

Septocolumellar Suture in Closed Rhinoplasty

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Abstract: Several surgeons advise a variety of tip sutures and describe their own techniques in open approach. Septocolumellar suture is one of them and can be described as a loop suture between the medial crura and caudal septum. Although some of the articles mention that it can be applied in closed rhinoplasty, there is no description of the technical details. This paper presents indications, technical steps, and advantages of the septocolumellar suture in closed rhinoplasty.

After completing the classic sequence of the endonasal extramucous technique, the medial crural cartilages are dissected from the overlying skin at the midcolumellar level, keeping the distal fibrous attachments between the anterior columellar skin and these cartilages intact. A 5/0 or 4/0 Prolene (Ethicon Ltd, UK) with a round needle is passed, penetrating both the medial crura and then the caudal septum. Depending on the penetration level of this suture, the tip projection can be increased or decreased, the tip can be rotated, and columellar show can be corrected. This suture also makes the medial crura of the alar cartilages and septum rigidly fixed together, thus providing stability. Depending on the experience gained in 433 primary and 62 secondary rhinoplasty cases since 2000, it can be claimed that this technique, presenting an alternative to the open approach in many cases and expanding the borders of closed approach, allows one to manipulate the tip and columella easily with closed rhinoplasty and provides a significant decrease in the suboptimal results and number of complications.

Key Words: closed rhinoplasty, tip, columella, suture

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There are numerous suture techniques described for nasal tip positioning/reshaping. One of those sutures is called “projection control suture,”^{1,2} which we prefer to term as septocolumellar suture. Although several authors give different names to this suture,^{1–8} the principle of the technique is the same: placing a loop suture between 2 medial crura and the caudal septum. This suture and its technical details have

a place in almost all articles about open rhinoplasty. Although some of the articles mention that it can be applied in closed rhinoplasty, there is no description of the technical details.^{2,4,6} This paper presents indications, technical steps, and advantages of the septocolumellar suture in closed rhinoplasty.

Technique

The classic sequence of endonasal extramucous technique is followed: bilateral intercartilaginous and transfixion incisions, skeletonization, extramucous dissection of the septum, hump removal, lower lateral and upper lateral cartilage reduction, lateral osteotomies. Thus, all the steps of the classic technique are completed except mucosal sutures. Then comes the time for the preparation of the cartilages for the septocolumellar suture. The septal cartilage has already been exposed as a part of extramucous rhinoplasty. The fibroareolar tissue between the 2 medial crura is separated by an angulated scissors, exposing the inner surfaces of them. The columellar skin edge of the transfixion incision is held by an Adson forceps at the midcolumellar level. The medial crural cartilages are dissected from their perichondrium by the help of a fine-tip scissors (Fig. 1A). Thus, the columellar skin overlying the medial crura is separated from the lateral surfaces, but the distal fibrous attachments between the anterior columellar skin and these cartilages are kept intact. The preparation of only the middle 4–5 mm of the medial crura is enough to place the suture. The next step is the placement of the septocolumellar suture. A 5/0 or 4/0 Prolene (Ethicon Ltd) with a round needle is passed, penetrating the left medial crus from outside to inside manner (Fig. 1B). The needle is passed behind the columella (Fig. 1C), and then the right crus is penetrated from inside to outside (Fig. 1D). Both ends of the suture are brought out from each nostril and held together and pulled gently up and down to check out the symmetry and decide the level of the penetration of the septum by the suture. The needle is passed through the septal cartilage from right to left at this determined point (Fig. 1E). Then the suture is tied, thus bringing the medial crura to a rider position on the septum (Fig. 1F). According to the penetration level of these 3 cartilages, the following targets are achieved:

1. increasing the tip projection
2. decreasing the tip projection
3. rotation of the tip
4. correction of the columellar show and bowing
5. stabilization of the tip

