Differences and Similarities Between Eastern and Western Rhinoplasty
Features and Proposed Algorithms

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Abstract: The authors collectively reviewed their experiences in performing rhinoplasty in North America, Asia, and South America and categorized common undesirable features in Eastern and Western rhinoplasty and their respective surgical algorithms. In Western rhinoplasty, the surgery is often reduction in nature. The proposed algorithm is a dorsum-first, tip-second surgical sequence to better suit the need of this population. Meanwhile in Eastern rhinoplasty, the surgery is often augmentation in nature with extra materials needed to build the nose. The proposed algorithm is the opposite, a tip-first and dorsum-second surgical sequence.

Key Words: rhinoplasty, Asian rhinoplasty, Caucasian rhinoplasty, Eastern rhinoplasty, Western rhinoplasty, rhinoplasty algorithm

Rhinoplasty has long been one of the most popular procedures in aesthetic plastic surgery. According to the most recent 2018 International Society of Aesthetic Plastic Surgery data, rhinoplasty was among the top 5 cosmetic surgeries performed worldwide.1 It is a highly desirable procedure across cultures and ethnicities because the nose is importantly situated in the center of the face, and it is often the most noticeable facial feature. Further nasal shape, position, and height can all influence the appearance of surrounding facial structures like the eyes and the lips.

To plastic surgeons, however, rhinoplasty is considered one of the most difficult cosmetic procedures. Millimeter differences determine a good surgical result from something subpar. In addition, every nose is distinct and there is no accepted standard for all. A perfect nose can be highly individual. Patients' ideal can be influenced by their cultural norm, popular fashion of the time, or even certain celebrity images. Thus, in order to achieve a result that will stand the test of time is a profile that is natural and harmonious with the rest of the patient's face.

Although perfection is difficult to determine, imperfection is often universal and can be easily recognized across cultures. Between Eastern and Western rhinoplasty, there exist different undesirable features in each and respective surgical techniques for correction. We collected our experiences from North America, Asia, and South America and summarized our assessment and surgical algorithms in dealing with both the Eastern and Western rhinoplasty.

DIFFERENT NASAL PROFILES AND SURGICAL ALGORITHMS IN WESTERN AND EASTERN RHINOPLASTY

Although every nose should be evaluated individually and its rhinoplasty tailored to fit, there are common points of correction and undesirable features that are seen repetitively in these 2 populations. We have summarized the major features and our proposed algorithms hereinafter.

Typical Western Undesirable Features

Most common complaints when rhinoplasty patients come are that their noses are “too big, too high, or droopy.” Figure 1 shows the front and profile photos of a typical female Western rhinoplasty patient. From the front view, the patient has a wide dorsum that consists of a wide bony vault. The tip is bulbous because of her large lateral crura of the tip lower lateral cartilages (LLCs). On the profile view, the tip appears droopy and pushed down from the relatively large dorsal hump. The long septum caudally can also be responsible for the excess tip derotation and sometimes an overhanging columella. These common features are listed in detail with their potential etiologies in Table 1.

Common Surgical Techniques and Algorithm for Western Rhinoplasty

The order of surgery follows the relative importance of their complaints. In Western rhinoplasty, the dorsum is often the first point of tackle, followed by tip modification. The common surgical sequence in order and the respective techniques for the dorsum are: dorsal hump reduction with rasping or direct

FIGURE 1. A Western rhinoplasty patient with common undesirable features of a dorsal hump, bulbous, and droopy tip. The cartoon shows the underlying etiologies of bony and cartilaginous excess at the dorsum and a long septum and derotated lower lateral cartilages.
osteotomy, tangential resection of the cartilaginous dorsal hump, and lateral osteotomy with infracture to close the open roof and narrow the bony dorsum.

After removing the dorsal hump and narrowing the dorsum, the tip is reduced in size and projection adjusted to fit the new dorsal height. The bulbosity of Western tip often comes from enlarged lateral crura of the LLC, so cephalic trim resecting the upper portion of the lateral crura is indicated. Then, using a combination of transdomal sutures with interdomal sutures, the tip can be further narrowed and, if tip bifidity existed, can also be corrected. A columella strut is not always necessary but more often used to increase the projection and rotation of the droopy tip. In cases where the septum is long, a “tongue-in-groove” technique can be used instead of a columellar strut, fixing the LLC to a higher and more rotated position on the caudal septum. Almost all tip techniques used in Western rhinoplasty (cephalic trim, interdomal and transdomal sutures, columellar strut, tongue in groove) will result in some degree of tip rotation. After proper tip rotation and increased projection, alar base reduction is often not needed because the alar rims are stretched toward the tip and their width secondarily narrowed.

