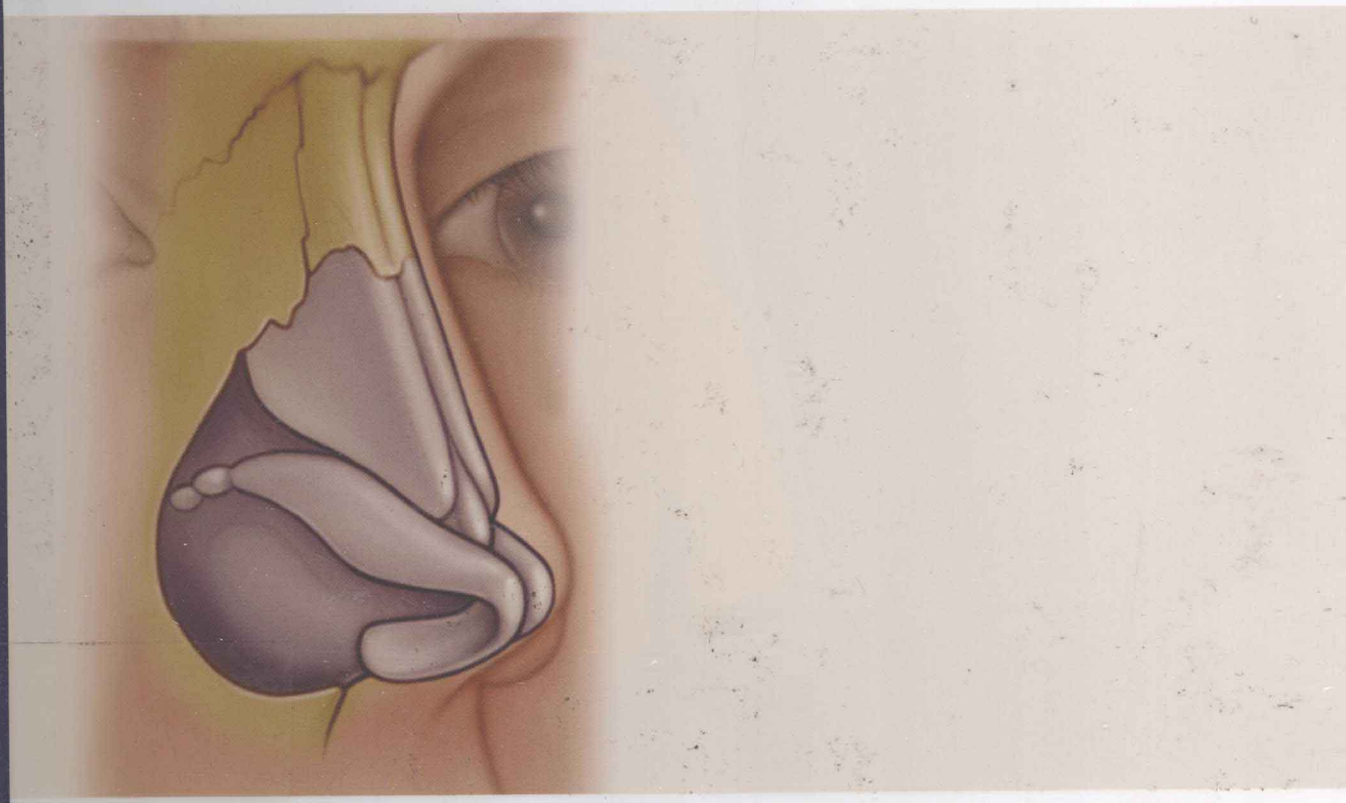
Bahman Guyuron

RHINOPLASTY



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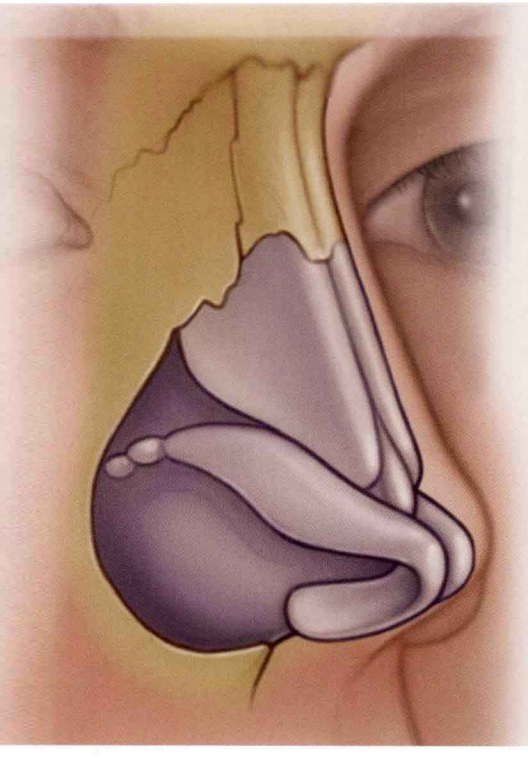

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Video Contents

Chapter 4: Basic Rhinoplasty

4.13bvii The crest of the vomer bone is also removed, if deviated. Often, this part of the septum protrudes to one side as a spur. The resection is continued until all the irregularities are eliminated. Sometimes it is necessary to cauterize the vessels along the base of the vomer bone to minimize the potential for postoperative bleeding.

4.13c One of the critical aspects of septoplasty is removing the overlapping portion of the caudal septum, which is often dislodged to one side of the septum. This will allow for a swinging-door-type movement of the septum.

4.13d The mobilized caudal septum is then repositioned over the anterior nasal spine and fixed into position using 5-0 PDS suture. However, it is crucial to make sure that the nasal spine is in the correct position prior to fixing the septal cartilage to it.

4.14a The turbinates are then conservatively trimmed using a pair of turbinate scissors, removing only the redundant portion and leaving normal-sized turbinates behind.

4.14b The suction cautery is then used to gently cauterize the raw surface of the turbinates to minimize postoperative bleeding.

4.15 Doyle stents covered with bacitracin ointment are then introduced into each side of the nasal cavity and fixed into position using a 4-0 polypropylene suture passed through the membranous septum. The ends of the suture are left long so they can be easily identified and are placed inside a tube in order to avoid irritation of the nasal lining.

4.16 The medial osteotomy is initiated with a 4 mm osteotome placed medial to the nasal bone and the osteotomy is completed with gentle tapping on the osteotome.

4.17 The lateral anteroposterior percutaneous osteotomy is accomplished using a 2 mm carbide osteotome. It begins anteriorly and is extended posteriorly in the subperiosteal plane.

