

Original Article / Orijinal Araştırma**The Use of Spongostan-Wrapped Diced Cartilage Graft For Obtaining A Regular Dorsal Contour In Rhinoplasty****Rinoplastide düzgün bir dorsal kontur elde etmek için spongostana sarılmış kıyılmış kartilaj greft kullanımı**

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ÖZET

Amaç: Bu önçalışmanın amacı rinoplasti operasyonu uygulanan 56 hastada düzgün bir dorsal kontur elde edilmesi için spongostana sarılmış kıyılmış kartilaj grefti kullanımının sonuçlarını sunmaktır.

Materyal ve metod: Dorsal nazal düzensizlikleri önlemek ve orta derecede semer burun deformitesini düzeltmek için kıyılmış kartilaj greftleri ile birlikte bir mold olarak spongostan kullanıldığı 56 rastgele seçilmiş hastanın dosya bilgileri geriye dönük olarak değerlendirildi. Klinik değerlendirme inspeksiyon, palpasyon ve fotoğrafların incelenmesi ile yapıldı.

Sonuçlar: Hastaların yaşları 21 ile 48 arasında değişmekte olup 26'sı erkek 30'u bayandı. 32 hasta sekonder rinoplasti vakası iken 24 hasta primer vakaidi. Postoperatif takip süresi 14-24 ay (ortalama 19 ay) arasında değişti. Enfeksiyon, yabancı cisim reaksiyonu veya greftlerin yerinden kayması gibi komplikasyonlar gözlenmedi. Hastaların çoğu ortaya çıkan estetik sonuçtan memnundu ve takip süresince klinik muayenede nazal dorsal düzensizlik gözlenmedi.

Sonuç olarak, rinoplasti operasyonlarında düzgün bir dorsal kontur sağlayabilmekle birlikte dorsal düzensizlikleri önlemek ve düzeltilebilir için kıyılmış kıkırdak greftlerinin spongostana sarılarak kullanılması etkili, emniyetli ve daha ucuz bir metod olduğunu söyleyebiliriz.

Anahtar Kelimeler: Rinoplasti, spongostan, kartilaj greft.

ABSTRACT

Purpose: The aim of the preliminary non-comperative study was to present the outcomes following the use of spongostan-wrapped diced cartilage graft for obtaining a regular dorsal contouring in 56 patients who underwent rhinoplasty.

Materials and Method: We have retrospectively evaluated the charts of 56 consecutive rhinoplasty patients in which spongostan as a mold was used with diced cartilages for correcting of mild saddle deformity and preventing dorsal nasal irregularities. Clinical evaluation was made by inspection, palpation and photographic documentation.

Results: There were 26 male and 30 female patients, with ages ranging from 21 to 48 years (mean age: 34.5 years). Of the 56 patients, 32 underwent secondary rhinoplasty, while 24 were primary cases. Postoperative follow-up period was between 14 and 24 months (mean:19 months). There were no complications such as infections, foreign body reaction or migration. Most of the patients had satisfactory aesthetic results, and no apparent irregularities were observed over the nasal dorsum in the follow-up period.

Conclusion: As a result, we can say that spongostan wrapped diced cartilages graft seems to be a cheap, safe and effective method for obtaining a nice nasal dorsal contouring as well as for correcting and preventing of dorsal irregularities in rhinoplasty.

Key words: Rhinoplasty, spongostan, cartilage graft.

Introduction

Rhinoplasty is one of the widely performed operations in the plastic surgery clinics. When the procedure was done properly, satisfactory results could be obtained both for the patient and the surgeon (1,2). In rhinoplasty, average revision rate is reported between 8 to 15% (3). Of the cause of revisions, abnormalities of the nasal dorsum remain as an important problem in rhinoplasty.

A variety of graft materials including various alloplastic implants and autografts have been used for correcting of dorsal nasal abnormalities. Cartilage augmentation of the nasal dorsum may especially be useful for mild saddle deformity. However, when a greater augmentation is required, the other options can be used. The cartilage grafts are commonly wrapped with Surgicel or fascia to hold together and to shape them. Surgicel-wrapped diced cartilage was first used to correct minor secondary deformities, including later graft visibility, depression, and surface irregularity. The amount of the diced cartilage mass required for each case may vary to achieve the desired thickness (4). In general, one mm thickness of cartilage mass is sufficient to cover the straight dorsum and correct dorsal irregularities.

