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FACIAL PLASTIC SURGERY
Rhinoplasty

英文原版

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鼻整形

STEPHEN PERKINS

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Introduction

Every conscientious and caring rhinoplasty surgeon desires to produce predictable, long-lasting, pleasing, and satisfactory results. Developing and incorporating a standard or routine set of procedures to effect these results are fundamental and crucial to successful rhinoplasty. In addition, however, it is imperative that truly talented rhinoplasty surgeons have a large accessory armamentarium of techniques for handling the huge variegates in anatomy (varying anatomies), natural or iatrogenic, encountered in each individual rhinoplasty case.

Success in rhinoplasty begins with a solid three-dimensional understanding of the nasal anatomy and experienced awareness of the functional aspects of the nose. An aesthetically pleasing rhinoplasty is only successful if the patient's pre-existing compromised airway concerns are addressed simultaneously. In fact, even an excellent cosmetic improvement in the nasal appearance can result in a very dissatisfied patient if one creates a worsened or compromised functional airway. The contemporary rhinoplasty surgeon **must** have an intimate knowledge of the anatomic abnormalities creating the disharmonious appearance and he/she must completely understand the functional nasal airway and the surgical steps that must be taken to ensure and improve proper breathing.

In this volume, we address all of the above basic tenets. We start with a review of pertinent anatomy and progress to preoperative evaluation of each individual patient. Succeeding chapters help prepare the rhinoplasty surgeon to plan the proper, individualized operation for each patient. The preoperative analysis is probably more important and more helpful in rhinoplasty than in any other facial plastic surgery procedure. Knowledgeable preoperative evaluation allows the surgeon to prepare a surgical plan for achieving successful, long-term, good results in any rhinoplasty. We present a very specific set of techniques that are useful in achieving this successful outcome in almost every patient encountered. We also address the conditions that require ingenuity and a different "bag of tricks" to achieve the same improvements in nasal appearance and airway function.

Finally, a respected rhinoplasty surgeon must be able to handle and correct problems that occur in patients who have had one or more previous rhinoplasty operations. Secondary or revisional rhinoplasty is covered in detail. Learning how to diagnose, approach, and deal with unusual anatomical distortions is crucial to restoring normal anatomical appearance and function for these patients. One must be able to "take apart" or "dismantle" the nose and totally rebuild it to achieve the successful outcome that the surgeon and the patient expect. The "tools" to do this are presented in detail in this volume.

The authors of this volume hope the reader will gain a practical and valuable system for evaluating, planning, approaching, and effecting an outcome for each rhinoplasty case that is both aesthetically pleasing and functionally competent, as well as long lasting. Happy patients, a successful practice, and a satisfied surgeon will be the best overall conclusion.

Stephen W. Perkins, MD

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Nasal Anatomy, Nasal Analysis, and the Rhinoplasty Consultation

Rami K. Batniji, MD, FACS and Stephen W. Perkins, MD

Applied Nasal Anatomy

The nasal skin consists of the following layers from superficial to deep: epidermis, dermis, subcutaneous fat, muscle and fascia (musculoaponeurotic layer), deep areolar tissue, and perichondrium or periosteum overlying cartilage or bone. There are two natural planes of dissection: one is the plane between the subcutaneous fat and muscle/fascia, and the other is between the deep areolar tissue and the perichondrium/periosteum. The type, texture, and sebaceous content of the skin differ among races and ethnicities. In general, skin is thinner and more mobile in the upper two thirds of the nose, while the skin of the lower third of the nose is thicker and more sebaceous.

The muscles of the nose may be divided into two groups: intrinsic and extrinsic. Of the intrinsic muscles, the procerus, pars transversa, and pars alaris muscles have the most clinical significance. These are paired muscles. The procerus raises the dorsum and lowers the lateral cartilages. The pars transversa provides lateral wall rigidity. The pars alaris is the primary dilatory muscle of the ala and is responsible for alar flaring. The levator labii superioris alaeque nasi is an extrinsic muscle and contributes to dilation of the nasal ala. The depressor septi nasi muscle is another extrinsic muscle and it contributes to drooping of the nasal tip and shortening of the upper lip on animation, particularly with smiling. The action of the depressor septi nasi muscle may cause de-rotation of the nasal tip upon smiling and should be documented with digital photography; if this action is significant, the depressor septi nasi muscle can be disrupted at the time of surgery (the authors' preferred method) or by injection of neuromodulator.

