Chapter25 . Lower Lateral Cartilage Grafting Techniques

- *Indications*: Certain patients may have insufficiency of the lower lateral cartilage resulting in either functional or aesthetic abnormalities. In such cases, autogenous cartilage will provide adequate replacement or augmentation to deficient, weak, or deformed tip cartilage. Cartilage can be harvested from the septum (if available), ear, or costal margin for placement as a graft in these patients. In other patients, notching of the alar rim may be managed by placing a graft to span the area of the notch.
- *Assessment and markings*: Although there are no specific markings that need to be made, a thorough dimensional analysis of the patient's existing nasal tip projection and rotation should be performed. There are many tip grafts described in the literature, and the most useful and their indications will be described in this section.
- *Approach*: The tip region may be approached via either an open or a closed technique. The open approach will utilize a transcolumellar incision extended along each alar rim distal to the inferior edge of the lower lateral cartilages.
- *Technique:* The shield graft derives its name from its roughly triangular shape. It is used to provide definition and projection to the nasal tip (Figures 25-1 and 25-2). The shape and size of the graft are determined from the patient's anatomy. The length is roughly determined from the junction of the lobule and columella to a point just above the desired projection. The width at the inferior aspect is slightly narrower than that of the columella. The width at the superior aspect is determined so as not to produce too narrow or too boxy a tip.[1] If the graft is noted to be too angled, the edges should be beveled to minimize show. If too rigid, it can be softened by gentle crushing prior to being sutured into place.
  - Additional tip grafts can be placed superior to the shield-type graft to further define the nasal tip and improve tip projection.[2] Several grafts have been described: cap graft (small graft placed between tip defining points), umbrella graft (vertical columellar strut combined with a horizontal onlay graft), onlay tip graft (horizontal graft placed over alar domes), and others. These are all variants of cartilage grafts placed on the nasal tip in slightly different locations.[3]
  - One of the more common grafts placed within the lower lateral cartilages is the columellar strut (Figure 25-3). It can be used to increase tip projection, decrease tip rotation, straighten deflected medial lower lateral crura, and simply provide increased caudal nasal support. The graft is fabricated in the shape of a long rectangle. The base may or may not rest on the anterior nasal spine. Some surgeons avoid contact of the inferior aspect of the graft with the nasal spine to avoid any undesirable feeling or clicking of the graft.[4] The columellar strut is sutured in place between the medial crura of the lower lateral cartilages to provide tip support. The superior aspect may extend slightly above the domes of the middle crura to increase or maintain nasal tip projection but should not put excessive tension on the skin overlying the nasal tip. If a large degree of tip projection is desired, the strut can be secured to the anterior maxilla just off midline of the anterior nasal spine. A 0.035-in K-wire can be inserted longitudinally into about three quarters the length of the graft. The free end of the K-wire is trimmed and placed into a 12-mm hole drilled just off midline adjacent to the anterior nasal spine. With the K-wire inserted into the drilled hole, the graft is secure and can be bent into its desired position, making it an excellent anchorage point off which the surgeon can secure the tip.[5]

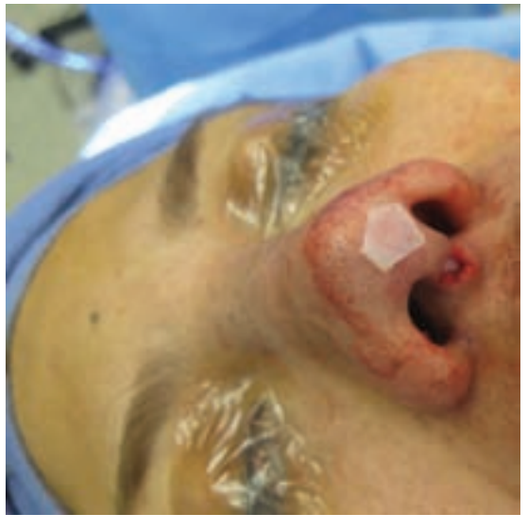

Figure 25-1. Position of the shield graft.