Decomposition of diced cartilages while placing them onto the nose is the essential problem(5). Venous blood, fibrin glue, wrapped of cartilages with various autologous tissues such as fascia, and surgicel may be used to hold together them. Diced cartilages are attached together by clotted fibrins. But this cannot be enough to harden them. Using manufactured fibrin glue can shape diced cartilages irreversibly, and the surgeon may not approve of the shape (5). Fascia may have a variety of donor site morbidities.

We used spongostan for wrapping diced cartilage grafts due to its many advantages. Spongostan is a cheaper material than Surgicel and it does not require venous blood or other glue for stabilization. Its stability time is longer than Surgicel (5). The present study offers the outcomes from 56 patients in which Spongostan-wrapped diced cartilage graft was used for correcting and preventing of nasal dorsal irregularities.

Patients and Methods

A retrospective analysis of rhinoplasties performed in Departments of Plastic Reconstructive and Aesthetic surgery between 2006 and 2011 years was made. An informed consent was obtained from all patients. Medical and operation records, pre- and postoperative photographs, the rhinoplasty approach used were reviewed. Clinical evaluation was made by inspection, palpation and photographic documentation preoperatively and during the follow up period. Spongostan wrapped diced cartilages graft was used in 24 primary and 32 secondary cases for correcting of mild saddle deformity and dorsal nasal irregularities.

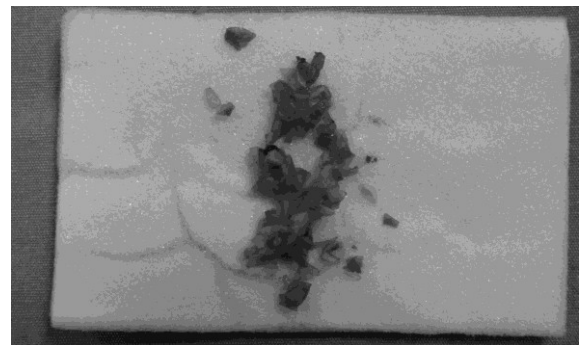


Figure 1A

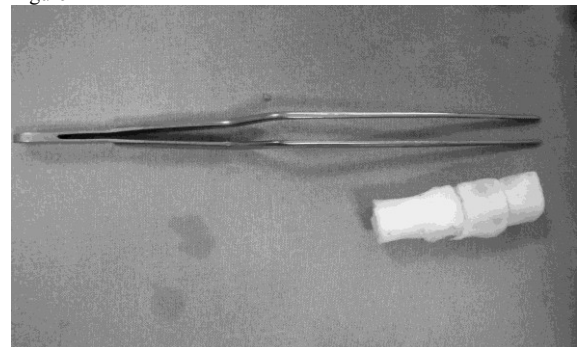


Figure 1B

Figure 1A, B: A cartilage graft is harvested and diced into small fragments. After the cartilage is crushed, it is placed and wrapped in a spongostan.

Cartilage grafts harvested from the septum, concha or costal cartilage was diced into 0.5 to 1mm cubes using no. 12 blade and packed into Spongostan (Figure 1A, B). The site in the nose was prepared, and every attempt was made to provide an adequately sized, soft-tissue pocket larger than the graft. The receiving pocket was dissected to an extent only sufficient to accept the graft, to ensure its stable positioning and to reduce the risk of misplacement. Adjustments to the final position and form of the graft were carried out by external digital manipulation after the nose had been closed. Steri-Strips (3M, St. Paul, Minn.) and a plaster cast were then

placed over the nasal pyramid to help maintain the graft in its position, and left in place for 1 week. The patient was reviewed at 7 to 10 days, when it was still possible to effect minor changes in the dorsal contour by gentle digital pressure on the graft. This maneuver was well tolerated without anesthesia by all patients in the outpatient setting. A broad-spectrum antibiotic prophylaxis was used during and for 5 days after surgery in all cases. Figure II shows pre- and postoperative views of case.

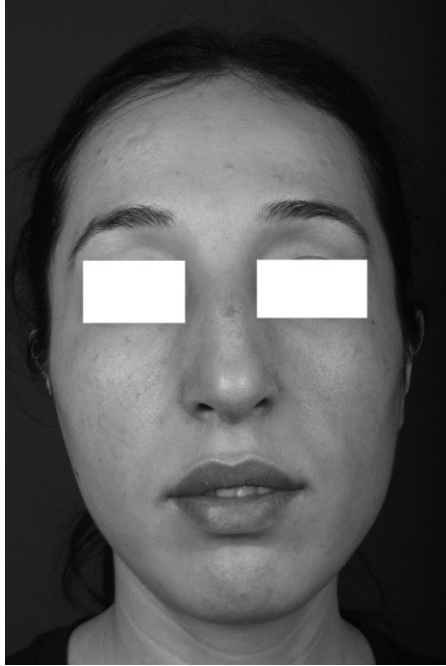


Figure 2A



Figure 2B

Figure 2A, B: Patient with anterior and lateral preoperative views.

