

Chinese Maxillary Protusion Correction with Rhinoplasty

by Ting Wang, MD and Mingjie Yang, MD

Patients with both insufficient nasal tip projection and bimaxillary protusion are a prominent subgroup in Chinese rhinoplasty patients. The typical patient is characterized by a short dorsum, over-rotated nasal tip, excessive nostril visibility on frontal view, and paradoxical narrowing of the nasolabial angle caused by bimaxillary protusion. Many studies¹ focus on perfecting the aesthetic balance between the nose, lips and chin. Chin augmentation with implant is a widely accepted and easy-to-use method that improves the subtle nasal-chin balance in this group of patients. Nevertheless, sufficient posteroanterior movement of the nasal tip² and appropriate premaxillary augmentation is a fundamental way to resolve the aesthetic concerns, according to cephalometric data analysis of these patients. In patients with a significantly sunken mid-face, a pair of grafts needs to be implanted beneath the alar base at the lateral side of the pyriform aperture. The use of an artificial synthetic implant in rhinoplasty (like silicone and ePTFE), is widely accepted in East Asia,³ including China, because it is easy-to-use, relatively-safe, and efficient in many cases. However, we prefer to use rib cartilage⁴ as a primary resource in augmentation rhinoplasty. This puts me in the minority of aesthetic surgeons in China. For the Asian nose, Toriumi⁵ and DeRosa's method⁶ provided

excellent forward movement of the nasal tip with an Extended Columellar Strut Graft (ECSG). We have modified the ECSG with an enlarged platform base and curved or break angle body. The enlarged platform can act as a premaxillary or sub-columellar graft.

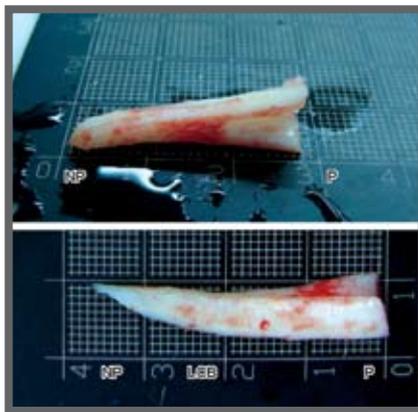


Figure 1. NP (nasal tip) LCB (lobular-columellar break) P (platform); the groove at the enlarged platform base makes the modified ECSG able to rest safely on the nasal spine and caudal septum.⁷

The modified ECSG provides strong nasal tip support, an integrated lobular-columellar break and adequate sub-columellar augmentation.

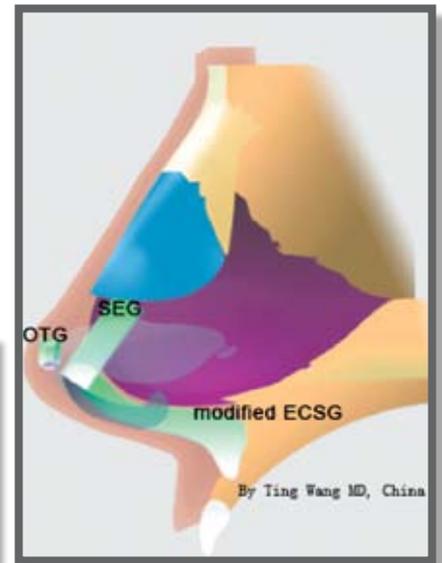


Figure 2. SEG (septal extended graft); modified ECSG (extended columellar strut graft); OTG (onlay tip graft).

During preoperative assessment, photography and computer simulation help to decide the planned movement of the nose and dimensions of graft. Generally expected posteroanterior movement of the nasal tip is approximately 4-7mm and premaxillary augmentation at the nasal spine position is 2- 4 mm. If a severe sunken mid-face needs to be corrected, a pair of 2-to-3 mm-thick cartilage grafts, ePTFE, or silicone can be implanted into the alar-base through two oral incisions.

[Feature]

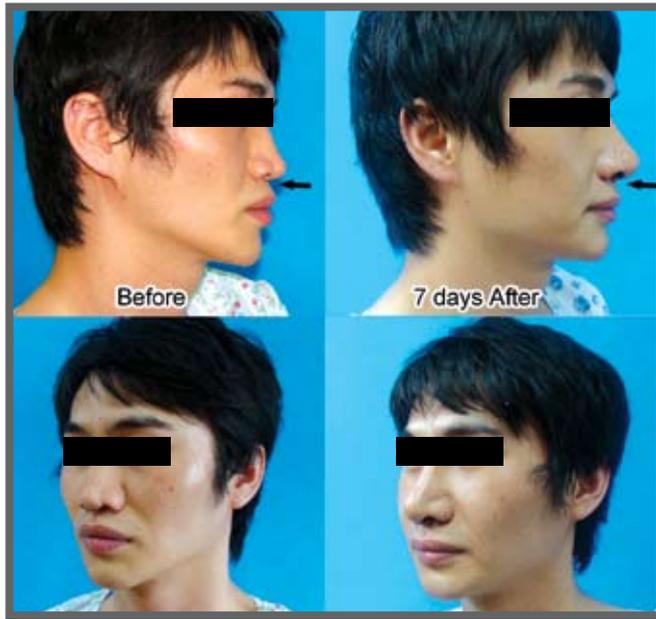


Figure 3. A 24 year-old male patient with severe low nasal tip projection and a sunken midface following augmentation rhinoplasty and alar base graft implant.



