RESEARCH LETTER

Lapping of Costal Cartilage Technique: A Key Step in Stabilizing and Reducing the Bulk of Costal Cartilage Used in Rhinoplasty

Rhinoplasty is an art of not only achieving structural integrity of nasal form but also maintaining functional aspects of breathing. To achieve this, autograft, allograft, and synthetic materials are used as various components of nasal structure for augmentation or correction.1,2 Despite various synthetic materials giving promising results and compatibility, cartilage grafting remains the most reliable method.

East Asian populations have short, flat noses with weak, insufficient cartilage.3 Therefore, costal cartilage is the best option for repair. Although costal cartilage is good for such cases, an adequate fixing technique will make it more reliable. In the present study, one of us (D.-H.J.) adapted a technique that is commonly used by carpenters to stabilize a joint without affecting the thickness of wooden blocks, termed half-lap joints.

Methods | The institutional review board of Shimmian Rhinoplasty Clinic, Seoul, South Korea, determined that the board's approval was not required for this study. From January 1, 2011, to December 31, 2012, the lapping of costal cartilage, coined LOCK technique by the authors, was used in patients for primary and secondary rhinoplasty (Figure 1) who requested nose lengthening and tip projection with either autologous (seventh rib) or cadaveric costal cartilage. A total of 220 patients were included in the study; 45 were male and 175 were female. All patients provided written informed consent prior to surgery, and all were monitored postoperatively for a minimum of 1 year.

The principle of using an extended spreader graft (ESG) and columellar strut is similar to the one used in conventional open rhinoplasty. Our technique is a simplified method to fix the 2 grafts that makes the base stronger, more secure, and less bulky.

The recipient area in the nose is prepared once the autologous costal cartilage is harvested (Figure 2). The cartilage is cut into blocks of required length and thickness and sculpted accordingly. To obtain straight pieces of cartilage, the cartilage should be laminated by cutting it longitudinally, achieving symmetry. The thickness of the graft should be more than 2 mm to reduce the risk of further warping. The ESG is initially placed either on the right or left side of the septum and secured. The columellar strut graft is then temporarily placed.

The surface of contact between the ESG and strut is marked on both grafts. The area between the marked lines is carved out, removing only half the thickness of the graft. Both grafts are then returned so that the cut surfaces come in contact and fit snuggly to one another. This joint is then sutured to create a half-lap joint in which one graft is lapping onto the other.

Results | The LOCK technique was used to fix the ESG with the columellar strut in all of the patients. Of the 220 patients who were monitored for a minimum of 1 year, only 2 patients required revision.

Discussion | Patients who request nose lengthening and tip projection may require an ESG and columellar strut.4 Indications to use costal cartilages as grafts5 are contracted or cleft noses and for revision surgery for patients who had septal and auricular cartilages harvested previously and are therefore lacking sufficient cartilage.

The advantage of using costal cartilage is its abundance and the ease by which it can be harvested with minimal complications,1,3 the small size of the scar, its ability to be
shaped into any form. A few inherent morphologic disadvantages are rigidity, bulkiness, and warping over time. The bulkiness should be addressed without compromising the strength of the graft.

The principles and method of using these for ESGs and columellar struts are similar to those of conventional rhinoplasty. Various techniques described in the literature have used different methods to achieve the ESG. We devised a simplified technique to fix 2 blocks of cartilages the way that 2 ends of wooden blocks are fixed by carpenters by chipping off half the thickness of the ends of these wooden blocks. This technique makes the joint stronger and less bulky, and the shoulders of each graft provide resistance that prevents displacement. To date, we have achieved excellent outcomes in all patients with the use of this method.

The LOCK technique is an innovative method designed to fix the ESG with a columellar strut to improve nasal tip projection, lengthening, and stability. This is a simple method to perform and can be easily reproduced. This technique can be used in noses with structural deformity in any population. Although the results with use of the LOCK technique have been excellent in this short postoperative follow-up period, long-term evaluation is needed. In addition, comparative study between this novel technique and the conventional method is recommended.

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Author Contributions: Drs Jung and Joshi had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Jung, Joshi, Chang.

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CORRECTION
Errors in Author Affiliations, Corresponding Author Address, and End Matter:
In the article titled “Evaluation of the Effect of Platelet-Rich Plasma on Recovery After Ablative Fractional Photothermolysis” published online November 27, 2014 (doi:10.1001/jamafacial.2014.1085), in JAMA Facial Plastic Surgery, Dr Kim’s affiliation should have read “Department of Otolaryngology–Head and Neck Surgery, University of Miami, Miami, Florida.” Her postal address should have read: “Haena Kim, MD, 106 La Casa Via, Ste 200, Walnut Creek, CA 94598 (drkim@drhaenakim.com).” The end matter should have included as Additional Information that Dr Kim is now in private practice. In the Additional Contributions, thanks to the statistician were missing, and the paragraph should have read “The Miami Institute for Age Management and Intervention provided the study site and materials. We thank Philip Craft, MD, of the Miami Institute for Age Management and Intervention and the volunteers for participating in this study. We would also like to thank the statistician, Richard Schwinn, MS, MA, of the University of Illinois at Chicago. None of these individuals received compensation for their contributions.”