

## 12: OPEN-TIP RHINOPLASTY

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### Introduction

The open approach for rhinoplasty offers excellent exposure of the various components of the nose *in situ*, enabling the surgeon to operate with precision and confidence. With careful attention to columellar skin flap elevation and closure of the incision, skin necrosis and visible scar formation are very unlikely sequelae. The extra time spent on the exposure is important for increased insight into nasal deformities, leading to more detailed reconstructions.

Indications for the open approach depends on the surgeon's preference. The open technique may be used in all rhinoplasty cases, except in those where the surgeon is able to diagnose all nasal deformities preoperatively and can correct them satisfactorily with the closed approach.

This chapter describes the technical aspects of the open approach in a step-by-step fashion. Thereafter, a relatively new grafting technique for nasal tip surgery is introduced.

### Exposure

The operation may begin with a hemitransfixion incision. Thus, septoplasty and harvesting of cartilage grafting material can be performed before the rhinoplasty. The hemitransfixion incision is made in the membranous septum and is not connected with incisions used in the open approach. Thereafter, the nasal skeleton is exposed using a mid-columellar incision (Fig. 1a). The ultimate scar in the middle columellar region is supported by the intact medial crurae, which diminishes scar contraction. For the same purpose, the incision (No. 11 blade) is not straight over the columella, but broken using an inverted V (Fig. 2). The mid-columellar incision is extended with marginal incisions (No. 15 blade) (Figs. 1b and 3).

The columellar skin flap is elevated superficial to the medial crura with blunt and sharp scissor dissection, leaving as much soft tissue as possible on the skin flap (Fig. 4 and 5). This enhances the viability of the columellar skin flap, while

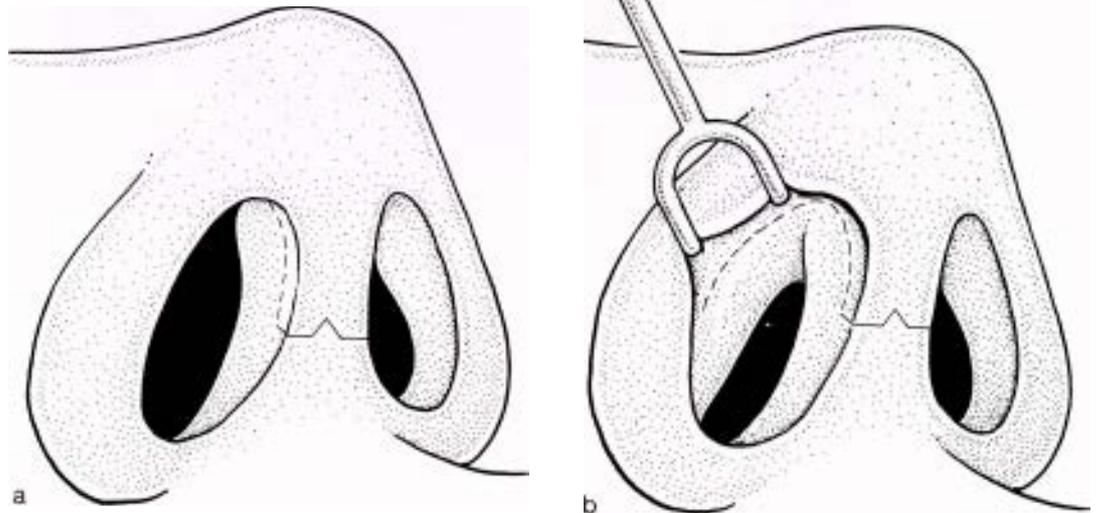


Fig. 1 a, b. Open rhinoplasty incision schematically depicted, basal view.



*Fig. 2.* Mid-columellar broken incision with a No. 11 blade.



*Fig. 3.* A No. 15 blade incising the vestibular skin.

the supraperichondrial plane is relatively bloodless. The upper lateral cartilages, lower lateral cartilages and nasal dorsum up to the nasal frontal angle, can be exposed in their undisturbed positions (Fig. 6).

Division of the medial inter-cru-ral liga-

ments offers extensive exposure down to the premaxillary spine. However, it is preferable to keep the inter-cru-ral ligaments intact and to use the hemitransfixion for work on the septum and nasal spine. After separating the ULC from the septum, the whole septum, including the



*Fig. 4.* Elevation of columellar flap with converse scissors.



*Fig. 5.* Skin hook and scissors used to perform marginal incisions and elevate the skin flap under direct vision.

nasal valve, can be viewed from below (comparable to hemitransfixion exposure) and also from above. This may be advantageous in case of dorsal septal deflection, nasal valve problems or septal perforation.

