Chapter 9 . Basic Approaches

- The right-handed surgeon should stand on the right side of the operating room table to facilitate manipulation through both the right and left nares with either the head in a neutral position or gently moved from side to side.
- *Open Approach*: The open approach to rhinoplasty involves exposure of the subcutaneous structures by incising the skin across the columella, continuing the incision along the mucocutaneous junction behind the columella, upwards behind the soft triangles, and then around just inferior to the caudal edge of the lower lateral cartilages. In the technique described, the entire nasal covering is elevated so that specific maneuvers may be performed to restructure and reshape the nose.
  - The choice of incision across the columella is purely one of preference and is placed roughly at the narrowest portion. Some surgeons prefer a stair-step incision (Figure 9-1), while others prefer a gull-wing–shaped incision (Figure 9-2). A straight line is usually avoided since the scar often remains more noticeable. A #15 scalpel blade is used for the horizontal portions of the incision and can certainly be used for the entire incision, however. The pointed tip of a #11 blade is often preferable for the vertical portion with the incision in this limb made with a controlled stabbing motion. Care must be taken not to damage the underlying medial crura of the lower lateral cartilages. These often lie close to the skin surface and are prone to injury when incising the skin.
  - It is important to create a 90-degree transition from the horizontal portion of the incision across the columella to the vertical portion along the mucocutaneous junction behind it (Figure 9-3). This will help maintain the integrity of the columella by again minimizing contracture as well as visibility of the scar. It is helpful to mark this 90-degree angle to ensure its accuracy.
  - To provide adequate exposure, the mucosal incisions along the medial borders of the columella need to be continued around the alar rims of the nostrils. This is usually at the level of the inferior aspect of the lateral crus of the lower lateral cartilage but may be performed at various levels (Figure 9-4). The position of this incision relates to the underlying lower lateral cartilages. The most common incision is a rim incision that parallels the inferior border of the lateral crus of the lower lateral cartilage. It is important to note that this incision follows the lower lateral cartilage, so it should progress cephalad (away from the nostril edge) as it proceeds laterally. This superolateral direction of the lower lateral cartilage can be seen as a ridge through the vestibular skin. Incisions placed within the substance of the lower lateral cartilage ("intracartilaginous incision") parallel to its main axis or along the superior border of the lower lateral cartilage just behind the inferior border of the upper lateral cartilage ("intercartilaginous incision") are used when a closed technique is chosen.

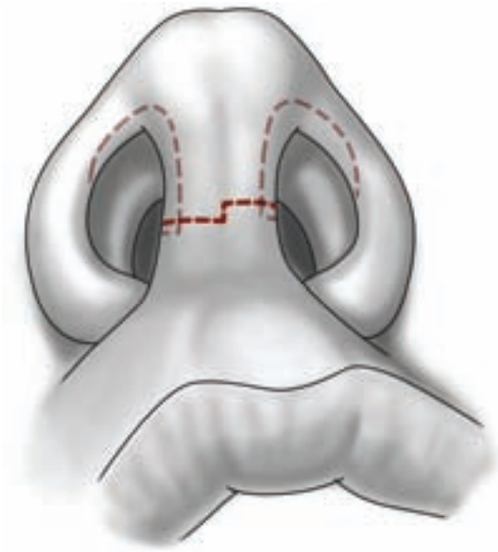

Figure 9-1. Stair-step type incision across the columella.

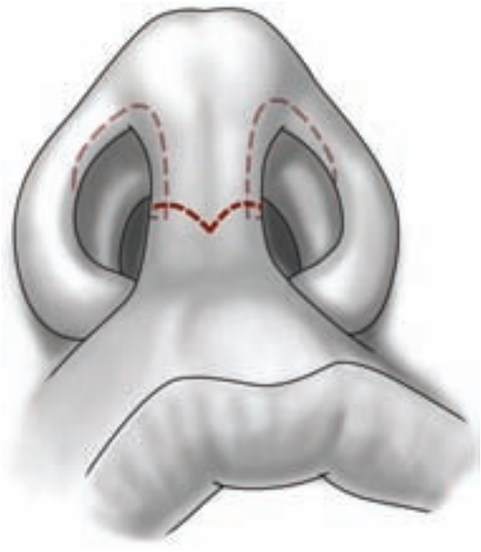

Figure 9-2. Gull-wing type incision.