The paired nasal bones form the bony vault, which is pyramidal in shape. The nasal bones articulate with each other medially, the frontal bone superiorly, the maxilla laterally, the perpendicular plate of the ethmoid posteriorly, and the upper lateral cartilages inferiorly. The relationship of the nasal bones to the cephalic end of the upper lateral cartilages may vary, but the most commonly seen relationship is that the nasal bones overlap the cephalic end of the upper lateral cartilages by 6–8 mm. The junction of the nasal bones, upper lateral cartilages, and septum defines the keystone area and is usually T-shaped in contour.

The internal nasal valve is found within the midnasal vault. The internal nasal valve is bordered by the septum (medially), the nasal floor (inferiorly), the inferior turbinate (laterally), and the caudal border of the upper lateral cartilage (superiorly).

The scroll area is defined as the junction between the caudal border of the upper lateral cartilage and the cephalic border of the lower lateral cartilage. The external valve is bordered by the caudal edge of the lateral crus of the lower lateral cartilage, the soft tissue alae, the membranous septum, and the sill of the nostril. The lower lateral cartilage is comprised of the medial, intermediate, and lateral crura. The accessory cartilages connect the lateral crus of the lower lateral cartilage to the piriform aperture. The accessory cartilages and the lateral crus are bounded by a continuous perichondrium; the accessory cartilages and the lateral crus are frequently referred to as the lateral crural complex. The major tip-support mechanisms include: (1) the size, shape, and resilience of the lower lateral cartilages, (2) the medial crural footplate attachment to the caudal border of the quadrangular cartilage, and (3) the attachment of the caudal border of the upper lateral cartilages to the cephalic border of the lower lateral cartilages. The minor tip-support mechanisms include: (1) the interdomal ligament, (2) the cartilaginous septal dorsum, (3) the sesamoid complex extending the support of the lateral crura of the lower lateral cartilages to the pyriform aperture, (4) the attachment of the lower lateral cartilages to the overlying skin and musculature, (5) the nasal spine, and (6) the membranous septum.

Anderson's tripod theory is a helpful method of conceptualizing the nasal tip and the effects any change to one of the three limbs of the tripod will have upon the nasal tip.[1] Two limbs of the tripod are each of the lateral crural legs of the lower lateral cartilages; the third limb is the joined medial crural feet.

The nasal septum is composed of the quadrangular cartilage, which articulates with the nasal spine (anterior and inferior), the maxillary crest (inferior), the perpendicular plate of the ethmoid (posterior and superior), and the vomer (posterior and inferior). Septal deviations typically occur at the articulation points between the cartilage and bone.

Intranasal anatomy includes the superior, middle, and inferior turbinates of the lateral wall. The middle and inferior turbinates have the most clinical significance. A concha bullosa of the middle turbinate may contribute to contralateral deviation of the nasal septum and nasal obstruction. Hypertrophy of the inferior turbinates may contribute to nasal obstruction. If the nasal septum is deviated to one side, the inferior turbinate of the contralateral side may demonstrate compensatory hypertrophy.

Facial Analysis

Facial symmetry should always be assessed. Most patients' faces have asymmetries; it is important not only to document these asymmetries but also to discuss them with the patient prior to surgery. To emphasize this point, one can utilize image-processing software to create a chimeric face. A chimeric face is created by vertically dividing an image of a face through the midline and making composite faces with the left or right hemifaces. Differences may become more apparent to the patient when comparing the chimeric face to the actual face.

Facial analysis begins with the frontal view. On frontal view, the face is divided into vertical fifths by lines drawn adjacent to the most lateral projection of the head, the lateral canthi, and the medial canthi (**Figure 1-1**). One frontal view, the face is also divided into horizontal thirds, with the upper third from the trichion to glabella, the middle third from the glabella to subnasale, and the lower third from the subnasale to the menton (**Figure 1-2**).