In primary Western rhinoplasty cases, extranasal materials like implants or autologous ear/rib cartilages are rarely needed. Columella strut if used can be harvested from the septum. There is plenty of septal cartilage available in contrast to Eastern rhinoplasty patients.

To summarize, Western rhinoplasty is more reduction in nature. Our proposed algorithm from the dorsum to the tip can be seen in Figure 2. Before and after photos of Western rhinoplasty, patients after this surgical sequence are shown in Figure 3.

## Typical Eastern Undesirable Features

In Eastern rhinoplasty, the undesirable features are those opposite of Western rhinoplasty patients. Most common complaints when rhinoplasty patients come are that their noses are “too small, too short, or upturned.” Figure 4 shows the front and profile photos of a typical Eastern nose.

### TABLE 1. Common Eastern and Western Nose Undesirable Features, Causes, and Respective Surgical Techniques for Improvement

| Eastern Undesirable Features | Etiologies | Surgical Techniques | Western Undesirable Features | Etiologies | Surgical Techniques |
|-----------------------------|------------|---------------------|------------------------------|------------|---------------------|
| Bulbous tip                 | Thick skin and subcutaneous fibrofatty tissue | Direct debulking | Bulbous tip | Large LLC | Cephalic trim |
| low tip projection Over rotated tip | No tip defining point at the middle crura | Transdomal suture to define the middle crura | Tip onlay grafts | Bifidity of LLC | Transdomal suture |
|                             | No septal support into the tip | Septal extension graft | Tip onlay grafts | - | Interdomal suture |
| Low dorsum                  | Short septum | Septal extension graft | Droopy tip | Relative excess of bony and cartilaginous dorsum | Bone rasping or osteotomy and ULC cartilaginous hump tangential resection |
|                             | Weak and small LLC | Tip onlay grafts | Derotated tip | Long septum | Caudal septal trim |
| Low dorsum                  | Small ULC | Prosthesis or autologous dorsal grafts | Dorsal hump | Excess nasal bone and ULC at the keystone |- |
|                             | Flat and wide nasal bone | Medial/lateral osteotomy with infracture | Wide dorsum | - | Tongue-in-groove cephalic fixation of LLC to caudal septum |
| Flaring alar                | Thick skin | Alar base reduction | Flaring alar | Wide nasal sill | Alar base reduction |
| Retracted columella         | Low tip projection causes relatively wide nasal pyramid | Tip elevation | Hanging columella | Long septum | Caudal septal trim |
|                            | Short septum | Septal extension graft | - | Low position of LLC | Tongue-in-groove cephalic fixation of LLC to caudal septum |
|                            | | Columella onlay grafts | - | - | - |

ULC, upper lateral cartilage.

## FIGURE 2. Proposed algorithms for Eastern and Western rhinoplasty. A tip-first dorsum-second approach is recommended for Eastern rhinoplasty, and the opposite order is suggested for Western rhinoplasty. Cartoons show the typical surgical changes in each.
female Eastern rhinoplasty patient. From the front view, the dorsum appears wide because of the low dorsal height especially at the radix. Tip is bulbous despite very small and weak underlying LLC. The tip appears big often because of the thick skin envelope and subcutaneous tissue, in contrast to the etiology of large LLC in Western patients. On profile view, the tip is short and overrotated because of the small septum lacking support caudally for the tip cartilages. The same short septum is also responsible for the retracted columella. The low dorsum also exaggerated the tip upturned look. These features are listed in detail with their potential etiologies in Table 1.

Common Surgical Techniques and Algorithm for Eastern Rhinoplasty

The tip is the most important part of an Eastern rhinoplasty. It is also the most difficult part to improve. The tip lower lateral cartilages are often small and poorly supported, so determining the proper projection and/or derotation is the most essential task. Once the tip is optimized then dorsal augmentation can be easily achieved with the selected material carved to fit the new tip height. Hence, in Eastern rhinoplasty, the surgical sequence is reversed from the Western algorithm: the tip is first, then dorsum, and then additional tip refinement if necessary (Fig. 2).

