

## **Novel Technique for Dorsal Nasal Augmentation Utilizing Crushed Septal Cartilage and Autologous Fat**

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**Purpose:** Cartilage grafts are widely accepted for dorsal onlay in primary and secondary rhinoplasty. Controversy exists regarding the best technique for long term graft retention and optimal aesthetic outcome. The aim of this study was to describe a novel technique for dorsal nasal augmentation utilizing crushed septal cartilage mixed with autologous fat, and to objectively assess long-term graft retention and patient reported outcomes.

**Methods:** A retrospective study of all patients who underwent primary open rhinoplasty and dorsal onlay grafting with this technique by a single surgeon was performed. Three-dimensional photographic images were acquired. Graft retention was calculated by global registration and volumetric subtraction of images acquired at two separate time points: 12 months postop (to allow for resolution of swelling) compared to final follow-up, with no intervening facial procedures affecting the nose. Patients completed the rhinoplasty module of the Aesthetic Face-Q to assess satisfaction.

**Results:** Fourteen patients were included in the study. Mean intermediate follow up photographs were taken at 17.8 months (range: 11.4 - 40.5) and mean long-term follow up photographs were taken at 28.9 months (range: 19.1 - 56.8). In this interval, graft reabsorption was minimal at final follow-up compared to 12 months follow-up with no significant difference: mean dorsal volume loss of  $-0.27 \text{ mm}^3$  (range:  $-1.81 - 0.25$ ,  $p=0.92$ ) and mean dorsal height change of  $-0.2 \text{ mm}$  (range:  $-0.7 - 0.6$ ,  $p=0.19$ ). Patients also reported a high degree of satisfaction with the appearance of their face  $66.0 \pm 40$ , nasal appearance  $70.4 \pm 39$ , nostrils  $78.0 \pm 39$ , psychological functioning  $72.6 \pm 43$ , and social functioning  $70.0 \pm 42$ . One patient underwent reoperation for persistent nasal vestibular stenosis. Otherwise, there were no major or minor complications related to the onlay graft.

**Conclusion:** Crushed septal cartilage mixed with autologous fat is a viable option in open rhinoplasty for dorsal augmentation and is associated with a high degree of graft retention and patient satisfaction.