

# Rhinoplasty for Middle Eastern Noses

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**Background:** Rhinoplasty remains one of the most challenging operations, as exemplified in the Middle Eastern patient. The ill-defined, droopy tip, wide and high dorsum, and thick skin envelope mandate meticulous attention to pre-operative evaluation and efficacious yet safe surgical maneuvers. The authors provide a systematic approach to evaluation and improvement of surgical outcomes in this patient population.

**Methods:** A retrospective, 3-year review identified patients of Middle Eastern heritage who underwent primary rhinoplasty and those who did not but had nasal photographs. Photographs and operative records (when applicable) were reviewed. Specific nasal characteristics, component-directed surgical techniques, and aesthetic outcomes were delineated.

**Results:** The Middle Eastern nose has a combination of specific nasal traits, with some variability, including thick/sebaceous skin (excess fibrofatty tissue), high/wide dorsum with cartilaginous and bony humps, ill-defined nasal tip, weak/thin lateral crura relative to the skin envelope, nostril-tip imbalance, acute nasolabial and columellar-labial angles, and a droopy/hyperdynamic nasal tip. An aggressive yet nondestructive surgical approach to address the nasal imbalance often requires soft-tissue debulking, significant cartilaginous framework modification (with augmentation/strengthening), tip refinement/rotation/projection, low osteotomies, and depressor septi nasi muscle treatment. The most common postoperative defects were related to soft-tissue scarring, thickened skin envelope, dorsum irregularities, and prolonged edema in the supratip/tip region.

**Conclusions:** It is critical to improve the strength of the cartilaginous framework with respect to the thick, noncontractile skin/soft-tissue envelope, particularly when moderate to large dorsal reduction is required. A multitude of surgical maneuvers are often necessary to address all the salient characteristics of the Middle Eastern nose and to produce the desired aesthetic result. (*Plast. Reconstr. Surg.* 123: 1343, 2009.)

**R**hinoplasty remains as one of the most challenging and humbling aesthetic operations. The Middle Eastern nose perhaps best exemplifies the inherent difficulties that the rhinoplasty surgeon faces in providing predictable, long-lasting improvement in nasal appearance while battling postoperative healing forces. Middle Easterners have traditionally played an important role in the rhinoplasty patient base worldwide, with numbers continuing to increase. Understanding the physical and social characteristics of this ethnic group is important for any surgeon who performs rhinoplasty and requires a careful evaluation.

It is critical to avoid the creation of “racial incongruity” in non-Caucasian noses, which produces an imbalance in ethnic facial features and signifies an “operated-appearing nose.”<sup>1</sup> A Caucasian-appearing nose on a Middle Eastern patient with Fitzpatrick IV skin type and other non-Caucasian facial traits presents as “overoperated” and awkward. Although an “accepted standard of beauty” may exist,<sup>1-4</sup> Middle Eastern patients frequently want to retain specific ethnic traits, such as a higher dorsum and less obtuse nasolabial and columellar-labial angles relative to their Caucasian counterparts. This concept is similar to performing rhinoplasty in the male patient, in which masculine features should be preserved.<sup>5</sup>

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Young women constitute a large proportion of the patient base, making it important to include the patient's parents in the details of the preoperative analysis, operative plan, and informed consent procedure. This produces a more "family-friendly consultation." Furthermore, Middle Eastern patients tend to be "perfectionists," and desire active participation in formulating the operative plan. Although this can be very helpful and illuminating to the surgeon, the rationale for the operative plan and the potential short- and long-term complications should be thoroughly discussed and documented. Preoperative imaging software can be invaluable in this discussion. In addition, privacy is cherished in most Middle Eastern cultures, and this became a formidable obstacle in obtaining photographic consent for our study.

As with any aesthetic procedure, the surgeon should only perform an operation that falls within his or her aesthetic judgment and ethical boundaries. Even if insisted on by the patient, creating a marked nasofacial/ethnic imbalance may not be in the best interest of the patient or the surgeon.

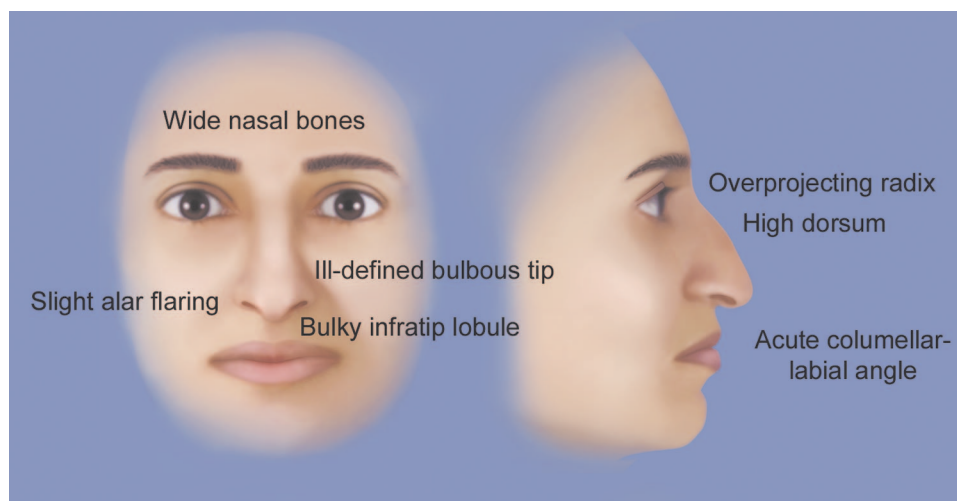
The Middle Eastern nose<sup>6-9</sup> possesses important morphologic features that exist on a spectrum between the African-American nose<sup>1,10-14</sup> and the Caucasian nose. Although similar nasal features are shared with African American,<sup>1,10-12,14</sup> Mediterranean,<sup>13,14</sup> and Hispanic/Mestizo<sup>13-16</sup> ethnic subgroups, significant distinctions must be recognized for an individualized, "ethno-sensitive" surgical approach.

