Correction of Pollybeak and Dimpling Deformities of the Nasal Tip in the Contracted, Short Nose by the Use of a Supratip Transposition Flap

Dong-Hak Jung, MD; Ray Yung-Chiou Lin, MD; Hyeong-Jun Jang, MD; Henry John Claravall, MD; Samuel M. Lam, MD

Objective: To discuss our experiences with the use of a supratip transposition flap to simultaneously correct pollybeak deformity and nasal tip dimpling.

Design: From April 1, 2007, through August 31, 2008, 10 Asian women with a contracted, short nose that exhibited nasal tip dimpling were retrospectively included in this study. By use of an open approach, the osteocartilaginous framework was elongated first. If the pollybeak and dimpling deformities of the nasal tip were found after the closure of the transcolumellar incision, a supratip transposition flap was designed to correct the combined deformities over the supratip and nasal tip areas. Finally, bilateral marginal incisions were closed.

Results: The follow-up period ranged from 2 to 16 months, with an average of 5 months. No immediate complications were noted in this small series. Four of 10 patients required minor flap revisions, with satisfactory results attained thereafter. All patients were satisfied with the aesthetic result after scar maturation.

Conclusions: The use of the supratip transposition flap not only corrects pollybeak deformity but also resolves dimpled nasal tip depression. The techniques presented herein add to the armamentarium of revision rhinoplasty surgeons, especially those dedicated to the treatment of the Asian patient who undergoes rhinoplasty.

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Silastic implants have been widely popular for augmentation rhinoplasty in Far East Asia for their technical ease in the correction of hallmarks of the Asian nose (eg, short nasal length, thick skin, low nasion, flared nostrils, and a low nasal tip).1,2 However, silicone augmentation rhinoplasty bears well-documented morbidity, such as infection, malposition, tip extrusion, and unnatural contouring.1,3 Problems with the postoperative, contracted, short nose typically can arise after previous silicone nasal implantation. The characteristics of the postoperative, contracted, short nose are a cephalically rotated nasal tip with an obtuse nasolabial angle in profile and associated increased visible nostril show, inelastic and contracted skin, shortage of mucosal lining, and development of significant subcutaneous scar formation (Figure 1).4,5 Jung et al4 and Lee et al5 have written about their corrective strategies for the postoperative, contracted, short nose by the use of both open and endonasal approaches.

In our experiences with the treatment of the contracted, short nose, if the skin envelope was severely contracted, the pollybeak deformity in the supratip area (supratip deformity) could develop after nasal elongation (Figure 2). This nasal disfiguration would linger for several months after the application of conservative treatments, such as skin taping or triamcinolone acetonide injection. However, we could usually achieve good results by the performance of a direct elliptical excision of the skin in the supratip region during open rhinoplasty. The resulting scar was not usually visible after several months. Besides, to address the skin dimpling that can occur in the nasal tip, it was possible to use morcellized cartilage or a
soft tissue graft to fill the defect subcutaneously and thereby elevate the defect. Occasionally, we had to correct both these deformities simultaneously. On the basis of our experiences of the correction of pollybeak deformities, we designed a transposition flap to transpose the originally excised supratip skin to replace the deformity of nasal tip dimpling. In this way, we obtained a more natural profile view of the reconstructed nose. In this article, we discuss our method and our experience with the use of the transposition flap to correct these complex deformities.

Figure 1. Characteristics of the contracted nose (postoperative short nose). A and B, Cephalically rotated nasal tip with obtuse nasolabial angle and increased visibility of nostrils, inelastic and contracted skin, shortage of mucosa lining, and multiple scarring.

Figure 2. Pollybeak deformity in the supratip area (supratip deformity) after nasal elongation. A, The contraction of the skin envelope of the contracted, short nose is noted by cephalic rotation of the nasal tip. B, A pollybeak deformity that remains near the supratip area (black arrow) after nasal elongation.
METHODS

We retrospectively reviewed the medical records of 10 patients in whom supratip transposition flaps were used to correct the dimpling deformities of the nasal tips in contracted, short noses. All patients were Asian women, treated with an open rhinoplasty procedure from April 1, 2007, through August 31, 2008. Their ages ranged from 24 to 57 years, with a mean age of 43 years. The follow-up period ranged from 2 to 16 months, with an average of 5 months. The results were evaluated subjectively by the comparison of preoperative and postoperative photographs.

The best candidates for this procedure are patients with a severely contracted, short nose combined with nasal tip depression after removal of their silicone implants. Features of this deformity include contracted skin envelopment, which manifests with an obtuse nasolabial angle and is prone to develop a pollybeak deformity over the supratip after nasal lengthening, and dimpling deformity over the tip.

We initially used meticulous surgical skill to expose the bony cartilaginous framework through an open rhinoplasty approach. To preserve the circulation of the skin envelope, degloving just along the supraperichondrial and subperiosteal plane is important for preservation of the supplying arteries and subdermal plexus of the nasal tip. After the rebuilding of the bony cartilaginous framework to elongate the skin envelope, the transcolumnellar incision was approximated.