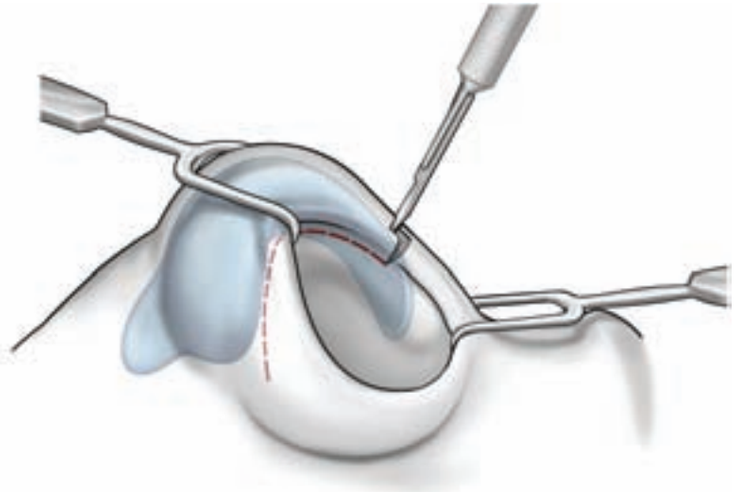

Figure 9-3. Transition of the columella incision from anterior to lateral.

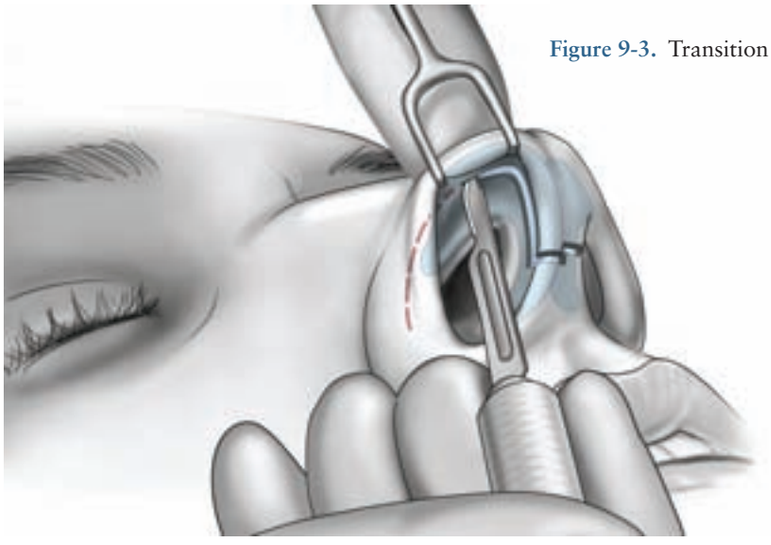

Figure 9-4. Alar rim portion of the incision along the inferior margin of the lower lateral cartilage.

- Once the incisions are made, a sharp iris scissors is advanced beneath the columellar incision from right to left in a plane between the underlying cartilage and the subcutaneous tissue. Placing a gloved finger over the skin of the columella and palpating the scissor tip as it crosses from one side to the other will determine the correct depth since the scissors will be palpable beneath the skin if they are kept superficial to the cartilage. With gentle spreading of the scissor tips, the correct plane is created. The scissor tips should exit on the left side of the columella within the vertical incision already made with the scalpel (Figure 9-5). The skin is then completely incised with the scissors protecting the cartilage below and retracted superiorly.
- Care should be taken not to grasp the thin tip of the columella but rather to retract it with a fine double hook as the underlying soft tissues are divided. The plane above the lower lateral cartilages is identified and followed superiorly onto the tip. Placing the tips of the scissors directly onto the surface of the cartilages and gently spreading the soft tissues will determine the correct plane, which is just above the perichondrium (Figure 9-6). Laterally, dissection can be initiated by placing the tips of a curved iris scissors perpendicular to the incision line and gently spreading. One tip should be just inferior to the caudal edge of the lower lateral cartilage and the other against the opposing edge if the incision. This maneuver should easily provide entrance into the proper dissection plane. The white color of the lower lateral cartilages should be easily visible. The middle and lateral crura are often more substantial than the medial crura, making identification somewhat easier (Figure 9-7). Soft tissue dissection should be directly on the surface of the cartilage and all soft tissue elevated from it. This plane facilitates a dry operative field and minimizes postoperative bruising. The soft tissue between the lower lateral cartilages is excised as dissection proceeds towards the nasal tip.
- Using a double-prong hook and a finger to evert the skin, excess fibrofatty tissue can be removed from the tip, if necessary. Caution should be taken to not damage the subdermal plexus and gentle cautery used to control bleeding so as not to injure the overlying skin. A needle tip cautery set between 10 to 15 works well.
- Dissection of the dorsum is frequently performed with scissors, keeping the tips immediately over the dorsal septum caudally and then the nasal bones as the surgeon moves towards the glabella. The soft tissues are elevated off the dorsal supporting structures, and too much lateral dissection should be avoided if osteotomies are to be performed. Some soft tissue attachment should be left on the bones to hold them in place following infracture. A freely dissected nasal bone risks greater malposition after fracture.
- Once fully freed, an Aufricht retractor may be inserted into the space over the dorsum to provide exposure to the midline structures. A wide double hook may be placed beneath the soft triangles and pulled inferiorly to provide additional exposure.

