

Rhinoplasty in the Aging Patient



Oh strong ridged and deeply hollowed nose of mine!

William Carlos Williams, *Selected Poems*

The older rhinoplasty patient requires special consideration.^{4,7-9} Although many of the techniques discussed elsewhere in this text are used, they may need to be modified to account for the special needs of these patients. In addition, rhinoplasty may represent only one of the facial rejuvenation procedures being considered. This chapter will first discuss some of the special psychological and medical needs of the aging patient, then describe the anatomy of the aging nose, and finally present some general approaches to rhinoplasty in the older patient, illustrated with specific cases.

As with all cosmetic surgery patients, it is important to carefully question the older rhinoplasty patient about his or her motivation and aesthetic goals. Many have had longstanding dissatisfaction with their nose for fairly straightforward reasons and have simply decided that they now have the time and money to proceed with correction. There is no need to be overly concerned with this type of patient any more than one would be with a younger patient in similar circumstances. These patients do, however, need to be counseled because they have developed a self-image over many years with their current nose and should be prepared for a change in that image. Patients desiring changes mainly in the

aspects of their nasal appearance that have been brought on by aging are also good psychological candidates for surgery and are really no different from patients seeking consultation for blepharoplasty or rhytidoplasty. An older patient, however, who has only recently become dissatisfied with his or her nose and decided to change it should be very carefully evaluated. If the patient also is undergoing some type of life change, such as divorce or unwelcome retirement, the surgeon should be quite careful in recommending significant changes.

A thorough medical evaluation is even more important in this age group than in younger patients. Many or even most older rhinoplasty patients will have some relatively minor medical problems with hypertension, atherosclerosis, peripheral vascular disease, pulmonary disease, and so forth. Although these problems may be well-controlled, they could easily be exacerbated with the stress of surgery and, in particular, with the use of catecholamines in the local anesthetic. When the older patient's nose is packed, there is a significant drop in their PO₂ level, which may exacerbate underlying cardiac disease. To prevent hypoxia, these patients should be given supplemental oxygen, and the nasal packing should be removed as soon as possible. Finally, aging patients are more prone to postoperative problems, such as epistaxis, and these same problems have the potential to be more severe.

In addition to a complete preoperative medical eval-

uation, careful consideration must be given to the type of anesthesia used. Although the procedures can be done under either local anesthesia with sedation or general anesthesia, monitoring by an anesthesiologist is recommended for all but the most minor nasal procedures in the elderly patient. Care is taken to keep local anesthetic injection to a minimum in patients with underlying cardiovascular disease and to use a reasonably dilute solution of epinephrine (such as 1:200,000).

The aesthetic goals for rhinoplasty in the older patient are subtly different from those for the younger patient. Many older patients do not want to look dramatically different and, in particular, do not want the dorsum

too concave, the tip too rotated, or the nasal pyramid overly narrowed. The differences in aesthetic goals between a younger and an older person should be pointed out to patients and discussed with them preoperatively.

ANATOMY

With age, there are changes in the position of the nasal tip, in the quality of the nasal cartilage and bone, and in the thickness and elasticity of the skin, as well as associated changes in the surrounding facial structures.



FIGURE 21-1. A sketch of opposing youthful and aging profiles by Leonardo da Vinci.

Leonardo da Vinci's drawing of facing heads sharply contrasts the appearances of the aged and youthful nose (Fig. 21-1).

The normal tip-support mechanisms have been well-described by Janeke and Wright.¹ They consist of the fibrous connections between the upper and lower lateral cartilages; the sesamoid complex, which attaches the lateral crura to the piriform aperture; the fibrous connections between the domes of the lower lateral cartilages; and the attachments of the feet of the medial crura to the caudal septum (Fig. 21-2). Unfortunately, all of these tip-support mechanisms weaken with age, resulting in the well-documented descent of the nasal tip over the years.

Krmpotic-Nemanic and co-workers studied the anatomy and histology of the aging nose in cadavers.⁶ They divided the nose into three parts: the fixed upper part (nasal bones); the semi-mobile midportion (upper lateral cartilages and septum); and the lower mobile part (lower lateral cartilages). In young adults, they found a 1:1:1 ratio between these three parts of the nose and a nasolabial angle greater than 90 degrees. With age, the more mobile and semi-mobile parts of the nose became longer and more prominent when compared with the fixed upper part, and the nasolabial angle became less than 90 degrees. Their dissections showed that the alar cartilages, which were convex in children and young adults, became flattened and fragmented in older people. There was a loss of attachment between the upper

lateral cartilages and the lower lateral cartilages, with fragmentation of the attachments in the scroll area. Cartilage in older patients can become firmer and in some cases ossified. The nasal bones themselves are thinner and more brittle. The skin of the nasal dorsum becomes thinner and less elastic. This older skin, however, heals in a less aggressive manner and, therefore, results in finer scars.

In addition to the changes in the nose itself with age, there are associated changes in surrounding facial areas. There is some loss of bone in the premaxillary area, which is much exacerbated if there is also loss of dentition. As individuals become older, there is usually a loss of subcutaneous fat, particularly in the cheek areas, which can cause the nose to appear more prominent. In facial rejuvenation surgery, one would consider changes in these associated facial areas as well as in the nose itself.

GENERAL PRINCIPLES

Most of the tip techniques discussed elsewhere in this book are applicable to the aging nose but must be individualized. An older woman with thin skin would not be a candidate for a dome-splitting (Goldman) technique. Similarly, a tip graft in such an extremely thin-skinned person would not be a good choice, unless it were

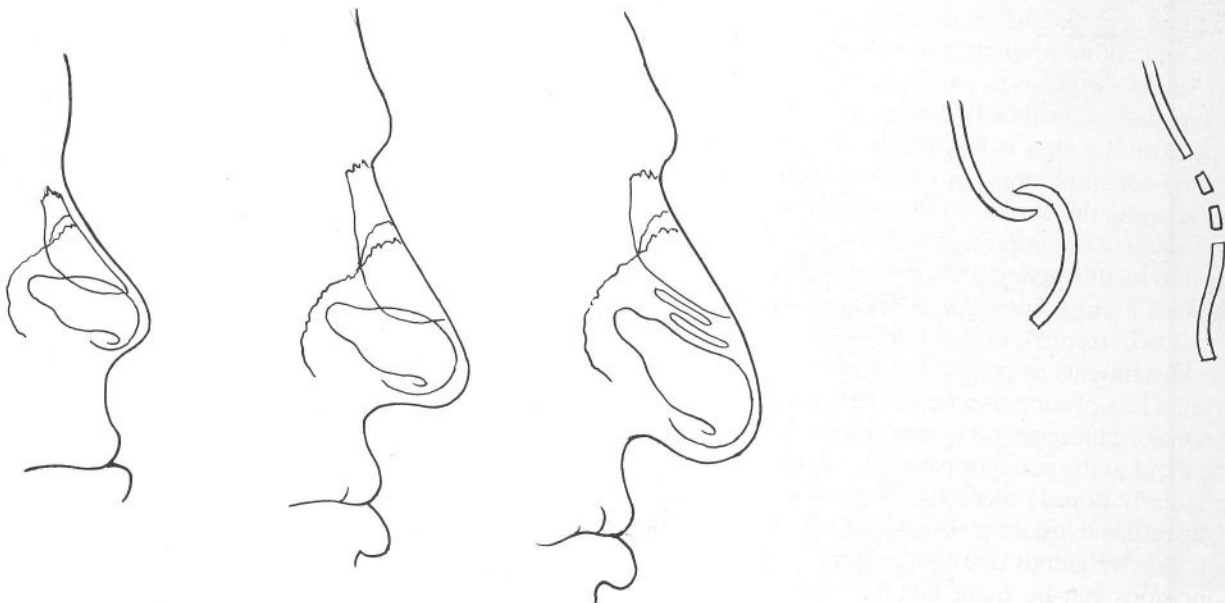


FIGURE 21-2. The normal support mechanisms of the nose are lost with age.

meticulously sculpted or morselized. On the other hand, there are many older patients in whom either of these techniques would be quite effective. A patient with extremely thickened, firm, lower lateral cartilages is not a good candidate for using one of the suture techniques to reposition the domes. In the older patient, the surgeon must carefully evaluate the skin thickness and elasticity and the quality of the underlying bony framework to select the appropriate technique.

No matter which method is used, it is important to preserve the tip support. The tip-support mechanisms discussed previously should be reconstituted on the operating table whenever possible. A cartilaginous strut between the feet of the medial crura is used in the majority of these patients. When septoplasty is required, a conservative approach is recommended. Except when cartilage or bone is needed elsewhere for reconstruction, they are almost always repositioned rather than resected. The mucosa of these older patients is thinner and dryer, and it is especially important to avoid the risk of septal perforation.

