Revision Rhinoplasty

by Paul S. Nassif, MD, FACS

Presurgical analysis of the revisional rhinoplasty patient is essential to achieve optimal results

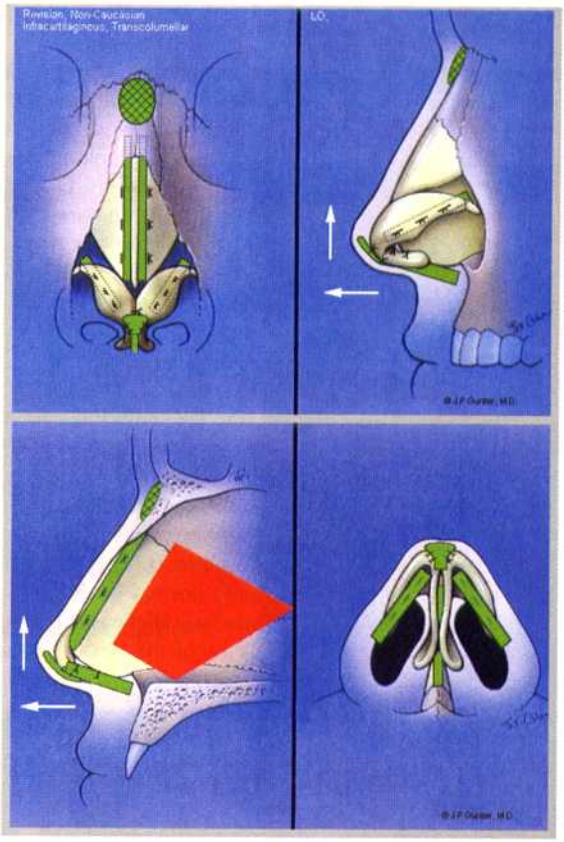

ILLUSTRATION COURTESY OF JOHN P. GUNTER, MD

Revision rhinoplasty surgery is the most challenging, and often, ungratifying procedure that facial and general plastic surgeons perform. I am sure we have all experienced the pit in your stomach when one of your primary rhinoplasty patients enters your office with postoperative nasal obstruction and obvious iatrogenic external valve collapse. You are overwhelmed with feelings of disappointment and bewilderment, wondering how this happened when all you did was perform a conservative cephalic trim (leaving 7 mm) and place domal sutures. Why did this happen? Because you did not diagnose the flaccid, weak lateral crura. As a result, any manipulation of the cartilage without placement of lateral crural strut grafts might cause this easily preventable mishap.

Perfecting surgery with this 3D structure can take years to improve and master. Rhinoplasty maneuvers performed today could cause disastrous results 3 years from now. In rhinoplasty surgery, you learn from your mistakes.

My fellowship director, J. Regan Thomas, MD, told me something that I will never forget—"You have not learned anything about rhinoplasty until you have performed at least a thousand procedures and followed them for many years." This statement epitomizes why fellowships are so valuable. Some of the needed experience and potential pitfalls are circumvented by first-hand observation, which includes studying the analysis, judgment, techniques, complication management, and most importantly, results from a seasoned rhinoplasty surgeon. The training catapults you years ahead of your colleagues that are not fortunate to have postgraduate training.

Many of us are taught that aggressive cartilage removal is a procedure of the past. Today's concept: less is more. Less cartilage excision, cartilage repositioning, camouflage techniques, structural grafting, and suturing techniques are being taught in most rhinoplasty courses and at our national meetings.

In primary rhinoplasty surgery, the keys to preventing complications are prediagnosis of potential anatomical and functional abnormalities. For example, a patient desires a dorsal hump reduction and you identify short nasal bones and a narrow middle vault. Your thorough evaluation will warn you that this patient is at risk for upper lateral cartilage subluxation from the nasal bones (inverted V deformity) and internal valve collapse. In revision nasal surgery, the previous surgeon missed these telltale potential anatomical abnormalities, and now you are in charge of repairing the complication. Always perform a detailed anatomical and functional evaluation of the nose followed by a diagnosis of the postoperative nasal deformities and/or nasal obstruction. The incidence of postoperative nasal obstruction is approximately 10%.[1] After the potential complications are identified, create a surgical plan while studying the preoperative photographs and prepare to use everything in your surgical armamentarium since nothing goes as planned.

