

Chapter 5. Dorsal Hump Deformity

DEFINITION

The dorsal hump is typically noticed from the lateral view but requires analysis from all views (Figure 15-1). In general, a desirable dorsal profile for a male patient should be a fairly straight line from the radix to the tip. In women, a slight depression (about 2 mm) below this line with a distal depression before the tip (“supratip break”) may be more appropriate. At its most superior aspect, the dorsum is made up of the paired nasal bones. More caudally, the dorsum is has a “T” shape composed of the midline septum and paired upper lateral cartilages. A dorsal hump may be due to excess nasal bone height, excess septal cartilage height, or most likely a combination of the two.

INDICATIONS

Patients with a “hump” or over-projecting dorsum are candidates for dorsal reduction. This may be performed as an isolated procedure or in conjunction with other maneuvers to reshape the nose.

It is important to assess the position of the radix preoperatively. A nose with an apparent “dorsal hump” that is actually due to a low radix may be better managed with dorsal augmentation between the hump and the radix to raise the radix to a more ideal position. The uneducated observer will miss the low position of the radix and reduce the dorsal lump in an attempt to better define the nasal tip. Dorsal reduction in this setting would severely compromise nasal aesthetics and be contraindicated.

MARKINGS

Some surgeons choose to mark the planned amount of reduction on the skin over the dorsum and refer to it as they incrementally reduce the bones and cartilages. The

amount of reduction is based on the preoperative examination and 1:1 photographs. For patients undergoing an open approach, the incision across the columella may be marked preoperatively.

APPROACH

The dorsum may be approached via an open or closed technique depending on the surgeon’s preference. However, isolated reduction of the dorsum will likely not require an open approach. With a closed approach, the dorsum may be exposed via an intercartilaginous incision. If an open approach is chosen, the columellar incision is made and carried around each nostril into bilateral infracartilaginous incisions inside the alar rim.

Once above the medial crura of the lower lateral cartilages, the tissues in the midline above the dorsal septum and nasal bones are dissected with scissors. It is important to establish a dissection plane just above the periosteum and perichondrium as the dissection proceeds. This helps to keep a dry field, maximizes soft issue over the dorsum to hide small irregularities, and minimizes tissue between the dissection and the dorsum. Inferiorly, the dorsal septum is identified and is mobile below its attachments to the upper lateral cartilage.

A small amount of lateral dissection is important to feather or contour the dorsum and prevent a flattened appearance. However, too aggressive lateral dissection should be avoided if nasal bone osteotomies are to be performed. Some soft tissue attachment should be left on the bones to hold them in place following infraction. A freely dissected nasal bone risks malposition after fracture. If dorsal resection is excessive, placement of spreader grafts (either free or folded from the medial edges of the upper lateral cartilages) should be considered.