If pollybeak deformity and dimpling deformity of the nasal tip were found, the supratip transposition flap was designed adjacent to the nasal tip depression (Figure 3A). To minimize a standing cone deformity over the donor site, an elliptical flap, instead of a round one, was designed (Figure 3A). Then the dimpled area in the nasal tip was excised (Figure 3B),

Figure 3. Frontal views of procedures of the supratip transposition flap. A, Design of the supratip transposition flap. Elliptical shape is recommended to prevent standing cone deformity over the donor site. B, Excision of skin depression deformity. C, Elevation of the supratip transposition flap. D, Wound was closed with 7-0 nylon sutures.
and the flap was elevated and rotated into position (Figure 3C). The incision lines were closed in a single layer with 7-0 nylon sutures (Figure 3D). After the closure of the remaining incisions, the external splint was applied so as not to compromise circulation of the transposed flap. The sutures were removed on the fifth postoperative day.

RESULTS

The postoperative contour in the profile view was smooth, and the scars were not prominent in the frontal view. All the patients were satisfied with the aesthetic result after scar maturation (Figures 4, 5, 6, 7, 8, 9, and 10). Meanwhile, the most common concern encountered was the initial visibility of the scar; however, it usually became much less obvious after the second postoperative week, when the patient could use light makeup to camouflage it. No immediate complications were noted, such as infection, flap necrosis, or hematoma formation. However, 4 patients required an outpatient-based flap edge revision to improve alignment; use of this procedure led to uniform satisfaction thereafter (Figures 8 and 9).
Unlike the typical white nose, the typical Asian nose is differentiated by a small osteocartilaginous framework with a broad low dorsum, decreased tip projection, and thick skin with abundant subcutaneous fatty tissue. Most facial plastic surgeons in Asia take advantage of these characteristics by the use of solid silicone implants in their aesthetic rhinoplasty practice.

CORRECTION OF THE CONTRACTED, SHORT NOSE

In two 10-year retrospective studies of 113 and 442 patients each, the total complication rate ranged from 0.6% to 9.8%. Complications that required removal of the implant included displacement, visible prominence, hemorrhage, infection, extrusion, and polybeak deformities. However, these studies failed to mention perhaps the most severe problem: the contracted, short nose. According to our observation, most patients with a contracted, short nose had been operated on at least twice; procedures included at least one insertion of a silicone implant. Some of these patients also experienced complicated infections that may have contributed to untoward nasal contraction. In a contracted nose deformity, the nasal contour shows progressive cephalic rotation of the nasal tip owing to inflammation and ongoing soft tissue contracture. After
removal of the implant, the skin envelope continues to contract, and the nasal tip rotates cephalically toward the supratip region (Figure 11).

To address this complex deformity, a 2-stage reconstruction is usually recommended during preoperative consultation. In the first stage, the purpose is to lengthen the nose; less consideration of aesthetic contours is given at this stage compared with the expansion of the contracted skin envelope, which is the more difficult objective. Six months after the successful restoration of normal nasal length, an aesthetic reshaping procedure in the second stage is performed if there is any other aesthetic disfiguration.

During the first stage of reconstruction, open rhinoplasty instead of an endonasal approach is advocated for better visualization and optimal reconstruction. The transcolumellar incision is made along the original incision to prevent possible necrosis of the distal portion of the columellar flap. Then bilateral marginal incisions are made and connected to the transcolumellar incision to elevate the skin envelope. Because all the cases are revision rhinoplasties that pose increased risks to the blood supply of the nasal
tip and columellar skin, some technical details with regard to safety guidelines should be set forth. First, the degloving plane should be along the supraperichondrium of the cartilaginous vault and the subperiosteum of the bony vault. The preservation of the lateral nasal arteries as much as possible is important because those arteries are the dominant source of blood supply of the nasal tip in open rhinoplasty.\(^7\) Second, with the avoidance of an alar base reduction, the simultaneous performance of subdermal defatting of the nasal tip or other associated skin envelope modification procedures protects the subdermal plexus and the major vessels.\(^8\)

After the elevation of the skin envelope, extended spreader grafts are used to project the distorted lower lateral cartilages to elongate the framework. Because of the necessity of the strong support that the extended spreader grafts must provide, irradiated homologous
costal cartilage\textsuperscript{9} or autologous seventh costal cartilage\textsuperscript{10} are our recommended donor grafts. Afterward, a meticulously partial capsulectomy or capsulotomy (a by-product of the previous silicone implant) is undertaken to release the scar (or capsular contracture), in an attempt to restore skin pliability. The transcolumellar incision is then closed directly or reconstructed by subnasal flaps\textsuperscript{11} as needed.