Consultations

Below is my algorithm for a revision rhinoplasty consultation, which makes up approximately 25% of my practice. When the appointment is made, ask patients to bring copies of their medical records and operative reports from their rhinoplasty surgery or surgeries, in addition to photographs of their native nose. Initially, review the notes and photos while the prospective patient discusses surgery with your patient care coordinator. This will give you a head start on identifying the problem, assuming that a problem exists. Next, perform a detailed history while listening carefully to the patient's wishes. Does the patient have realistic expectations? This is by far the most important detail that surgeons need to attain from the history. What is the patient unhappy with—a pinched tip or Polly beak deformity? Additionally, listen to the patient and see if negative comments about the prior surgeon are made or if potential law-

suits are mentioned. If this is the scenario, you may want to think twice about operating on this patient. If the patient is not happy with the results with you, there is a good chance that the patient will be saying unkind words about you in the subsequent surgeon's office. Does the patient fit the SIMON profile (Single, Immature, Male, Obsessive, and Narcissistic)? If so, be cautious because these patients are difficult to please and are litiginous. During the initial 5 minutes while acquiring the patient's history, surgeons should know if the patient is a good candidate for revision surgery. Poor patient selection can lead to an unhappy patient and physician.

Another important detail is to ascertain if the patient has nasal obstruction. Determine if the nasal obstruction was present preoperatively. If the obstruction is a result of the surgery, a number of questions need to be answered. Did the patient have reductive rhinoplasty surgery? Have the patient point out where the obstruction is. Is it static or dynamic? Does it present with normal or deep inspiration? What alleviates and worsens the nasal obstruction? What are the characteristics of the nasal obstruction? Was septal surgery performed?

Examination

For the physical examination, I use a detailed nasal analysis worksheet (Table 1, see page 22). Perform a detailed visual and tactile evaluation of the nose and use an ungloved finger to palpate the nose. Examine the bony and cartilaginous skeleton, tip, and skin-soft tissue envelope characteristics in frontal, lateral, and base views. For the bony dorsum, examine the osteotomies, presence of open roof deformity or rocker deformity, and hump under- or over-resection. If inadequate hump reduction is in question, first examine for a deep radix, under projected, ptotic nasal tip, and for microgenia. Look for middle vault abnormalities such as a narrow middle vault, inverted V deformity, or under-resection of the caudal cartilaginous dorsum (Polly beak deformity). For the tip, examine tip projection, rotation, support, alar and columellar retraction, over-aggressive Weir incisions, and lower lateral crural characteristics such as over-resection, cephalically oriented, or bossae formation. Over-resection of the lower lateral cartilage complex in patients with a heavy sebaceous skin-soft tissue envelope can cause tip ptosis and nasal obstruction. A deviated cartilaginous dorsum and tip can signify a deviated septum. This is only a partial list of anatomical problems that one needs to identify in nasal analysis.

For patients with nasal obstruction, observe the patient performing normal and deep inspiration on frontal and basal views. Often, the diagnosis is easily identifiable as supra-alar, alar, and/or rim collapse or slit-like nostrils during static or dynamic states. External valve collapse (lower lateral cartilage pathology) can be evaluated with the soft end of a cotton swab while plugging the contra lateral nostril. The cotton swab elevates the area of obstruction whether it is the alar rim, lower lateral crura, or supra-alar region. See if the nasal obstruction is alleviated by elevating the nasal tip in patients with ptosis of the nasal tip. Perform the Cottle maneuver (pulling laterally on the cheek) to check for internal valve collapse. Although this test is generally nonspecific, internal nasal valve pathology caused by supra-alar pinching or a narrowed angle between the upper lateral cartilage and septum can be diagnosed.