One of the most versatile tools to control tip projection and create derotation is the septal extension graft. Adding an end-to-end septal extension graft is essentially turning a short Eastern septum into a long septum seen in Western patients. The bilateral lower lateral cartilages then can be released from original tethering structures and reanchored at a more projected and derotated position on the septal extension graft, much similar to the concept of the tongue-in-groove technique used in Western patients. Tip derotation is not always necessary, but projection is almost always required to improve an Eastern nose.

Other tip maneuvers like the cephalic trim, interdomal, and transdomal sutures can be used if specific anatomy requires but they often have minimal effects on the final tip shape because of the thick skin envelope.

Once the tip is fixated at a stable position, dorsal augmentation is done using a selected material of choice. There are pros and cons of all currently available materials including autologous cartilages. The selected material then is simply shaped to fit the length and height needed to complement the tip structure.

Contrast to Western rhinoplasty, additional tip refinement is often necessary in Eastern rhinoplasty. Onlay grafts such as the shield grafts and cap grafts made of ear or septal cartilages give the exaggerated tip definition needed to counter the thick skin envelope. This tip refinement is often done after dorsum height has been determined to add the extra projection and definition needed and create a more natural supratip break. As in Western rhinoplasty, alar base reduction is always the last step and is not necessary if the tip projection increased significantly. To summarize, Eastern rhinoplasty is more commonly augmentation in nature, so rhinoplasty surgeons have to always be prepared to...
harvest additional materials. Before and after photos of Eastern rhinoplasty patients after this surgical sequence are shown in Figure 5.

SIMILAR IDEAL NOSE SHAPE IN WESTERN AND EASTERN RHINOPLASTY

The ideal nose shape has been extensively studied and described in various texts. Although every patient will have individual requests, they are all minor variations of the theme. From our collective experiences, the final nasal profile that is desired by Eastern and Western rhinoplasty patients is actually quite similar. If one compares celebrities with beautiful noses from Asia and America, you will find them quite similar in shape. The difference only lies in the size and proportion to the face. Western and Eastern rhinoplasty surgeries converge from 2 opposite directions toward the same profile (Fig. 6).

Ideal nose shape, length, height, and angles all follow similar proportions across cultures. Western noses are reduced and projected/rotated, whereas Eastern noses are augmented and projected/derotated to reach the same final result. One of the biggest misconceptions is to think Eastern rhinoplasty as a westernization procedure; the goals are ultimately to improve on their nasal profile and to emulate their more beautiful Asian counterparts.

EXAMPLES OF MIXED TYPES WITH MIXED TECHNIQUES

The algorithms proposed previously for Eastern and Western subtypes will be applicable in 80% to 90% of cases. However, as emphasized previously, all noses should be individually assessed and techniques tailored to fit. It is not uncommon to mix up the techniques and order of surgery to serve the points of correction. The following 2 cases illustrate these points:

Case 1

An African medical student from Ghana would like to have a more defined tip and narrower nasal profile from the front. She also had a small dorsal hump that she disliked. On evaluating her nose, she had undesirable features from both the typical Eastern and Western rhinoplasty patients. Her nasal features that are common in Eastern noses: thick skin, low tip and dorsum height, flaring alar, and a lack of tip definition. Her nasal features that are common in Western noses are as follows: dorsal hump, wide bony dorsum, large LLC, and a slightly droopy or derotated tip. Therefore, a combined surgical approach was taken in this order: tip skin defatting, dorsal hump reduction with rasping, lateral osteotomy with infracture to narrow the bony dorsum, cephalic trim of LLC, columellar strut from the septum to increase tip projection and rotation, interdomal and transdomal sutures to further narrow the tip width, and alar base reduction at the end (Fig. 7).

Case 2

An Asian nurse from China has an obvious dorsal hump and a droopy tip. Her nasal morphology is more commonly seen in the Western rhinoplasty patients with the added feature of her thick nasal skin. Different from usual Eastern patients, her tip height and dorsal height are already adequate for her facial profile, so no augmentation was needed. Essentially, a Western rhinoplasty algorithm dealing with the

FIGURE 5. Before (left) and after (right) photos of Eastern rhinoplasty patients.

FIGURE 6. The ideal nasal profile is similar in Western and Eastern rhinoplasty. They converge to the same shape from the opposite directions.
A dorsal hump was applied with some nasal skin defatting to thin out the skin envelope (Fig. 8).