The open approach provides superior visualization for precise graft placement and fixation. Tip grafts sutured to the caudal edge of the medial crura using the open approach can provide significant tip projection, if needed. The columellar strut graft placed in a pocket between the medial crura can be sutured into place with one or two 6-0 sutures (we currently use PDS). Great care should be taken when placing these sutures because asymmetric placement can result in tip asymmetry. The columellar strut provides support and projection, which aids in correcting the ptotic tip deformity. When appropriate, the domes are sutured together or attached with a tip graft, and the attachments of the lower lateral cartilages to the septum and upper lateral cartilages are reconstituted with sutures.

Because the skin is less elastic, the surgeon must perform wide undermining to allow the skin to redrape after changing the shape of the underlying framework. This is particularly important in the supra-tip area. The exception to this generalization in the older patient is that when a large bony dorsal hump is removed (an unusual occurrence), one should leave as many soft-tissue attachments as possible over the nasal bones to prevent a loss of support after osteotomies.

A major difference between rhinoplasty in the older patient and in the younger patient is the use of external (particularly dorsal) incisions. Because older patients usually heal with minimal scarring and because the non-elastic skin frequently does not redrape as desired, dorsal incisions can be quite helpful. Standard alar-base reduction and external rhinoplasty incisions, incisions across the dorsum to help elevate the nasal tip (Fig.

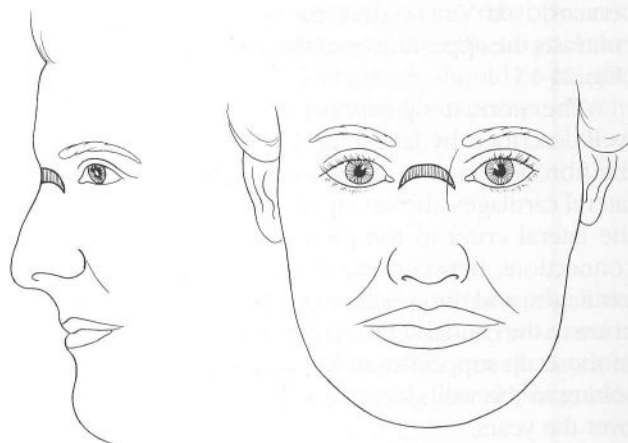


FIGURE 21-3. Excision of dorsal skin to help elevate the nasal tip in the aging nose.

21-3), and direct excision of excessive skin in the supra-tip area will usually heal well in the older patient (Fig. 21-4). These external incisions are rarely useful by themselves but are good adjuncts to a more complete rhinoplasty procedure. Some specific cases will be described later.

Dorsal hump removal, particularly of the bony dorsum, is performed in a very conservative manner in the older patient. Frequently, by elevating the tip, one can avoid any removal of the hump and obtain a good aesthetic result. In some cases, the only dorsal irregularity that remains after projecting the tip is a deep convexity in the region of the nasion. A small morselized cartilage graft can be placed in this region to correct the defect. This maneuver is performed to help camouflage a dorsal hump, not to blunt or obliterate the nasofrontal angle.

With ptosis of the lower third of the aging nose, several other deformities frequently present. The columella usually hangs, distorting the youthful aesthetic relationship between the columella and alar rim. The columellar deformity often is most prominent anteri-



FIGURE 21-4. Direct excision of excessive skin in the supra-tip area.

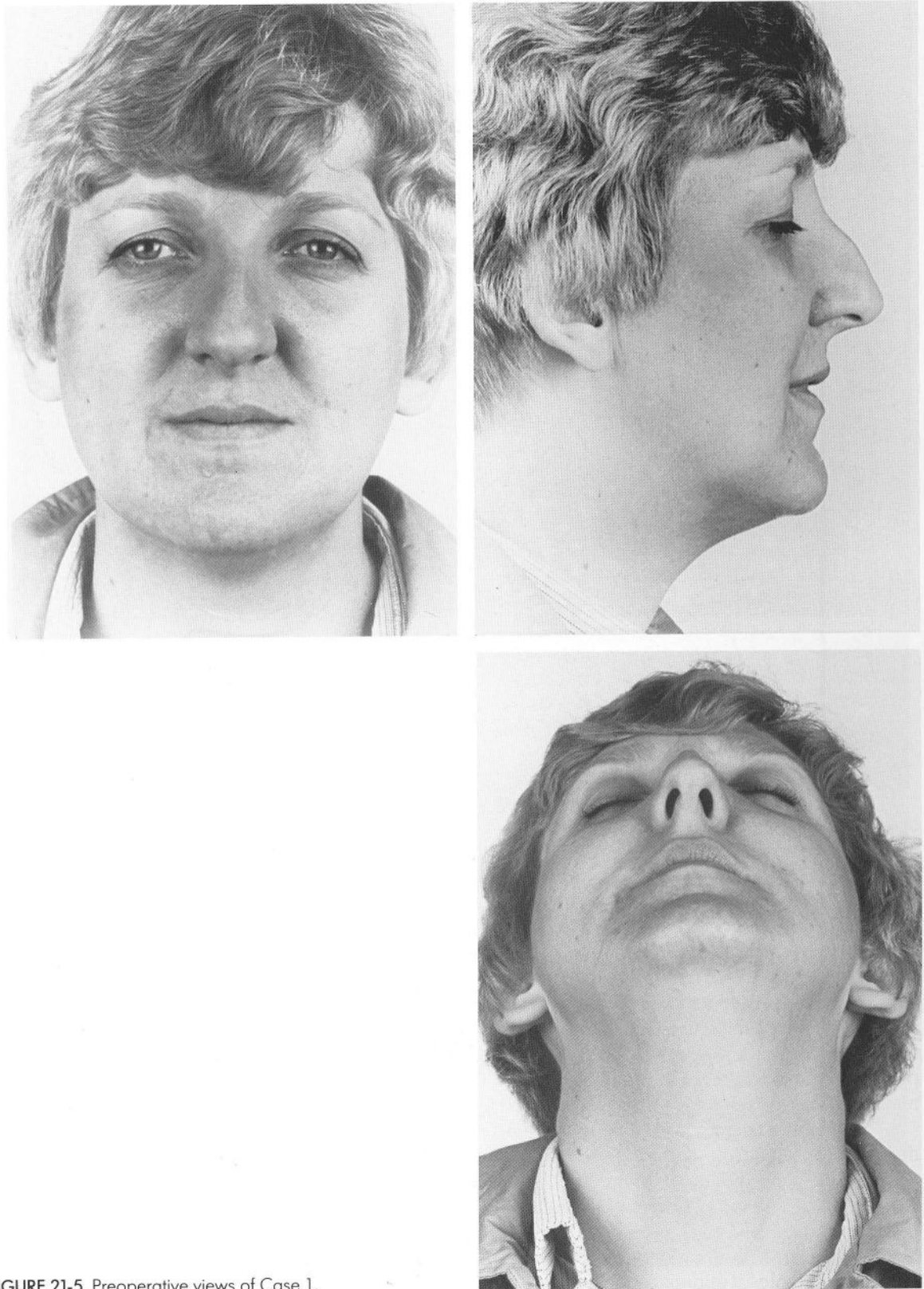


FIGURE 21-5. Preoperative views of Case 1.

