

Chapter 24 . The Wide Tip: Suture Techniques

- **Indications:** In contrast to excision, techniques for suturing cartilage have the advantage of being nondestructive and reversible. Patients in whom the lower lateral cartilages are deformed or malpositioned require reconstruction, which in some part relies on sutures placed either within the domes of the cartilages, between the domes of the middle crura, and/or from the cartilages to surrounding structures. Sutures are frequently used to alter the curvature or position of the cartilage (Figure 24-1). Common maneuvers address domes that are too wide or domes that are situated too far from each other. Patients in whom these maneuvers are particularly useful are those with wide or boxy tips. Similar techniques may be used for lateral deflections of the septum.
 - **Markings:** Preoperatively, the position of all three components of the lower lateral cartilages should be identified beneath the skin envelope. The medial crura extend predominantly up the length of the columella. They may or may not contribute to excessive show of the columella on lateral view. The middle crura are perhaps the most visible and form the tip-defining points on frontal view. The lateral crura may extend along the alar rims and rotate superiorly.
 - **Approach:** Access to the lower lateral cartilages may be achieved via an open or closed approach to the nasal tip. However, many surgeons believe that better exposure is afforded by the open approach. Recent reports have outlined combined approaches that spare the patient a transcolumellar incision but allow adequate visualization of the nasal tip.¹ The anatomy of the lower lateral cartilages should be carefully assessed to determine if the pathology is due primarily to a widened dome arc, increased divergence between the two domes, or a combination of the two.^{2,3}
 - **Technique:** The choice of suture for tip modification is a personal one. The material should pass easily through the cartilage causing the least trauma and last long enough to prevent relapse. Either a permanent, monofilament suture, such as clear nylon, or a long-acting dissolvable suture, such as polydioxanone (PDS) may be used. Shorter acting sutures, such as plain gut, and braided sutures, such as polyglactin (Vicryl®), are not recommended.
- **Tip narrowing sutures:**
 - A medial footplate suture is a mattress suture that approximates the medial crura. Intervening soft tissue is usually dissected prior to suture placement to maximize the degree of columellar narrowing and minimize the inferior protrusion of the columella (columellar hang).
 - A medial crura-septal suture is used to increase or decrease nasal tip projection and rotation. The medial crura are isolated and a suture is passed through the medial crura and the caudal septum to secure the tip in its desired position. If the sutures are placed through the posterior crura and moved anteriorly, tip projection increases and cephalic (counterclockwise) tip rotation occurs. If the anterior medial crura are secured posterior to the caudal septum, tip projection decreases and tip rotation moves in a caudal (clockwise) direction.
 - A middle crural suture is similar to the medial crural suture but is placed more anterior, near the tip. This serves to provide more tip narrowing and support than the medial crural suture.
 - An intradomal suture spans the domal arch anterior to the vestibular lining (Figure 24-2). A clear, monofilament suture is placed in a mattress pattern with the knots kept medially where they are less likely to be palpable. The entrance and exit points should be spaced appropriately. Points that are too close together will not impart sufficient folding of the crura, while those that gather too much intervening cartilage will create too severe a deformation. Care should be taken that the suture does not catch the underlying vestibular mucosa.