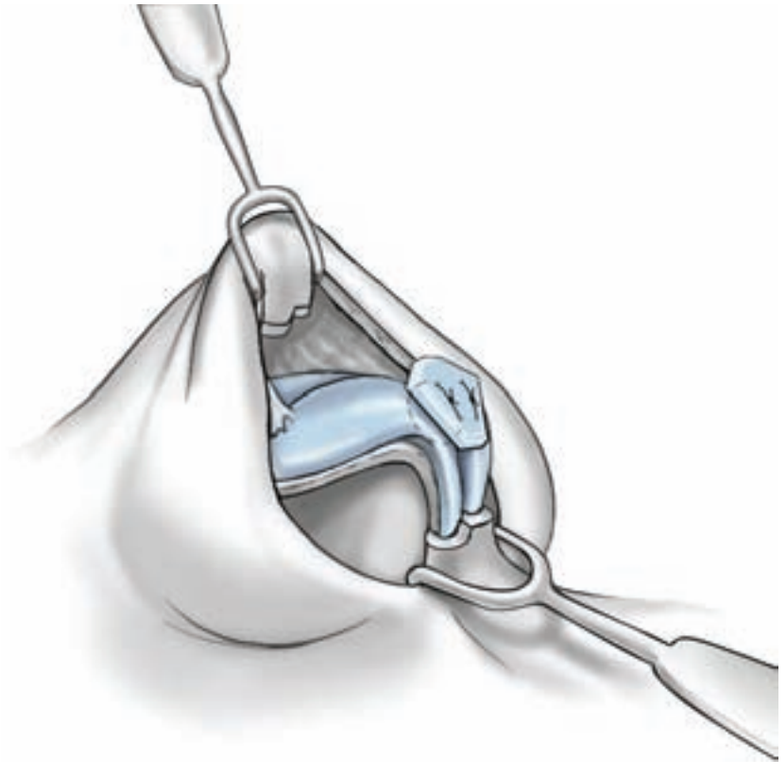

Figure 25-2. Shield graft.

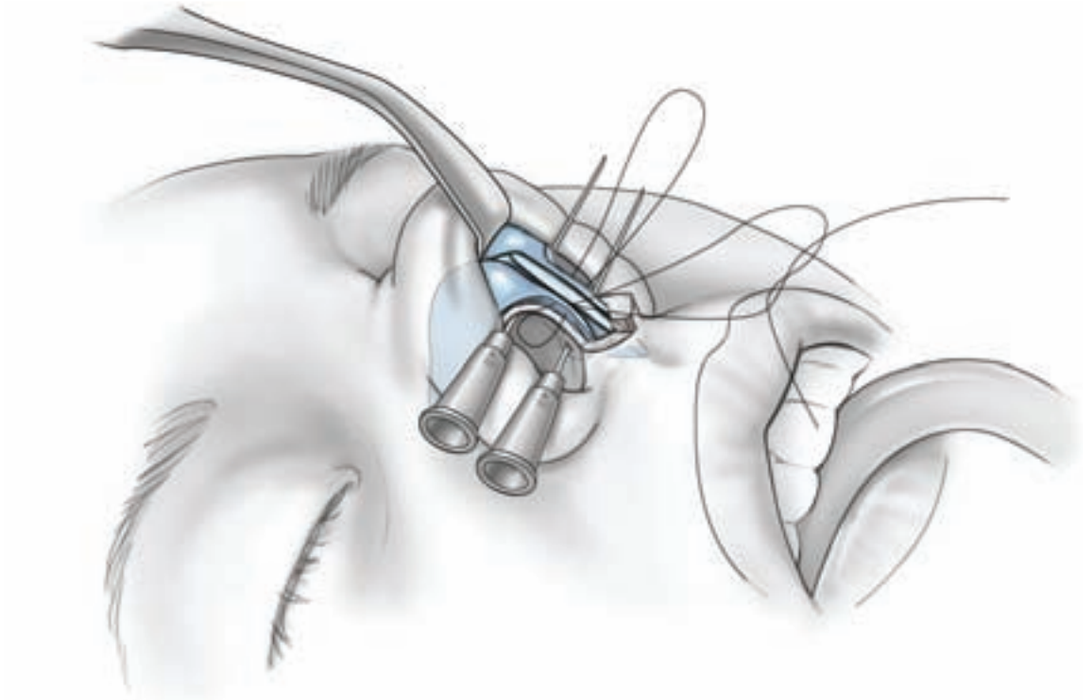

Figure 25-3. Twenty-five–gauge needles used to facilitate placement of a columellar strut graft.

- In the setting of external valve collapse—either uni- or bilateral, alar batten grafts can be positioned over dorsal surface of one or both lower lateral cartilages (Figures 25-4). The grafts need not be completely rigid but should provide resistance to the negative inspiratory pressure created during inhalation. Batten grafts usually measure 10 mm to 15 mm in length and 3 mm to 4 mm in width. If bilateral grafts are to be used, they should be symmetrical. With isolated problems of the external valve, a closed approach is sufficient. The superior border of the lower lateral cartilage is identified and a subcutaneous pocket is created by dissecting in a plane just above the surface of the cartilage[6] (Figure 25-5).
- An alar rim graft is used to treat or prevent alar retraction or collapse. These grafts are placed just above and parallel to the alar rim. A small incision is made and the grafts are inserted through a subcutaneous pocket. In cases of severe alar retraction, a lateral crural strut graft is usually more effective and can be used in addition to or in place of an alar rim graft.[7]
- An alar spreader graft is a rectangular graft that is placed between the deep side of the lower lateral cartilages and the vestibular skin. This graft is sutured to each lateral crus and serves as a deep strut to maintain distance between the alar domes. This is useful to treat a pinched tip and also improves internal and external nasal valve function.[8]
- Lateral crural onlay grafts are used to treat alar contour deformities from intact, but deformed lateral crura. They are placed over the lateral crura in a superficial manner. If done bilaterally, they need to be symmetric. Because irregularities may become apparent, the graft requires meticulous beveling or peripheral morselization.[9]