**CORRECTION OF POLLYBEAK DEFORMITY (SUPRATIP DEFORMITY)**

At this point, 2 deformities may still remain. The first deformity is the pollybeak deformity over the supratip that can develop after nasal lengthening (Figure 2).\textsuperscript{12,13} In accordance with the observation of Guyuron et al\textsuperscript{13} in \( \pm 10 \) rhinoplasty patients, the frequency of pollybeak deformity in revision rhinoplasty is higher than in primary rhinoplasty. The common causes of the postoperative pollybeak deformity include supratip soft tissue excess owing to an overresected caudal dorsum or midvault, an underprojected tip, residual excessive caudal dorsum, or a combination of some of these factors.\textsuperscript{12,13} The reason why the postoperative short nose tends to develop a pollybeak deformity is that the inelastic skin envelope cannot redrape properly to the new framework, and the resultant dead space engenders more fibrotic tissue formation. In our experience, this unsightly, pollybeak deformity can linger for several months postoperatively and does not respond well to conservative treatments, such as the use of external taping or triamcinolone injection.\textsuperscript{13,14} Therefore, we are compelled to undertake an elliptical supratip skin excision to reduce the extra soft tissue and to lower the supratip area with the morbidity of an external scar.\textsuperscript{15,16} The small linear scar that arises from this procedure in our series has consistently faded after several months to become aesthetically unremarkable. However, Lemperle and Biewener\textsuperscript{15} have reported that up to 58\% of 19 patients who received wedge-shaped skin excisions owing to secondary pollybeak deformity required further dermabrasion to improve the aesthetic quality of the scar.

**CORRECTION OF DIMPLING DEFORMITY OF THE NASAL TIP**

The second major deformity that can be present along with a contracted nasal tip after silicone implant removal is skin dimpling over the nasal tip. Soft tissue atrophy over the nasal tip arises from excessive mechanical tension by the implant or from capsular contracture. Initially, skin discoloration can develop from the forces applied, which thin the skin and compromise the blood supply to the localized area. Soft tissue atrophy follows, and extrusion develops if the implant is not removed quickly.

When performing reconstruction of the dimpling area of the nasal tip, several approaches may be considered: graft repair, direct excision, or flap mobilization.\textsuperscript{17} The most aesthetically minded strategy is to use slight or moderate crushing of cartilage graft,\textsuperscript{18} dermal fat graft, or cadaveric dermis (eg, AlloDerm)\textsuperscript{19} to fill the defect subcutaneously. We have no experience with the use of subcutaneous, alloplastic injectable fillers to augment the depression. There are several reasons for not doing so. First, most patients want to restore their positive facial image after removal of the implant and request revision augmentation rhinoplasty as a more durable option. Second, long-acting cosmetic fillers (eg, calcium hydroxylapitate [Radiesse]) may cause problems under the thin skin of the nasal tip after removal of the solid silicone implant. And, last, the shorter lasting fillers, such as hyaluronic acid or collagen, provide a more transient solution to the problem.

In this article, we focus on dealing with both the pollybeak and dimpling deformities simultaneously if both defects developed after the reconstruction of the osteocartilaginous framework. On the basis of our experiences, we use a supratip transposition flap to transfer the excessive skin of the pollybeak deformity to the dimpling area of the nasal tip. In this way, the elevated supratip area is lowered, and a smooth nasal dorsal line can be restored. The dimpling area is replaced with normal tissue. Meanwhile, because the tissue being transferred to the nasal tip is immediately adjacent to the defect, there is excellent skin color and quality match. The other advantages of the supratip transposition flap are that no subcutaneous grafting is needed and there is only one operative site. Accordingly, the technique is simple and safe.

The most common adverse effect that can occur after a nasal tip transposition flap is the creation of an unsightly scar over the nasal tip. Forty percent of the patients required an outpatient-based wound edge revision to improve alignment, which has led to uniform satisfaction thereafter. Therefore, if the procedure must be performed, the surgical scar over the nasal tip should be mentioned during the preoperative consultation.

Even though the incision sites healed with acceptable cosmetic results in most patients, we do not recommend the liberal application of the supratip transposition flap in every case of a postoperative short nose. The technique presented herein is meant to add to the armamentarium of revision rhinoplasty surgeons while dealing with this difficult combination of deformities.

In conclusion, dealing with an inelastic fibrotic skin envelopment is the most difficult part of the treatment of the contracted, short nose. There are several possible conditions that can occur, such as a retracted columella, retracted alae, pollybeak deformity over the supratip area, and/or nasal tip dimpling. We can use a supratip transposition flap not only to correct pollybeak deformity over the supratip area but also to resolve nasal tip dimpling. This technique is relatively straightforward, and the results have been consistently rewarding.

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**COMMENT**

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**Correspondence:** Ray Yung-Chiou Lin, MD, Division of Plastic Surgery, Department of Surgery, Taichung Vet-
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