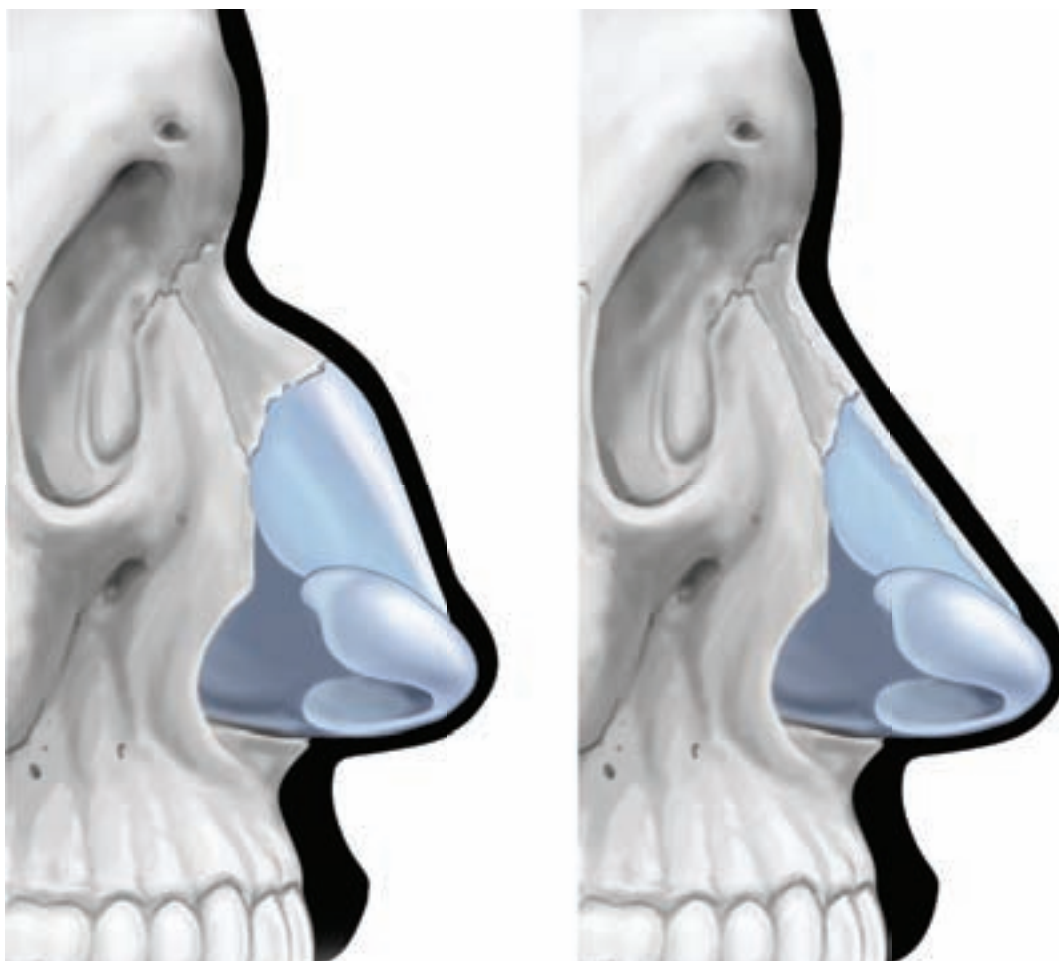


Figure 15-1. Dorsal hump deformity and its correction.

TECHNIQUE

Reduction of the dorsum is performed by separating it into its component parts, especially at the cartilaginous level where the upper lateral cartilages rest on the dorsal septum. Reduction of the bone is usually performed independent of the cartilage and may either precede or follow it.

The method for bony reduction depends on the amount of bone that will be removed (Figure 15-2). For smaller reductions, the bony dorsum may be taken down with rasps (Figure 15-3). A guarded osteotome is used when a larger amount of bone is to be removed (Figure 15-4). Care should be taken that the osteotome passes relatively superficially and does not create a divot in the radix. After the osteotome is used, rasps are used to smooth the dorsal contour. In addition to reducing and

smoothing the central dorsum, the rasps should be oriented obliquely along the lateral edges to refine the dorsal aesthetic lines.

As the dorsum is incrementally resected, the skin should be frequently re-draped to confirm the adequacy of the reduction. A single suture may be used to temporarily close the columellar incision to accurately redrape the soft tissue envelope. A moistened finger is an excellent means of detecting subtle irregularities that may not be seen in the face of edema. Intraoperatively, the tip should project above the height of the dorsum to give a subtle supratip break. In thicker-skinned patients, this distance should be slightly greater. Once reduced, the dorsum should be inspected and palpated to identify the presence of an open roof. If present, osteotomy of the nasal bones must be performed to close the roof and re-create the pyramidal shape, which is addressed below.



Figure 15-2. Planned reduction of the bony dorsum.