"Middle Eastern" commonly refers to people of Arabic, Turkish, North African, or Persian descent. Although specific ethnic delineations and geographical distinctions can be made, they are

beyond the scope of this report. Furthermore, many of the cultural traits in the region have become intertwined over centuries. For example, the Parsi people have both Indian and Persian roots. In a review of Middle Eastern rhinoplasty techniques, Bizrah<sup>6</sup> divides the Middle Eastern population into the Middle East, North African, and Gulf regions.

The Middle Eastern nose seen on anteroposterior and lateral views is characteristic and distinct from other ethnic groups (Fig. 1). For our purpose, the term Middle Eastern refers to patients from North African countries (i.e., Morocco, Algeria, Libya, and Egypt), Gulf countries (i.e., Saudi Arabia, Iraq, United Arab Emirates, Kuwait, Iran, and Oman), and other ethnic regions (i.e., Turkey, Lebanon, Syria, Armenia, Afghanistan, Pakistan, and India).<sup>6</sup>

Overgeneralization regarding the nasal characteristics of specific ethnicities should be avoided. Ofodile and James<sup>17</sup> describe the vast anatomical variations of the African American nose. However, an individualized, systematic approach to rhinoplasty in African Americans can help guide the operative plan, as described by Rohrich and Muzaffar.<sup>1</sup> Like other ethnic subtypes,<sup>1,15,16</sup> the Middle Eastern nose exhibits a varied combination of specific anatomical characteristics. The goals of this study are to (1) define the more common nasal characteristics of the Middle Eastern nose; (2) describe a systematic open rhinoplasty approach that successfully addresses each nasal component; (3) define strategies that reduce the unpredictability of postoperative healing forces; and (4) emphasize the prevention of racial incongruity.



**Fig. 1.** Most common nasal characteristics.

## PATIENTS AND METHODS

A retrospective rhinoplasty database search of 3 consecutive years was conducted to select out patients of Middle Eastern origin ( $n = 36$ ). Middle Eastern patients were selected out based on name recognition by the junior author (A.G.) and by history. A chart review of these patients was conducted and included detailed analysis of standardized preoperative and postoperative photographs and a review of the operative note. We also evaluated available nasal photographs of Middle Eastern patients who had not desired or undergone rhinoplasty ( $n = 35$ ), yielding a total number of 71 noses analyzed.

In addition to standard nasofacial analysis,<sup>18</sup> an ethnically focused nasal analysis was performed that centered on the specific nasal features of the Middle Eastern nose. This included a systematic evaluation of the Fitzpatrick skin type, skin thickness/sebaceous quality, dorsum/radix position and contour, adequacy of nasal length, orientation and strength of the lateral crura, presence of nasal deviation, nostril-tip imbalance, degree of alar flaring (alar base position), columellar/medial crura length and integrity, and presence/absence of a hyperdynamic tip (animated view). The frequency of these preoperative characteristics is listed. Morphologic traits that were present less than 20 percent of the time are stratified as “infrequent.”

## RESULTS

Based on detailed evaluation of 71 Middle Eastern American patients, a varied combination of the nasal characteristics were present. The most common features are shown in Figure 1, and a more detailed list is provided in Table 1, with percentage frequencies. Although some North African and Arabian ethnic groups demonstrate nasal features that are similar to African American,<sup>1,10,11</sup> Asian,<sup>19</sup> and Hispanic noses,<sup>15,16</sup> the Middle Eastern nose<sup>6,9</sup> lacks certain features that often predominate in other ethnic subgroups (Table 2). Figure 2 depicts an ethnically focused nasal analysis that includes a systematic evaluation of the Fitzpatrick skin type; skin thickness/sebaceousness; dorsum/radix position; nasal length; orientation and strength of the lower lateral, middle, and medial crura; nostril-tip imbalance; alar flaring; alar base position; and presence of a hyperdynamic tip.

Creation of nasal balance based on normative measurements is aesthetically pleasing (Fig. 2). However, the avoidance of “ethnic asymmetry” is crucial and can be prevented by not overcorrect-

**Table 1. Common Characteristics of the Middle Eastern Nose\***

Characteristic	No. of Patients (%)
Amorphous, bulbous nasal tip	66 (93)
Thick sebaceous skin (fibrofatty soft-tissue envelope), especially at the tip	64 (90)
Wide bony and middle nasal vaults	61 (86)
Significant dorsal hump	60 (85)
Nostril-tip imbalance and nostril asymmetries	58 (82)
Droopy nasal tip with acute nasolabial (and columella-labial) angle (<80 degrees)	57 (80)
Underprojected nasal tip	56 (79)
High septal angle	51 (72)
High, shallow radix	46 (65)
Cephalically and vertically malpositioned lower lateral crura	44 (62)
Hyperdynamic nasal tip (hyperactive depressor septi nasi muscle)	24 (34)
Weak and insufficient lateral, middle, and medial crura (nasal base platform)	N/A†

N/A, not applicable.

\*The total number of patients is 71.