4.18ai The lateral osteotomy begins with a stab wound incision in the vestibular lining close to the pyriform aperture. A Joseph's elevator is then used to create a tunnel in the subperiosteal plane over the nasal bones.

4.18aii The lateral osteotomy is then started using a guarded osteotome, which is gently advanced in the subperiosteal plane while its position is monitored with the index finger of the nondominant hand. Upon completion of the osteotomy, the nasal bone can be moved medially with gentle pressure.

4.18b The upper lateral cartilages are trimmed after completion of the osteotomy.

4.19a Spreader grafts are prepared using a piece of straight septal cartilage and the ends are beveled to minimize visibility.

4.19b The spreader grafts are then placed into position, extending from underneath the nasal bones to the caudal end of the upper lateral cartilages, and are fixed in position using a double armed 5-0 polyglactin suture. After one needle is passed, the position of the spreader grafts is adjusted and then the second needle is passed and the suture is tied to align the cartilages with the dorsum. At least two sutures are utilized to avoid rotation of the graft. Again, the position of the grafts is monitored throughout this process to insure proper alignment and symmetry.

4.20a The upper lateral cartilages are then approximated to the septum using 5-0 PDS. Since the intention is to rotate the anterior septum to the left side, the stitch is placed more cephalad on the left side and more caudally on the right side. In this way, using the left upper lateral cartilage as an anchor, the septum can be rotated to that side. As the suture is tightened, the septum rotates to the patient's left to be aligned with the rest of the facial structures. A second suture is often necessary to avoid bulging of the upper lateral cartilages. These stitches should be placed as anteriorly as possible to avoid constriction of the internal valves.

4.20bi The columella strut is prepared using the longest and straightest portion of cartilage available. In fact, this is the first piece that is harvested. The length of the graft is, to a great deal, dependent on its purpose.

4.20bii The soft tissue between the middle crura is excised using the coagulation power of the cautery.