Results

56 patients (26 men and 30 women) underwent rhinoplasty using Spongostan-wrapped diced cartilage graft were evaluated. All patients had a characteristic thin nasal skin. The postoperative average follow-up was 19 months (range, 14 to 24 months). The average age was 34.5 years (range, 21 to 48 years). The donor site for cartilage harvest was septal in 50 patients, conchal in five cases, and costal in one. Any complication such as infections, foreign body reaction or migration was not seen in the patients. All patients had satisfactory aesthetic results, and no apparent irregularities were observed over the nasal dorsum.

Discussion

Various materials have been used for nasal contour restoration. These include various alloplastic materials and autografts. One of the alloplastic materials is silicone. There are several advantages with using of silicone, including ready availability in numerous shapes and sizes, as well as lack of donor site morbidity (6). However, silicone are commonly associated with malposition, and in a long term follow-up, have an accompanying high rate of extrusion over time (7). The other option of alloplastic material is Gore-tex. There are some reports about the use of Gore-Tex in rhinoplasty. The complication rate is quite low in the literature (8). Owsley and Taylor (9) reported a large series of 106 patients in whom Gore-Tex was used as an implant material over a 5-year period. In that study, the authors showed no complications. However, they had six revision cases because of excessive augmentation. In the study performed by Godin et al. (10), the complication rate was 3.2%. In another study published by Conrad and Gillman (11), they reported two soft tissue reactions and five infections. Complications such as infections or foreign body reactions can develop with using of Gore-Tex, but resorption problems as well as changes in shape and contour seen with cartilaginous or bony grafts do not occur (8). Another is porous high-density polyethylene (Medpor). This material has been effectively used in reconstructive craniofacial surgery for the past 25 years (12). In a study performed by Skouras et al (12), the authors reported the rejection rate was 5.1%. This result was substantially low compared with previous reports concerning alloplastic materials. However, the medpor has potential

for immune reaction, infection and implant rejection. The alloplastic materials have varying degrees of complications related to foreign body reactions, infections, instability, rigidity, and extrusions. In some cases, such as after severe trauma or prior nasal surgery, as autogenous cartilage is not available, alloplastic materials should be considered.

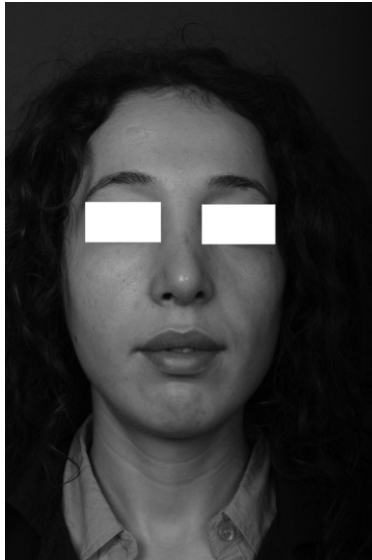


Figure3A

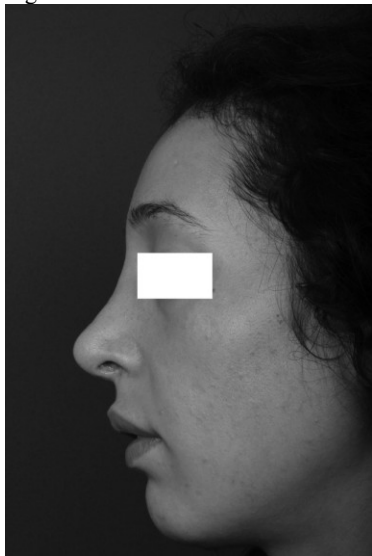


Figure3B

There are reports for nasal contouring, augmentation and camouflage with the use of various autografts such as temporalis fascia, dermofat, fascia lata, and bone and cartilage grafts in the literature. Temporalis fascia and rib cartilage have the technical difficulty of harvesting the graft. Also, these options may have some donor-site morbidity and unpredictable resorption. Jang et al (13) and Karaaltın et al (14) described the use of fascia lata graft for dorsal augmentation and nasal dorsal contouring in rhinoplasty.