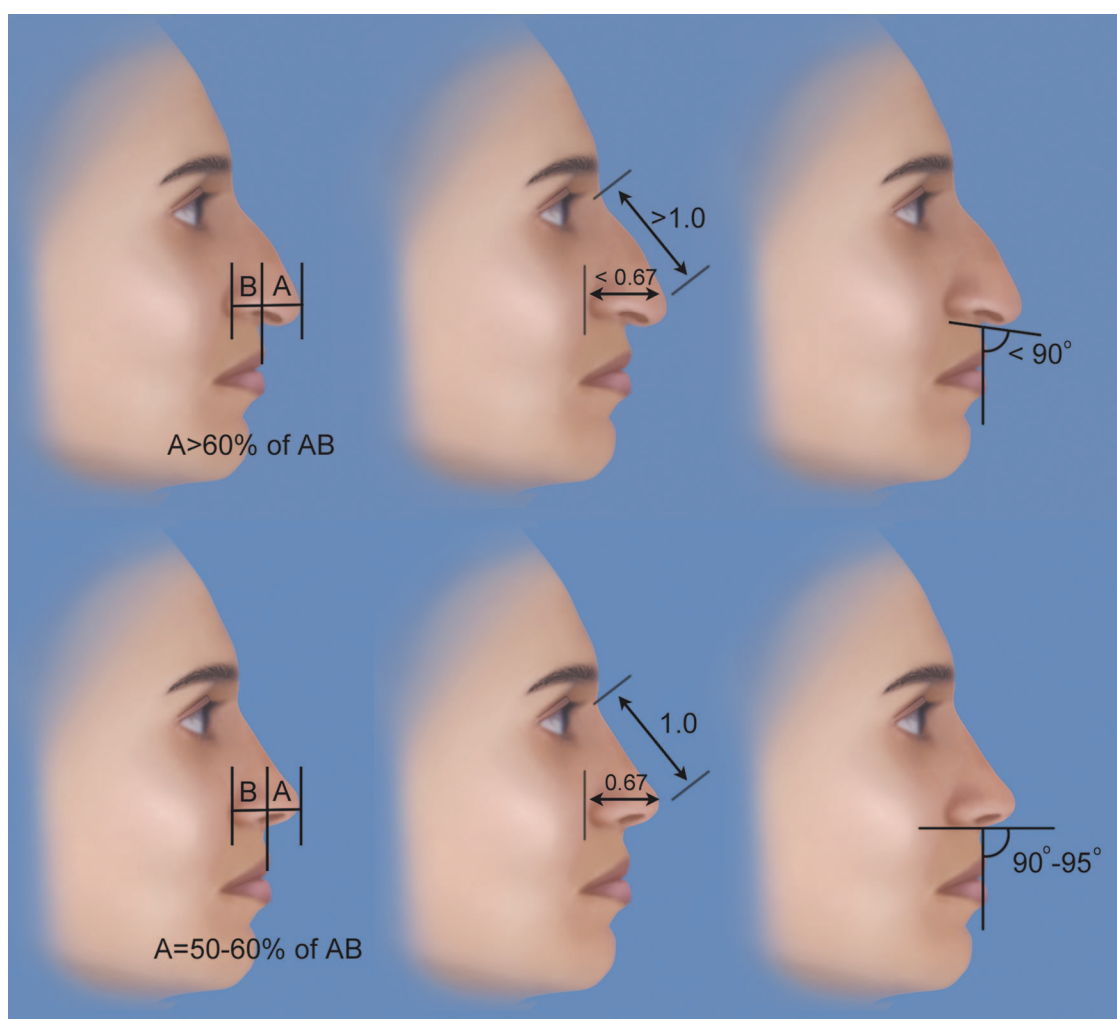
†Crural morphology was observed intraoperatively and was not quantified.

**Table 2. Features Infrequently Seen in the Middle Eastern Nose\***

Infrequent Features in Middle Eastern Noses
Low dorsum
Inadequate nasal length
Overprojected tip
Thin skin envelope with visible cartilage framework
Bifid tip
Distinct soft triangle facets
Round, transversely oriented nostrils
Obtuse nasolabial angle (and columellar-labial angle)
Excess nostril show on frontal view

\*Frequency for each trait was less than 20 percent.

ing beyond preoperatively planned guidelines. The nasolabial angle (and columellar-labial angle) should not exceed 95 degrees, and tending toward undercorrection is best. Standard nasal ratios may be used as a guide for treatment and evaluation, incorporating deviation from Caucasian norms (i.e., sharp supratip break). Patients may request specific changes be made, such as a very defined or narrowed tip; however, both the surgeon and patient must arrive at a balanced, well-informed decision. Use of preoperative patient image software is a powerful education tool and aids in this process. Downplaying the postoperative results image may also prevent unrealistic expectations. The goals of rhinoplasty in the Middle Eastern patient are listed in Table 3, and outcomes are demonstrated through case examples that depict the morphologic variations.



**Fig. 2.** Nasal analysis (*above*) demonstrates nostril-to-tip imbalance with bulky lobule but inadequate projection when compared with nasal length. Nasolabial and columellar-labial angles are less than 90 degrees. (*Below*) Ideal nasal proportions in the Middle Eastern nose. Nasolabial and columellar-labial angles should not be much greater than 95 degrees but may be individualized according to patient preferences.