4.20biii The columella strut is placed in position while the domes are aligned and retracted with a double skin hook. Using methylene blue and brilliant green, the columella is tattooed with a 25-gauge needle.

4.20biv Guided by the tattoo marks and using 5-0 PDS, two stitches are placed through the medial crus on one side, passed through the columella strut and the opposite medial crus, and tied in position to insure proper alignment of the cartilages. The second stitch is placed in a similar fashion, aligning the medial crura and the columella strut. Prior tattooing of the medial crura and the columella strut avoids unnecessary repeated replacement of the sutures. The excess portion of the columella strut is then trimmed if necessary.

4.21a A transfixion incision is made along the cephalic border of the medial crura and the redundant portion of the membraneous septum is excised to facilitate cephalic rotation of the tip.

4.21b The caudal septum is then excised in a triangular shape based anteriorly to facilitate cephalic rotation of the tip.

4.21c A tip rotation suture is placed using 5-0 nylon. The suture is passed through the medial crura and tied, and the needle is then passed in between the medial crus on one side and the columella strut. A bite is taken of the anterocaudal septum including a minimal amount of soft tissue and the suture is then passed between the opposite medial crus and the columella strut and tied incrementally to oppose the cephalic border of the medial crura to the caudal border of the septum. The tip position should be carefully monitored throughout this process.

4.22a The footplates are exposed through the transfixion incision and the redundant portion is excised if necessary.

4.22b If the footplates are displaced laterally, a 5-0 PDS suture is passed through the footplate on one side and then passed to the opposite side cephalad to the footplates. The suture is then passed through the opposite footplate and tied incrementally.

4.23 A subdomal graft is being placed by creation of a pocket under each dome first. A piece of cartilage graft usually measuring about 10 mm long, 1.5 mm thick, and 1.5 mm wide is passed under the dome on one side and then passed under the opposite dome and fixed in position using 6-0

polyglactin sutures. At least two and often three sutures are needed to avoid dislodgment of the graft.

4.24a Next, a supratip suture is placed if needed. To do so, a temporary columella suture is placed and the supratip breakpoint is identified and tattooed using a 25-gauge needle and methylene blue. The supratip skin is approximated to the underlying anterior septal angle guided by the tattoo marks.

4.24b The columella incision is then repaired using 6-0 fast-absorbable catgut sutures. The angles of the step incision aid the precise placement of the sutures.

4.25a A graft 10–12 mm long and 2–3 mm wide is crafted from the thinnest portion of the septum or the removed cephalic margin of the lower lateral cartilage. The anterior end of the cartilage graft is beveled to avoid visibility. A pair of iris scissors is used to create a pocket within the thickness of the alar rim as close to the rim as possible. The graft is inserted and fixed in position using a 6-0 fast-absorbable catgut suture.

4.25b The alar base incision is designed by removing most of the tissue from the nostril sill, leaving enough laterally to facilitate a graceful transition from the alar rim. The incision is made using a no. 15 blade while the soft tissues are retracted. The alar base is excised using a combination of knife and electrocautery needle and the muscles at the base of the excised area are released and cauterized gently. The incision is then repaired using 6-0 fast-absorbable catgut and the lateral flap is approximated to the medial flap in a very precise fashion using multiple stitches.

4.26a The nose dressing is a very important part of the rhinoplasty in order to approximate the freed soft tissues to the underlying frame. Mastisol® is used on the nose skin to help the adhesion of the Steri-Strips™, which are then applied precisely.

4.26b Routinely, a combination of a metal splint and Aquaplast™ is used over the Steri-Strips™.

4.26c The Aquaplast™ portion of the splint provides stability while the metal portion of the splint aids precise molding of the Aquaplast™.

Chapter 6: Tip Sutures

6.1 The interdomal suture can be placed as a simple stitch or in a figure-of-eight fashion. A simple stitch may overlap the domal cartilages, while the figure-of-eight suture will not only avoid this but, if the domes are overlapping or are misaligned cephalically, will align them.

6.2 When a transdomal suture is utilized, it is preferable to place an independent transdomal suture across each dome to avoid asymmetry. The suture is started from the medial aspect of one dome, passed across the dome laterally without violating the lining, passed lateral to medial, and then brought back across the dome and tied in the medial side of the dome.