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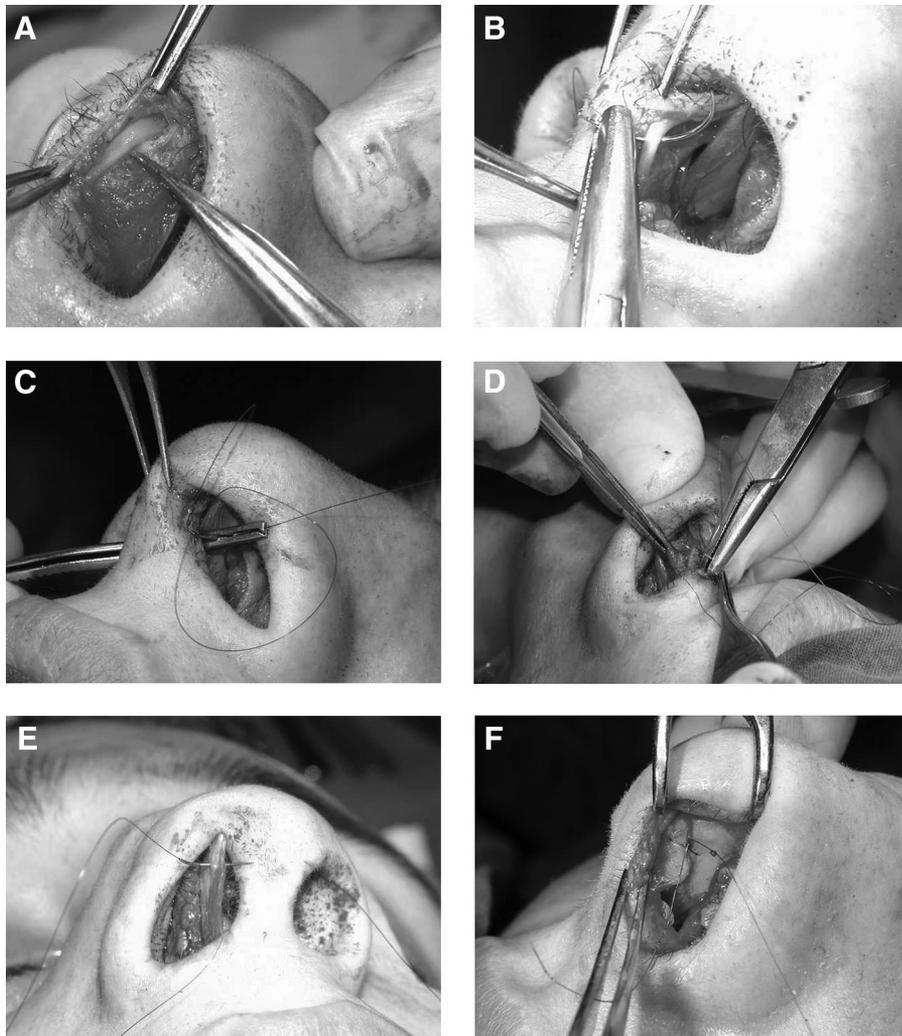


FIGURE 1. A–F, The sequences of the septocolumellar suture.

Increasing the Tip Projection

The suture is passed through both medial crural cartilages at the midcolumellar level, as described above. Then it is passed from the caudal septum in a manner above the level of the medial crural penetration. The suture is tightened gradually until the desired projection is achieved. The more superior the suture is penetrated to the septum, the more projection is obtained. Thus, up to a 5–6 mm projection of the tip complex can be achieved.

Decreasing the Tip Projection

The level of septal penetration of the suture must be below the medial crural penetration point for decreasing the tip projection. The effect can be accentuated by penetrating the suture at the more superior portions of the medial crura to the more inferior portions of the caudal septum. Footplate resection may be necessary in some cases. Up to a 4- to 5-mm decrease of tip projection can be achieved, but attention must be paid to avoid the flaring of alar cartilages by an excessive pull.

Rotation of the Tip

The loop must be passed through the uppermost portion of the medial crura (or middle crura) and the dorsal septum near the septal angle. Then the suture is tightened gradually until the desired tip rotation is obtained. If this suture changes the tip projection or causes flattening or recession of the columella beyond the desired position, another suture should be placed at the midcolumellar level prior to tightening it. This suture will be the pivot point of this tip rotation, preventing the retraction of the columella and an undesired increase of the nasolabial angle.

Correction of Columellar Show and Bowing

If a columellar recession (or prevention of columellar show) is desired, the septal penetration must be away from the caudal border of the septum (behind 4 mm) to increase the posterior movement of the columella. Of course, the recession in this way is limited to the width of the medial crural cartilage. Caudal resection of the septal cartilage is added if more recession is desired.

Stabilization of the Tip

The septocolumellar suture can even be used only for the stabilization of the position of the tip and the columella. Special care must be taken to keep the tip and columella positions unchanged while the suture is tightened gradually. The stabilization is checked out by pushing the tip toward the face by the finger gently.

The septocolumellar suture must be a figure-of-8 suture if the septum is too short and there is risk of columellar retraction. This figure-of-8 suture itself prevents the posterior movement of the medial crura over the caudal edge of the septum. A cartilage graft may be installed between 2 medial crura in more severe cases.

The level of the suture and the extent of dissection of the medial crura are changed according to the dynamics of the cartilage. Care must be taken to cover the septocolumellar suture during mucosal incision closure.

This technique has been performed in a total of 495 cases (433 primary and 62 secondary rhinoplasty cases) since 2000.