**Table 3. Goals in Middle Eastern Rhinoplasty\***

**Treatment Goals**

Moderate dorsum reduction  
Narrow wide nasal bones  
Debulk fibrofatty tissue  
Define nasal tip  
Address tip underprojection  
Address hyperdynamic tip  
Correct alar flaring  
Correct nostril asymmetries  
Correct nostril-tip (lobule) imbalance

\*Although every case should be individualized according to the specific clinical presentation, certain surgical maneuvers are commonly required.

## DISCUSSION

### Skin and Soft-Tissue Envelope

One of the greatest challenges in Middle Eastern rhinoplasty is management of the poorly con-

tractile, thick, sebaceous skin envelope. Patients frequently have Fitzpatrick skin types III through V, with Middle Eastern patients of more northern regions (Northern Iran, Armenia, and Turkey) demonstrating lesser Fitzpatrick scores. Skin characteristics consist of thick nasal skin throughout, which is most challenging at the supratip and infratip lobule. Skin texture often displays a high degree of sebaceousness, particularly the dorsum and nasal tip. Oral tretinoin (Accutane; Roche US Pharmaceuticals, Nutley, N.J.) or topical retinoic acids can be prescribed in severe cases to reduce the density of sebaceous skin.

Intraoperative evaluation demonstrates moderate to large amounts of fibrofatty tissue (up to 4 mm thick) in the supratip, interdomal space, and between the medial crura. Wide soft-tissue under-

mining is often required to reduce the fibrofatty infiltration. The abundant presence of intercartilaginous fibrofatty tissue may be partly responsible for the decreased stability and strength of the cartilaginous frame (Fig. 3). The fibroligamentous nasal attachments<sup>20</sup> appear weakened by the abundant fatty deposits.

On external palpation, weakness of the tip cartilages and compressibility in the region of the domes can give a sponge-like feel to the nasal tip and lobule. The strength of the nasal base platform and middle/medial crura is assessed by placing direct pressure on the domes and pressing posteriorly toward the nasal spine. Lack of resistance from the tip/lobule complex may be observed as it collapses away from the high septal angle. This indicates a weak nasal base platform, supportive cartilages (i.e., short/thin middle crura and medial crura), and ligamentous attachments. The intrinsically fragile tip complex is usually located posterocaudal to the high anterior septal angle, which creates a biomechanical disadvantage for the unsupported/weak middle and medial crura. Vertically oriented lower lateral crura further add to this phenomenon and increase the risk of postoperative loss of tip position and external valve function, as elegantly described by Constantian.<sup>21,22</sup>

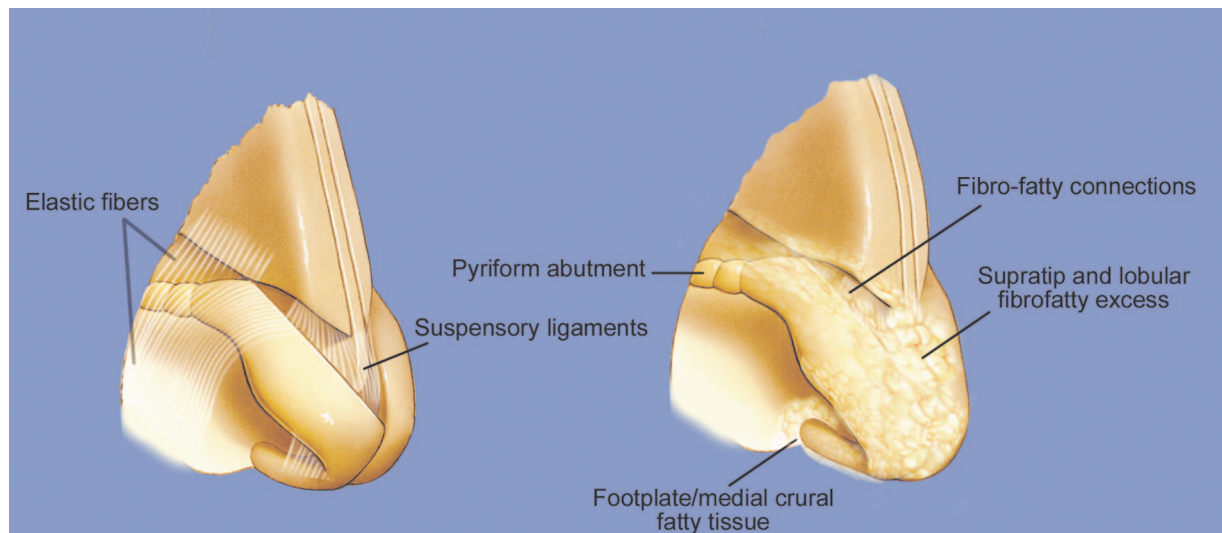
Careful resection of intercartilaginous fatty tissue<sup>1,23,24</sup> allows for greater stability when replaced with stronger and longer strut grafts.<sup>24–28</sup> As with the African American nose, extensive defatting and scoring in the supratip may be indicated to promote

greater soft-tissue contracture. This should not violate the subdermal plexus, which can produce irregularities and vascular embarrassment.<sup>1,10,11,17,29</sup>

### Bony Pyramid and Nasal Dorsum

The nasal dorsum is frequently wide and high in the Middle Eastern patient. The dorsal hump has contributions from the paired nasal bones (usually long), the ascending process of the maxilla, the cartilaginous septum, and the upper lateral cartilages. The contribution of each of these structures will dictate the degree to which each must be altered and a component (incremental) dorsal hump reduction becomes particularly useful.<sup>30</sup> This graduated technique is critical, as excessive dorsum reduction can produce significant racial incongruity through greater loss of dorsal height and a “scooped out” dorsum. The radix can be high and overprojecting (men and women), and burring or rasping of the radix may be required in very select cases.<sup>31</sup> It is critical that the balance between dorsal height and radix projection be maintained. Over-resection of one and/or the other will result in an imbalanced, overoperated nose. Occasionally, crushed radix grafts may be necessary at the radix but are not very predictable.