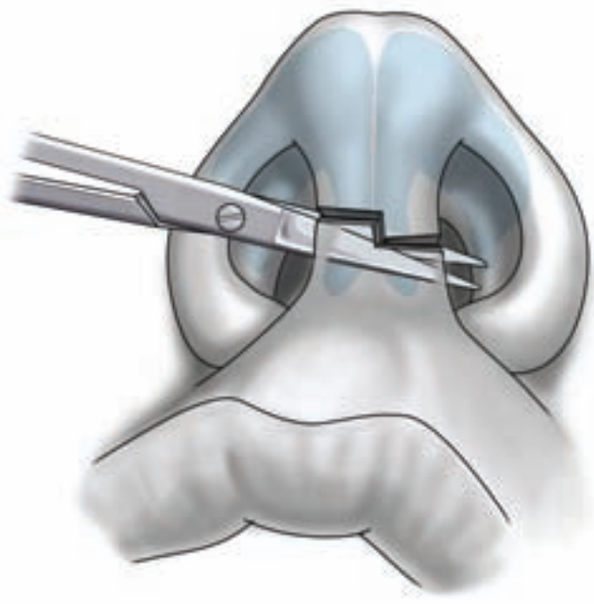

Figure 9-5. Fine iris scissor being passed under the skin and over the lower lateral cartilages.

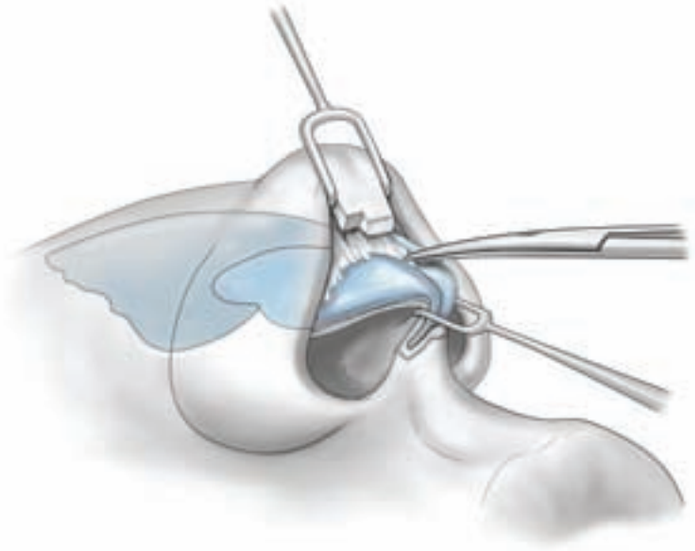

Figure 9-6. Elevation of the soft tissue off the perichondrium of the lower lateral cartilage.

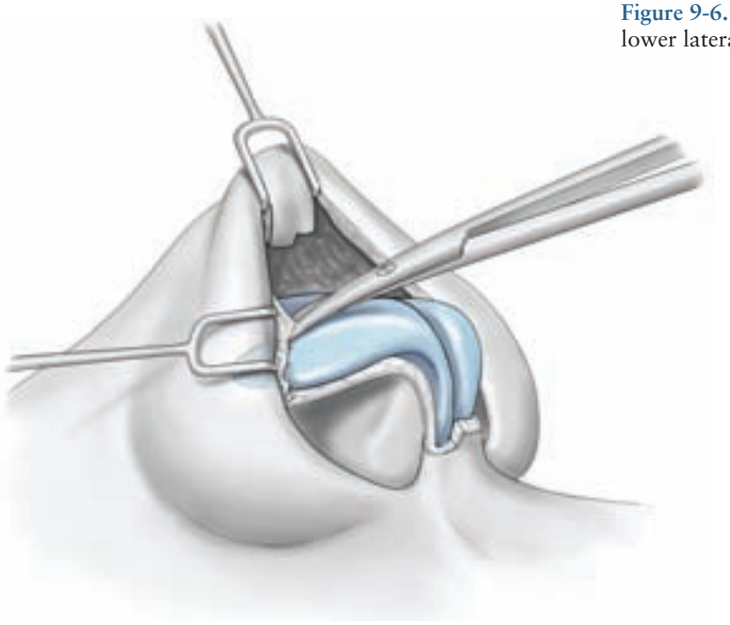

Figure 9-7. Exposure of the nasal tip above the lower lateral cartilages.