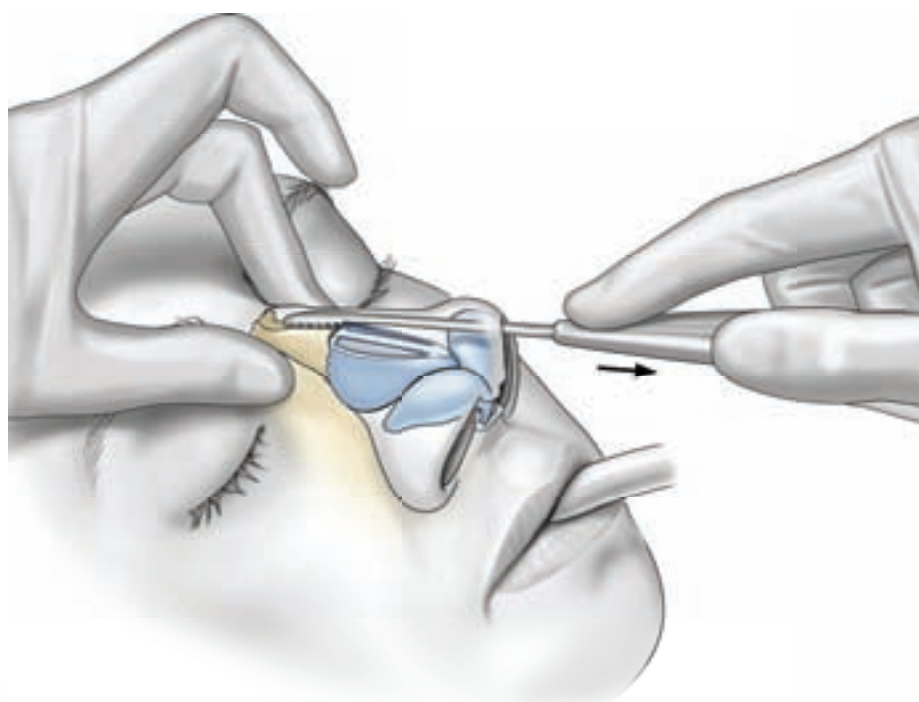


Figure 15-3. Reduction of the bony dorsum with a rasp. Note that the cartilaginous dorsum has already been reduced.

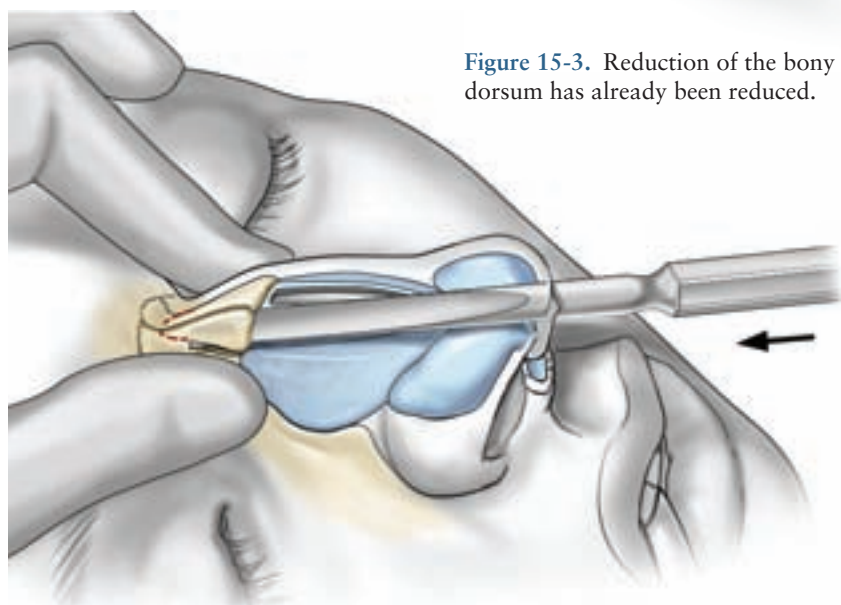


Figure 15-4. Reduction of the bony dorsum with an osteotome.

Once the bony dorsum has been addressed, a needle tip Bovie on a low setting or scalpel blade can be used to score the more inferior dorsal surface to identify a subperichondrial plane over the septum (Figure 15-5). The dorsal edge of the septum is gently grasped with a Brown-Adson forceps while a sharp Cottle elevator is used to start a subperichondrial dissection from an anteroposterior direction along the dorsal aspect of the septum. This can be tunneled proximally under the upper lateral cartilages, creating a subperichondrial tunnel (Figure 15-6). Once the tunnel has been established on both sides of the septum, a #15 scalpel blade can be placed adjacent to the septum, with the sharp edge facing upwards, and gently lifted to separate the upper lateral cartilages from the septum.^{1,2} Once separated, the lateral cartilages will fall away from the midline septum.

Following separation of the caudal dorsum into the paired upper lateral cartilages and dorsal septum, reduction of the septal component is performed with either a scalpel or sharp scissors (Figure 15-7). For either, a Brown-Adson forceps can be used to grasp the more inferior septum for stability. If a scalpel is chosen, care must be taken not to injure the surrounding skin envelope. A #11 blade with the tip broken off is easy to use and the blunted tip minimizes the chance of inadvertent injury.

