

# Rhinoplasty in 3D

## A high-definition approach to natural and aesthetically pleasing results

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**P**recision and a keen sense of what constitutes a modern and aesthetically pleasing nose are key components to achieving a natural and smooth outcome. Miscalculations that involve leaving or resecting even just a few millimeters of tissue can make the difference between a saddled, upturned, or pinched nose and a beautifully defined nasal shape and projection.

Our concept of a beautiful nose has changed throughout the past several decades, as have the surgical tools and techniques available. We now recognize that the older pinched, upturned “stamp” of rhinoplasties of the 1980s do not stand the test of time and are no longer aesthetically or functionally appealing.

A naturally attractive nose reveals an ideal congruity between its different parts, as well as a harmonious balance between the nose and the rest of the patient’s facial features. A conservative approach, which involves less resection of cartilage and more cartilage molding with either stitching or grafting techniques, can result in a nose that ages better over time. It appeals to the idea of a beautiful nose in the mind of today’s demanding cosmetic patient.

### CONSERVATIVE, YET DRAMATIC

Less is more when it comes to the physician’s approaches to modern rhinoplasty. Minute improvements and corrections can have a dramatic effect. The patient’s perception of the changes, post rhinoplasty, as being “dramatic” or “subtle” depends mainly on the overall size and shape of the nasal structure prior to alteration. For example, an extremely obvious bump or bulbous tip will appear dramatically altered even with conservative surgery, whereas a subtle hump reduction will produce a more minimal change.

“Conservative” approaches can result in dramatic or subtle results, in comparison to the dimensions of the patient’s nose preoperatively. To further illustrate this important point, so-called subtle changes

can result in a dramatic impact in the patient’s overall appearance. These small refinements can be used to feminize a masculine-looking nose or redefine a thick and bulbous tip.

Rhinoplasty is one of the most difficult operations in plastic surgery, not only because of the anatomical complexity of the nose but also because the procedure often has cosmetic and functional implications over the patient’s lifetime.

Rhinoplasty also requires a keen understanding of the long-term healing of the nose and consequences of altering the nasal anatomy, which is an important factor in surgical planning. For example, consider a patient with thick, sebaceous skin or a secondary rhinoplasty case. An open approach, where indicated, may yield considerably more swelling—which has to be discussed in detail during the consultation phase.

In my practice, I see a large number

of primary and revision rhinoplasties, so I am always searching for ways to obtain a more precise result and a smoother outcome with cartilage grafts. Achieving a natural-looking, functionally sound, and cosmetically attractive nose depends on the surgeon’s aesthetic vision, technical ability, and conservative approach—as well as the surgical tools used.

### THE 3D HIGH-DEFINITION SYSTEM

To that end, I have incorporated in my practice the use of a 3D endoscopic high-definition system to allow for better visualization of intranasal anatomy during endonasal rhinoplasty. I am also using dermabrading units with powered rotating diamond burrs to smooth and round out the edges of the grafts that I place.

Early in my practice, I encountered difficulty smoothing cartilage grafts with a #15 blade. In some cases, following those patients 3 years later I began to see the edges of tip grafts—or their shadows—appear, especially in thin and fair-skinned patients. I found it quite challenging, if not impossible, to create a round surface using only a #15 blade.

Having been trained in otolaryngology and having used diamond burr high-powered units to smooth out the bone during reconstructive ear surgery, I decided to apply this technique with cartilage grafts to create a rounded edge. This worked extremely well—I was able to achieve the desired round edges of a cartilage graft. To date, I have used this approach in more than 1,000 nasal cases where the patient required grafts. In addition, I have followed these patients over 3 to 4 years and can report no graft visibility.

In Figure 1, the patient presented with a primary rhinoplasty from 15 years prior and was unhappy with her pointy and asymmetric tip. The patient had some remaining septal cartilage that was not sufficient, so I also used auricular cartilage. I was able to redefine her tip with multiple tip grafts that were smoothed





with the use of diamond burrs. She also required spreader, baton, and rim grafts. The postoperative result shown is at 3 years.



Figure 1. Correcting a 15-year-old rhinoplasty that left a pointy and asymmetric tip, the tip was redefined using multiple tip grafts that were smoothed with the use of diamond burrs. The patient also required spreader, baton, and rim grafts. This patient is shown 3 years after the correcting surgery.