6.3 To place a medial crura suture, a 5-0 PDS stitch is passed through the medial crus on one side, passed through the opposite side, and tied incrementally while watching the domes to ensure that they are not approximated too much.

6.4 To place the Tebbetts lateral crura spanning suture, this horizontal mattress suture is started from the medial portion of one lateral crus, passing the suture medial to lateral on one side, passed cephalically lateral to medial, crossed over the dorsum. It is then passed through the opposite lower lateral cartilage and brought back. The suture is then tied incrementally while the assistant holds the knot with a pair of smooth forceps to avoid overtightening.

Chapter 7: Achieving Optimal Tip Projection

7.1 Use of a tip punch to harvest a tip graft.

7.2 The graft is removed from the punch.

7.3 The tip graft is fixed in position using 6-0 polyglactin sutures. Its position is monitored three-dimensionally to ensure that it is placed symmetrically.

Chapter 9: Correction of the Overprojected nose

9.1 The domes are separated from the underlying lining using a pair of iris scissors. The extent of the lining will depend on the amount of cartilage that needs to be removed.

9.2 The domes are lowered beyond what is optimal for the patient considering the thickness of the cartilage that will be applied over the existing medial and lateral crura.

9.3 The columella strut is placed in position and trimmed.

9.4 A tip graft is harvested using the tip punch. The graft is placed in position and fixed using 6-0 polyglactin. The first suture will fix the graft to the underlying medial crus. Next, the graft is sutured to the lateral crus on the same side. As the suture is being tied, the position of the graft is monitored three-dimensionally. The graft is then sutured to the opposite side.

9.5 The redundant portion of the lining under the newly constructed dome is excised in a triangular shape. The resulting defect is then repaired using 5-0 chromic interrupted sutures.

Chapter 13: Controlling the Nostril Size

13.1 A crescent piece of the redundant soft triangle lining is excised to elongate the nostril.

Preface

There is no procedure in the plastic surgery field that demands as much finesse, and as many years of practice to master as rhinoplasty does. In fact, a rhinoplasty technique that provides consistent, flawless outcomes has been elusive to the majority of us. This challenging operation commands keen scrutiny of every result and appreciation of the maneuvers that succeed in order to experience steady progress. Over the years, we have been able to reduce some of the ambiguities involving this surgery, discovered most of the reasons for its failures, and have developed safeguards to lead to more pleasing and natural outcomes and fewer revisions. In this field, patience is a virtue since many of the results cannot be fully assessed until at least one year from the surgery. This, naturally, flattens the learning curve and it is often compounded by the fact that during the early years of practice following completion of plastic surgery training, the rhinoplasty cases are rare and most patients choose the more experienced surgeons for their rhinoplasty. As it will be demonstrated in this book, most of the passage of time related changes in the nose are directly linked to the thickness of the skin. As the skin becomes thinner, the flaws that were not initially so discernible may become evident. Sometimes this takes years. It is, therefore, paramount to create a nose frame that would provide the most satisfying outcome no matter how thin the skin gets with time. Indeed, with experience, there comes a point in practice when one can create the type of frame that would provide this objective. One of my hopes from sharing this information with our colleagues is to help them to reach that point sooner and alter the learning curve auspiciously.

Another powerful factor that makes this operation exceedingly taxing is the interplay that occurs with each maneuver. As one completes each rhinoplasty step, it not only achieves the intended goals, there are multiple unintended changes that take place which may have synergestic, antagonistic or independent consequences. These have been elaborately discussed in Chapter 3 since complete understanding of rhinoplasty dynamics is one of the cardinal essentials for a successful rhinoplasty.

This book is a product of 31 years of experience, perpetual learning and transition from the results that began with many suboptimal and rare pleasing outcomes, common features of the rhinoplasty results in early 1980's for most

surgeons, and has culminated into logical steps with reproducible results and fewer revisions. When you review the patient examples in the chapters, you may conclude that while the noses may share some common characteristics, they are not exactly alike and I have tried to avoid prototype noses. I owe this progress to my craniofacial training which led me to design a cephalometric principled planning of the rhinoplasty that takes the entire face into consideration and creates congruity between the nose and the rest of the face. However, my quest for consistent perfect rhinoplasty outcomes has continued and there is rare day that I am in the operating room and fail to learn something new that improves my results.