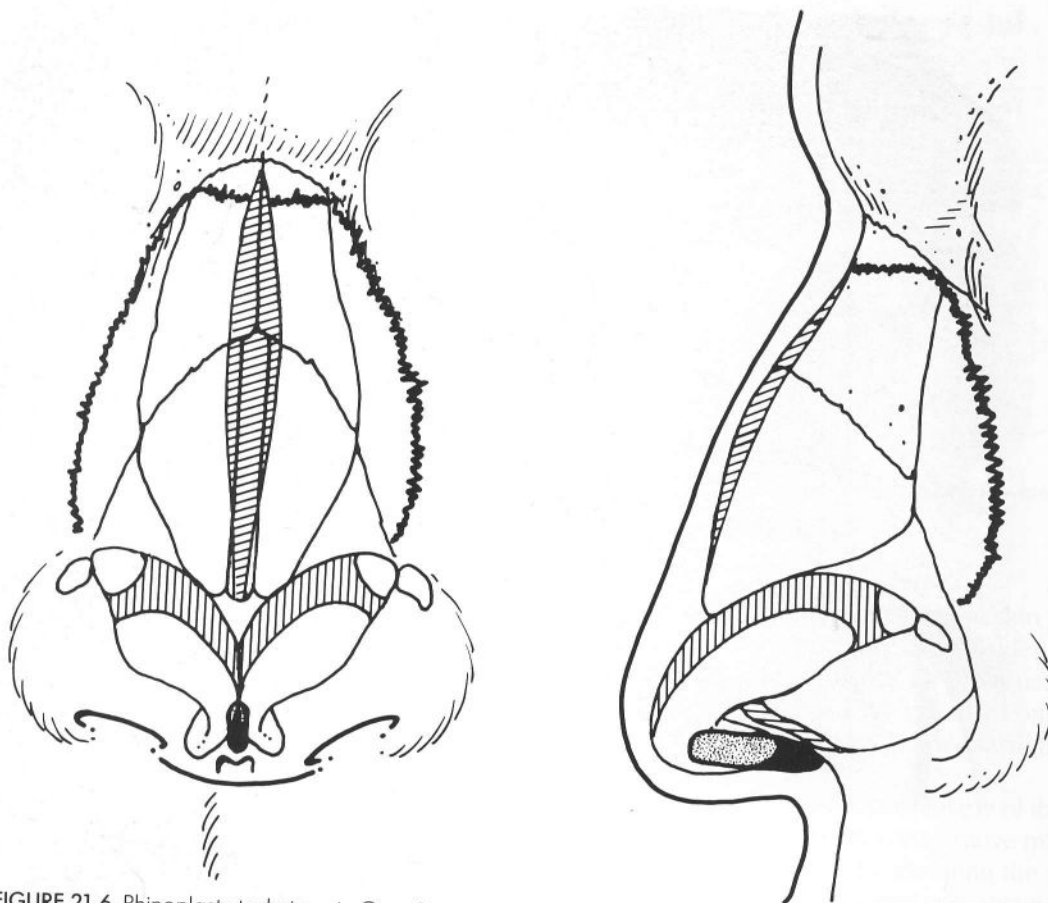


FIGURE 21-6. Rhinoplasty technique in Case 1.

only. This defect becomes even more pronounced with flaring of the nostrils, which is associated with ptosis of the nasal tip. Correction of the hanging columella deformity requires rotation and projection of the lower third of the nose and, frequently, resection of caudal septum with excess vestibular skin. If necessary, caudal medial crura can be trimmed. To help stabilize the lower third of the nose and preserve the ala-columella relationship, a mattress suture can be used to affix the caudal septum to the medial crura. After the nasal tip is rotated and projected, the nostril flare is usually decreased (which may eliminate the need for alar-base reduction).

Certainly, a slightly prominent dorsum is aesthetically pleasing in this age group. When it is necessary to remove significant amounts of bony dorsum, a rasp works well and helps avoid comminution of the nasal bones. If a relatively small amount of dorsal hump has been removed, it is not always necessary to perform lateral osteotomies; a minimal open dorsum can be camouflaged with a small amount of morselized cartilage. This avoids overnarrowing the bony pyramid.

When lateral osteotomies are needed, they should be performed cleanly with a sharp, fine osteotome. A large osteotome (*eg*, Parkes) used to infracture nasal bones can work well on young patients but too often leads to comminuted nasal bones in older patients. A small (2 mm or 3 mm) osteotome used to create about three perforations along the nasofacial groove will usually allow a clean osteotomy, with preservation of soft tissue and periosteal support. These osteotomies can quite easily be done through the piriform aperture, but if desired, an external stab incision in the skin overlying the proposed osteotomy site (midway between the medial canthus and piriform aperture) is acceptable. Occasionally, it is helpful to make a second small stab incision midway between the medial canthus and dorsum to create two or three perforations and complete the osteotomy.

Dressings used in older patients are similar to those used in younger patients, except they are even more important. Casting material is not used unless osteoto-

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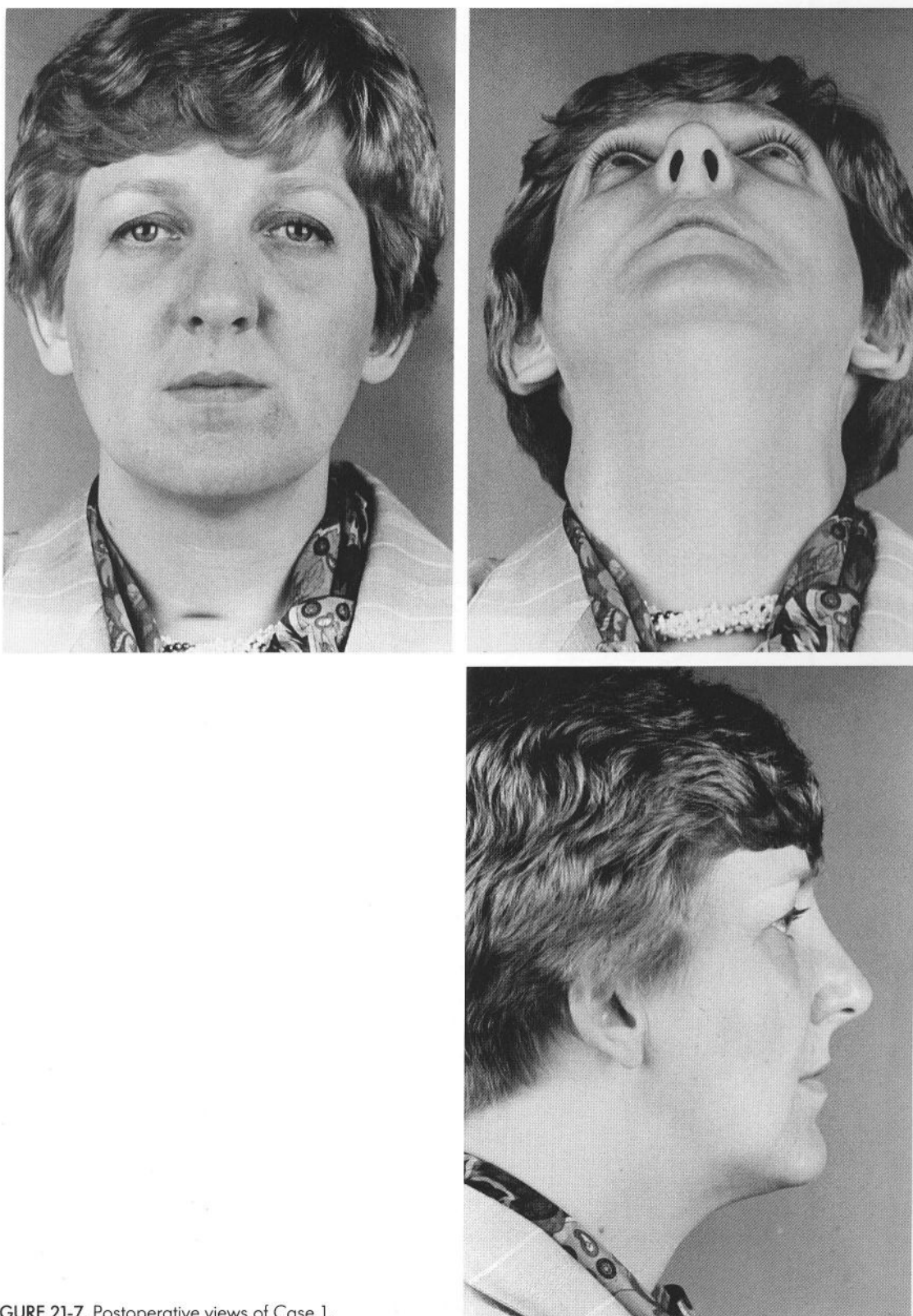


FIGURE 21-7. Postoperative views of Case 1.



FIGURE 21-8. Preoperative lateral view of Case 2.



FIGURE 21-10. Postoperative lateral view in Case 2.

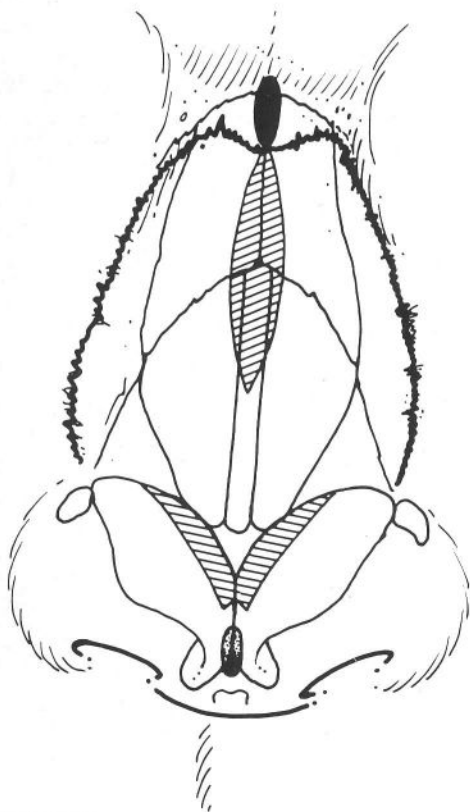


FIGURE 21-9. Rhinoplasty technique in Case 2.