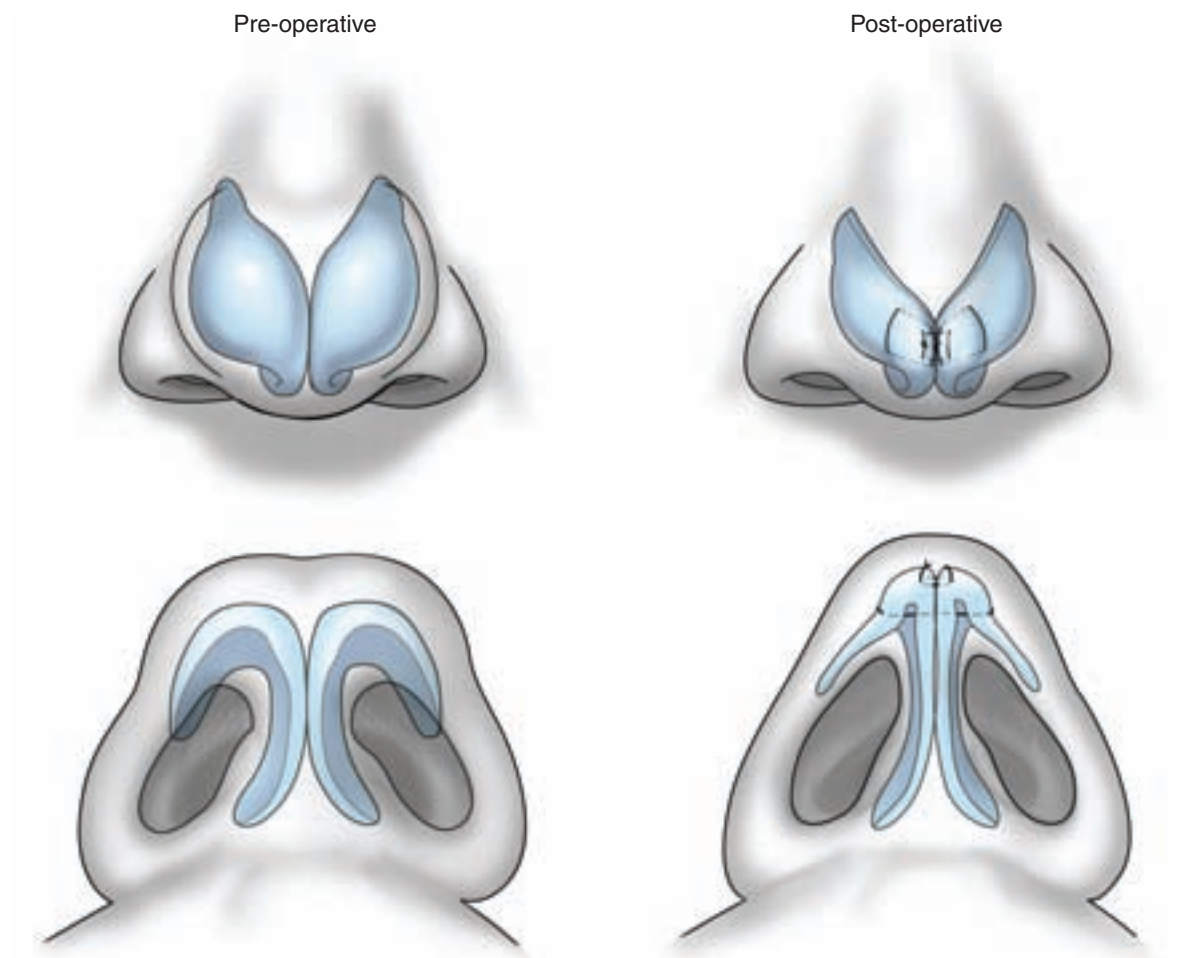


Figure 24-1. Boxy nasal tip and correction using interdomal suture.



Figure 24-2. Horizontal mattress intradomal suture used to narrow the middle crura.

The effects of this suture are tip narrowing, increased lobular size, increased tip projection, and interdomal narrowing. The lateral crural concavity that occurs with this suture may be noted and an alar rim graft may be needed to avoid alar retraction or compromise of the external nasal valve. The exact location of the interdomal suture will affect the crura so placement is important. More cephalic placement results in slight upward rotation of lateral crura. Mid-domal placement narrows the domes without rotation, while caudal placement results in slight downward crural displacement. This suture is indicated when the interdomal distance is ideal but the domal arches are too wide.

- An interdomal suture is a horizontal mattress suture between the domes that approximates the most anterior point of each crura. This suture will narrow the tip and increase length (Figure 24-3). This suture is more effective at approximating the domes than the intradomal suture. As with the intradomal suture, the exact location of the interdomal suture will affect the crura so placement is important. Cephalic placement will result in slight again upward rotation of the lateral crura. Mid-domal placement will narrow the domes without rotation, and caudal placement results in slight downward crural displacement. This suture is used when the domal arches are optimally shaped but are too far apart. The suture can be used alone or in combination with the intradomal suture.
- A lateral crural suture is placed as a horizontal mattress suture that spans from the cephalic portion of one lateral crus through the caudal septum to the opposite lateral crus and is tied over the septum at the desired tension. The purpose of this suture is to narrow the lateral crura and elongate the nose.
- A lateral crural spanning suture is a horizontal mattress suture that extends over convex portions of the lateral crura. The suture at the ends of the mattress pattern should be spaced 3 mm to 4 mm apart to support adequate tension across the suture. As it is tightened, the underlying lateral crural convexity is flattened or even made concave, if desired. Scoring the cartilage on the side opposite the desired change will facilitate the deformation. This suture will also result in increased tip projection.⁴
- *Suture sequence:* The sequence of suture placement stabilizes the central nose first with placement of medial and middle crural sutures as indicated. These sutures stabilize the base of the tip. Domal sutures are then placed followed by lateral crural sutures if necessary. The medial crural septal suture is then placed to set the nasal projection followed by the tip-rotation suture.
- *Tip-dorsum relationship:* In general, the domes of the lower lateral cartilages should project 6 mm to 8 mm above the level of the dorsal septum.
- *Postoperative management:* A standard dressing of Steri-strips along the dorsum and around the tip is recommended as a postoperative dressing.
- *Pitfalls:*
 - Definition in the tip is difficult to achieve in the patient with thick, glabrous skin. In contrast, care should be exercised in the patient with thin skin for fear of necrosis from skin flaps that are too thin.
 - Following the placement of sutures to narrow the nasal tip, the alar rims should be inspected to make sure they are not elevated as a side effect.
 - Placement of an intradomal suture can deflect the lateral crura too far medially, causing collapse of the external nasal valve. The problem can be corrected by supporting the lateral crura with an alar batten graft.
 - For all sutures, care should be taken not to over-perforate the cartilage with excessive passes of the suture and not to damage the cartilage with excessive traction.
 - For interdomal sutures, a tip that is too pointed can occur if the domes are brought too close together.
 - For lateral crura sutures, excessive flattening or curvature can result if the suture is tied too tight.
 - For crural-septal sutures, either over- or under-rotation or over- or under-projection can occur if the suture is not placed in an ideal location.
- *Tips:*
 - Tip reconstruction should be chosen for the proper patient. Any unintended effects of suture placement should be considered in addition to the intended ones.
 - For transcrural sutures, excessive narrowing should be considered and avoided.
 - Alar rim grafts should be inserted when numerous tip-suturing methods are employed since the external valves become weak and the ala may appear concave and retracted.
 - When placing mattress sutures over convex lateral crura, it is helpful to flatten the cartilage with one's finger to reduce the chance of the suture perforating the vestibular mucosa.