On basal view, examine the medial crura to identify if they are impinging into the nasal airway. Following a thorough external nasal evaluation, the endonasal examination ensues. At minimum, perform anterior rhinoscopy with and without topical decongestion. In certain cases, nasal endoscopy and rhinomanometry may be useful. Evaluate the nasal septum for perforations, persistent deviation, and for any remaining cartilaginous remnants to be used for grafting. Other causes of nasal obstruction to identify are: hypertrophic inferior turbinates, synechiae between the lateral nasal wall and septum, nasal masses, and middle turbinate abnormalities (concha bullosa).

As you are examining the patient, create a mental problem list with solutions followed by documentation on your nasal analysis sheet, such as: 1) external valve collapse secondary to over-resected lower lateral crura with a plan of open rhinoplasty with lateral crural strut grafts using conchal cartilage, 2) internal nasal valve collapse secondary to a narrowed middle vault and supra-alar pinching with moderate inspira-

PHOTOS COURTESY OF PAUL S. NASSIF, MD, FACS

Preoperative.

Four-week postoperative photographs of a 30-year-old Hispanic male who complained of bilateral nasal obstruction, nasal tip ptosis, and a wide appearance. Based upon the scars from his previous rhinoplasty 15 years ago, he had bilateral Weir incisions and a columellar scar for what appears to be an open rhinoplasty. Patient also has microgenia.

Procedure. Revision rhinoplasty with septoplasty with cartilage harvesting, large chin implant, and platelet gel application.

Findings at the time of surgery. 1) Deep nasal frontal angle: crushed radix graft placed, 2) Narrow middle vault (left more narrow than right) and narrow internal nasal valve: bilateral spreader grafts (left thicker than right) placed, 3) Overresected lower lateral cartilages, expecially laterally causing external valve collapse; supra-tip scar tissue and what appears to be a cartilageinous cap graft; silicone columellar strut; tip ptosis, weak support, deprojection, and heavy, sebaceous skin-soft tissue envelope: excise scar tissue, remove cap graft, bilateral lateral crural strut grafts, sheild graft, remove silicone, and replace with septal cartilage extended columellar strut, interdomal sutures, 4) Retracted columella, acute nasolabial angle: plumping grafts to subnasal, 5) Deviated nasal septum with left septal spur: septoplasty with cartilage used for grafting material.

tion with a plan of bilateral spreader grafts and supra-alar batten grafts using conchal cartilage, and 3) bilateral alar retraction with a plan of bilateral conchal composite grafts. If structural grafting is necessary, decide what material may be used. A thorough knowledge of the types of autologous (septal, conchal, costal cartilage, and calvarium) and alloplastic grafting is needed as well as harvesting techniques. This is only an initial plan as you are creating your algorithm. It will change as you get closer to surgery.

Avoiding Risks

Photo imaging can be extremely useful if patients are notified that the final image is not a guarantee of results. However, despite proper notification and

Preoperative: 49-year-old status-post chin implant now presenting with asymmetric right mandibular fullness and status-post rhinoplasty with immediate bilateral nasal obstruction and "deformed looking nose" following procedure.

Postoperative: 11 months following revision rhinoplasty with removal and replacement of chin implant. On the basal view (last image), note that the deflected septum is improved but not perfect.

consent, there have been reports of lawsuits filed by patients for outcomes that are different from what was generated by the photo imager. Photo imaging can give clues to the patient's expectations. Unrealistic expectations of the patient can be identified when a conservative image is generated by the surgeon and the patient desires a radical change. Therefore, photo imaging can be a powerful tool in evaluating patients for surgery.

I cannot count the number of times that I have rejected patients after using the computer to discover their unrealistic expectations. An additional use for the computer image is to use it as a goal in surgery. Bring the preoperative and computer imaging photos to the operating room.

