

Chapter 8. Operative Setup

- Rhinoplasty is best performed in a supine or head-up position on an operating room bed or flexed operating chair. A circular cushion is placed at the occiput to support the head and a shoulder roll is placed transversely behind the shoulders to gently extend the neck. The arms are placed at the sides with padding beneath the elbows to avoid ulnar nerve injury due to prolonged compression.
- Lighting is of key importance since certain structures may be hidden in shadow beneath overlying soft tissue. Overhead operating lights are often insufficient and a headlight is recommended. This allows the surgeon to direct a focused beam of light onto the working area. Suction/irrigation devices with a light incorporated into the tip may also be useful.
- Anesthesia for rhinoplasty is largely determined by surgeon preference and the need for adjunctive procedures. Local anesthesia with or without intravenous sedation may be perfectly adequate for many patients and may be administered safely. This is typically indicated for modification of the soft tissues rather than osteotomies. Intravenous propofol may be used and titrated to a level of adequate sedation without losing spontaneous respiration. Many patients and surgeons alike prefer general anesthesia because it minimizes patient sensation during the procedure and allows the anesthesiologist to safely control the patient's blood pressure as a means of minimizing blood loss. If bleeding is to be expected, a protected airway is advantageous in that it reduces the chance of laryngospasm. The sedated patient is breathing spontaneously, and the protective cough reflex is blunted. If blood or irrigation lands on the vocal cords, laryngospasm may be induced, creating an airway emergency. With a secure airway, this potential complication can be avoided. The need to harvest bone or cartilage from a remote site, such as calvarium or rib, also makes general anesthesia a preferable choice. If general anesthesia is chosen, the endotracheal tube (ETT) or laryngeal mask airway (LMA) is best taped so that it does not interfere with exposure of the tip or osteotomies. An ETT or LMA that is taped at the corner of the mouth may pull the oral commissure and thus the nasal tip resulting in a tip deviation that may confound the surgeon's ability to assess tip symmetry.
- In addition to setting up the operative instruments on a larger sterile table, a small prep table should be used. This should include a speculum, small scissors, Bacitracin, as well as an antimicrobial solution, pledgets soaked in a vasoconstrictive solution, a 10 cc syringe with 1% lidocaine with 1/100,000 epinephrine, and a 1½ inch 25-gauge needle. The speculum is used to confirm the preoperative findings from the intranasal examination.
- The nasal hairs are trimmed with scissors (or a #15 scalpel blade) to improve visualization and avoid entrapment of hair within the incisions. The vestibules are then prepped with an antimicrobial solution such as a dilute iodine solution. Lidocaine with epinephrine is then injected into the columella, lateral nasal walls, dorsum, tip, intranasally, and into the septum if a septoplasty is to be performed. It is important to inject prior to the surgical prep and drape so the epinephrine has completely taken effect prior to incision. The authors typically inject about 8 cc to 10 cc. Immediately after injection, the nose will appear amorphous, but by the time the prep and draping is complete the fluid has been absorbed and redistributed returning the nose to its normal anatomy. The nares are then packed with cotton pledgets soaked in a vasoconstrictive agent as indicated. A 4% cocaine solution may be safely used in most instances. The pledgets are left in place for 7 to 10 minutes and removed at the start of the procedure. It may be helpful to trim the strings attached to the pledgets so that they are not inadvertently removed during prepping. If cocaine solution is not available or desired, oxymetazoline may be used as a substitute. Additional injection of an anesthetic/vasoconstrictive solution is also recommended if the septum requires manipulation. Hydrodissection of the septal mucosa off the cartilage is done with the syringe and 25-gauge needle immediately before dissection.
- Around the pledgets, the face is prepped with any of the standard solutions, such as dilute iodine-povidone solution or chlorhexidine. Care should be taken to avoid exposure keratitis with an ophthalmologic safe lubrication before prepping and avoiding pooling of fluid around the eyes. If the oral cavity is not to be entered, it may be sealed off from the operative site with a sterile transparent dressing. Generally, scleral shields are not required for rhinoplasty. A small Tegaderm cut in half will seal the eyes shut, while leaving access to the medial nose for clinical assessment and osteotomy access. If cranial bone graft is planned,

the entire head needs to be prepped and the area over the proposed incision infiltrated. If costal bone/cartilage grafts are required, a separate area over the chest needs to be prepped and infiltrated.