The medial edges of the upper lateral cartilages should be reduced separately to prevent over-resection. It is important to note that equal or less reduction of the upper

lateral cartilages with respect to the septum should be performed so as to create a natural curvature of the dorsum. Excessive resection of the upper lateral cartilage will result in an inverted-V deformity. This occurs not infrequently because as the assistant pulls on the dorsal skin with a retractor to create space for adequate visualization, the freed upper lateral cartilages are pulled superiorly and anteriorly into a more artificial position (Figure 15-8). Resection of what may seem conservative may actually be excessive with the cartilage in this position. Excessive resection leads to a functional internal valve collapse and the unnatural inverted-V deformity. Following appropriate trimming, the upper lateral cartilages should be sutured back to the septal cartilage to reestablish structure and support. The subperiosteal pocket should then be irrigated with saline to evacuate any remaining fragments of bone and/or cartilage. The columellar incision is closed temporarily with a single subcutaneous suture to gauge the smoothness of the dorsum again with a moistened finger.

POSTOPERATIVE MANAGEMENT

Strips of ¼-in paper tape or surgical strips may be used to minimize the development of edema and minimize dead space after the dorsum has been reduced. An external splint may or may not be used.

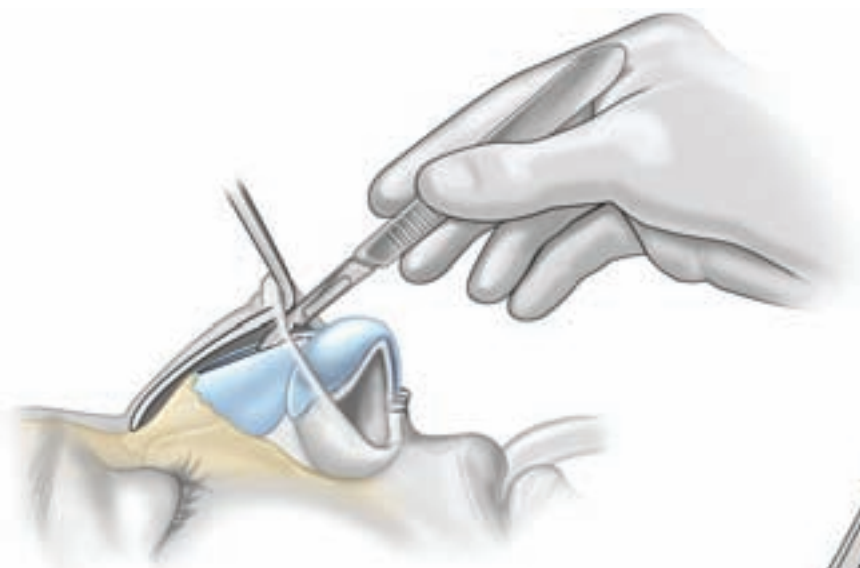


Figure 15-5. Separation of the cartilaginous dorsum into its component parts.

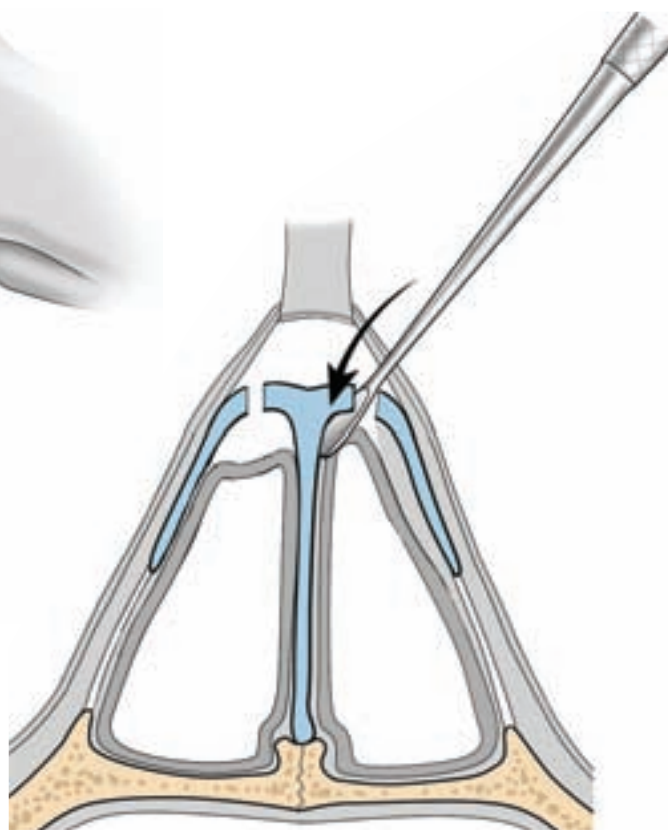


Figure 15-6. Creation of bilateral submucosal tunnel.