In general, rhinoplasty revision rates are high. Do not feel pressured to embark on surgery that is beyond your capabilities. First, do no harm. Know your limitations. Do not hesitate to refer your patient to colleagues who specialize in rhinoplasty for a second opinion or to perform the actual surgery. The patient will thank you for being honest. If you decide to undertake revision nasal surgery, a clear and thorough knowledge of nasal anatomy and function is paramount. Having an extensive preoperative discussion, including expectations, outcomes, and a detailed list of potential complications with the patient, can prevent physician-patient miscommunication. Prior to surgery, review the examination, previous operative summary, photos, nasal analysis sheet, problem list and plan, and then proceed with the surgical treatment. ■

Paul S. Nassif, MD, FACS, is a facial plastic and reconstructive surgeon in private practice in Beverly Hills, Calif. He is an assistant clinical professor in Facial Plastic and Reconstructive Surgery at the University of Southern California School of Medicine and University of California, Los Angeles School of Medicine, and a member of *Plastic Surgery Products'* advisory board.

Reference

1. Beekhuis GJ. Nasal obstruction after rhinoplasty: etiology, and techniques for correction. *Laryngoscope.* 1976;86(4):540-548.

Table 1. **NASAL ANALYSIS**

Patient Name:_____ Date: _____

- **Skin Quality:** Thin Medium Thick Sebaceous
- **Primary Description:** Big Twisted Large Hump Boxy Pinched Bulbous

FRONTAL VIEW

- **Dorsum:** Twisted Deviated Straight
- **Convex:** R L Bony Bony-Cartilaginous Cartilaginous
- **Width:** Narrow Wide Normal Wide-Narrow-Wide
- **Tip:** Deviated Bulbous Asymmetric Amorphous Pinched
- **Support:** Normal Weak
- **Medial Canthal-Alar Relationship:** Wide Normal Narrow
- **Tip Defining Points:** Uni Double
- **Nasal Bones:** Short Normal Long
- **Middle Vault/Upper Lateral Cartilages:** Narrow Normal Subluxed Asymmetric

BASE VIEW

- Trapezoidal Triangular
- **Tip:** Deviated Bulbous Wide Bifid Asymmetrical
- **Base:** Wide Narrow Normal **Dislocated Caudal Septum:** Y N R L
- **Columella:** Columellar/Lobule Ratio (2:1) Normal Abnormal
- **Medial Crural Footplates:** Wide Normal

LATERAL

- **Nasofrontal Angle:** Shallow Deep Normal
- **Nasal Starting Point:** High Low Normal
- **Nasal Length:** Normal Short Long
- **Dorsal Hump:** Y N Bony Cartilaginous
- **Tip Projection:** Normal Decreased Increased Ratio (0.55-0.60)_____ (TDP-AFJ/Nasion-TDP)
- **Alar-Columellar Relationship:** Normal Abnormal A-C Show _____mm
- **Naso-Labial Angle:** Obtuse Acute Normal _____ degrees
- **Supratip Break:** Y N
- **Nasal Ptosis:** Y N With Smiling: Y N
- **Infratip Break:** Y N
- **Chin:** Normal Microgenia Macrogenia
- **Columella:** Normal Hanging (Septum Medial Crura Soft Tissue) Retracted
- **Ala:** Normal Hanging Retracted
- **Pollybeak:** Y N Cartilaginous Soft Tissue

INTRANASAL

- **Septum:** Deviated Y N Spur R L
  Caudal Deviation Y N R L
  _____% Obtsruction R _____% Obstruction L
  Edematous Mucosa Y N Erythematous Mucosa Y N
  Perforation Y N If yes, location _____
- **Turbinates:** Hypertrophic Y N R L Normal
- **Internal Nasal Valve:** Narrow Normal
- **Conchal Cartilage Harvesting:** R L

PROBLEM LIST/PLAN:

1._____
2._____
3._____
4._____

_____ _____
Paul S. Nassif, MD, FACS Date