In my approach to rhinoplasty, I am as comfortable with the endonasal (closed) with tip delivery technique as I am with the open (external) technique. I had a unique residency training experience at Manhattan Eye, Ear, and Throat Hospital, having been exposed to both facial plastic and general plastic surgeons. Some surgeons only performed open rhinoplasty while others only did closed procedures, and a few surgeons did both. I am now able to do most primary rhinoplasties—even with multiple graft placements—with an endonasal approach, unless the tip has significant asymmetries and lacks support.

In Figure 2, the patient underwent endonasal rhinoplasty with tip delivery, conservative dorsal reduction, deprojection and refinement of the tip with small resection of cephalic trim and dome-binding sutures, and slight rotation with anterior caudal septal reduction with membranous septum and septocolumellar sutures.

I use the high-definition 3D endoscopes with the closed approach from the intranasal incisions in order to visualize the dorsum more precisely. This allows me to clearly see areas that are difficult to visualize with a closed approach—such as the nasofrontal angle and minor irregularities of the dorsum, which may present later as irregularities once the swelling resolves over time.

Cartilaginous and bony dorsal irregularities can be seen with much more clarity with the high-definition 3D endoscopes. I have also found it advantageous to use the endonasal technique for revision rhinoplasties that lack lateral support in the

external nasal valve, as well as some that require spreader grafts.

I prefer the open approach in revision rhinoplasty where there is significant middle vault collapse, and/or the nose has a very weak, drooping tip, and/or tip cartilages have buckles and asymmetries in their native state that straighten out when the tip is delivered.

In cases where multiple graft placements are required, I can secure the grafts better via the open approach. In rare cases, I have begun the rhinoplasty endonasally and then converted to an open approach. Delivering the lower lateral cartilages stretched and moved them from their native state, which made it difficult to see buckling and other anomalies of the tip cartilages in their anatomic state.

During the consultation, if there is a chance that this technique may be indicated, I always discuss the possibility of the open approach and visible incision with the patient.



Figure 2. The patient had endonasal rhinoplasty with tip delivery, conservative dorsal reduction, deprojection and refinement of the tip with small resection of cephalic trim and dome-binding sutures, and slight rotation with anterior caudal septal reduction with membranous septum and septocolumellar sutures.

### A GRADED APPROACH

To refine my technique, I developed a graded approach to rhinoplasty that progresses from endonasal to open approaches. I utilize surgical tools such as the high-definition 3D endoscopic-assisted system for an endonasal approach. I do not use grafts on every patient, especially where there are long nasal bones and adequate tip support.

Usually, I endeavor to begin with endonasal and suturing techniques only and progress to grafting with the endonasal approach in small pockets.

I will opt to do an open rhinoplasty with multiple grafts, especially in revision rhinoplasty, only when absolutely necessary. I always try to use the patient's own cartilage and avoid adding synthetic

material when possible, although I have had great success using irradiated rib grafts as a graft material when not enough septal cartilage is present (or the patient's ear cartilage is insufficient or too weak).

As for synthetic implants, I do not use silicone but have had tremendous success with Medpor. I use the micro-diamond burr machine to sculpt and smooth cartilage grafts. It, as well as Medpor, is particularly useful with septal or costal grafts. However, you have to use extra caution when sculpting ear grafts with a powered instrument that can easily break the tissues.

The sculpting of grafts with the powered diamond burrs is particularly helpful with tip, cap, and dorsal grafts—less so with deeper grafts, such as columellar struts, lateral crural struts, or spreader grafts. All nasal grafts should be placed below the SMAS muscle layer in the nose. In addition, my dissection is always deep, which results in a cleaner operation with less bleeding and bruising. Patients greatly appreciate that. If I find that I need to defat the overlying thick skin, I use the Brown Addison forceps in selected areas.

### CONCLUSION

Rhinoplasty and, in particular, secondary rhinoplasty, patients are increasingly demanding and often present as obsessed with minor defects that are magnified in their perception of the way their nose appears. I always promise less than what I think I can reasonably deliver, especially with twisted noses, which are notoriously difficult to correct completely.

In the end, nothing replaces a keen understanding of nasal beauty, facial harmony, and what constitutes the elements of a great result. Technology, surgical techniques, and specialized tools are only a means to an end. Our aesthetic judgment and expertise are the driving forces behind the decisions we face about how much tissue to remove, how much to leave behind, as well as when tissue should be added.

The true test of producing excellent results with rhinoplasty operations is based primarily on how pleased the patients are when the swelling settles down and, perhaps secondarily, how well they can breathe. ■

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