- *Closed ("endonasal") Technique*: The endonasal technique must address the same anatomical structures and areas of concern as the open technique. It must be able to expose the dorsum and nasal cartilages. It must also be able to expose and allow manipulation of the septal cartilage, either for reconstruction or harvest.
  - A transfixion incision is made through the nasal mucosa caudal to the nasal septum within the nasal vestibule (Figure 9-8). If no tip work is required, a hemi-transfixion incision may be used, which spares the opposite nasal mucosa and exposes only the septum.
  - The external portions of the nose are degloved with bilateral infra- and intercartilaginous incisions around the lateral crura of the lower lateral cartilages. These are then extended medially above the nasal valve and around the septal angle to meet the superior extent of the transfixion incision(s).
  - Through these incisions, the soft tissue over the dorsum and upper lateral cartilages may be dissected in a subperichondrial plane with a scissors (Figure 9-9). To separate the dorsum into its component parts, a scalpel may be used to divide the mucosa and upper lateral cartilages from the septum. Healing, however, may result in scarring and construction of the internal nasal valve. Therefore, preservation of the mucosa should be preferred. The dorsal structures once free can be taken down together or separated above the mucosa.
  - To address the nasal tip, the paired infracartilaginous, and intercartilaginous incisions create two bipedicle flaps of nasal mucosa and lower lateral cartilage (Figure 9-10). These may be delivered outside the skin envelope for better visualization and ease of manipulation. Portions of the lower lateral cartilages may be resected and sutures placed—both within each cartilage and between the two cartilages—to change the shape and form of the nasal tip (Figure 9-11).
  - An intracartilaginous incision may also be used to perform a closed reduction of the cephalic portions of the lower lateral cartilages. Using a 25-gauge needle and methylene blue ink, the proposed incision may be marked. The needle is passed through the skin of the alar rim and into the nostril 6 mm to 8 mm above the inferior border of the cartilage being careful to leave enough cartilage behind for rim support. With the needle through the skin, cartilage, and mucosa, it is dipped in ink and withdrawn from the nose. This is repeated along the alar rim until several points have been made along the mucosa. The proposed incision is then seen along the inner nasal mucosa and completed with a scalpel through mucosa and cartilage, stopping short of the skin. Retraction and protection may be afforded by placing a double hook on the edge of the alar rim and pressing the mucosa outwards with a gloved finger. Once through the cartilage along the proposed

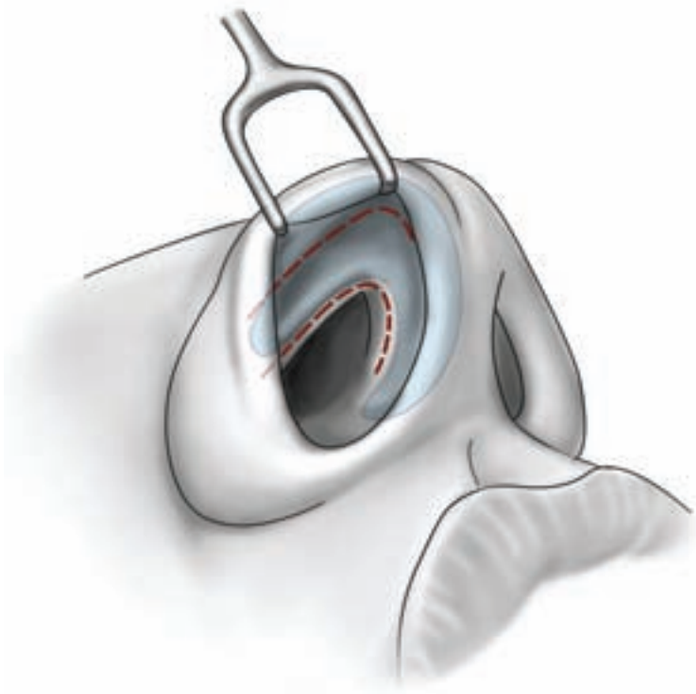

Figure 9-8. Infra - and intercartilaginous in airline.