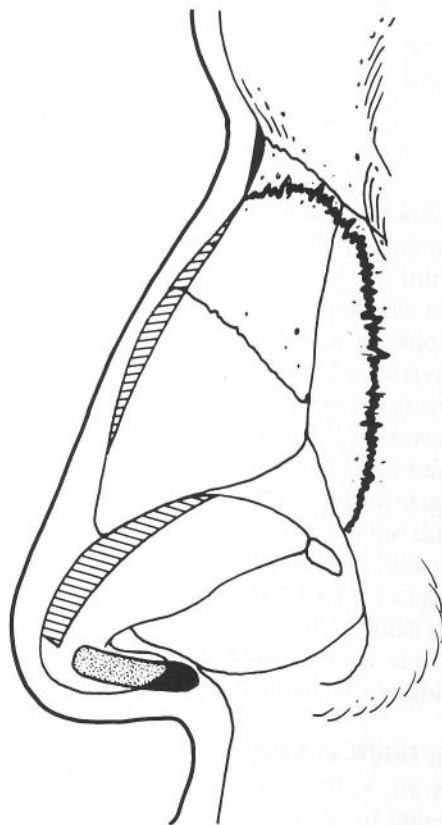




FIGURE 21-11. Preoperative views of Case 3.

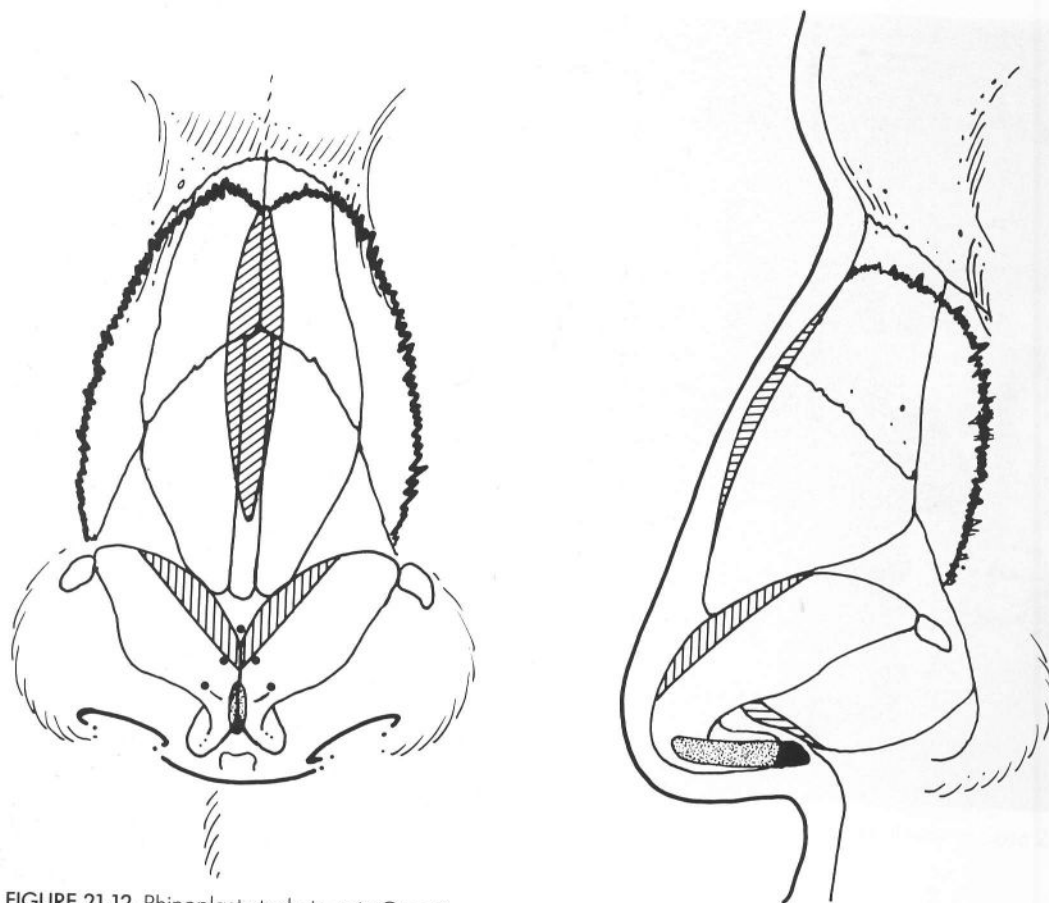


FIGURE 21-12. Rhinoplasty technique in Case 3.