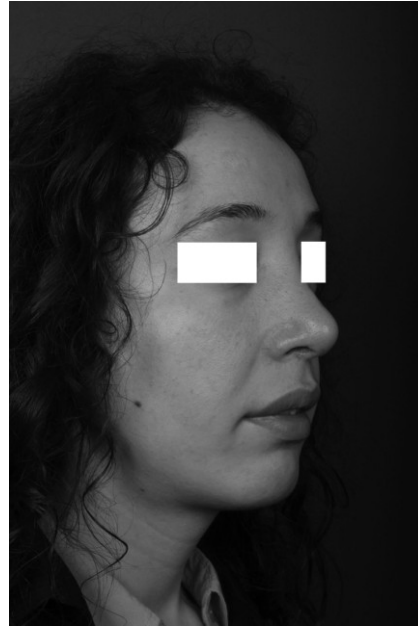


Figure3C

Figure 3A,B,C: 6-month postoperative photographs after using spongostan-wrapped diced cartilage graft.

According to these studies, the harvesting of the graft is easy and the operation time is rather short. However, the donor-site morbidity can be observed. The patients may require treating by a postoperative elastic bandage over the donor site.

Cartilage augmentation of the nasal dorsum is useful in the minimal defects (3,4). Septal cartilage is the first choice in these cases. Rib cartilage allows a greater degree of augmentation than septal cartilage. However, if not curved carefully they have a tendency to curl, thus giving the nose a twisted appearance. Besides the technical difficulty of harvesting this graft, there is also a risk of pneumothorax. Theoretically, cartilage provides a softer, more natural substance in the nasal dorsum as compared with bone. Disadvantages of the cartilage graft include difficulty in fixation and problem of postoperative malposition. In addition for larger defects or in the presence of significant tissue destruction, bone grafts can be considered the best autogenous graft material to maintain tip projection and to minimize airway embarrassment (3,7). Besides septal cartilage grafts have been the gold standard in functional rhinoplasty over the past decades, their use is limited when previous septal surgery has been performed or in cases of recurrent inflammation or trauma. The use of auricular cartilage grafts comprise a reliable method in cases presenting with external valve or alar cartilage defects, due

to their natural curved configuration (15). In addition, persistent surface irregularities even following morselisation limit the use of autologous auricular cartilage grafts in dorsum defect reconstruction (16).

In cases of important dorsal nasal deficiency, the use of cartilage micrografts wrapped in a sleeve has been developed to solve the ideal dorsal graft problem and demonstrated to be effective in improving both the functional and the cosmetic aspects of the nasal framework. Surgicel-wrapped diced cartilage graft was introduced by Erol with successful results. The technique is demonstrated to maintain a smooth external contour, without significant resorption, visibility or distortion. The technique was modified by Daniel and Calvert using autologous fascia-wrapped cartilage micrografts (17). In that study, more stable results were observed. However, there are reports of patients with cartilage graft distortion, resorption and migration. This is a particular concern in patients with thin nasal skin. Thin skin with sparse subcutaneous tissue poorly camouflages even the small irregularities in the nasal support structures; therefore, cartilage graft positions, asymmetries and irregularities may become obvious over time (14).

Spongostan was performed in our patients because it is cheaper and its stability time is longer than Surgicel. In addition, it does not require venous blood or other glue for stabilization of the diced cartilages when they are carried in spongostan. Surgicel is fully absorbed in 7–14 days, while spongostan is absorbed in 3–5 weeks (5). The long-lasting of stability time may be advantaged for thin skin patients.

The present study has a larger series of the patients with a longer follow up period when compared to a similar study by Islamoglu. However, the modest follow up period is lack of our study as well. The follow up period of the patients should be longer to reasonably and scientifically to conclude whether the technique is equal or superior to any other diced cartilage dorsal augmentation techniques. Therefore, the present study can be considered as a preliminary report and the authors follow the patients to define whether the graft resorption and visible contour irregularities occur. In the present study, we did not encounter any visibility, infection, allergic or foreign body

reaction, and deformity or exposure of the grafting material during 2 years of follow-up. We have observed high patient satisfaction with using spongostan-wrapped diced cartilage graft technique. We have not found graft distortion or displacement to be a problem with this technique up to now. Our results support the use of spongostan-wrapped diced cartilage graft as a simple, practical and a cheap method for dorsal contouring in patients undergoing rhinoplasty.

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