Osteotomies, if performed, are made using a low-to-low percutaneous technique, because bony width usually starts at the ascending process of the maxilla. The “low osteotomy” position circumvents asymmetric/unbalanced dorsal aesthetic lines and lateral bony stepoffs. Reduction of a significant dorsal hump can increase bony and midvault



**Fig. 3.** Fibrofatty ligamentous support, which is present mostly in the supratip, over domes, at the scroll region, and at footplates of the medial crura.

width by means of an open roof, and a combination of osteotomies and spreader grafts is commonly indicated. In addition, with the presence of long nasal bones, osteotomies can further narrow an already attenuated airway and create a clinically significant airway obstruction.

The dorsal hump often presents concomitantly with a dependent and underprojecting nasal tip. This can exaggerate the amount of dorsal resection required. Understanding this dynamic dorsum-to-tip interplay helps prevent dorsum overresection, because some degree of dorsum tip balance is achieved through proper tip positioning alone. A 6- to 10-mm tip-to-dorsum height differential can serve as a useful guideline as to the amount of dorsal resection and dome projection needed. The surgeon can position the tip-defining points where desirable using a double hook or two single hooks throughout the graduated dorsum reduction, to estimate the final dorsum-tip relation. If the tip complex is stable, less tip-to-dorsal height differential is indicated. This will prevent unnecessary dead space in the supratip region.

### Cartilage Framework Nasal Tip

An ill-defined nasal tip that is bulbous or boxy, with overlying thick skin, mandates more aggressive tip modification. Standard invisible/nonpalpable suturing and grafting techniques<sup>24</sup> can be supplemented by more visible grafting techniques. A stepwise approach that begins with placement of a columellar strut (or septal extension graft), medial crural sutures, transdomal sutures, interdomal sutures, medial crura-septal sutures, and tip grafting and ends with nostril/base shaping improves the predictability of the long-term nasal tip contour. Although the underlying domal width and angle of divergence may appear adequate, the thickness of the overlying soft tissue/skin thickness (particularly in the supratip) blunts this configuration and mandates the use of multiple tip-suturing techniques (and grafts) to improve tip contour and projection.<sup>24</sup> Tip stability is crucial, as a postoperative “pollybeak” deformity is not uncommon in this ethnic group.

The lower lateral, middle, and medial crural cartilages are often weak and thin relative to the heavy skin/soft-tissue sleeve. Therefore, the tip is prone to postoperative loss of projection and definition, unless support cartilages are adequately augmented. The insufficient middle crura<sup>32,33</sup> and medial crura increase the need for both a columellar strut to lengthen/stabilize the nasal base,

and Sheen-type and/or Peck onlay grafts<sup>33,34</sup> to create aesthetic infratip double breakpoints.<sup>32,33</sup> The use of a strong, floating (or fixed) columellar strut or septal extension graft, as described by Byrd et al.,<sup>35</sup> may also be required.

The lateral crura are commonly wide, thin, and malpositioned, and cannot contribute substantially to overall alar arch strength. When lateral crural malposition cannot be corrected with cephalic trim-transposition, transection at the accessory chain along with repositioning and a lateral crural strut graft<sup>36</sup> or batten graft becomes necessary. An alar contour graft<sup>37</sup> is often indicated to improve alar arch shape, improve external valve function, and prevent secondary alar notching. Toriumi<sup>38</sup> also places importance on the position of the cephalic lateral crural margin relative to the caudal margin. When the cephalad margin is oriented in a different plane than the caudal margin, inherent lateral crural instability exists and should be addressed before tip shaping.<sup>36–38</sup> Thus, the lower lateral crura position must be maintained. Lastly, redundant scroll area and caudal septal vestibular resection and suturing may be required. Vestibular lining plays an important role in strength and maintenance of nasal tip position and shape.<sup>32</sup>

### Alar Base

Alar flaring and increased interalar width are common. Conservative alar base surgery is required for nostril flaring, elongated nasal sidewalls, a widened nasal base, large alae, and alar (nostril) asymmetries. If alar flaring (alar rim >2 mm outside the medial canthal line) is present with normal nostrils, flaring is corrected by limiting the excision to only the alar flare.

Alar and nostril position and asymmetries were also observed. When alar flaring is present with excessive nostril size (increased interalar width), a complete wedge excision that extends into the vestibule 2 mm above the alar groove is needed. Excessive alar base narrowing should be avoided at all costs, which may create racial incongruity.

In Middle Easterners, alar-columellar disharmony<sup>39</sup> often presents as a “hanging columella” deformity and/or hanging ala. Primary alar retraction or excess nostril show is rare.<sup>2,9</sup> Correction of excess “columellar show” may require medial crural septal sutures and caudal septal resection, to improve/maintain tip rotation. Many Middle Eastern patients express significant concern about tip overrotation, which is a widespread problem in improperly treated Middle Eastern noses. This is perhaps the most important imbalance to avoid.

The alar base is frequently displaced cephalad relative to a plunging tip.<sup>2,10</sup> On animation, this imbalance between the caudally dependent nasal tip and cephalically positioned alar base is exaggerated. However, the degree to which the alar base needs to be caudally repositioned decreases after proper nasal tip rotation is achieved.

