

The Caudal Septum Columellar Strut Graft: An Alternative for Tip Support

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Summary: The authors describe a convenient option for obtaining a columellar strut graft without the need for harvesting septal or auricular cartilage. Its utility has been shown by use in almost 10 percent of 569 patients in the senior author's (D.A.H.) series. (*Plast. Reconstr. Surg.* 136: 484, 2015.)
CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, V.

The columellar strut graft is a well-established means for augmenting nasal tip support in rhinoplasty. Septal cartilage is the most common source of graft material. It is readily available and exhibits adequate size and thickness to meet graft design requirements.

There are situations where neither functional septoplasty nor other internal grafting is indicated but there is an isolated problem of poor tip support. In many of these patients, the caudal septum is resected for aesthetic reasons. The excised portion can be used as a columellar strut graft,

thereby avoiding the inconvenience of harvesting more cartilage from another site.

OPERATIVE TECHNIQUE

Fifty patients within a series of 569 patients had caudal septum columellar strut grafts placed. All had open rhinoplasties for which the primary indication for the open method was the need for significant tip modification. None of the 50 patients required other cartilage grafts. All had conservative caudal septal resection to aid tip

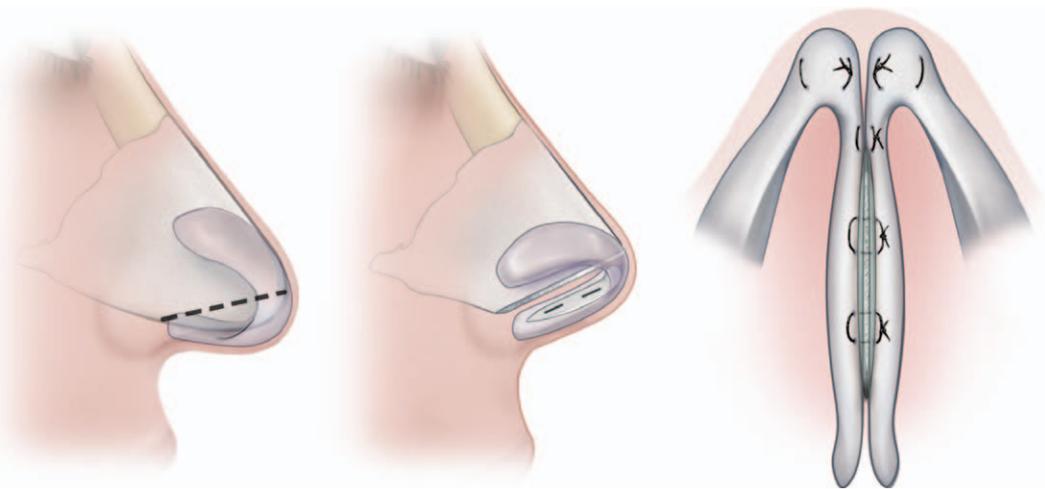


Fig. 1. Excessive caudal septum length is trimmed (*left*) and the resected portion used as a columellar strut graft (*center*). The graft is sutured in place between the medial crura with two sutures. Interdomal and transdomal sutures are seen above the graft (*right*).

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rotation, to shorten it centrally where it contributed to a hanging columella, or both. In most instances, the portion resected measured approximately 2 to 3 mm wide by 1.5 cm long. Following treatment of the dorsum and upper lateral cartilages, the lower alar cartilages were first treated by conservative cephalic resection. Transdomal and interdomal sutures were then placed to shape and narrow the tip and establish the desired projection. The tip was then subjected to ballottement with compression to test medial crural strength. If the tip was spongy and easily compressed, the resected caudal septum was used as a columellar strut graft. After separating the medial crura, a 25-gauge needle was used to stabilize the graft

between them. Two 5-0 clear polydioxanone horizontal mattress sutures were used to secure the graft in place (Fig. 1). Sometimes, the interdomal sutures have to be removed to facilitate this process and then replaced. The strut graft is usually not long enough to extend its fixation farther in either direction and instead is left “floating.” Once adequate tip support is confirmed, the skin is redraped and closed.

CASE REPORT

An 18-year-old white female patient presented with concerns regarding a dorsal hump and a low, broad tip. She had no breathing complaints. The frontal view demonstrated a wide upper nose and a tip with mild deviation. The lateral view showed



Fig. 2. Preoperative (*above*) and postoperative (*below*) views.

