose and Throat
ASA	Anterosuperior Septal Angle
PDS	Polydioxanone

Author Contributions

Jorge Alberto Espinosa-Reyes: Conceptualization, Methodology, Supervision, Project administration, Writing – original draft, Writing – review & editing

Juan Carlos Ochoa Alvarez: Data curation, Formal Analysis, Investigation, Validation, Writing – original draft, Writing – review & editing

Roxana Cobo: Methodology, Supervision, Validation, Writing – review & editing

Nicolas Heredia: Investigation, Resources, Validation, Visualization, Writing – review & editing

Roberto Quijano: Data curation, Investigation, Resources, Visualization

Conflicts of Interest

The authors declare no conflicts of interest.

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