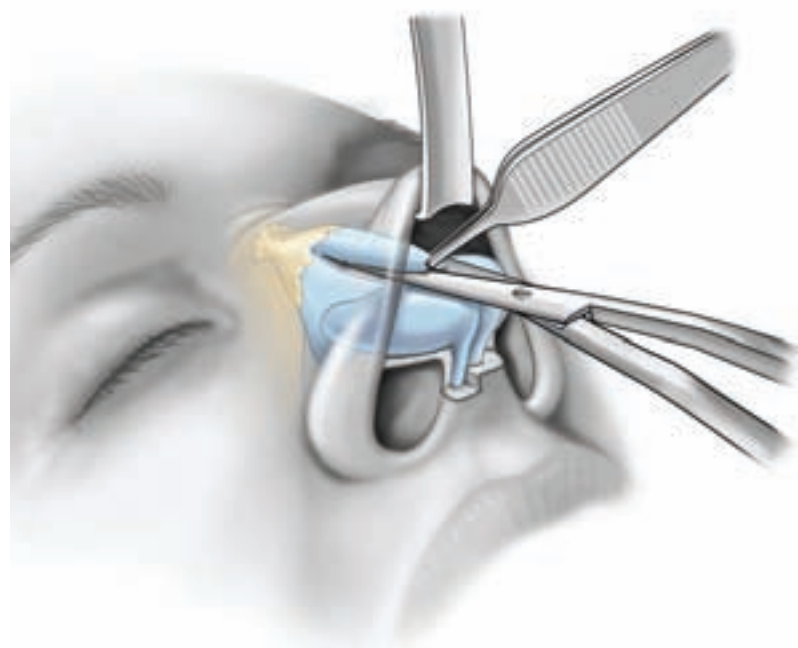


Figure 15-7. Scissor removal of the cartilaginous dorsum.

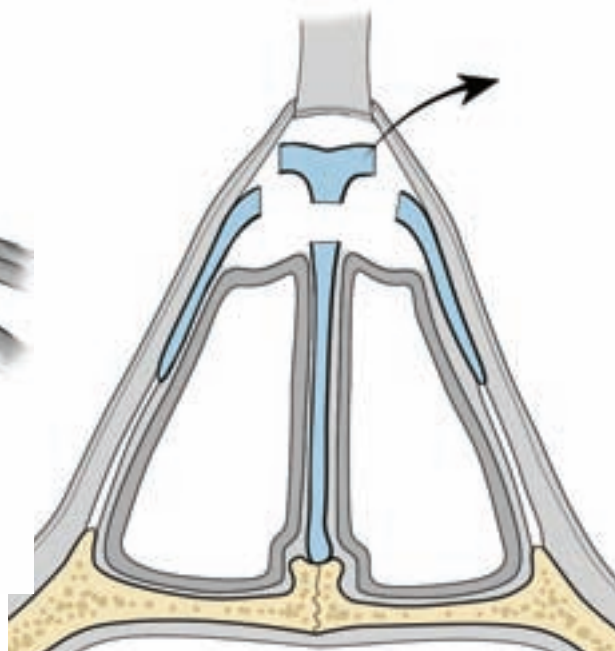


Figure 15-8. Removal of the cartilaginous dorsum and the upper lateral cartilages pulled into a falsely superior position due to the retractor.

PITFALLS

Reduction of the nasal dorsum may result in obvious complications, notably irregularity, overcorrection, or under-correction.