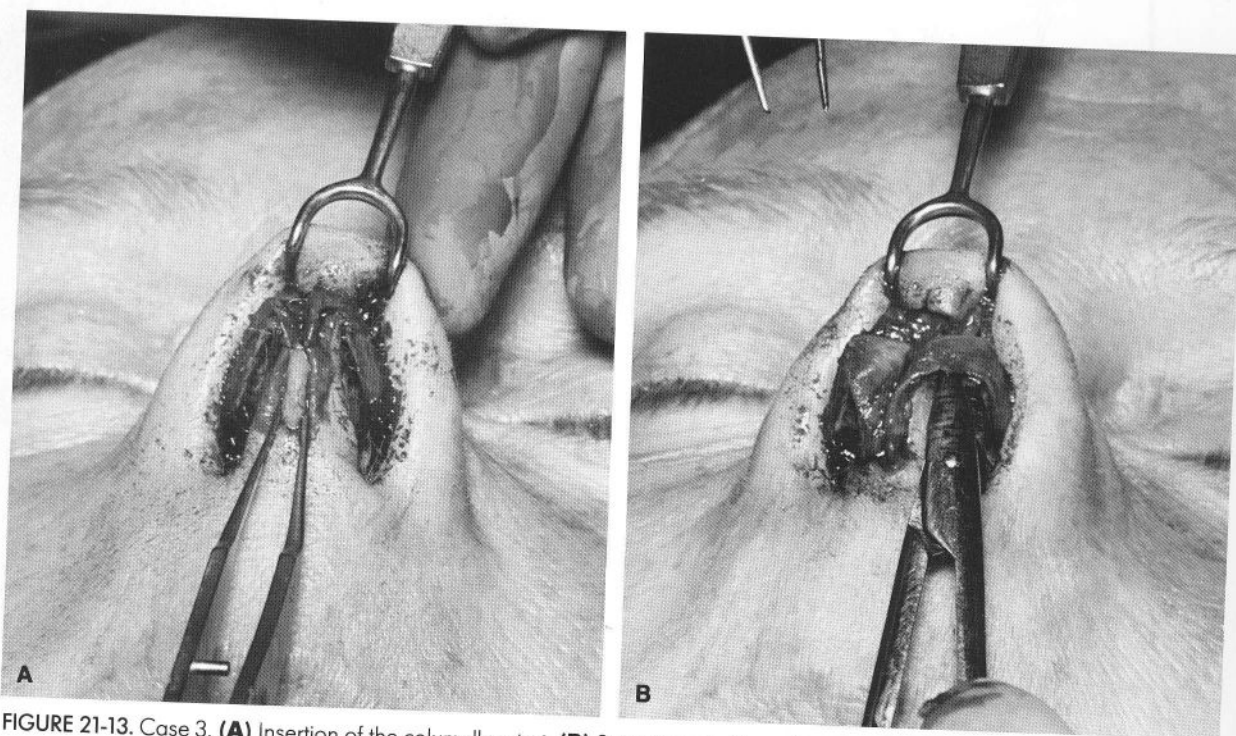


FIGURE 21-13. Case 3. (A) Insertion of the columellar strut. (B) Sutures are tightened to rotate the tip.
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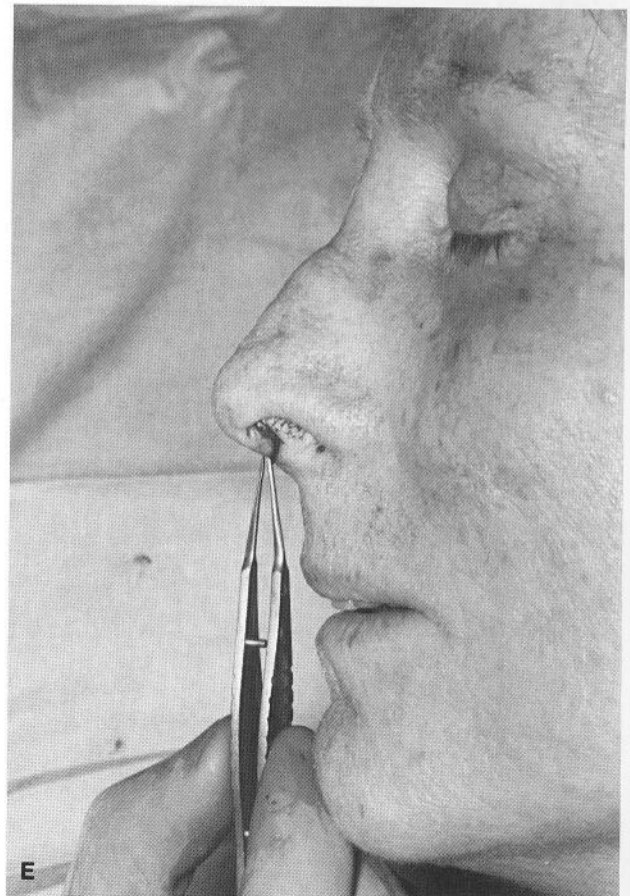
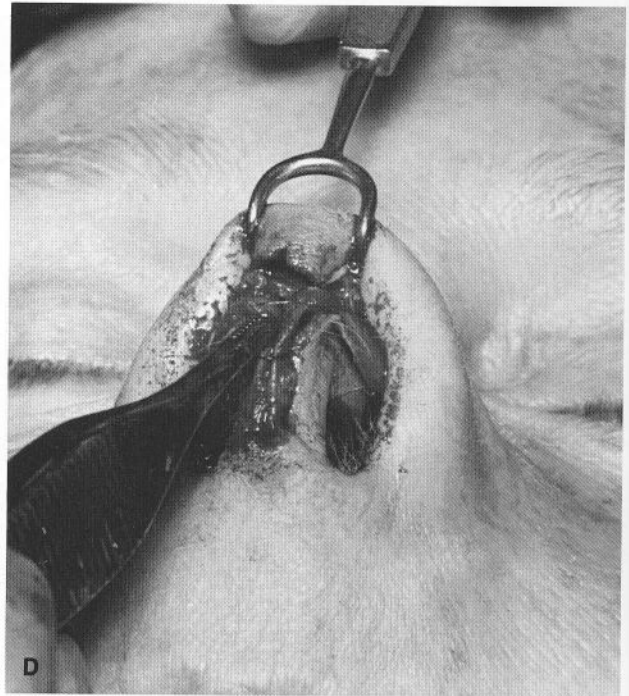
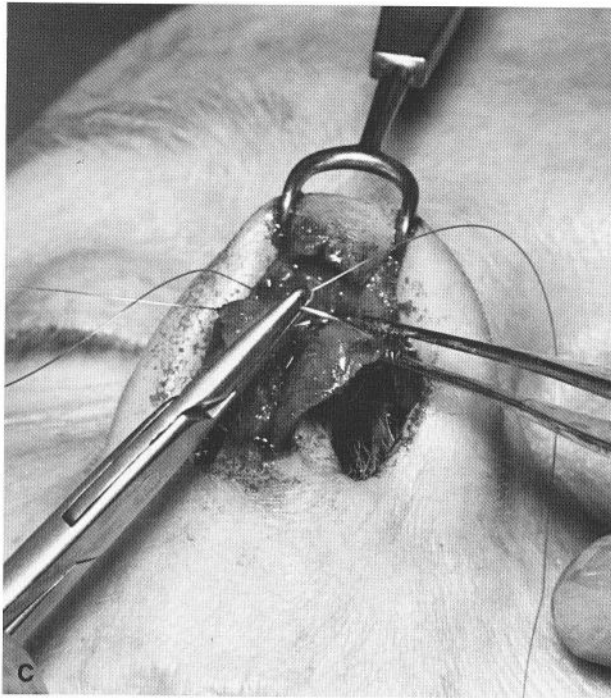


FIGURE 21-13. (continued)
 (C) Mucosal attachments of the lateral crura are elevated. (D) Sutures are placed lateral to the domes. (E) Position of the tip on the operating table before dorsal reduction.



FIGURE 21-14. Postoperative results in Case 3.

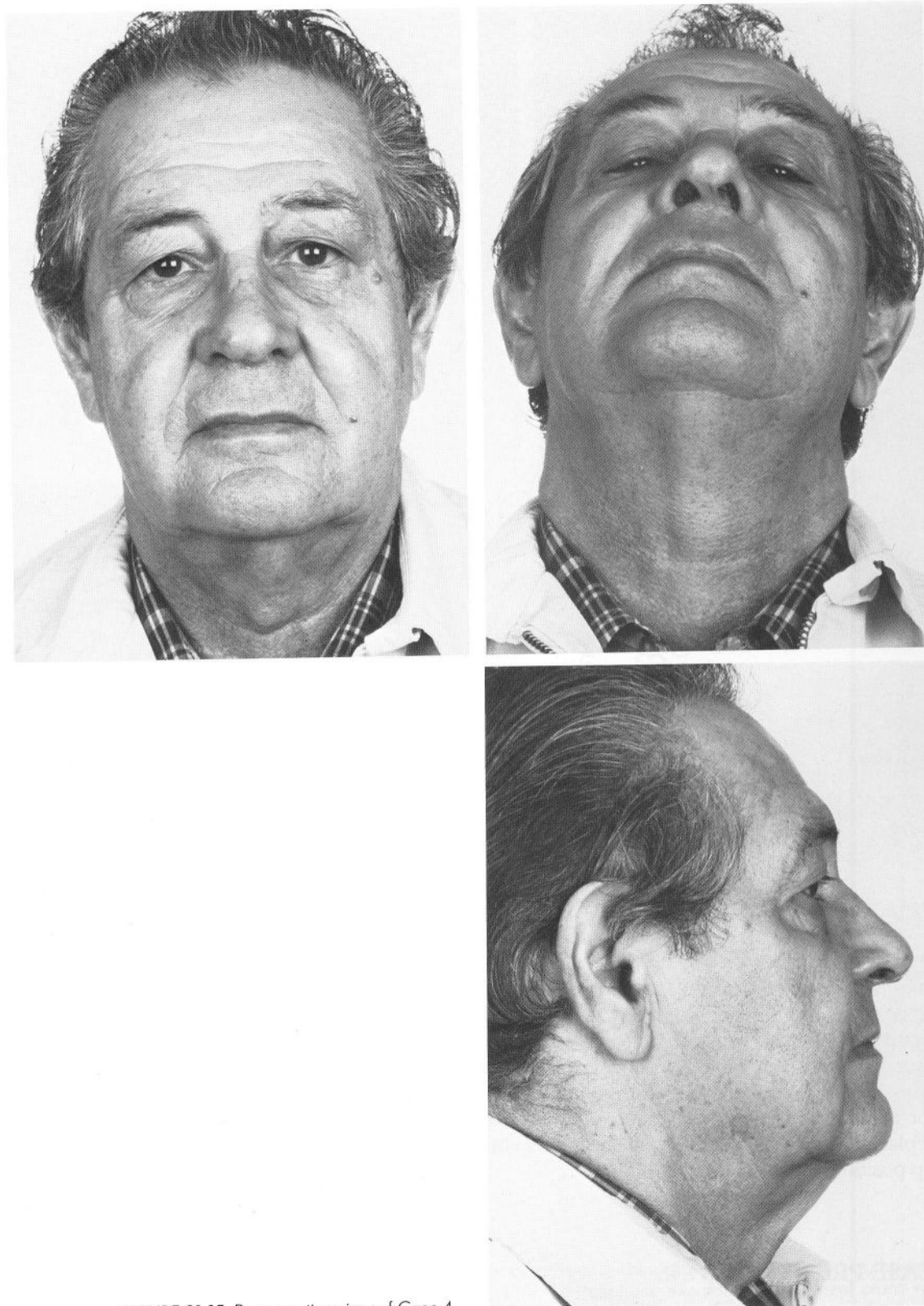


FIGURE 21-15. Preoperative view of Case 4.

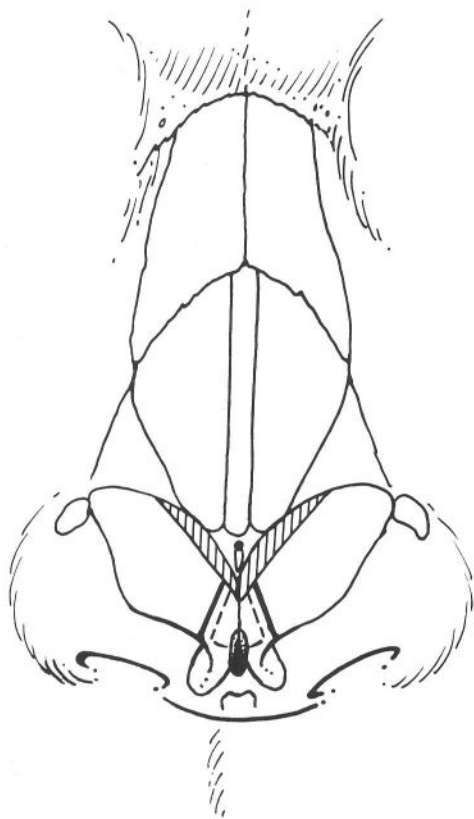
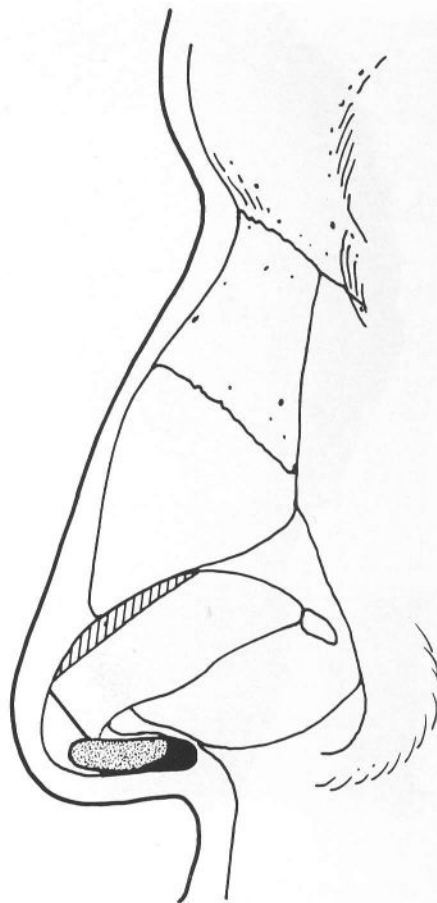


FIGURE 21-16. Rhinoplasty technique in Case 4.



mies have been performed. The dorsal skin is carefully taped to help it redrape into its new position. The tip is taped to support its rotation, taking care not to place it over the alar rim where it might cause notching. Dressings in younger patients are routinely left in place for about 1 week; in older patients, the tape may be replaced at this visit for select patients to help maintain tip position during healing.