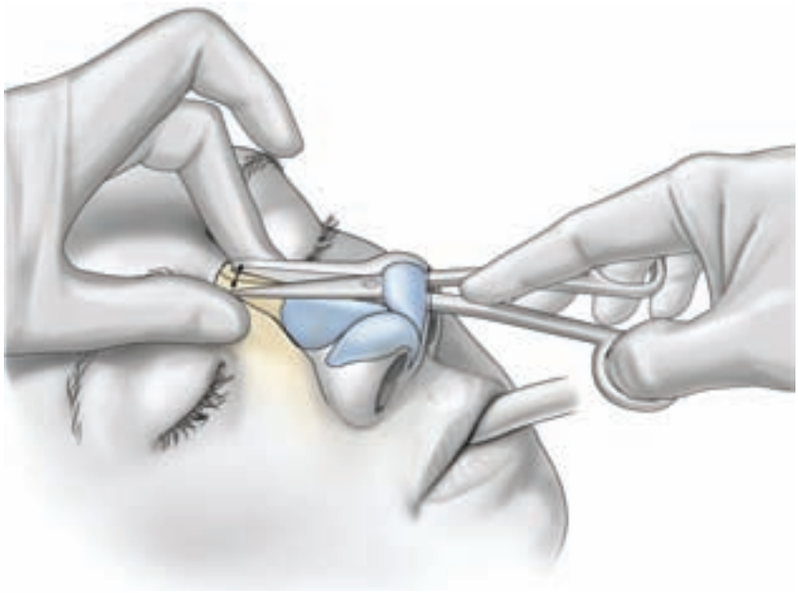

Figure 9-9. Dissection of the nasal dorsum using an endonasal (closed) technique.

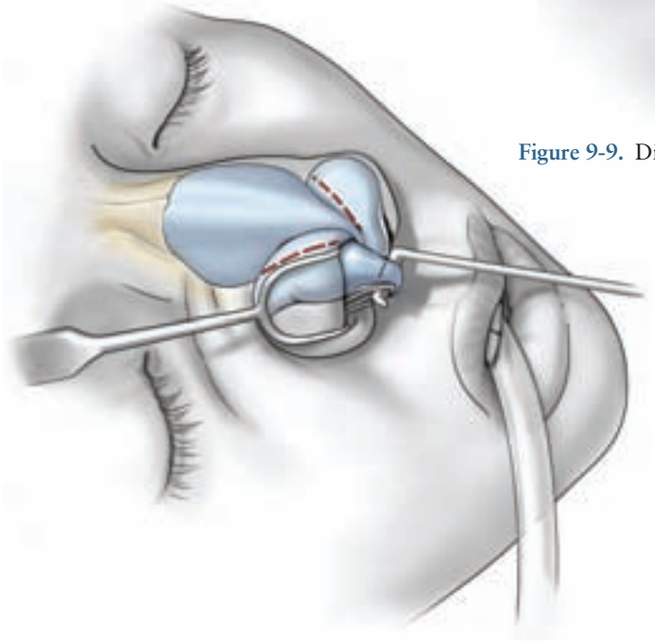

Figure 9-10. Delivery of a bipedicle flap of nasal mucosa and cartilage using an endonasal delivery technique.

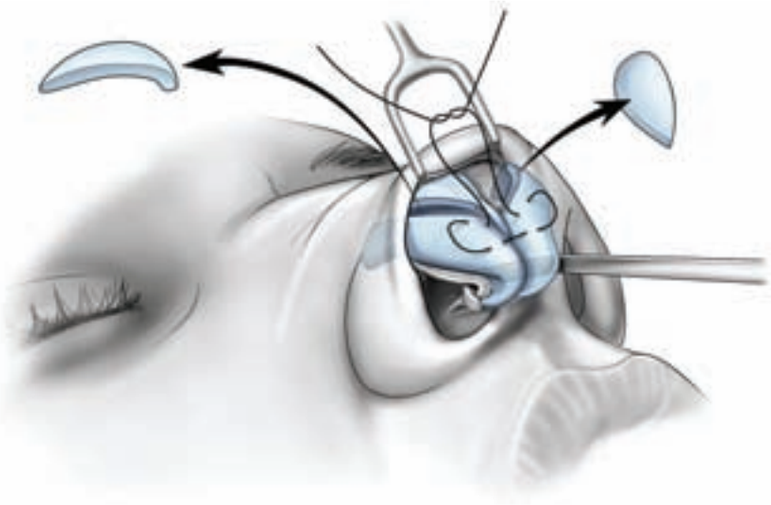

Figure 9-11. Cephalic trim and spanning sutures placed in the lower lateral cartilage using an endonasal delivery technique.

length of the incision, dissection may proceed superiorly above and below the more cephalic portion of cartilage to be resected.