- Unlike other procedures, the bulk of instruments used for rhinoplasty are highly specialized and developed for specific operative maneuvers.
 - *Nasal speculum*: various sizes should be available to examine the nose under anesthesia at the start of the procedure and provide retraction of soft tissue during the procedure.
 - #11 and #15 scalpel blades.
 - *Iris scissors*: useful for dissection of the lower lateral cartilages and excision of the cephalic portion for volume reduction and tip definition.
 - *Fine double-hook retractor*: useful to separate the medial crura of the lower lateral cartilages to approach the caudal septum.
 - *Large double-ball and double-hook retractor*: useful when placed on the nasal rim for exposure of the distal nasal mucosa to identify the course of the intranasal incision.
 - *Cottle elevator*: long, narrow instrument with a small circular paddle with sharp edges at one end. It is used to dissect mucosa or perichondrium or periosteum off cartilage or bone. The shaft is marked in one-centimeter increments so that it can be used to measure certain depths.
 - *Aufricht retractor*: angled retractor of adequate width to expose the bony and cartilaginous nasal dorsum. When exposing the dorsum, it should be noted that adjacent structures are pulled out of place.
 - *Goldman elevator*: thick, straight elevator with blunt edges used to out-fracture the nasal bones.
 - *Freer elevator*: small, fine paddle used to elevate periosteum off underlying bone.
 - *Brown-Adson forceps*: small-toothed forceps useful for handling cartilage since multiple, small teeth minimize large perforations.
 - *Ballinger blade (swivel knife)*: used to excise central portions of septal cartilage once the mucosa has been elevated off either side of the septum. The blade is used by contacting the caudal and superior corner of the portion of cartilage to be resected, pushing the handle posteriorly (while preserving one centimeter of dorsal septum), contacting the anterior edge of the ethmoid, changing direction of the swivel blade by pressing inferiorly on the handle, and finally pulling anterior along the vomer to cut the remaining inferior edge of septum and deliver the graft material.
 - *Rasps*: tools with a jagged end that come in a variety of styles. Pull and push rasps act as their names imply. The latter shave bone off a fixed structure such as the bony dorsum when it is pushed across the surface. The former only works in a pulling direction. Mild or moderate reduction is best performed with a

rasp to prevent overreduction. More significant reduction may be performed with a controlled osteotomy of the nasal bones. A Rubin chisel may be used to prevent an unequal bony reduction.

- *Nasal osteotomes*: the classic nasal osteotomes are paired, a right-sided osteotome and a left-sided osteotome. Each is curved to assist in performing a low position to mid or high position osteotomy. Depending on the manufacturer, one side of the groove is sharp while the opposite side is blunt. This is to minimize trauma to the skin as one follows the leading edge superiorly along the maxilla. Generally, nondisplaced injury to the internal mucosa heals without adverse sequelae.
- Symmetrical guarded osteotome for larger reductions of the bony dorsum.
- Suture material is largely personal preference. Some prefer absorbable material since the suture disappears over time and is less prone to eventual “spitting.” Others prefer nonabsorbable material, such as clear nylon or Prolene, which provide long-term support but may palpable or lead to suture granulomas. For cartilage grafts, 5-0 PDS offers good long-term support but ultimately resorbs reducing the incidence of a suture-related complication. Both 4-0 and 5-0 sutures are appropriate for suturing cartilage. The rim incisions can be closed with 5-0 chromic gut and the columella closed with 5-0 Vicryl and 6-0 nylon for the subcutaneous tissue and skin, respectively.
- PDS flexible plate (Mentor Worldwide LLC) is a new material that is made from polydioxanone, a resorbable material that is degraded by hydrolysis and absorbed by the body. Polydioxanone has been used for years for bone defects.¹ This material is now available as a flexible plate in various thicknesses: 0.15 mm, 0.25 mm, and 0.5 mm. The thinner sheets are useful to serve as a scaffold to link small pieces of cartilage into a larger piece. The thicker sheets have enough rigidity to straighten warped cartilage, reinforce weak cartilage, or be used as a septal extension graft to aid in tip positioning that can be reinforced with tip sutures and additional grafts.
- *Tips*:
 - The setup for rhinoplasty surgery uses unique instruments and each surgeon will have a personal setup. It is useful to have a laminated photograph of the instrument set up for the nurses to reference in order to make sure all the instruments are available and set up in the desired arrangement. This is true for the main table as well as the back preparation table.

REFERENCE

1. Hollinger JO, Battistone GC. Biodegradable bone repair materials: Synthetic polymers and ceramics. *Clin Orthop Relat Res*. 1986;207:290.