To date, 54 articles have been published based on studies that have been conducted by our team to lend as much scientific support to the opinions expressed in this book as possible. Additionally, I have tested all of the sensible techniques that have been introduced by our colleagues and if reproducible with achievement of the claimed positive outcomes, they were incorporated in my practice and are discussed in this book. I extend my deepest gratitude to our colleagues for sharing their knowledge with all of us and helping us to advance the rhinoplasty field. Because of their efforts, the rhinoplasty results that we produce today are enormously superior to what we used to achieve 3 decades ago. We owe this progress to Jack Sheen, Jack Gunter and other rhinoplasty educators who unselfishly shared their rhinoplasty knowledge with us.

In this composite publication, we have incorporated a text with 3D animated and illustrations, and videos. Although the videos have been segmented for the ease of reference, when chained together, they will demonstrate the entire surgery from the beginning to the end. Essentially every patient photograph utilized in this book includes all four standard views of the patient in the same or subsequent chapters for the sake of completeness. The patients examples included here have a minimum of 1 year, and commonly, a longer follow-up.

It is my earnest hope that this complete package of information will provide the readers with all the tools they need to improve their results and achieve more consistent, gratifying, and natural outcomes.

Bahman Guyuron, MD

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Dedication

This book is dedicated to Lora, Glen, Greg, Grant, Sarah, and Shawn for understanding my passion for teaching and the compromises that they made in sharing my time with my colleagues, students, residents, and fellows.

Contents

CHAPTER 1

Surgical Anatomy and Physiology of the Nose

Chapter Contents

Pearls

- Soft tissues of the nose are thick cephalically and caudally and become thinner in the center. It is for this reason that the nose frame that is totally straight on the profile will most likely not induce an optimal dorsal outline.
- There are 4 distinct layers that occupy the area between the skin and underlying osteocartilaginous frame, including the superficial musculoaponeurotic system (SMAS), fibromuscular layer, deep fatty layer, and periosteum/perichondrium.
- Damage to the pars alaris muscle may result in collapse of the external nasal valve.
- Release of the depressor septi nasi muscle not only eliminates the depressor effect on the nasal tip, it may also cause a slight ptosis of the

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upper lip which may or may not be beneficial to the patient depending on the amount of incisor show.

- African-American noses often have short nasal bones. This becomes significant in maintaining the width of the nose after nasal bone osteotomy.
- Osteotomy and medial repositioning of the long nasal bones will have a deleterious effect on the airway since it will transpose the upper lateral cartilage medially as well.
- The confluence of cartilaginous nasal septum, ethmoid bone, and nasal bone is called the keystone area.
- Overall, the two paired middle and medial crura structures constitute the caudal leg of the basal nose tripod, the other two legs of which comprise the lateral crura. Understanding the tripod mechanism in reduction of tip projection and its rotation is absolutely crucial to the delivery of tip projection objectives.
- The lower lateral cartilage is commonly short and weak in non-Caucasian noses.
- The angle between the caudal border of the upper lateral cartilage and the septum, usually 10–15°, composes the internal valve along with the border of the inferior turbinate.
- Continuous interweaving of the perichondrium and the periosteum at the junction of the vomer bone and the cartilaginous septum anteriorly makes dissection in this part very difficult. It is easier to dissect the mucoperiosteum and mucoperiostium posteriorly and extend it anteriorly during the septoplasty.
- The highly vascular area that receives arterial circulation from the superficial terminal branches of the anterior ethmoid, the sphenopalatine, and the superior labial arteries is called Kesselbach's plexus, which is a common source of anterior nasal bleed because of the robust blood flow.
- The optimal turbulence of the nose will occur with a nasolabial angle of 90–115°.

An essential initial step in the arduous ascending pathway to the successful rhinoplasty is a clear understanding of the nasal anatomy and its function. It has been repeatedly stated that form and function are inalienable components of most facial structures and the nose is no exception. It is of cardinal importance to recognize that the nose has several important functions and maintaining sound structural support during the rhinoplasty is crucial to its shape and physiology. This is where the understanding of the nasal anatomy becomes an irreplaceable component of a positive rhinoplasty outcome. In this chapter, we will first discuss the anatomy of the nose, followed by its function as it relates to the rhinoplasty. We will begin with the surface of the nose and extend the discussion to the deeper structures.