- *Septal Exposure*: If the septum needs to be manipulated or harvested for graft material, it may be approached in one of several ways, depending on whether an open or closed approach is used.
  - *Open rhinoplasty septal harvest*:
    - *Caudal approach*: The caudal septum may be identified by separating the lower lateral cartilages during an open approach (Figure 9-12). After dividing the ligamentous structures between the medial and middle crura, retraction will expose the caudal portion of the septal cartilage. A light touch of the needle tip cautery (set at 10) will expose the cartilage beneath the perichondrium and aid in establishing a dry dissection plane. The septal mucosa is tightly adherent anteriorly and dissection should proceed cautiously (Figures 9-13 and 9-14). This approach also allows the surgeon access to suture the middle and medial cartilages to the caudal septum if repositioning of the tip is necessary. It is important to remember to reestablish tip support upon closing by using medial crural sutures and/or a columellar strut graft.
    - *Dorsal approach*: The septum may also be visualized from above by separating the upper lateral cartilages from their attachments to the septum (Figure 9-15). The dorsal septum is identified anterior to the upper lateral cartilages, and the dorsal edge is brushed with a needle tip cautery to create dry exposure to the cartilage. A subperichondrial dissection is now started with a sharp Cottle elevator just 3 mm to 4 mm below the dorsal edge of the septum. It is useful to use a Brown-Adson forceps to stabilize the flimsy septum while this dissection is initiated. Once this plane has been established, the Cottle is used to dissect in a posterior direction along the superior edge of the dorsal septum. This dissection is blind in that the Cottle is now tunneling directly beneath the upper lateral cartilages. Once these tunnels have been created bilaterally, a #15 blade is placed adjacent to the septum and just inferior to the upper lateral cartilage with the sharp edge facing in a superior direction. The blade is then elevated to separate the medial aspect of the upper lateral cartilage from the dorsal septum all the way to the nasal bones. At this point, the Cottle is used more posteriorly to establish wide subperichondrial undermining from the septum in the posterior two thirds of the septum where this dissection is relatively easy. Once the posterior two thirds of the septal mucosa has been elevated, the dissection proceeds carefully in an anterior direction to complete the dissection. As soon as there is enough room, a speculum can be placed on either side of the septum to spread the dissected mucosa from the septum facilitating exposure to the operative field.
    - Occasionally in an open rhinoplasty, the surgeon may opt to harvest septal cartilage in a manner similar to that described below for closed rhinoplasty. This instance could be a complex tip requiring direct exposure but not access to the entire dorsum.

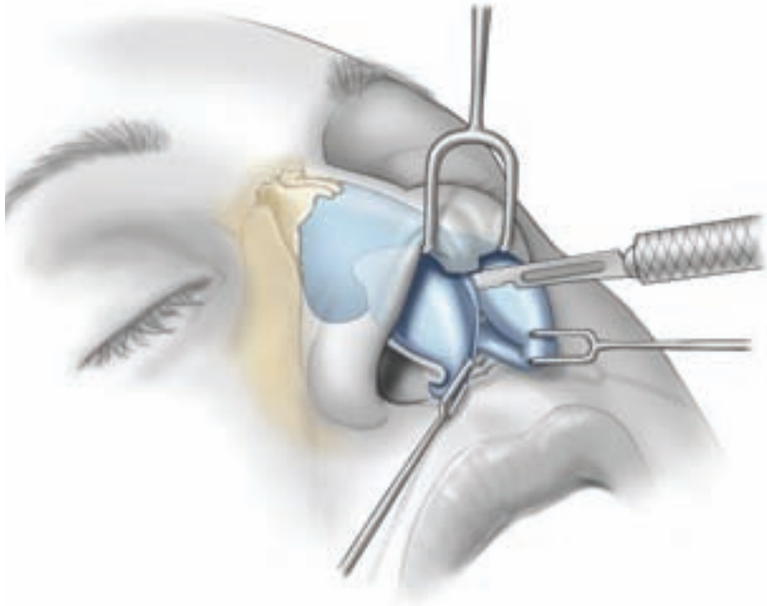

Figure 9-12. Opening the perichondrium over the septum.