After having achieved wide exposure

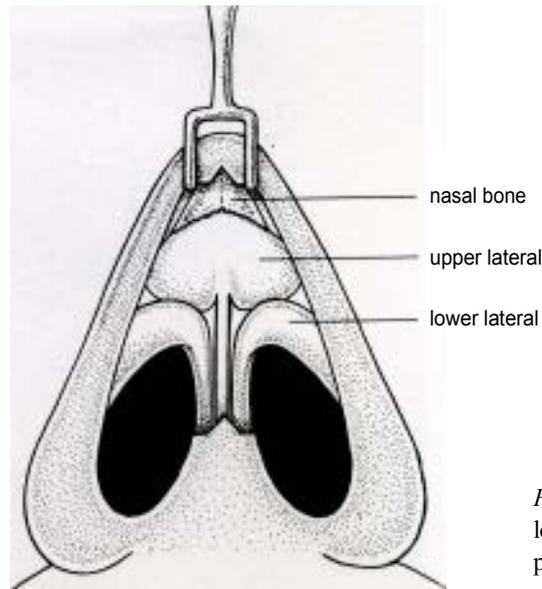
with the open approach, all rhinoplasty manoeuvres deemed necessary can be performed under direct vision with the use of both hands. However, thorough understanding and skill are necessary to achieve good results. The various chapters in this book deal with the technical

details of rhinoplasty. All these can be applied using the open approach. The closure of open rhinoplasty incisions will be described in detail here. Thereafter, a new trend in nasal tip surgery which has become popular in combination with the open approach will be described in the second part of this chapter.

### Closure

Before closure, the skin at the angle of the lateral marginal incision and horizontal incision is undermined to prevent trapdoor deformities (Fig. 7). Simple 5-0 nylon is used to close the columellar incision precisely (Fig. 8). No subcutaneous sutures are necessary. Meticulous care should be taken in closing wound edges when they are of unequal thickness.

Eversion of skin edges is strived for. Marginal incisions are closed with 5—0 absorbable suture material, as in the routine closed approach. The columellar sutures are removed on day 4, the sutures



*Fig. 6.* Undistorted view of lower lateral cartilages, upper lateral cartilages and nasal dorsum.

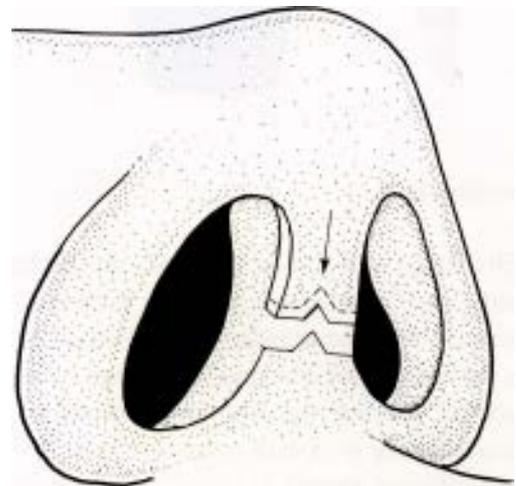
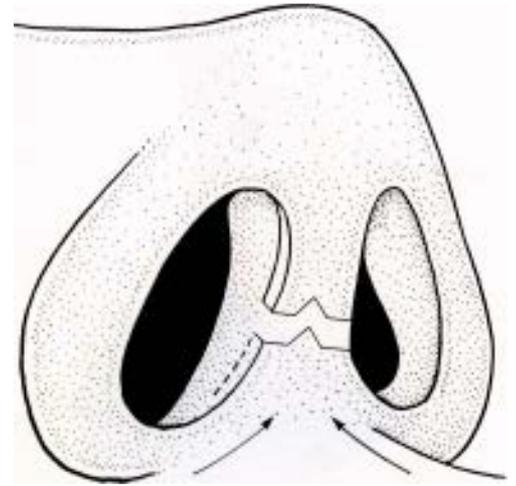
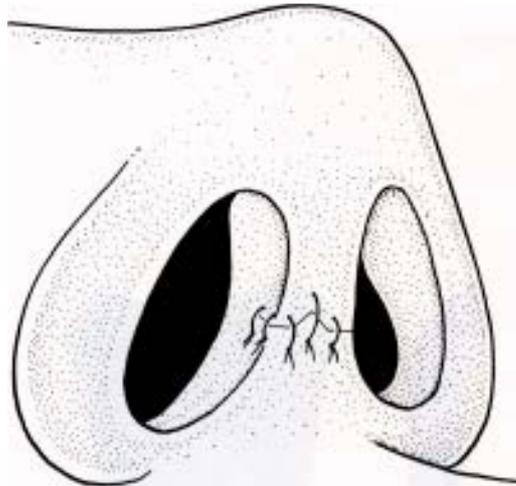
at the junction of the horizontal columellar and vertical marginal incision on day 7. If significant increase of nasal tip projection occurs, it is advisable to prevent too much tension on the closure line by creating an advancement flap of the inferior columella before closure by extending the vertical marginal incision



*Fig. 7.* Undermining of lower columellar wound edge.