Another key to facial analysis is the lip-chin complex. The desired relationship of the lip-chin complex is an upper lip that projects approximately 2 mm more than the lower lip on profile view. Whereas in females the chin lies slightly posterior

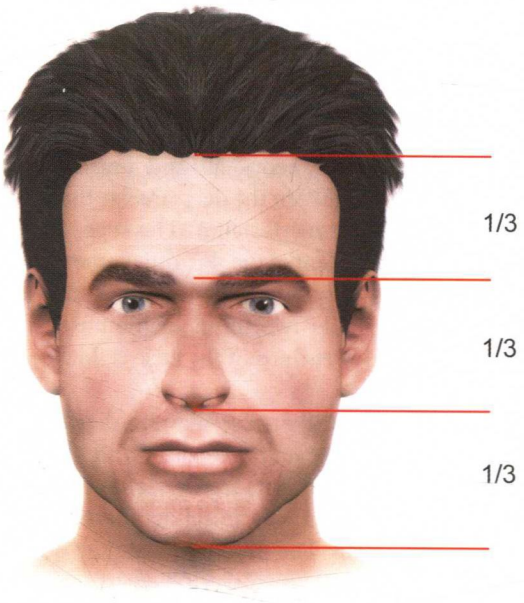

Figure 1-1. On frontal view, the face is divided into vertical fifths by lines drawn adjacent to the most lateral projection of the head, the lateral canthi, and the medial canthi.

Figure 1-2. On frontal view, the face is further divided into horizontal thirds: the upper third from the trichion to glabella, the middle third from the glabella to the subnasale, and the lower third from the subnasale to menton.

to the lower lip, in males the chin is even with, if not slightly anterior to, the lower lip. Deformities of the facial skeleton may affect the relationship of the lip-chin complex as well as other aspects pertinent to facial analysis in general and nasal analysis specifically. The facial skeleton should be evaluated for deformities, such as maxillary or mandibular hyperplasia and hypoplasia, piriform aperture recession, and malar prominence and/or recession. Adjunctive procedures, such as orthognathic surgery, may be indicated if a facial skeleton deformity is identified.

Nasal Analysis

Skin

The skin type and texture should be noted. Thick, sebaceous skin tends not to drape well over the underlying framework and takes longer for postoperative edema to subside before the final result is appreciated. Thin skin, on the other hand, may show small deformities of the underlying framework, but edema subsides more quickly than in thick skin.

Frontal Analysis

On frontal view, the nose is evaluated for possible deviation from the midline. Facial asymmetries that may affect the defined midline should be noted and pointed out to the patient. If a deviation of the nose is present, the cause must be determined, and the cause may be attributed to the upper, middle, and/or lower third of the nose.[2]

The nasal dorsum should be outlined by two slightly curved divergent lines; Tardy referred to them as the brow-tip aesthetic lines.[3] These lines extend from the infraorbital rim to the nasofrontal angle, into the slightly narrower middle nasal vault, and then to the tip-defining points. If there are any irregularities to the brow-tip aesthetic lines, then the observer subconsciously tends to focus upon these irregularities. If, however, the brow-tip aesthetic lines are smooth, slightly curved, divergent lines as described, then the observer's attention is focused upon the patient's eyes and not the nose.

Profile Analysis

On profile view, the nasofrontal angle is defined as the angle of demarcation between the forehead and nasal dorsum (**Figure 1-3**). It should measure 115–130 degrees, with a more obtuse angle in females and more acute angle in males. The deepest portion of the nasofrontal angle should lie between the upper eyelash line and supratarsal fold with the eyes in forward gaze.

The next aspect of nasal profile analysis is tip projection. Many methods have been developed for evaluating tip projection. One method relies upon an upper lip with normal projection: a vertical line is drawn adjacent to the most projecting part of the upper lip, then a horizontal line is drawn from the alar-cheek junction to the tip of the nose. Adequate tip projection is defined as having 50–60% of the horizontal line lie anterior to the vertical line. If more than 60% of the horizontal line lies anterior to the vertical line, then the tip is considered over-projected. If less than 50% of the horizontal line lies anterior to the vertical line, then the tip is considered under-projected. Tip projection can also be determined using Crumley's method: the nose with normal projection forms a "3-4-5 triangle"—that is,

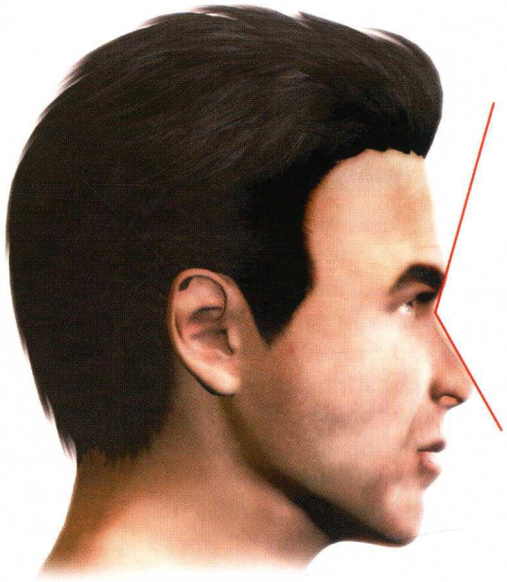

Figure 1-3. The nasofrontal angle should measure 115–130 degrees, with a more obtuse angle in females and more acute angle in males. The deepest portion of the nasofrontal angle should lie between the upper eyelash line and supratarsal fold with the eyes in forward gaze.