### Nostrils

The nostrils are assessed three-dimensionally on lateral, frontal, and basilar views for shape and asymmetry. Tip-to-nostril disproportion often presents as tip proportion greater than 40 percent and a nostril proportion less than 60 percent. A nostril-to-tip ratio of approximately 60:40 is aesthetic, similar to other ethnic groups.<sup>40,41</sup> After proper correction of tip rotation/projection, alar-columellar discrepancy,<sup>39</sup> and alar base positioning, residual nostril abnormalities become even more apparent. Flaring medial crural footplates, a short nostril deformity<sup>41</sup> (soft triangle excess), or enlarged/improperly angled nostril apertures are usually the culprits.<sup>42</sup>

Asymmetric and excessive medial crural footplate flaring is corrected through suturing techniques, with or without footplate excision.<sup>23</sup> Excess soft tissue is commonly present in the intercrural space and should be excised to further enhance nostril and columellar shape.<sup>23</sup>

Nostril-tip disproportion can appear exaggerated during further intraoperative inspection. When infratip lobule augmentation and tip projection are increased without addressing a short nostril, a short nostril deformity results, because of excess tip/lobule bulk.<sup>41</sup> Guyuron et al.<sup>41</sup> describe soft triangle excision and/or tip-suturing techniques to elevate the nostril apices and elongate the nostrils.

### Depressor Septi Nasi Muscle

The depressor septi nasi muscle is often hypertrophied, resulting in a hyperdynamic nasal tip. This exaggerates the dorsal hump as the tip plunges toward the nasal spine.<sup>43</sup> An aesthetic improvement in upper lip length (static and dynamic) can be achieved with depressor septi transection/transposition.<sup>43</sup> It is unknown exactly to what degree the depressor muscle contributes to the “plunging” tip because simultaneous rhinoplasty maneuvers also elevate the tip. Isolate analysis of the depressor septi nasi muscle is currently being investigated using botulinum toxin type A injection preoperatively.<sup>44</sup>

## CASE REPORTS

Although classic Middle Eastern nasal traits have been discussed and shown, case studies have been selected to demonstrate the heterogeneity and complex spectrum of nasal characteristics observed in the Middle Eastern population.

### Case 1

An 18-year-old woman with Fitzpatrick type III skin presented with complaints of nasal deviation; a dorsal hump; and a wide, poorly defined nasal tip. She represents a lesser variant of the typical Middle Eastern nose (Fig. 4).

#### Nasal Analysis

Nasal analysis includes the following:

- Moderately thick skin envelope
- Narrow midvault and dorsal hump (4 to 5 mm)
- An underprojected and bulbous nasal tip with minimally asymmetric alar cartilages
- Alar-columellar imbalance with retracted columella
- Septal deviation
- Nostril asymmetry
- Hyperactive depressor septi nasi muscle

#### Operative Plan

The operative plan includes the following:

- Open rhinoplasty approach by means of a transcolumellar incision with infracartilaginous extensions
- Septoplasty and cartilaginous graft harvesting
- 5-mm component dorsal reduction
- Cephalic trim leaving symmetric alar cartilages and a 6-mm rim strip
- A floating columellar strut graft
- Medial crural, interdomal, and transdomal sutures
- Depressor septi muscle release and transposition
- Infralobular graft
- Low-to-low percutaneous osteotomy

#### Postoperative Assessment

Twelve-month postoperative photographs are shown in Figures 5 and 6. The patient was happy with her result. The nasal tip is appropriately projecting and the bulbosity has been refined, which creates aesthetically pleasing tip contours. The alar-columellar imbalance was restored. This patient had a lesser variant of typical Middle Eastern nasofacial features and a slightly greater degree of columella-labial and nasolabial angle correction was appropriate for her.