CASE PRESENTATIONS

The following variety of aesthetic and functional problems are presented to demonstrate the multiple techniques available to reconstruct the aging nose.

CASES 1 AND 2: MIDLIFE RHINOPLASTY

In midlife, as well as in older age, many patients do not want dramatic change in the appearance of the nose, but simply desire refinement of their facial characteristics, particularly the profile.

Case 1, the patient seen in Figure 21-5, had a longstanding desire to change her profile. She was of average height and had average skin thickness. She underwent septorhinoplasty as described in Figure 21-6. The septum was shortened several millimeters through a semi-transfixion incision, and a septoplasty was performed for septal deviation. The cephalic margin of the lateral crura was excised through a cartilage-splitting incision; the lateral crura were then shortened somewhat by carrying the incision through the crura and excising several millimeters (as demonstrated in the figure) to rotate the tip and decrease projection slightly. A columellar strut, fashioned from septal cartilage, was inserted between the feet of the medial crura. Dorsal reduction and osteotomies



FIGURE 21-17. Case 4. (A) Skin excision outlined. (B) Skin excision. (C) Wide undermining performed. (D) Operative closure.

were performed in the usual fashion. Postoperative results are seen in Figure 21-7.

Case 2 is a woman who desired subtle refinement of her nose. She has fairly thick skin, poor tip support, and about a 90-degree angle between the columella and the lip (Fig. 21-8). Her alae were similarly positioned in a horizontal fash-

ion. Her conservative rhinoplasty was performed as shown in Figure 21-9. The cephalic excision of the lateral crura was performed through an intercartilaginous approach. A columellar strut was placed between the feet of the medial crura. A small cartilaginous graft was placed in the area of the

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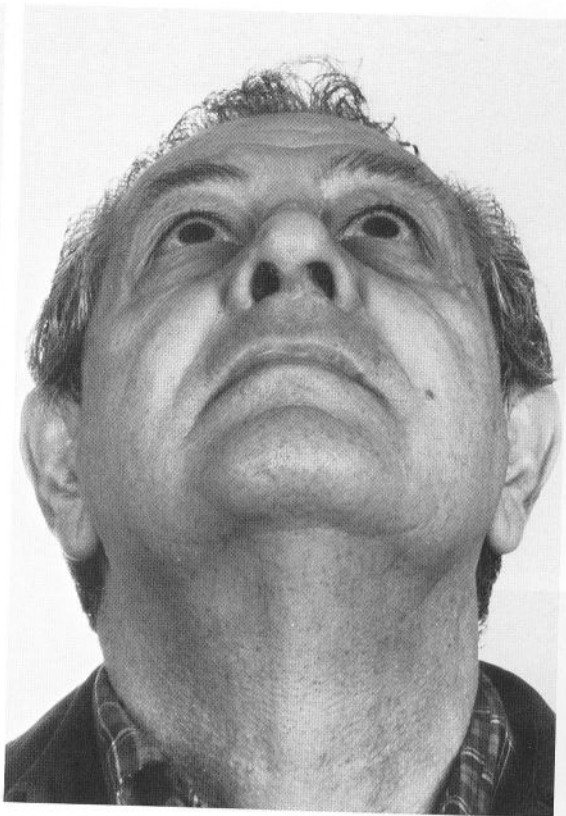


FIGURE 21-18. Postoperative results in Case 4.



FIGURE 21-19. Preoperative views of Case 5.

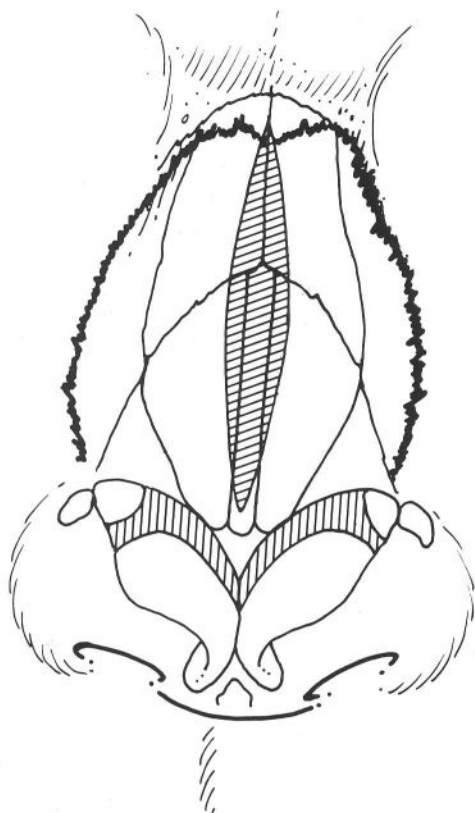
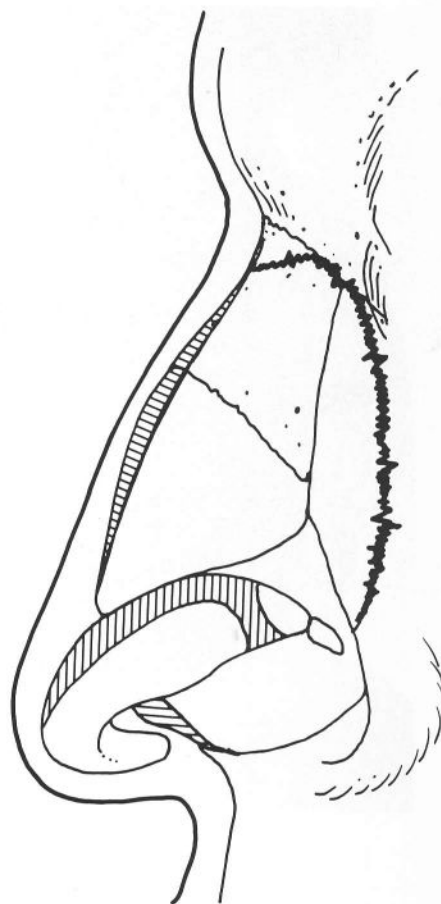


FIGURE 21-20. Rhinoplasty technique in Case 5.



nasion. Conservative resection of cartilaginous and bony dorsum was combined with osteotomies. Results show the strong dorsum that is attractive in the middle-aged or older patient (Fig. 21-10).

CASE 3: OPEN TECHNIQUE

Case 3 is a woman with the typical tip depression seen in the aging nose (Fig. 21-11). She is of medium height and has skin of moderate thickness. She had quite poor tip support, combined with a relatively acute angle between the columella and philtrum. The bony dorsum was wide. She had septal deviation consistent with asymmetry of the alae, which were quite longstanding. Case 3 underwent an open rhinoplasty with the technique demonstrated in Figure 21-12. A septoplasty was first performed through a complete-transfixion incision. The transfixion incision helped reorient the columella and decreased tip projection somewhat. Two or three millimeters of the caudal septum was resected, preserving the septal angle. A small amount of redundant membranous columella was excised. Adequate septal cartilage was harvested from the

septoplasty procedure to create a columellar strut. Figure 21-13A shows the insertion of the columellar strut. The cartilages were quite pliable, and it was decided to rotate the tip with the lateral crural steal approach.⁵ After excising a small amount of the cephalic margin of the lateral crura, the mucosal lining was totally freed from the undersurface of the lateral crura in its medial portion, as seen in Figure 21-13B. A suture of 5-0 PDS was then placed symmetrically lateral to the dome (Figure 21-13C); the suture was tightened to cause rotation of the tip (Figure 21-13D). The newly repositioned lateral crura were then fixated with sutures to the septum and upper lateral cartilages. Conservative reduction of the dorsum followed by osteotomies completed the procedure. Figure 21-13E shows the position of the tip after the lateral crural approach and strut insertion but before reduction of the dorsum. Final postoperative results are seen in Figure 21-14.