**DISCUSSION**

Every nose looks different, so every rhinoplasty should be customized accordingly. However, these nasal morphologies discussed previously are repetitively seen and the respective surgical techniques can be used to produce consistent results. In this article, we present our collective experiences and attempt to classify the most common features and provide algorithms in both Eastern and Western rhinoplasty. We have also illustrated through case examples to show how these techniques can be versatile and intermixed.

Although both Western and Eastern rhinoplasty results in very similar aesthetic nasal profiles (Fig. 6), there are many salient points worthy of discussion on the surgical path reaching that desired final result. For instance, the columnar strut graft is a more logical choice for Western rhinoplasty versus the septal extension graft recommended in Eastern rhinoplasty. Both columnar strut and septal extension graft increase tip projection, but columnella strut is free floating while septal extension graft is fixated to the caudal septum. Upon skin closure, the tension in the skin envelope will further push the columnella strut projected tip into a more rotated position cephalically, which is often desired and favored in Western rhinoplasty. That situation is quite the opposite in Eastern rhinoplasty, whereas most patients need not only their tip projected, but also elongated, and/or derotated, even a slightly overrotated tip is aesthetically less tolerant in the Eastern population.

Thus, the fixated nature of a septal extension graft can provide a stable foundation to resist the passive tip rotation upon tight skin closure.4

Tip-first approach is logical in Eastern rhinoplasty because there is often a limit to how much the tip can be projected because of surrounding soft tissue tethering, skin/mucosa stretchability, or amount of augmentation materials available. Once the preferred maximum tip height is set, the dorsum height then can be easily determined and augmented to provide a harmonious profile. If the opposite is done first, it is easy to overestimate or underestimate the dorsal height and require extra steps to revise your dorsal graft to fit the later tip.

Meanwhile, in Western patients, the dorsum is already too high, so after removing the dorsal hump and setting a desired lower dorsum, the tip can be raised to fit. If the tip is done first in Western nose, the increased projection actually gets in the way of dorsal hump rasping or resection, and if after infracture the dorsal height changes, it might force the surgeon to readjust the tip height again. Thus, it makes the most sense to always handle the dorsum first in primary Western rhinoplasty.

Another consideration for dorsum first in Western rhinoplasty is to avoid oversection of the septum. Only after the cartilaginous dorsal hump reduction is complete, one can accurately determine the maximum amount of septum harvest possible to leave the recommended 1-centimeter width L strut for tip support.

Because Eastern rhinoplasty is more often augmentation in nature, the skin tension at the incision is higher. In addition to the interrupted skin sutures on the surface, we recommend at least 1 or 2 deep dermal absorbable sutures for a more aesthetic scar. The increased skin tension at the tip in Eastern rhinoplasty is also another reason why we would avoid any implant material at the tip complex. Most revision rhinoplasties that we have encountered stemmed from either protrusion or exposure of tip implants or malposition due to implant contracture at the tip.

In terms of innate cartilage structure and bulk, Eastern rhinoplasty represents a more difficult situation. Eastern noses have a very heavy soft tissue envelope yet very small underlying LLC and short septum to provide the support for it. More often than not, additional materials need to be brought in (ear, septum, donor rib, autologous rib, implants) to provide support. Whereas Western nasal cartilages are much thicker and more abundant, rarely extranasal materials are necessary to provide the support needed. The LLC maneuvers (interdomal/transdomal, cephalic trim) are often enough to provide the tip shape needed in contrast to the reliance on tip grafts in Eastern noses.
Regarding the dorsum, because of the deeper set eyes and stronger frontal bandeau structure in Western patients, a higher radix is more tolerated in Western patients than in Eastern patients. However, in both populations, a more natural nasal profile starts at a level between the pupil and the upper eyelid ciliary margin.

By no means that our algorithms cover all nasal types, they merely act as useful guidelines and, in our experiences, can be applied in more than 90% of primary cases. Further rhinoplasty refinements like tip deprojection, medial/lateral crural steal, alar rim graft, composite grafts, or external/internal approaches to alar base reduction are based on individual patient need and physician preferences that take time to evolve.

CONCLUSIONS

Although rhinoplasty is a very commonly done procedure in all parts of the world, the undesirable morphologies and corresponding techniques are very different. From our collective experiences, we analyzed the common features in both Eastern and Western rhinoplasties and suggested a tip-first dorsum-second approach for the Eastern rhinoplasty patients, while recommending the opposite surgical route of dorsum-first tip second for the Western population.

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