Height Changes of tutoplast-processed Fascia Lata over Time After Dorsal Augmentation During Rhinoplasty

Ji Yun Choi
Department of Otolaryngology-Head and Neck Surgery, Chosun University College of Medicine

INTRODUCTION

Autologous temporalis fascia, autologous fascia lata, and Tutoplast (Tutogen Medical, Neunkirchen am Brand, Germany)–processed fascia lata (TPFL) have all been used as graft materials. Autologous fascia can be used to cover dorsal irregularities and dorsal augmentation with wrapped diced cartilage during rhinoplasty. Temporalis fascia has been used as an augmentation material, but its harvesting needs time and an additional incision. Fascia lata is thicker than temporalis fascia, which means fascia lata is considered more suitable for dorsal augmentation. When used as a substitute for autologous fascia, TPFL is a commercially available homograft that can avoid donor-site morbidity.

Methods

This retrospective study was approved by the Institutional Review Board of Gil Medical Center. This study enrolled 18 patients who underwent augmentation rhinoplasty during which TPFL was used as dorsal augmentation material from March 2008 to June 2012. Patient photographic data and charts were reviewed. Two types of TPFL were used: Tutoplast and AlloSheet (CGbio, Seongnam, Republic of Korea). For augmentation, TPFL was rehydrated in saline solution for about 5 minutes and then cut to the desired size. TPFL was applied in 2 to 6 layers. In some patients crushed cartilage was combined with TPFL to augment the nasal dorsum. Postoperative photographs were taken at approximately 1 month after rhinoplasty, and final postoperative photographs were taken at 18 to 75 months; 2 lateral views and 2 oblique views were taken at each time. Analysis was performed by comparing photographs taken at the first and last follow-up visits. Postoperative outcomes were classified as no change, slight change, or marked change based on changes in nasal dorsal height.

Patient No.	Gender	Age, yr	Layers of TPFL	Classification	
				ENT Doctor 1	ENT Doctor 2
1	Male	33	3	M	M
2	Male	55	5	M	M
3	Male	18	2 + CC	N	N
4	Male	37	2	N	N
5	Male	42	2	N	N
6	Female	26	3	N	N
7	Male	23	3	N	N
8	Female	42	6	N	S
9	Male	28	3 + CC	N	N
10	Female	19	3	N	S
11	Female	18	3	N	N
12	Male	26	3 + CC	N	N
13	Male	50	4 + CC	S	S
14	Female	23	3	S	M
15	Male	31	2	S	S
16	Male	21	2	S	S
17	Male	19	4	S	M
18	Female	53	3	S	S

Results

A total of 18 patients were enrolled, comprising 12 male and 6 female patients, with an average age of 31.3 ± 12.4 years. On average, the first and last postoperative photographs were taken at 1.11 ± 0.32 and 36.83 ± 15.23 months, respectively. A maximum of 6 TPFL layers and a minimum of 2 layers were used(mean, 3.11 ± 1.08 layers). Doctor 1 classified the outcomes of the 18 patients as follows: no change in 10 patients (55%), slight change in 6 (33%), and marked change in 2 (11%). Doctor 2 classified the outcomes as follows: no change in 8 patients (44%), slight change in 6 (33%), and marked change in 4 (22%) . The correlation coefficient of agreement between doctors was 0.68. Change in nasal dorsal height was not found to be correlated with number of TPFL layers (r = 0.347), follow-up period (r = 0.775), or TPFL manufacturer(Tutogen, r = 0.796; AlloSheet, r = 0.257). In addition, the use of crushed cartilage was not found to affect nasal dorsal height; only 1 of 4 patients (25%) treated with TPFL and crushed cartilage showed slight change. Doctor 1 classified the remaining 14 patients treated with only TPFL as follows: marked change in 2 patients, slight change in 5, and no change in 7 (P = .597). Doctor 2 classified the remaining 14 patients treated with only TPFL as follows: marked change in 4 patients, slight change in 5, and no change in 5 (P = .311).

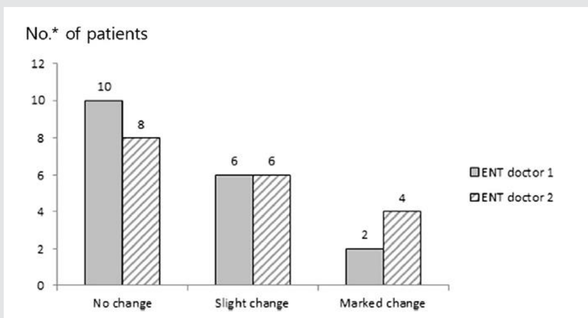


FIGURE 5. Classifications of 18 patients as determined by ear, nose, and throat (ENT) doctors 1 and 2. Abbreviation: No*, number.

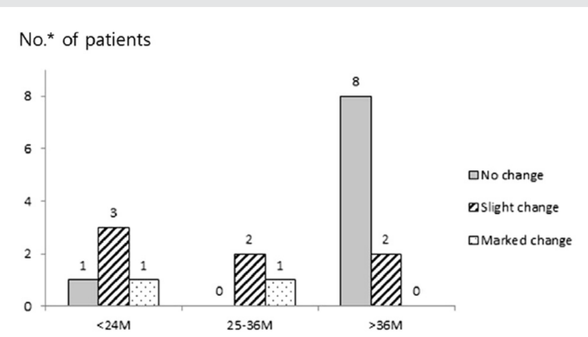


FIGURE 6. Distributions of dorsal height changes by follow-up time. Abbreviations: M, months; No*, number.

DISCUSSION

TPFL as an augmentation material used duringvrhinoplasty provides a natural appearance and camouflages irregularities on the nasal dorsum and nasal tip . When TPFL is used for dorsal augmentation during rhinoplasty, it can be rea dily cut into desired shapes and multilayered.6 Furthermore, complications su ch as extrusion and graft visibility when used in combination with other allopl astic materials are less common when TPFL is used. In our study, 11 to 22% of the patients who underwent rhinoplasty with TPFL showed marked resorpti on, although nasal dorsal height was not evaluated objectively, the follow-up period was relatively long, and two different ear, nose, and throat doctors e a luated the photographs separately and arrived at similar opinions. Although th e number of patients was small, the use of crushed cartilage with TPFL seem ed to lower the rate of absorption

REFERENCES

1. Kelly MH, Bulstrode NW, Waterhouse N: Versatility of diced cartilage-fascia grafts in d orsal nasal augmentation. Plast Reconstr Surg 120:1654, 2007
2. Daniel RK, Calvert JW: Diced cartilage grafts in rhinoplasty surgery. Plast Reconstr Sur g 113:2156, 2004
3. Jang YJ, Song HM, Yoon YJ, Sykes JM: Combined use of crushed cartilage and proce ssed fascia lata for dorsal augmentation in rhinoplasty for Asians. Laryngoscope 119:10 88, 2009
4. Yu MS, Park HS, Lee HJ, Jang YJ: Histomorphological changes of Tutoplast-process ed fascia lata grafts in a rabbit rhinoplasty model. Otolaryngol Head Neck Surg 147:239, 2012