CASE 4: NOSE-LIFT PROCEDURE

In the aging nose, there may be functional problems with breathing as well as problems with appearance. When these

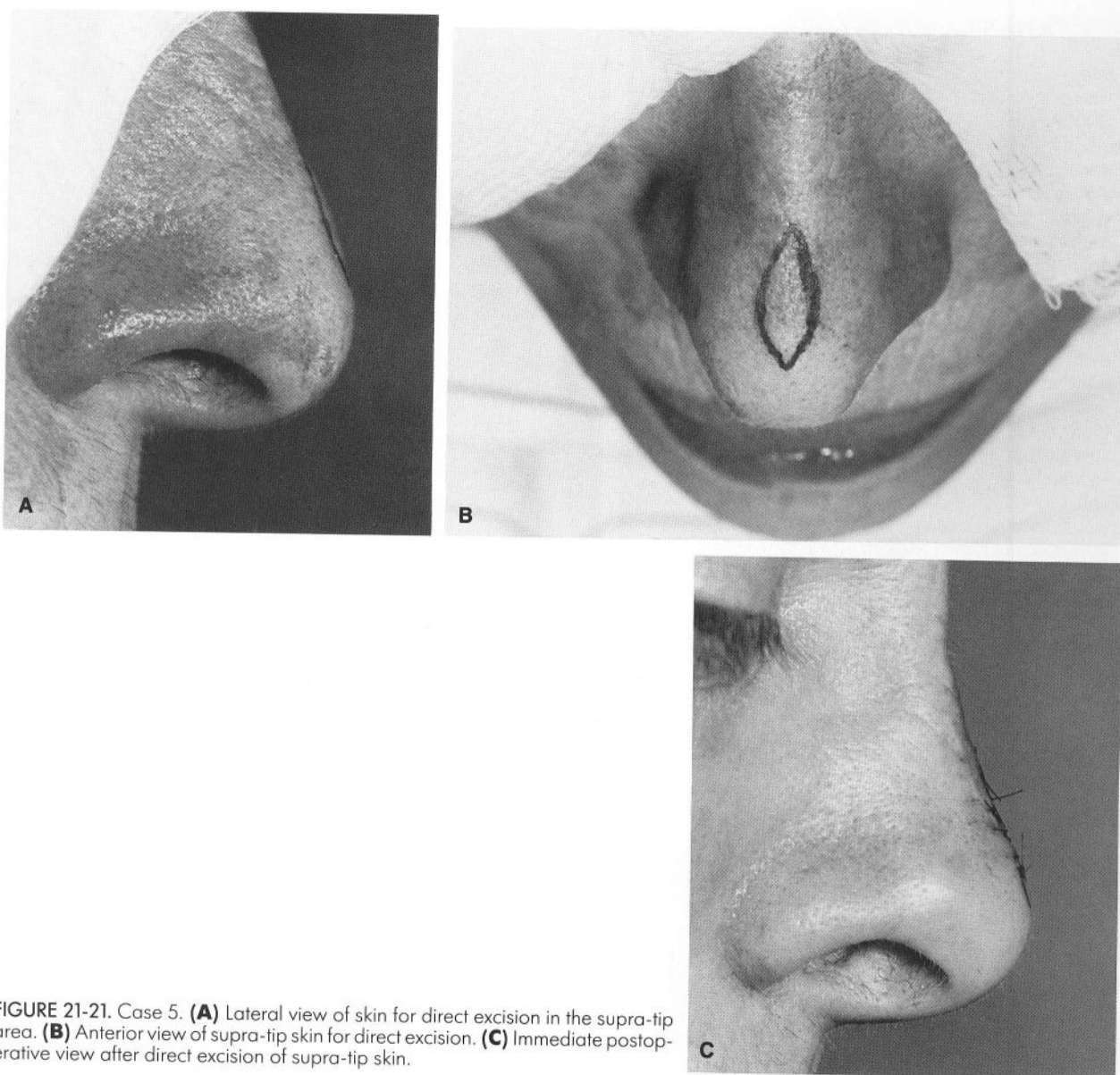


FIGURE 21-21. Case 5. (A) Lateral view of skin for direct excision in the supra-tip area. (B) Anterior view of supra-tip skin for direct excision. (C) Immediate postoperative view after direct excision of supra-tip skin.

patients also have thick, sebaceous skin, an external skin excision is a useful adjunct.^{2,3} Case 4 is a man in his late sixties who had multiple episodes of previous trauma to his nose (Fig. 21-15). His primary concern was with breathing. On examination, he had significant septal deviation. There were scars over the columella as well as the nasal dorsum. His skin was extremely thick and sebaceous. A septoplasty was first performed through a complete-transfixion incision. Marginal and intracartilaginous incisions were made, and the lower lateral cartilage was delivered. A minimal amount of cephalic border of the lateral crura was excised to allow some superior

rotation. The domes were then divided and the medial crura sutured to each other using 4-0 chromic sutures (Fig. 21-16). Bony dorsal irregularities were smoothed with a rasp. Because of the redundant skin, it was then elected to combine this procedure with an excision of dorsal skin. The skin was outlined for excision (Fig. 21-17A,B). Wide undermining was performed to connect the dorsal undermining to the supra-tip area and to allow movement of the skin and redraping (Fig. 21-17C). After excising an appropriate amount of skin, the closure was performed in an interrupted fashion (Figure 21-17D). Postoperative results are seen in Figure 21-18.



FIGURE 21-22. Postoperative views in Case 5.



FIGURE 21-23. Preoperative lateral views of Case 6.

CASE 5: DIRECT EXCISION IN THE SUPRA-TIP AREA

This technique is rarely needed but occasionally can be useful in the older patient with non-elastic skin. Case 5 is a 70-year-old woman who sought consultation for some facial plastic surgery of the nose and face (Fig. 21-19). In the nasal area, she had about a 90-degree angle between the columella and the philtrum. Her alae were oriented in a horizontal direction. There was a slightly prominent cartilaginous as well as bony dorsum. Her skin was quite thick. She underwent a procedure that began with a hemi-transfixion incision through which the septum was shortened slightly (Fig. 21-20). Next, through a cartilage-splitting incision, the cephalic margin of the lateral crura was excised and the pivot point of the lateral crura changed to allow some rotation of the tip. A conservative lowering of the bony and cartilaginous dorsum was then performed, followed by osteotomies to narrow the nose. Case 5 obtained a reasonable result, but there was a slight polly-beak deformity postoperatively. On palpation, this was due not to scar tissue or other soft tissue, but to the thickness of the skin itself. Options, including steroid injection, were discussed, and the patient preferred to have the external incision and try to achieve a more dramatic result. Direct excision was then performed (Fig. 21-21A,B). Immediate postoperative view on the operating table (Figure 21-21C) and postoperative surgical results (Fig. 21-22) demonstrate a major profile change that would have been difficult to achieve without direct excision.

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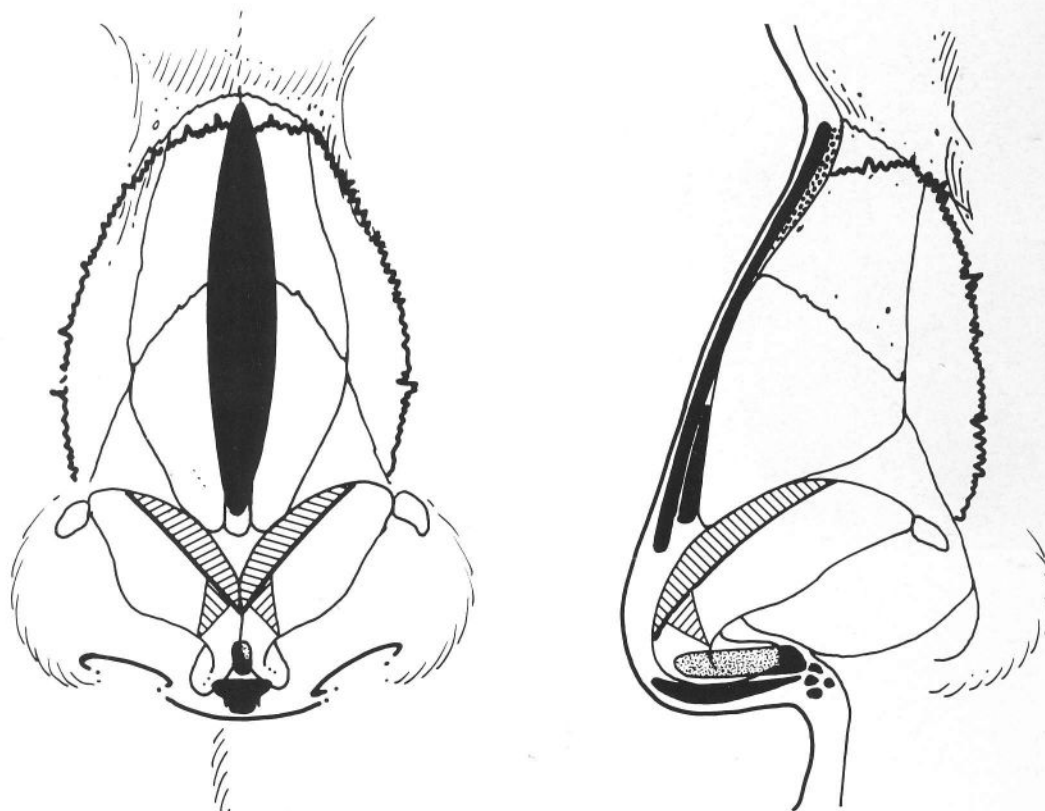


FIGURE 21-24. Rhinoplasty technique in Case 6.