*Fig. 8.* Closure of open rhinoplasty skin incisions.

*Fig. 9.* Advancement flap of columellar base which developed after extending the vertical aspect of the marginal incisions.



*Fig. 10.* Shortening of columellar flap.

(Fig. 9). If significant tip deprojection occurs, there may be a tendency for the redundant columellar skin to form a hanging columella. This 1 or 2 mm of excess skin can be excised before closure (Fig. 10).

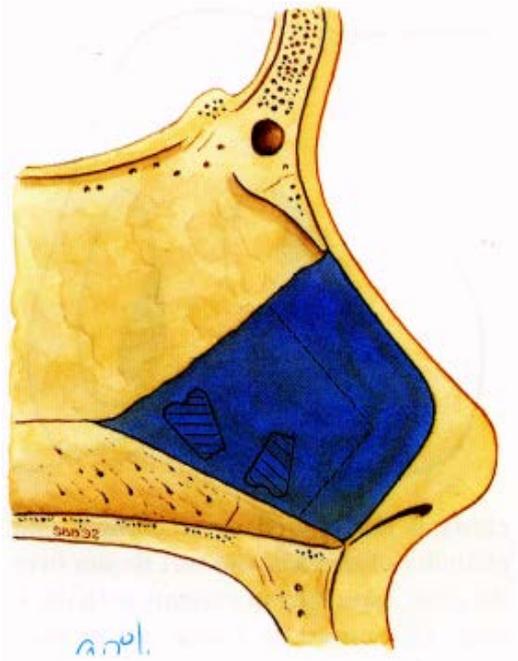
### **Cartilage tip grafts**

Rhinoplasty has evolved from a predominantly reduction procedure to surgery of a more precise and conservative nature. Emphasis now lies on conservation, reconstruction and even augmentation, and less on reduction. The major unpredictable factor in reduction rhino-

plasty is the limited contractibility and pliability of the skin and soft tissues over the nose, especially in patients with thick skin. This uncertain factor can be controlled by creating a stronger projecting underlying nasal skeleton to which the skin and soft tissues can adapt themselves. Moreover, a stronger profile conforms with modern aesthetics. The key to a modern high dorsal profile is adequate and balanced nasal tip projection. Cartilage grafting of the nasal tip and columella may give control over nasal tip projection which is otherwise hard to obtain. Shape and rotation may also be improved with grafting techniques. The open approach has greatly facilitated and improved cartilage tip grafting techniques. As cartilage tip grafting complies with modern rhinoplasty principles, the technique will be described in detail.

### *Graft harvesting*

Autogenous cartilage grafting material has distinct advantages over other grafting material for nasal reconstruction, because of its superior long-term survival rates, easy availability and low risk of infection. Septal cartilage is ideal for tip grafting due to its proper flat shape and stiffness. It can be harvested through a



Killian incision leaving the attachment of the medial crura to the septum intact, or via a hemitransfixion incision when the caudal septum needs modification. The graft is best taken from the thick areas of the septum lying at the junction of the perpendicular plate and the vomer (Fig. 11). Other parts of the septum, leaving a dorsal and caudal strut of at least 1 cm, can be used as a columellar strut. If insufficient septal cartilage is available, cartilage may be obtained from the concha of the ear. For technical details see Chapter 7.

Tip grafts are preferably taken from the area adjacent to the ear canal, including the thickened part of the cavum conchae in the graft. This part shows a helpful curvature which, when judiciously used, can mimic the double break of the nasal tip. However, septal cartilage is preferred to ear cartilage, as the latter is more pliable and generally more strongly curved.

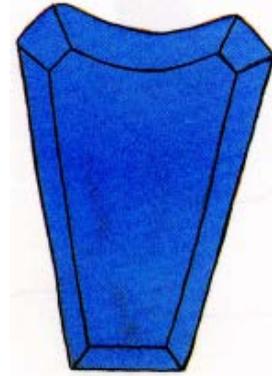


Fig. 11. Cartilage harvesting from the septum.