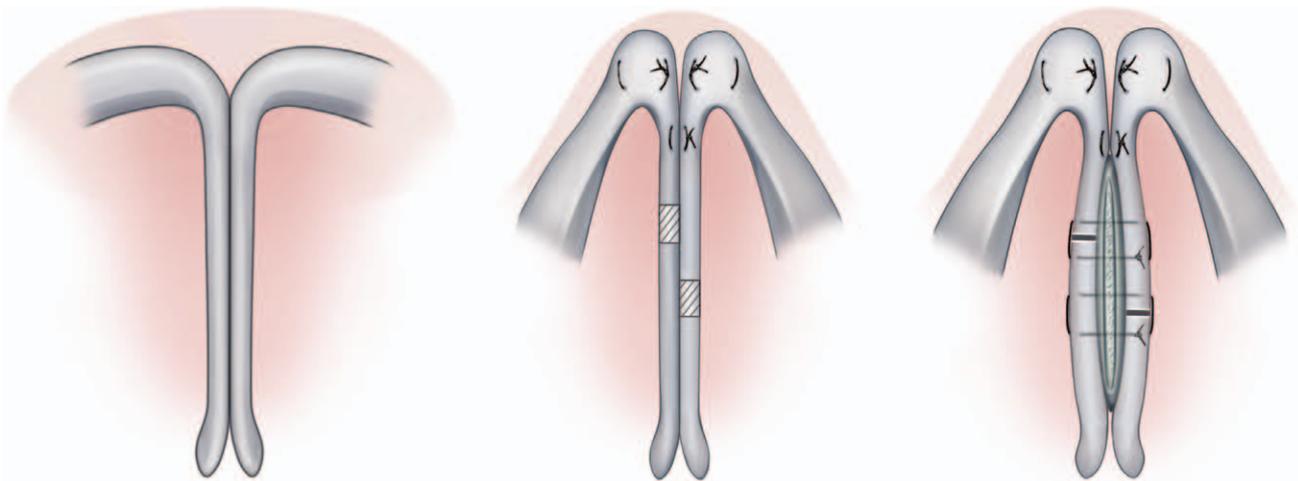


Fig. 3. A wide tip (*left*) treated with transdomal and interdomal sutures may increase tip projection excessively (*center*). A staggered 2-mm resection of medial crura to reduce projection can be stabilized with a caudal septum columellar strut graft (*right*).

a dorsal hump, excessive nasal length, and a low tip position. The preoperative goals included reducing the dorsal hump, raising the tip position, refining tip shape, and conservatively narrowing the nose. The surgical plan included an open approach using a midcolumellar stairstep incision, dorsal hump reduction with conservative anterior resection of the upper lateral cartilages, cephalic resection of the lateral crura of the lower alar cartilages ensuring a 5-mm strut, transdomal and interdomal sutures to narrow the tip and increase projection, placement of a columellar strut graft using the resected caudal septum to maintain tip projection, and infracture of the nasal bones. Patient images preoperatively and at 14 months show correction of the dorsal hump, shortening of the nose, and tip elevation with improved projection (Fig. 2).

DISCUSSION

Rhinoplasty techniques, particularly open methods, can weaken tip-supporting structures. Potential side effects include external nasal valve dysfunction and loss of tip projection. Such sequelae can be a source of dissatisfaction following rhinoplasty.¹

Columellar strut grafts unify the lower lateral cartilages and provide a central supporting scaffold. They increase tip support by as much as 40 percent.² This aids in resisting skin envelope compressive forces and wound healing contractile forces. Increased medial crural support contributes to establishing and maintaining the desired degree of tip projection and rotation.³ Strut grafts also help to correct midline columellar deviation resulting from weak and distorted medial crura. The tongue-in-groove concept of suturing the medial crura to the intact caudal septum is an alternative method to using columellar strut grafts, provided that there is adequate septal length and no significant deviation present.

Septal cartilage is the most common source of material for strut grafts, although auricular cartilage, rib cartilage, calvaria, iliac crest, and the inferior turbinate are alternative sources.⁴⁻¹⁰ Septal resection can provide abundant material, allowing for graft dimensions as large as 4 mm wide and 2.5 cm long.¹¹ However, improved tip support is less dependent on graft length than on the added strength the material itself provides.¹²

This study demonstrated that adequate medial crural support is provided by grafts that are as small as 2 to 3 mm wide and 1.5 cm long. They even provide enough support to stabilize segmental medial crural resections used to reduce excessive tip projection (Fig. 3).

It should be emphasized that the extent of caudal septum resection is never planned to suit the requirements of adequate strut graft dimensions. Rather, the extent of resection is determined solely by aesthetic goals. If the resected segment proves inadequate to serve as a columellar strut graft and one is needed, another source of material is sought, typically the septal cartilage.

The caudal septum columellar strut graft is a convenient option that effectively uses normally discarded tissue. It obviates the need for septal resection in patients in whom there is a need to augment tip support or straighten the columella but there are no other graft requirements.

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PATIENT CONSENT

The patient provided written consent for the use of her images.

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