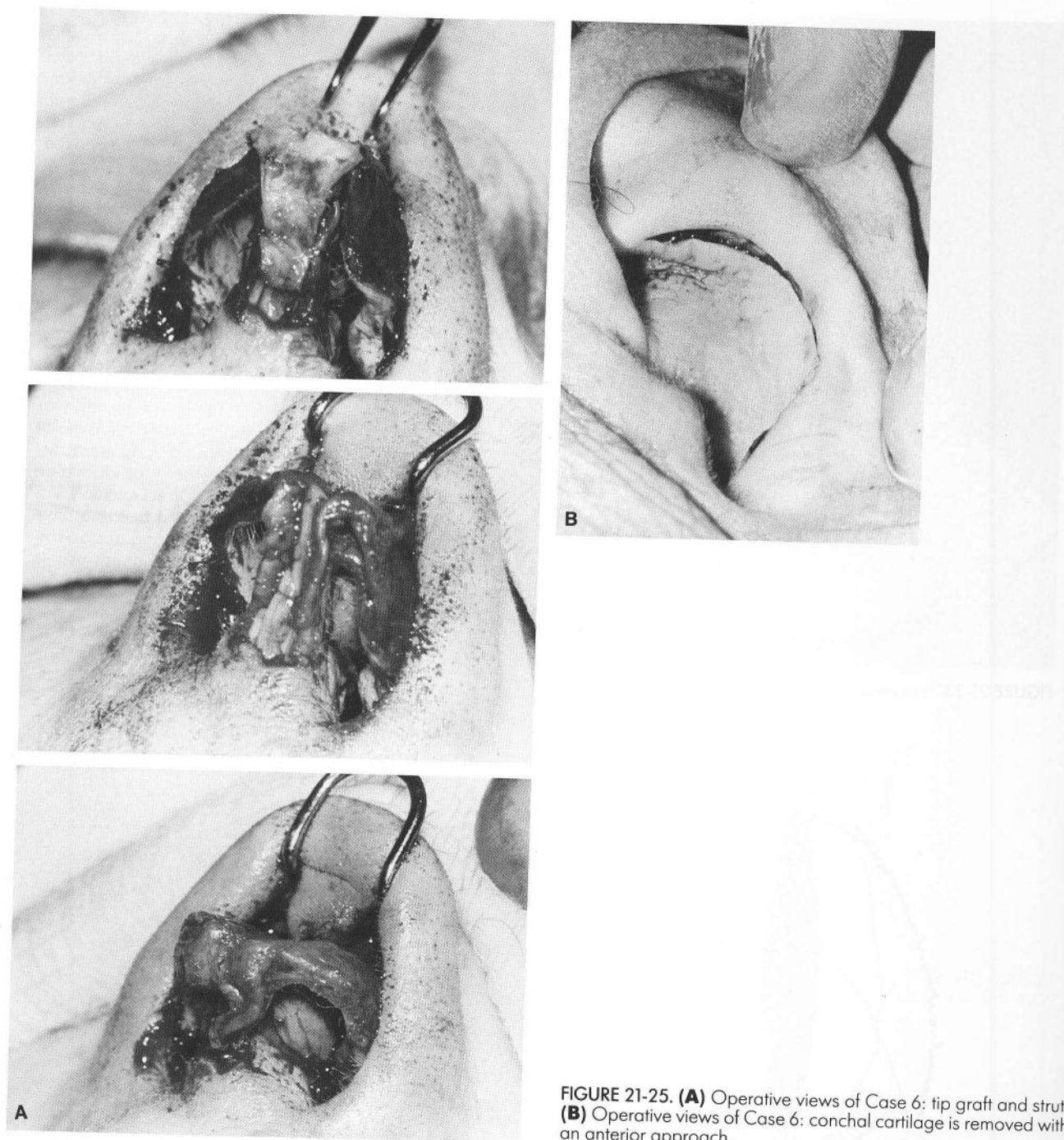


FIGURE 21-25. (A) Operative views of Case 6: tip graft and strut. (B) Operative views of Case 6: conchal cartilage is removed with an anterior approach.

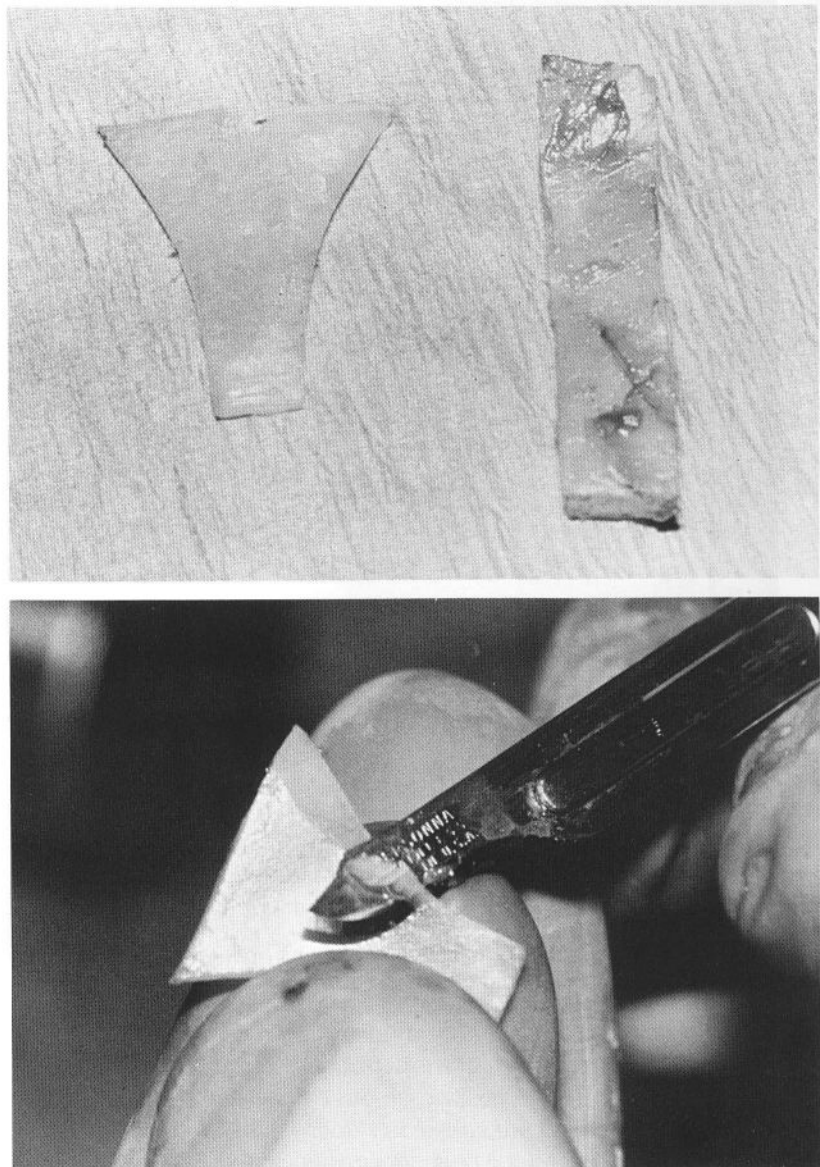


FIGURE 21-26. Tip grafts and struts are sculpted from septal cartilage, if available.



FIGURE 21-27. Postoperative lateral view of Case 6.

CASE 6: AUGMENTATION RHINOPLASTY

When functional problems arise in the aging nose with loss of support, one must augment with grafts. Case 6 (Fig. 21-23) had a nose with structural deficits that were addressed

through the open approach with grafts of auricular cartilage and demineralized bone (Figs. 21-24, 21-25). The tip was supported and formed with a columellar strut and tip graft. (We prefer septal cartilage when available—see Fig. 21-26). A sandwich graft was created on the dorsum with demineralized bone over a solid graft of cartilage in the supra-tip area and some morselized cartilage over the bony dorsum. We now feel demineralized bone on the dorsum tends to resorb, and this area may be best addressed with a matrix of bone growth factors. Final results are seen in Figure 21-27.

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