the alar point-to-nasal tip line (3), the alar point-to-nasion line (4), and the nasion-to-nasal tip line (5).[4]

Once tip projection is determined, the nasal dorsum is evaluated. A line is drawn from the radix to the tip; the dorsum of the nose should lie approximately 2 mm posterior and parallel to this line in women and approximately 1 mm posterior and parallel to this line in men.

Next, tip rotation is evaluated. Tip rotation is determined by the degree of the nasolabial angle. The nasolabial angle is defined as the angle between a line drawn from the midpoint of the nostril aperture and a line drawn perpendicular to the Frankfurt horizontal plane while intersecting the subnasale.[5] The Frankfort plane is defined by a horizontal line connecting the superior border of the external auditory cana; meatus with the infraorbital rim. The desired nasolabial angle in males is 90–95 degrees and in females it is 95–100 degrees (**Figure 1-4**). In a short person, the nose may be slightly more rotated than in a tall person.

Base Analysis

On base view, the lobule should make up a third and the columella should make up two thirds of an equilateral triangle. The medial crura should be inspected. If the medial crura are short and the medial crural feet are flared, this may indicate poor tip support.

Consultation

History

Preoperative evaluation is paramount for successful rhinoplasty. The evaluative process begins with a comprehensive nasal history. The patient's specific reason for seeking consultation should be explored. Does the patient have aesthetic concerns, functional concerns, or a combination of both? The patient should be able to clearly articulate aesthetic concerns; vague descriptions may lead to the surgeon's misunderstanding the patient's desires. The physician should pay attention to the patient's expectations of rhinoplasty and whether these expectations are reasonable given the patient's anatomy. Occasionally, a patient expresses a concern about the appearance of the nose that does not correlate with the actual physical appearance of the nose; this discrepancy may be an initial indication of body dysmorphic disorder.

The past medical history should be reviewed in detail to identify any medical contraindications

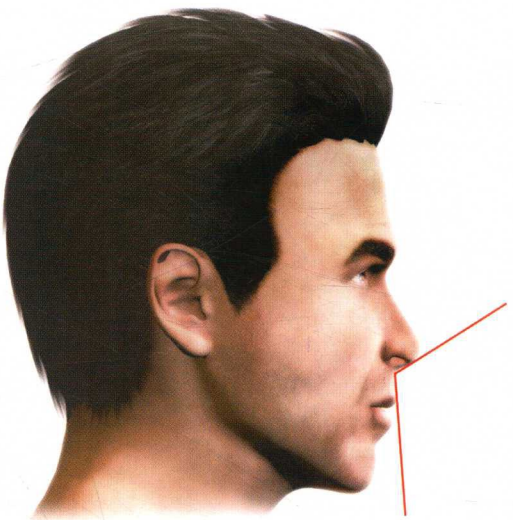

Figure 1-4. The nasolabial angle is defined as the angle between a line drawn from the midpoint of the nostril aperture and a line drawn perpendicular to the Frankfurt horizontal plane while intersecting the subnasale. The desired angle in males is 90–95 degrees and 95–100 degrees in females.