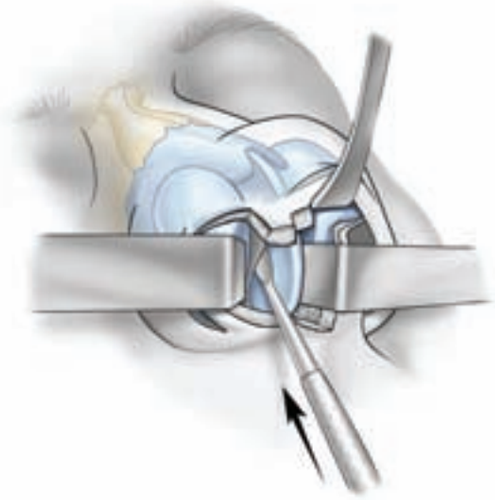

Figure 9-13. Dissection of septal mucosa from a caudal direction.

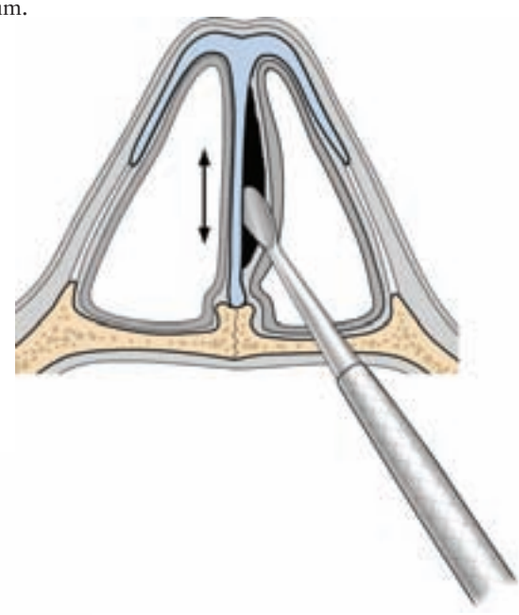

Figure 9-14. Caudal dissection of the septum in cross-section.

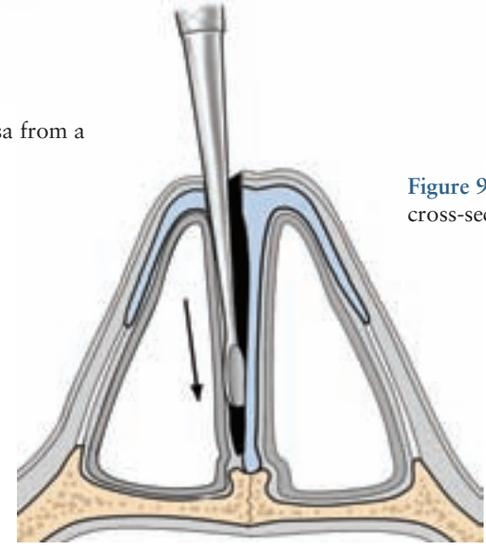

Figure 9-15. Dorsal dissection of the septum in cross-section.