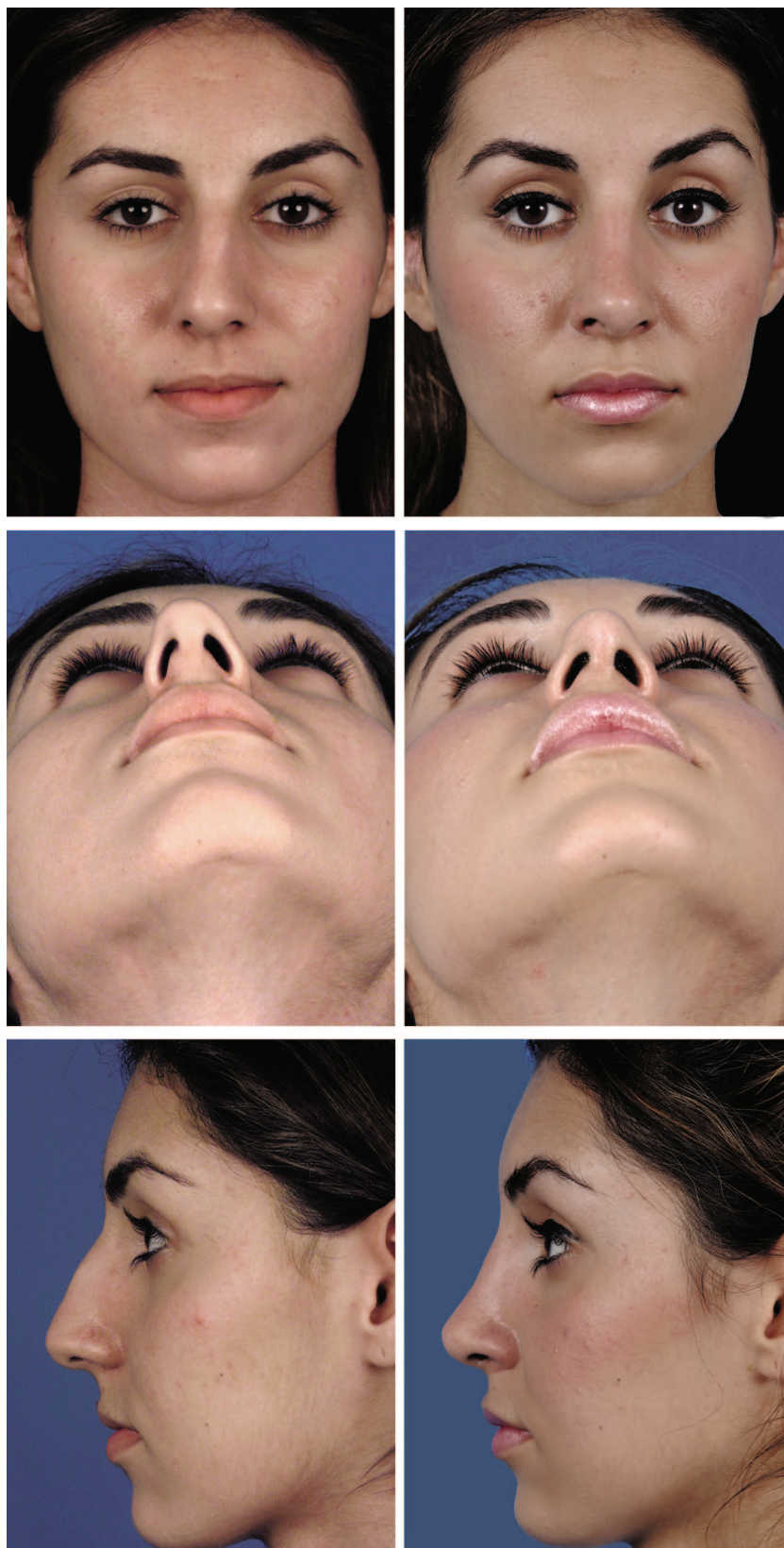
### Case 2

A 41-year-old woman with Fitzpatrick type III skin did not like her dorsal hump and unrefined tip, which appeared “flat” to her. She had a large dorsal hump, a poorly shaped nasal tip that lacked projection, was plunging, and was hyperdynamic. This patient demonstrates the classic Middle Eastern nasal morphology. She requested a more dramatic change in her tip, and this required a secondary soft-tissue debulking operation (Fig. 7).

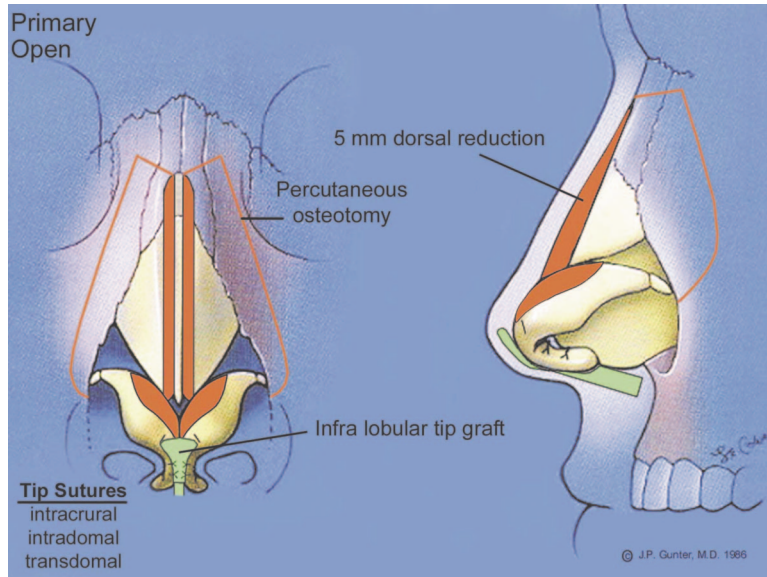
#### Nasal Analysis

Nasal analysis included the following:

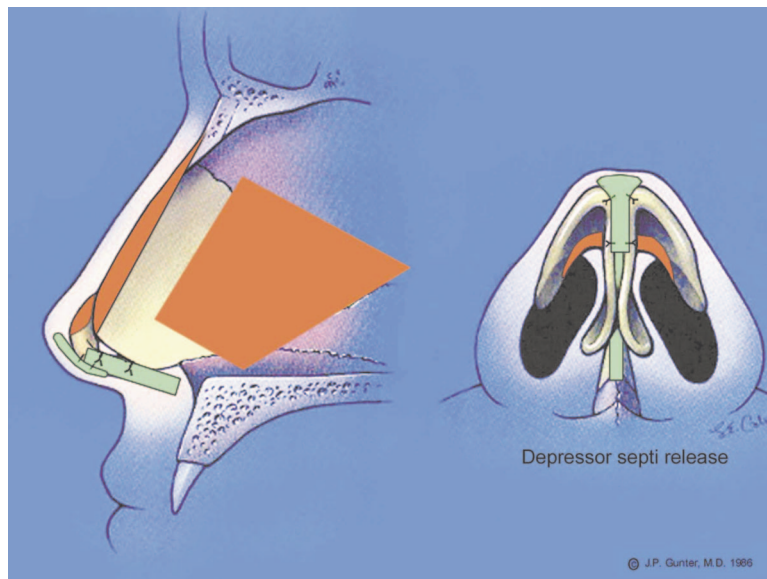
- Thick nasal skin throughout
- Large dorsal hump
- Slight nasal deviation
- Severely underprojecting, amorphous, and plunging/hyperdynamic tip
- Very poor supratip break and insufficient infralobule