DISCUSSION

The position and the shape of the tip have significant importance in planning rhinoplasty procedure, particularly with respect to decreasing the magnitude of dorsal reduction required to achieve a balanced dorsum-tip relationship. Unrecognized inadequate tip projection is one of the most common reasons for an unfavorable postoperative result.⁹ Several surgeons advise a variety of tip sutures and describe their own techniques in an open approach. Septocolumellar suture is one of them, called by different names, and seems to be an indispensable one in open rhinoplasty. Although some authors^{2,4,6} mention that it is possible to apply this suture in a closed technique, no detailed description has been found in the literature.

Septocolumellar suture can be described as a loop suture between the medial crura and caudal septum. According to the penetration level of this suture in both cartilages, several effects can be achieved. The tip projection can be increased or decreased, the tip can be rotated, and columellar show and hanging columella can be corrected.

While the tip sutures such as interdomal, transdomal, or tip-defining suture are hard to adopt in closed rhinoplasty, inserting the septocolumellar suture with a closed approach is easy to perform.

There have been ongoing controversies on the advantages and disadvantages of both open and closed rhinoplasty techniques. The advantages of the closed approach are as follows: First of all, there is no visible scar, which presents a special importance for Mediterranean countries, where the risk increases due to both genetic factors and environmental reasons. Second, the exact effect of the suture is easily determined while the knot is tied gradually. On the contrary, skin must be redraped frequently to see if the desired effect is achieved in the open rhinoplasty.⁴ Also, since natural contact between skin and cartilage is detached in an open approach, fluid collection in the subcutaneous space and its replacement with fibrous tissue can distract from the result achieved in the surgery. Besides, an open approach might be a significant risk for heavy smokers and the ones who had previous tip incisions.⁴

On the other hand, in closed rhinoplasty, the fibrous connections between septum and columella are separated through transfixion incision, and sudden loss of projection is observed during surgery. The tip complex slides downward during the healing period in many cases because there is no structure to hold it in its place but the dorsal edge of the septal cartilage. This leads not only to the loss of projection of the tip but also the supratip deformity. During this drop, columellar bowing may appear. Even if these do not happen, it is

FIGURE 2. A, B, After completing the classic sequence of the closed rhinoplasty, before the septocolumellar suture is tied. It seems there is a need for more hump resection; however, the problem is about the inadequate tip projection.

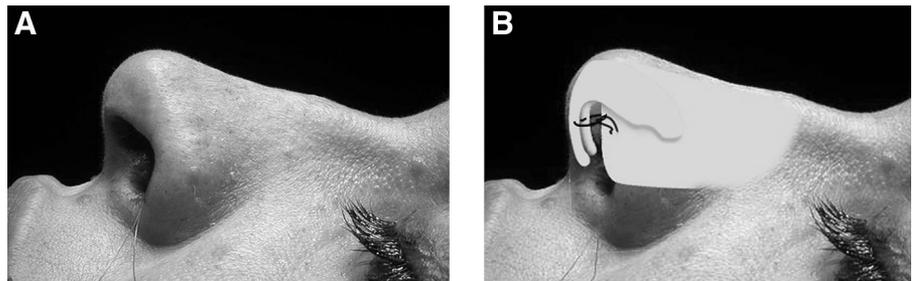
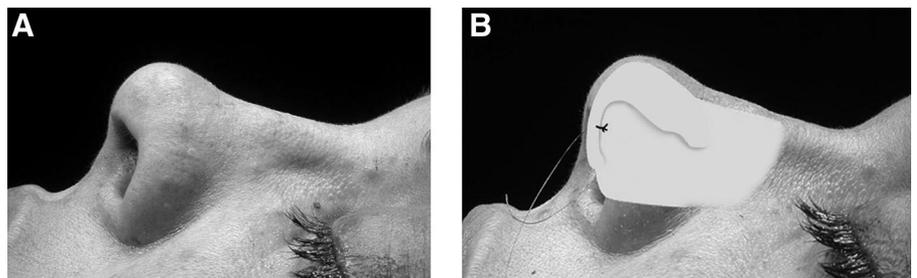


FIGURE 3. A, B, After the suture is tied, the tip is projected, magnitude of dorsal reduction is diminished, and thus the balanced dorsum-tip relationship is achieved.