to surgical intervention. A history of easy bruising and/or bleeding may alert the physician to a bleeding abnormality that warrants further evaluation with blood testing. A history of hypertension and antihypertensive therapy should be reviewed, because hypertension may complicate the operative procedure, causing increased bleeding, edema, and postoperative bruising. Careful review of previous nasal surgery is essential, including the number of rhinoplasties performed and the dates they were performed. The condition for which the patient had initial surgery should be explored. Analysis of operative notes from previous rhinoplasty procedures may yield information about the approach utilized to achieve the aesthetic and/or functional goals, reasons for suboptimal outcomes, and any perioperative complications that may have occurred. Any history of nasal trauma should be recorded, including the date the trauma occurred. The patient with a history of nasal trauma may complain of nasal obstruction from septal deviation, mid-nasal vault collapse with internal valve obstruction, and/or external valve collapse. Hypertrophic inferior turbinates may result in nasal obstruction. Hypertrophy of the inferior turbinates may be a sign of allergic rhinitis, and such patients may benefit from antihistamines, local decongestants, systemic decongestants, and short courses of corticosteroids. A history of facial pain, pressure, and/or headaches may alert the astute diagnostician to sinusitis. Medication use should be reviewed, with particular attention paid to use of ibuprofen-based products, acetylsalicylic acid, and other agents that may increase the incidence of bruising and/or bleeding. Furthermore, use of herbal medicine should queried, because St. John's wort and *Gingko biloba* may also increase the incidence of bruising and/or bleeding.

Physical Examination

The type, texture, and sebaceous content of the skin must be carefully analyzed. Since thin skin has a high capacity to contract and redrape over the underlying nasal framework, slight imperfections of contour, asymmetries, and graft edges are more likely to be visible postoperatively. In contrast, thick sebaceous nasal skin tends to offer less postoperative contraction; therefore, more aggressive maneuvers may be necessary to achieve a significant definition of contour.

The contribution of the depressor septi nasi muscle to drooping of the nasal tip and shortening of the upper lip is observed when the patient smiles. If this contribution is significant, intraoperative modification of the muscle with dissection and transection can enhance the tip/lip complex.

The internal nasal valve is examined via anterior rhinoscopy. The normal internal valve angle measures 10–15 degrees. Patients with short nasal bones may be at risk for collapse of the mid-nasal vault and subsequent airway compromise. Osteotomies should be avoided if possible in patients with short nasal bones. However, if osteotomies are necessary in patients with short nasal bones, then placement of spreader grafts is highly encouraged to maintain the integrity of the internal valve. Spreader grafts may also be indicated to avoid not only disrupting the dorsal aesthetic lines, but also an inverted V deformity. Furthermore, incremental dorsal septal reduction should be performed when treating a cartilaginous dorsal hump in order to preserve the internal valve.

The external nasal valve examination includes the integrity of the alar rim, strength, resiliency, and shape of the lateral crura of the lower lateral cartilages, the position of the caudal septum, and the shape of the medial crura of the lower lateral cartilages. Also, the size of the anterior head of the inferior turbinate should be assessed.

Digital Photographic Analysis and Computer Imaging

Proper digital photographic analysis is dependent upon the utilization of proper positioning, cameras, lenses, flashes, and background. Photographs should be obtained in a standardized fashion, including the following standard views: frontal, profile (from both sides), oblique (from both sides), and base. Analysis of these photographs may uncover subtle asymmetries and deformities. Digital photographs provide the undeniable benefit of easy storage, high-quality printing, image manipulation, and easy retrieval.

Photographs facilitate communication between surgeon and patient. The photographs may serve as a medium through which the patient can more accurately demonstrate his/her concerns. Similarly, analyzing digital photographs enables the surgeon to demonstrate qualities that the patient cannot appreciate, such as asymmetries and disproportions seen in the lateral view. For example, disproportions in the nose and chin relationship can be demonstrated on review of digital photographs. Computer imaging of the preoperative photographs provides a visual reference for evaluating surgical outcome.

The computer also enables the surgeon to simulate the proposed changes and enables the patient to view and analyze them before surgery. It is imperative that the surgeon carefully assesses the computer-generated images so that the images represent an outcome that can be realistically achieved by the surgeon. The surgeon should not be overly optimistic about the potential results, to avoid patient dissatisfaction postoperatively. Furthermore, some patients may misconstrue computer imaging as an implied contract for the postoperative appearance. It should be explained to the patient that imaging represents the surgical goals and not the final result. This disclaimer should be provided orally and in written consent form.

Concluding the Consultation

At the end of the consultation, the surgeon should review the findings from the history and physical examination as well as the photographs and digital images. At this time, the surgeon should document the planned surgical maneuvers that may obtain the desired outcome. A thoughtful surgical plan, generated from a thorough review of the case, is an essential aspect of the consultation. This plan is recorded and and is reviewed again prior to the surgery.