Figure 4. A 23 year-old female patient with moderate nasal tip projection and a short chin following augmentation rhinoplasty and chin augmentation.

Procedure:

Under intravenous sedation, an average 60mm long 6th or 7th rib cartilage is harvested through a left inframammary fold incision and designed⁸ and carved into a dorsal graft,⁹ Septal Extended Graft (ESG)¹⁰ and modified ECSG which has a platform-like sub-columellar portion at its base. An open approach is preferred through a stair-step trans-columellar incision in conjunction

with marginal incisions. The area over the nasal spine along with the entire dorsal soft tissue envelope is freed. Cephalic alar cartilage is trimmed or the scroll area is released to derotate the nasal tip. In most cases an ESG is necessary to help fix the strut and to assist in the rotation of the nasal tip.

Since 2007, 40 patients with maxillary protusion have undergone augmentation rhinoplasty. 92.5% of

them are satisfied with the result (follow-up period was 1-18months) according to our telephone survey or clinic follow-up.

Autologous cartilage grafts provide maximal safety in augmentation rhinoplasty. The traditional first choice of septal cartilage in the West is a dilemma to Asian surgeons facing a patient with a small, low dorsal nose demanding safe and efficient augmentation. Costal cartilage is not only the first choice in secondary rhinoplasty but also an ideal cartilage source for a demanding patient. An abundant volume of rib cartilage makes it possible to integrate a premaxillary graft into an extended columellar strut graft providing both more stability and simple design. Unlike the fixed columellar struts¹⁰ that are attached to the maxilla with the help of a K-wire, a modified ECSG may rest on the nasal spine safely by itself in a tongue-in-groove fashion. In our experience, if the thickness of the harvested cartilage is not sufficient, the platform part of the graft can be reduced in size without sabotaging the premaxillary augmentation, only if the strut length is enough (commonly around 30mm in Chinese female patients) and premaxillary soft tissues are sufficiently released. We call it the "upper lid borrow" phenomenon.

In conclusion, a modified ECSG from rib cartilage can significantly correct a narrow nasolabial angle in rhinoplasty patients with maxillary protusion as well as producing dramatic nose tip projection.

Biography

Ting Wang, MD graduated from the School of Medicine at China Medical University in 1997, and trained at Nagumo Tokyo Plastic Surgery Hospital, Korman Plastic Surgery Center, Bay Area, CA USA, Beijing Plastic Surgery Hospital and Shanghai Conbio Huang-Pu Aesthetic Surgery Hospital. Dr. Wang has performed numerous successful aesthetic procedures on celebrities, movie stars and foreign guests from North America, Japan, Canada, Singapore, Australia, Korea, India and Russia. His expertise includes procedures such as rhinoplasty, natural-shape implant breast augmentation, ultrasonic assisted liposuction, facelift, and lower eyelid surgery(blepharoplasty). ■

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References:

1. Jack P. Gunter, Fred L Hackney. Clinical Assessment and Facial Analysis In Gunter JP, Rohrich RJ, Adams WP, eds. Dallas Rhinoplasty: Nasal Surgery by Masters.[M]2007,7:113
2. Toriumi DM. New concept in nasal tip contouring. Arch Facial Plast Surg 8:156-185,2006
3. Deva AK, Merten S, Chang L: Silicone in nasal augmentation rhinoplasty: a decade of clinical experience, Plast Reconstr Surg 102(4):1230-1237,1998
4. Gunter JP, Clark CP, Friedman RM, Internal stabilization of autogenous rib cartilage grafts in rhinoplasty: a barrier to cartilage warping. Plast Reconstr Surg 100:161,1997
5. Toriumi DM. Augmentation rhinoplasty with autologous cartilage grafting. In Park JJ, Toriumi DM, eds. Asian Facial Cosmetic Surgery. Philadelphia: Elsevier, 2007
6. Jaimie DeRosa, Dean M. Toriumi. The Asian Nose. In Gunter JP, Rohrich RJ, Adams WP, eds. Dallas Rhinoplasty: Nasal Surgery by Masters. [M] 2007,59:1167-1196.
7. Toriumi DM. Structural concept in nasal tip surgery. Oper Tech Otolaryngol Head Neck Surg 7:175-186,2000
8. Gibson T, Davis WB. The distortion of autogenous cartilage grafts: its causes and prevention. Br J Plast Surg 10:257, 1958.
9. Jack P. Gunter, Clifford P. Clark III, Ronald M. Friedman, Fred L Hackney. In Gunter JP, Rohrich RJ, Adams WP, eds. Dallas Rhinoplasty: Nasal Surgery by Masters. [M] 2007,39:741-755.
10. Jack P. Gunter, Alan Landecker, C. Spencer Cochran. Frequently Used Grafts in Rhinoplasty: Nomenclature and Analysis. In Gunter JP, Rohrich RJ, Adams WP, eds. Dallas Rhinoplasty: Nasal Surgery by Masters.[M]2007,11:159-174.