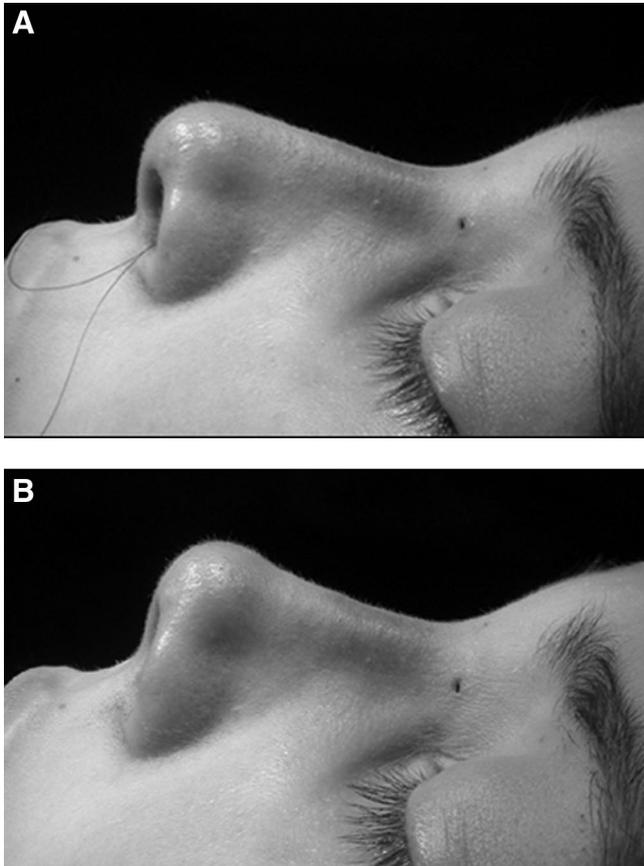


FIGURE 4. A, B, Before and after the application of the septocolumellar suture on another patient.

not uncommon to see that edema and fluid collection between the columella and caudal edge of the septum (despite taping) are replaced with fibrous tissue, which causes increased columellar show. A single septocolumellar suture alone is capable of preventing these major drawbacks of closed rhinoplasty and decreases the need for open rhinoplasty in most cases, therefore limiting the dissection and making the adjacent structures less subject to disruption or distortion by postoperative wound contraction forces.

The resection of the caudal septum is generally required to increase the nasolabial angle and for the correction of the columellar show in closed rhinoplasty. This resection must be very limited or even omitted when the septocolumellar suture is used; otherwise, undesired widening of the nasolabial angle and columellar retraction may occur.

The authors of this paper have been utilizing both the open and the closed approach in rhinoplasty. The ratio of these techniques has been shifted toward to the advantage of closed technique since the application of the septocolumellar suture in closed rhinoplasty has started.

It is clear that the medial crura of the alar cartilages and septum are rigidly fixed together with this suture, thus providing stability and withstanding the effects of most of the forces which may change the position of them (Fig. 1F). Therefore the caudal septum acts as a strut graft to stabilize the tip complex. A



FIGURE 5. A–H, Pre- and 1-year-postoperative front, oblique, lateral, and worm’s-eye view of the patient in Fig. 4.

single septocolumellar suture is usually sufficient for the above-mentioned 4 purposes. Sometimes, a second or even a third one can be placed, if required, for better results.

The cartilages are fixed rigidly by this suture; still, special attention must be paid to the tip of the nose in the first 6–8 postoperative weeks until the cartilages are welded together by the biologic cast. Tip massage is not allowed in this period to keep the fixed position of the cartilages.

Maintenance or creation of the tip projection with a septocolumellar suture is so significant that in planning, the magnitude of reduction of the dorsum must be carried out with respect to the achieved projection of the tip. Consequently, the magnitude of the dorsal resection may be diminished by the increase of the tip projection achieved by septocolumellar suture. We usually remove humps smaller than seems to be necessary and create the dorsum-tip balance with the application of a septocolumellar suture. The amount of the upper lateral cartilages resection is decided depending on the degree of the tip rotation (Figs. 2A–5H).

The application of the septocolumellar suture decreases the need for open rhinoplasty in most cases, therefore limiting the dissection and making the adjacent structures less subject to disruption or distortion by postoperative wound contraction forces.

We have been using this suture in almost all cases since 2000, and the number of abovementioned complications and suboptimal results decreased dramatically. This technique brings the solution for problems such as supratip deformity, nasolabial angle change, or columellar bowing that stem from losing the position of the desired columella-tip complex in the late postoperative period.

CONCLUSIONS

This approach in rhinoplasty brings several advantages, such as being easy to perform, leaving no scar, and no need

for predicting the results since the results can be observed during the operation and the results are permanent.

We make no claim of originality of the septocolumellar suture; still, this paper claims to be the first article describing the detailed application of the technique step by step in closed rhinoplasty. This paper will cover the gap in the literature, and it will not be unrealistic to anticipate a shift of the ratio of open/closed rhinoplasty toward closed technique among the plastic surgeons who perform both techniques.

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