- *Postoperative management*: Internally, nasal packing can be placed in the anterior portion of the vestibule if temporary support to the alar margin is desired. Externally, a single Steri-strip placed down one sidewall, across the columella, and back up the other sidewall suffices as a dressing to hold the repositioned columella in place.
- *Pitfalls*:
  - A visible tip graft should be avoided at all costs. Placement of semirigid cartilage grafts beneath a thin skin envelope will lead to eventual unnatural show of the margins of the graft. If this is encountered, the graft should be removed before closing the incision and gradually reduced to the point where support is maintained but not at the expense of visibility.
- *Tips*:
  - Precise modification of the tip is perhaps better performed via an external approach, although many surgeons can achieve success via a closed approach. If the latter is chosen, the pocket for a tip graft should be minimized to prevent migration. In the open approach, careful placement and suturing of the grafts into place is of paramount importance.
  - If the patient has thin skin and concern exists for eventual graft show, a thin piece of fascia from the temporal region may be used to cover the reconstructed, composite tip.

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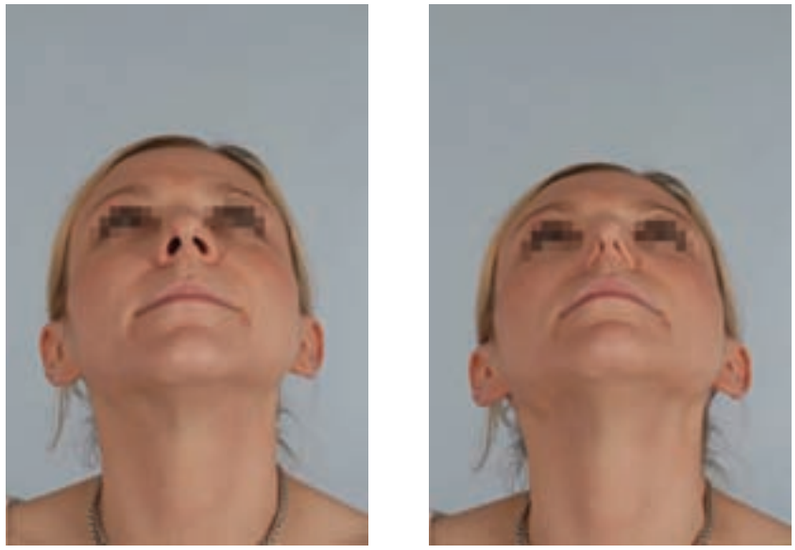

Figure 25-4. Worm's eye view of a patient demonstrating external value collapse with inspiration.

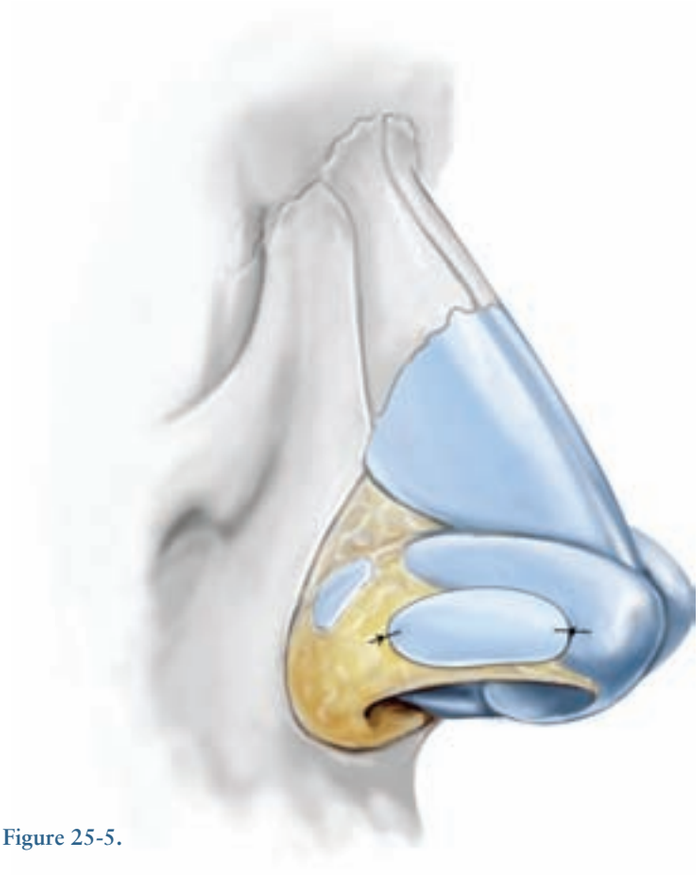

Figure 25-5.