**Fig. 4.** Case 1. Preoperative (*left*) and 1-year postoperative (*right*) views.



**Fig. 5.** Gunter graphic for the patient in case 1. (Gunter Diagrams, J. P. Gunter, M.D.)



**Fig. 6.** Gunter graphic for the patient in case 1. (Gunter Diagrams, J. P. Gunter, M.D.)

- Alar-columellar discrepancy with retracted columella
- Nostril-tip imbalance with “short nostrils”

### Operative Plan

The operative plan included the following (Figs. 8 and 9):

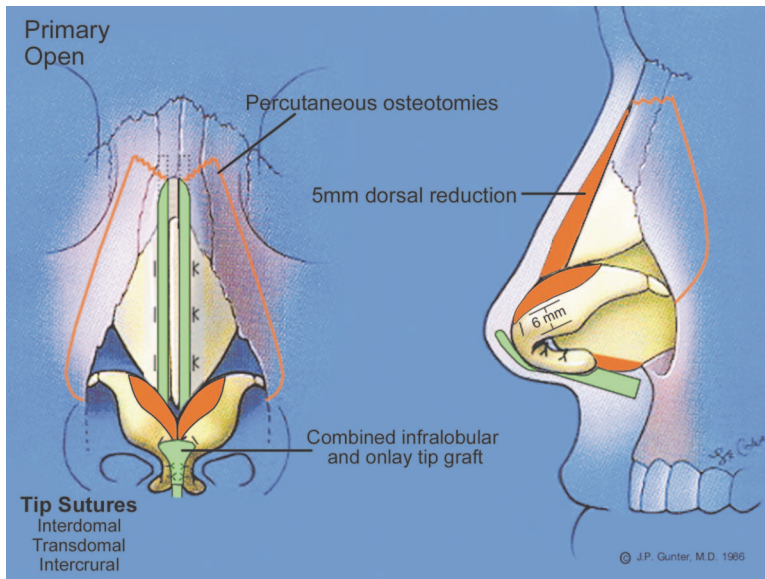
- Open rhinoplasty approach through a transcolumellar incision with bilateral infracartilaginous extensions and soft-tissue debulking
- 5-mm dorsal height reduction
- Bilateral spreader grafts
- Septoplasty with cartilage harvest, preserving a 10-mm L-strut
- Anterior septal angle reduction
- Cephalic trim leaving intact 6-mm lateral crural strips
- Floating columellar strut graft with medial crural septal sutures
- Tip refinement with medial crural, transdomal, and interdomal sutures
- Combined infralobular and onlay tip graft
- Percutaneous low-to-low osteotomies

### Postoperative Assessment

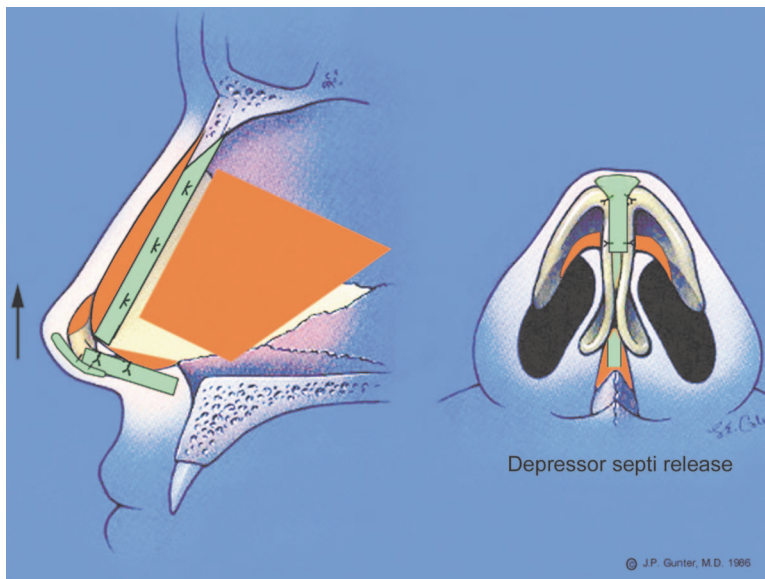
Two-year postoperative photographs (from her primary operation) show a balanced nose that is aesthetically pleas-



**Fig. 7.** Case 2. Preoperative (*left*) and 2-year postoperative (*right*) views after a secondary soft-tissue debulking and regrafting of the nasal tip was performed.



**Fig. 8.** Gunter graphic for the patient in case 2. (Gunter Diagrams, J. P. Gunter, M.D.)



**Fig. 9.** Gunter graphic for the patient in case 2. (Gunter Diagrams, J. P. Gunter, M.D.)

ing. The nasal envelope has been debulked; the dorsum appropriately reduced; and the nasal tip refined, raised, and projected. Note the drastic improvement in overall nasal envelope reduction and creation of conservatively defined supratip and infratip breakpoints. This required an intermittent revisional operation (Gunter diagrams not shown), with more soft-tissue debulking (particularly at the supratip) and visible onlay tip graft replacement secondary to early resorption. The necessity for secondary tip refinement/debulking is not uncommon in the Middle Eastern population and should be discussed fully as part of the initial informed consent.

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