- Under-reduction results in a relative persistence of the deformity. Lateral examination of the dorsum during reduction will minimize the incidence of leaving the dorsum under-reduced. Under-resection is treated by additional reduction of either bone, cartilage, or both.
- Upper lateral cartilage injury/avulsion can occur with aggressive rasping along a straight line. This potential problem can be minimized by orienting the rasp in a slightly more oblique angle.
- Open roof deformity results from reduction of enough bone to expose the three components of the bony pyramid. An open roof deformity is best managed with lateral osteotomy of the nasal bones to close the opening. If too much dorsal bone is removed, a portion of it can also be replaced as a graft to cover the roof and more naturally round off the dorsum.
- An inverted-V deformity results from collapse at the level of the internal nasal valve. The stability of the upper cartilaginous vault depends not only on bony vault width but also on the height and width of the septum and upper lateral cartilages that comprise the roof.^{4,5} Resection of that portion of the roof that contains the confluence of all three structures destabilizes the position of the upper lateral cartilages, allowing them to slide medially. This compromises airflow at the internal valves. The reduction in airflow may be avoided by recognition of the deformity and placement of dorsal and spreader grafts to maintain support. Conservative reduction of the upper lateral cartilage is advised.
- *Supratip deformity*: A supratip deformity, also known as a Pollybeak deformity, is postoperative fullness of the dorsum just above to the tip. The etiologies of the supratip deformity are over-resection of the caudal dorsal septum, inadequate resection of the dorsal caudal septum, inadequate resection of cephalic lower lateral cartilages, and/or inadequate tip projection. Over-resection of the septum leads to a dead space that fills with blood and evolves into fibrous tissue creating undesired fullness in the supratip region. In order to minimize the dead space, taping is performed under the splint postoperatively. Additionally, a supratip suture can be placed. During the operation, the skin is temporarily closed and the region of the supratip break is marked with methylene blue through the skin to the underlying cartilage. The nose is opened again and a suture is placed from the deep dermis to the underlying cartilage where indicated by the methylene blue staining. This suture helps in minimizing dead space. An angiocatheter is also used at the end of the case to irrigate any residual blood prior to final splint application. Inadequate cephalic trim of the lower lateral cartilages will cause supratip fullness and is treated by further resection. If a supratip deformity is noted postoperatively, initial treatment during the first 4 weeks is taping. If there is no response by 6 to 8 weeks postoperatively, deep steroid injections can be used (0.2 cc to 0.4 cc of 20 mg/cc triamcinolone). If after 1 year there is a persistent deformity, surgical correction can be performed.³
- Inadequate tip projection results in a tip that is too low giving the illusion of a supratip deformity, yet when the tip is placed at the ideal position, the supratip deformity is corrected.
- Dorsal hump reduction will make the nose look wider and potentially increase cephalic tip rotation. Nasal osteotomies should be considered when dorsal hump reduction is performed.
- *Saddle nose deformity*: Over-reduction of the dorsum will result in low dorsal height and a drastically concave appearance on lateral view. This is commonly referred to as a “saddle nose deformity.” It might also produce an open roof deformity at the confluence of the nasal bones and septum. Reducing the dorsum in small increments and checking the height after each attempt is the best method to prevent excessive resection. This is best done with a rasp rather than an osteotome, especially as one is getting comfortable with rhinoplasty surgery. If over-resection is noted at the time of the primary rhinoplasty, correction involves replacement of a portion of the resected tissue back onto the dorsum with either internal or external stabilization. Tape over the skin with a moldable splint will allow the tissue to heal back to the dorsum. Secondary reconstruction of the saddle nose deformity involves the addition of replacement material to augment the dorsum (see dorsal augmentation, chapter 16). Autogenous choices include cartilage, bone, or fascia. Sources of bone include the ribs, calvarium, or iliac crest. Sources of cartilage include the ribs, ear, or nasal septum. The replacement material should be positioned from the superior-most point of recession to the supratip area. The middle crura of the lower lateral cartilages should project above the level of the material to create a smooth transition and a slight supratip break.
- *Dimensional interplay*: Reduction of the dorsum, affects other regions of the nose that must be considered. The dorsal aesthetic lines may be altered requiring spreader grafts to restore the dorsal nasal roof. Reduction of the nasal pyramid may create a nasal trapezoid giving the dorsum a wider appearance requiring nasal osteotomies to narrow for aesthetics or to close an open roof. If the hump has been removed and the dorsum narrowed, there is a good chance that the tip will now need to be refined and narrowed to bring it back into harmony with the new dimensions of the dorsum. Dorsal reduction may also affect the length of the nose, position of the columella, contour of the

nostrils, size of the alar base, and the internal nasal valves.^{6,7,8}

TIPS

- The presence of a low radix should be identified preoperatively. This will minimize the chance of further reducing an already low dorsum. In such patients, the dorsum should be raised either segmentally or entirely and the amount of tip reduction should be limited.⁶
- To minimize the possibility of internal nasal valve collapse, the upper lateral cartilages should be maximally preserved.
- When combining a dorsal reduction with a septoplasty, the dorsal reduction should be performed first. This assures that 1 cm of dorsal and caudal septal cartilage will be preserved.
- When sufficient upper lateral cartilage is present at its medial edge, it can be reflected inward and serve as an autospreader graft to minimize the chance of internal valve collapse.
- Injection of corticosteroids is not indicated for any type of supratip deformity for several months after the primary rhinoplasty.

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