REFERENCES

1. Bravo FG, Schwarze HP. Closed-open rhinoplasty with extended lip dissection: A new concept and classification of rhinoplasty. *Plast Reconstr Surg.* 2008 Sep;122:944–950.
2. Weber S, Cook TA, Wang TD. Irradiated costal cartilage in augmentation rhinoplasty. *Oper Techn Otolaryng.*
3. Rohrich RJ, Adams WP Jr. The boxy nasal tip: Classification and management based on alar cartilage suturing techniques. *Plast Reconstr Surg.* 2001 Jun;107(7):1849–1863.
4. Guyuron, Bahman RA. Nasal tip sutures part II: The interplay. *Plast Reconstr Surg.* 2003;112:1130.

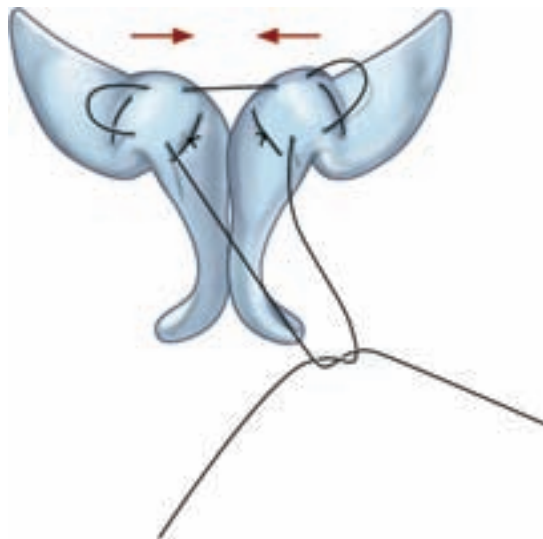


Figure 24-3. Intradomal and interdomal sutures need to achieve nasal tip definition.

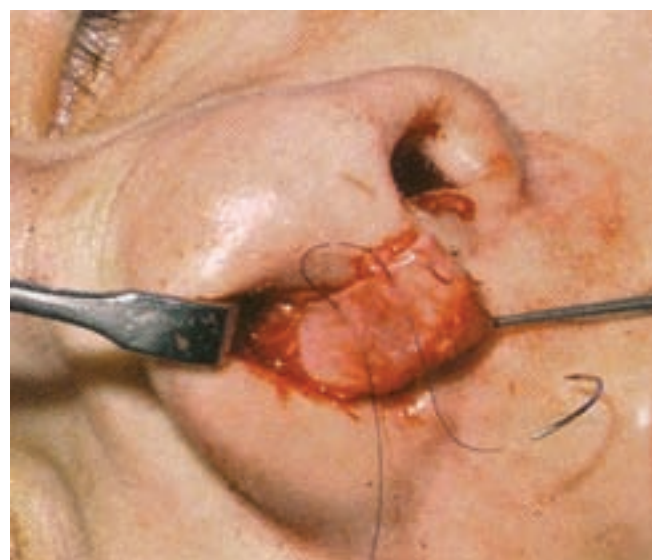


Figure 24-4. Lateral crural suture to convert a concave area into a convex one.