- *Closed rhinoplasty septal harvest*:
  - If approached through the nostril, the mucosal incision is made at or posterior to the caudal edge (Figure 9-16). This is easily identified by deflecting the columella to the left. Once the mucosa is incised, a Freer or Cottle elevator is used to dissect off the mucosa on the right side of the septum. The dissection should proceed posteriorly to the perpendicular plate of the ethmoid, which will have a different feel than cartilage, and inferiorly to the vomer (Figure 9-17). Once the right side is dissected, the sharper end of the Freer or a Cottle elevator may be used to incise the septum in a vertical direction 1 cm off the caudal edge. The nasal mucosa on the contralateral left side should be preserved. The opposite side of the septal cartilage is then dissected in a similar fashion to isolate the septal cartilage. In difficult dissections, it may be impossible to avoid tears in the septal mucosa. As long as these are small and occur only on one side of the mucosa, a septal perforation should not develop. However, if tears occur on each side that are opposite of each other, a septal perforation will occur if the mucosal tears are not repaired. In this case, repairs can be made by suturing the torn mucosa to adjacent intact mucosa. With adequate mobilization of the mucosa, each blade of a nasal speculum may be placed between the septum and mucosa for exposure. Next, a desired graft of cartilage may be harvested. With the anterior incision already completed, the superior incision may be made with a scalpel scissors, or Ballenger blade (swivel knife) parallel to the nasal dorsum, cognizant that at least a 1-cm strut of cartilage be left for support. The posterior and inferior incisions are often better performed with the Ballenger blade. The graft is removed with a cartilage forceps. Once adequate cartilage has been harvested, one or more chromic mattress sutures should be placed across the septum to minimize development of a hematoma in the dead space between the sides of nasal mucosa.
  - It is important to remember that whenever septal cartilage is harvested, at least 1 cm of cartilage needs to remain intact at the caudal and dorsal borders to maintain nasal support. If a fracture of this cartilage occurs during the dissection, it needs to be sutured together to maintain its integrity. The PDS foil is useful to reinforce these repairs when they occur.
  - When a smaller volume of septal cartilage is required, a localized portion can be removed from the septum. In such instances, the entire graft can be visualized and harvested 1 cm below the dorsal edge with a scalpel, in lieu of the Ballinger swivel knife.
  - Posterior to the cartilaginous septum is the perpendicular plate of the ethmoid bone. This may or may not be deviated, but can serve as graft material. It is often strong enough to support warped septal cartilage. Prior to use, it should be perforated with a narrow caliber drill to permit ingrowth and minimize malposition and resorption. The perforations can also be used to hold sutures.
- *Pitfalls*:
  - The columellar skin comes quite close the medial footplates of the lower lateral cartilages. Care should be taken when using a scalpel in this area and making sure the scissor tips ride over the cartilage to prevent cartilage injury.
  - Non-Caucasian patients are prone to undesirable scarring across the columella. Synechiae and webbing may develop within the nasal vestibule along mucosal incisions. Precise skin closure is paramount.
  - Defatting of the soft tissues should not be relied upon to provide better definition of the nasal tip, and damage to the subdermal plexus by aggressive defatting should be avoided. In patients with thicker, more glabrous skin, removal of fat from the tip will often do little to provide better refinement.
- *Tips*:
  - Careful attention should be paid to the transition between the horizontal cutaneous portion of the incision and the vertical mucosal portion of the incision within the columella. This should be a true right angle, marked preoperatively and reconstructed meticulously at the conclusion of the procedure.
  - A wide double-hook retractor should be used to expose the intranasal portion of the incision.
  - The area at the soft triangle is the most difficult to visualize. By using a finger to evert this area with a skin hook, exposure is optimized.
  - It may be easiest to dissect from medial and lateral to the region of the soft triangle. Then the soft triangle is everted and the two edges of the dissection are joined under direct vision.
  - The posterior two thirds of the septum dissects the easiest and therefore, is a good place to start this dissection.
  - Always perform the dorsal reduction before the septoplasty to ensure 1 cm of septal cartilage will be left at the dorsal and caudal borders.

Figure 9-16. Hemi-transfixion incision.

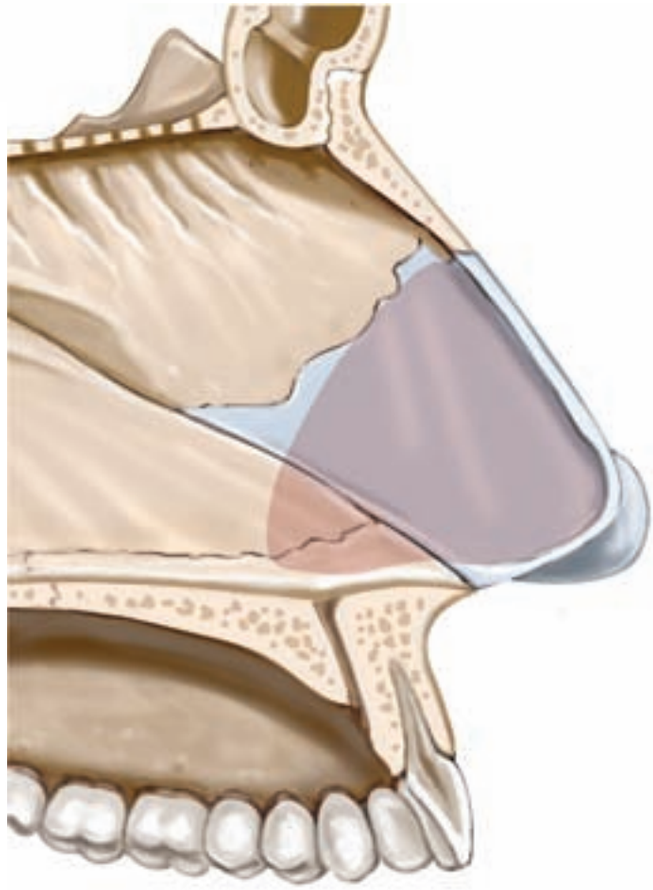

Figure 9-17. Extent of septal mucosal dissection.