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2

Primary Rhinoplasty: Intermixed Use of Endonasal and External Columellar Approaches

Stephen W. Perkins, MD

Primary rhinoplasty can be the most gratifying and yet challenging of facial plastic surgical procedures. Primary rhinoplasty challenges the surgeon with the anatomical variants that result from heredity, ethnicity, processes that interrupt or change normal development, and posttraumatic alterations. Being able to recognize and diagnose anatomical variants and to predict what will be required to alter the patient's nasal anatomy from its current state to a more aesthetically pleasing and functionally competent state is the first goal for every surgeon.

Planning the operation and choosing the appropriate approach to carry out the operative plan require significant training and experience and allow the surgeon to more accurately predict immediate and long-term results of the proposed approach. There are many surgical maneuvers and techniques that enable one to achieve any given desired result in rhinoplasty. Choosing the approach that allows one to more easily carry out the surgical plan and to deal with unexpected anatomical deviations is crucial for the success of the operation. Being experienced and facile with endonasal approaches, as well as having the ability to use the external columellar approach when necessary, allows the surgeon the widest leeway in carrying out proper maneuvers to achieve the desired outcome. Whether the approach is endonasally through a single cartilage-splitting incision,[1] through a delivery flap,[2] or via an external columellar incision and a more "open" approach,[3] it is imperative that the surgeon be able to accurately diagnose the deformity, adequately visualize it, and predictably carry out the maneuvers to modify the anatomical deformity to a more normal and aesthetically pleasing structure.

The overall concept in primary rhinoplasty is to perform a graduated, individualized approach for each patient and to achieve a pleasing aesthetic and functional result.[4] It is very important to treat each patient as an individual and only to perform the approach and the surgical maneuvers that are least disruptive to the existing anatomy, yet to accurately perform them for predictable and consistent results. Each surgeon has an ongoing and evolving need to achieve more refined results and to prevent late complications in every rhinoplasty. Even as the complexity of the operation has increased, the ways in which one can execute more complicated surgical maneuvers have been more clearly outlined and defined. The increasing use of the external columellar approach allows use of an expanded number of surgical maneuvers and grafting techniques to achieve even better results, to maintain structure

and function, and to predict the long-term outcome, while minimizing the risk of complications.

It is important that the operative plan incorporate the least-invasive intervention and the shortest operative time to achieve an operative result that satisfies the patient as well as the surgeon. The increasing use of grafts in the middle nasal vault and internal and external nasal valve areas has resulted in a larger percentage of cases carried out through the external columellar approach in the more open rhinoplasty fashion.[5]

Experience has shown that it is paramount to establish a structural foundation for the midnasal vault, which can prevent later inward contracture of the upper lateral cartilages.[6] Recognizing anatomical variants, such as cephalic malposition of the alar cartilages,[7] which leave inherent weakness in the alar margins and external nasal valve, has led to the increased use of alar batten and strut grafts to prevent external nasal valve collapse and inward recurvature of the lateral nasal alar walls.[8] Although some of these grafts can be placed through endonasal approaches, most of the time it is far easier to place the structural grafts through an external columellar approach, suturing them in position and ensuring that the grafts stay in the proper position.

Understanding tip support and tip dynamics is critical to a successful outcome in any rhinoplasty operation. It doesn't matter whether one uses an external columellar approach or an endonasal approach when maintaining tip support and projection: both approaches require reconstruction and support for tip-support mechanisms that may be interrupted in the rhinoplasty operation or the approach itself.[9] It is this author's philosophy that aligning the profile in a predictable, predetermined fashion is the primary maneuver that should be accomplished, thus allowing one to appropriately adjust the tip projection to complement and to be harmonious with pyramid height. This can often be done endonasally, but it may be necessary to place an extended tip graft to increase tip projection substantially, and this is much easier to perform and suture in place using the external columellar approach. All these points are emphasized in the discussion of the graduated approach to the various problems one sees in the preoperative condition of the tip and the lobule. The nature of the midnasal vault and the length of the nasal bones will also dictate whether an external columellar approach is indicated when otherwise an endonasal approach would be satisfactory to accomplish the predetermined goals of nasal tip plasty.

Consultation

The evaluation of each individual patient starts with a conversation in the initial consultation. It is important first to listen to the patient and to understand what bothers the patient and what the patient desires as the outcome of the proposed rhinoplasty. The patient's concerns and goals may be obvious, or they may be different from what the surgeon perceives on initial examination. The consultation with the patient requires a detailed evaluation of the patient's concerns, desires, and history. A history of significant trauma to the nose or of previous surgery is critical in determining the type of surgery that will be required and the approach needed to accomplish the surgical goals. A preoperative nasal evaluation sheet is very helpful in documenting the aesthetic and physical evaluation of the nose (**Figures 2-1 and 2-2**).