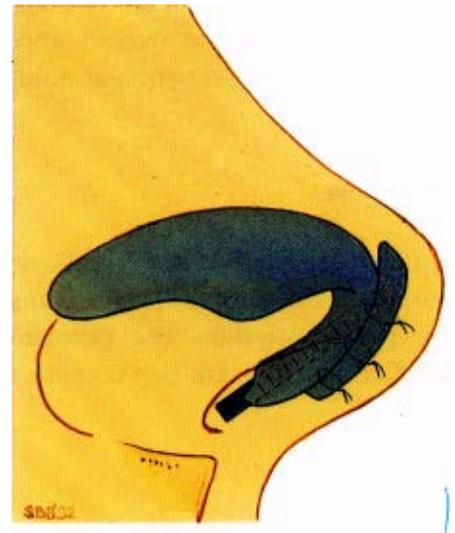
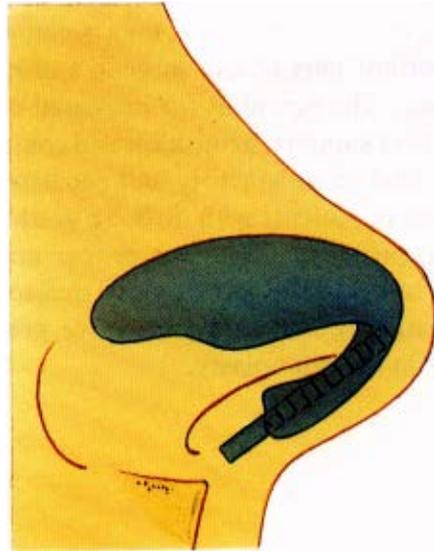
Fig. 12. The three-dimensional sculptured tip graft.

### Sculpturing

The shape and size of the graft should be individually adapted, varying with each nose. A flat rectangular piece of cartilage is carved so that one end is notched in the center, leaving the blunted corners approximately 6-8 mm apart to form two tip-defining points (Fig. 12). The graft narrows away from the tip so that the width of the base is 3-4 mm. The length of the graft varies, but is usually about 10-12 mm. In some cases, the graft may extend along the entire length of the columella to increase support and/or augment a retracted columella. The thickness of the graft may vary from 1-3 mm. The most inferior portion of the graft is thinned and the edges are bevelled to blend the tip graft into the underlying structures. A double tip graft may be used to increase dorsal length and to add strength to weak grafts, such as those from the ear. Final precise sculpturing can be performed *in situ* after fixation of the graft to the alar cartilages.

Fig. 13. The columellar strut.

Fig. 14. Sculptured tip graft sutured to the underlying alar cartilages.



### Grafting

A stable basis is a prerequisite for tip grafting. A columella strut is used in all cases, lending strength to the medial crura and increasing its potential support. The graft extends from 1-2 mm above the nasal spine to the level of the angle, just below the domes of the alar cartilages (Fig. 13). This sandwich construction is fixed to the septum with an absorbable mattress-type suture.

To create a symmetrical bed for the graft, and especially if there is a hanging columella, the caudal margins of the medial crura may be trimmed. Sculpturing of the lateral crura can be performed, taking care to leave a strip of cartilage of at least 8 mm in width to prevent weakening of the graft base. The tip graft is secured by from four to six prolene sutures (Ethicon 8697) to the underlying domal and crural cartilage (Fig. 14). The exact position depends on the specific indications defined preoperatively. The graft can be sculptured *in situ*. In thin-skinned patients, in particular, the graft should blend imperceptibly into the surrounding structures to prevent unnatural points and ridges.

### Indications

Cartilaginous grafting of the nasal tip may be indicated in cases which require additional support, projection, contouring or camouflaging. In general, lack of adequate tip projection is the main indication. With tip grafting, the nasal dorsum can be maintained at a higher level, leading to a stronger, more natural appearing projecting structure. Provided the graft is well-shaped and positioned, a defined shape for the domal region of the tip may be produced. Using the tip graft's interdomal width, the degree of tip definition and infratip lobular shape can be controlled. In patients with thick skin and weak lower lateral cartilages, tip grafting is the only precise method to add definition to the domal area.

Asymmetries or irregularities can be camouflaged, making the graft especially suitable for cleft-lip surgery. After transection of the domes of the alar cartilages, tip grafts may be used for camouflaging the sharp edges of the divided alar cartilages. The dorsal length may be increased by 2-3 mm by using a very thick or sometimes double-layered tip graft.

This small increase in dorsal length or counter rotation of the nasal tip may significantly improve the overall appearance of a short or over-rotated nose.

### **Conclusions**

The open approach offers excellent exposure in rhinoplasty. This advantage more than outweighs the (avoidable) risks of columellar skin flap necrosis and

an ugly scar. Cartilaginous tip grafting, using the open approach, may become an important part of the surgeon's armamentarium. The potential for increased control over support, projection and contour may lead to satisfactory and predictable results in patients with difficult aesthetic nasal problems. With the proper attention to detail, tip grafting can indeed be a gratifying and safe adjunctive procedure in tip rhinoplasty.