Preoperative Examination and Analysis

When it involves the lobule, the preoperative analysis is very important in determining the problem with the tip and in planning the appropriate approach and technical maneuver for aesthetic correction. The surgeon evaluates whether the tip is bulbous, broad, wide, boxy, bifid, trapezoid, twisted, asymmetrical, amorphous, infantile, over-projected, under-projected, under-rotated, or over-rotated. Evaluation of the tip is based on visual inspection, palpation, and photographic analysis.[1] Palpating the nose determines the nature, volume, strength, and resiliency of the lobular cartilages themselves.

In addition, the surgeon can assess the contribution of the anterior septal angle and its fibrous connections to the lobular support, which is critical to the surgical plan. The thickness of the skin envelope is also extremely important. It is worth noting that thin skin shows the defined relief of strong alar cartilages or any postoperative alterations in these cartilages, whereas very thick skin not only may obscure postoperative anatomical alterations, but also may otherwise prevent achieving the desired aesthetic result no matter what technique or approach is used. Equally important is the presence of columellar distortions, such as a hanging, retracted, angulated, or twisted medial crura. Evaluation of the base of the columella at the nasal spine will reveal whether the tip is over-projected or under-projected in relationship to an overly prominent nasal spine or if there is

Meridian Plastic Surgeons — Nasal History and Physical

Patient: _____

_____ History of trauma to nose: _____

_____

_____ Previous surgery: _____

_____ Difficulty breathing: ☐R ☐L ☐Bilateral ☐Snoring ☐Mouth breathing

_____ Patient desires: ☐Straighter nose ☐Improved breathing

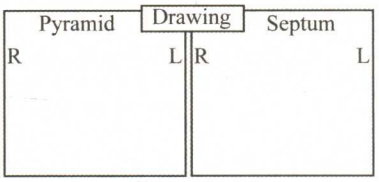
_____ Sinus disease

_____ Medications tried: _____

_____

Functional abnormalities

_____ Deviated nasal bones
_____ Fractured nasal bones
_____ C-shaped deformity R _____ L _____
_____ Irregular nasal bones
_____ Nasal bones holding septum off center



_____ Intranasal synnechia(e) R _____ L _____
_____ Inferior turbinate hypertrophy R _____ L _____
_____ Middle turbinate hypertrophy or concha bullosa R _____ L _____
_____ Septal ulcer R _____ L _____
_____ Septal perforation:
Size: _____
Location: _____
_____ Nasal polyposis: R _____ L _____
_____ Retraction of columella
_____ Acute nasolabial angle
_____ Premaxillary deficiency: R _____ L _____
Complete _____
_____ Cleft lip nasal deformity: R _____ L _____
Bilateral _____

_____ Traumatic dorsal hump R _____ L _____
_____ Dorsal saddling: Cartilage ____ Bone ____ Both ____
_____ Angulated R _____ L _____
_____ Dorsal ridge R _____ L _____

_____ Septum deviated R _____ L _____
_____ Spurs R _____ L _____
_____ Caudal end deflected blocking vestibule R _____ L _____

_____ Floor obstruction R _____ L _____

_____ Nasal valve collapse R _____ L _____
_____ Internal _____Alar
_____ Middle vault narrowing or collapse R _____ L _____
_____ Loss of tip support
_____ Collapsed lobule w/ valve collapse R _____ L _____
_____ Alvulsed/Depressed ULC's R _____ L _____
_____ Soft lobular cartilages

% Airway obstruction

R _____ L _____

(60 - 65 - 70 - 75 - 80 - 85 - 90 - 95 - 100 - 105)

Notes: _____

Doctor: _____ Date: _____

Figure 2-1. Preoperative nasal evaluation sheet (front).

a tension nose related to an overgrowth of the nasal septum. It is important to determine whether or not the tip is "hanging" from the nasal septal angle or is supported on its own by the strength of the alar cartilages themselves. If the alar cartilages are positioned more cephalad,[7] there is less cartilaginous support to the lateral nasal walls and predictably retraction, pinching, and inward recurvature will likely result if no support is added (**Figure 2-3**).

The alar cartilages may be convex, concave, rolled, flattened, wide, or narrow. The lateral alar cartilages may be long themselves, creating a dependent