

A New Spreader Graft Technique: Anatomically Adopted Spreader Graft

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Abstract

In the practice of septo-rhinoplasty, the use of spreader grafts has become a routine and useful application that has both aesthetic and functional purposes. In this study, a new method of using a spreader graft is described and the results of its use from the previous five years are analyzed. In anatomically adopted spreader grafts, the spreading method relies on anatomic relationships and enhances the process of spreading structures in comparison to present techniques. The main advantage of anatomically adopted spreader grafts is the creation of a true nasal valve angle when compared to Jack Sheen's spreader graft technique. Anatomically adopted spreader grafts have been used in more than 200 patients with high rates of success and patient satisfaction. In this technique, the nasal dorsum is reconstructed anatomically, with the nasal wall being enlarged more extensively than occurs following the use of present spreader graft applications. After the use of anatomically adopted spreader grafts for five years, it has been found to be superior to present techniques.

Introduction

Management of the nasal dorsum is an important aspect of rhinoplasty. In the case of dorsal hump reduction, normal osseous cartilaginous structures are destroyed. The nasal valve mechanism is also excised and separated from the nasal septum. Meanwhile, in traumatic and post-rhinoplasty deformities, the nasal dorsum may be deformed.

Sheen has previously described the spreader grafting technique as a method for restoring the nasal dorsum and enlarging the nasal valve [1]. Spreader cartilage grafting has been described as an endo nasal procedure and has become a popular technique among practitioners of open-rhinoplasty.

In my clinic, the use of Sheen's technique has produced a high rate of success and patient satisfaction over the previous 15 years. In an effort to restore the nasal cartilaginous dorsum in a manner that recapitulates nasal anatomy, questions arose regarding the use of Sheen's spreading technique.

Since 2011, I have described the anatomically adopted spreader grafts (AASG) technique, which has since been performed on hundreds of patients. Patients who have undergone this technique have expressed a high rate of satisfaction when compared to patients who have undergone Sheen's technique. AASG provides an anatomic reconstruction and a true nasal valve angle.

Material and Methods

Since 2011, the AASG technique has been described and performed on more than 250 patients, with the principal author having performed approximately 150 rhinoplasty procedures per year. Among

these cases, AASG has been used in approximately 90% of primary or secondary rhinoplasty surgeries.

Surgical Technique

The AASG is performed through a W incision during an open-rhinoplasty procedure [2]. First, the nasal mucosa is dissected from the dorsal nasal septum and the nasal valve portion of the upper-lateral cartilages (ULC) of the sub-perichondrium. Then, the cartilaginous hump is resected and the bony hump is rasped. The dorsal portion of the upper lateral cartilages is not resected with the nasal septum at this time. After the reduction of the dorsal nasal septum, the excessive part of the dorsal ULC is resected and adjusted to a position that is 1 or 2 mm higher than the nasal septum. Spreader grafts are harvested from the inferior portion of the nasal septum in most instances.

First, the spreader grafts are fixed to the nasal septum at a position that is 1 mm below the dorsum of the nasal septum, thereby allowing for the creation of a pyramidal dorsum [Figure 1]. Then, the dorsal ends of the ULC are bent to fix the upper ends of the ULC to the side of spreader grafts that are adjusted to a position that is 1 mm below the dorsal ends of the spreader grafts [Figures 2 and 3].

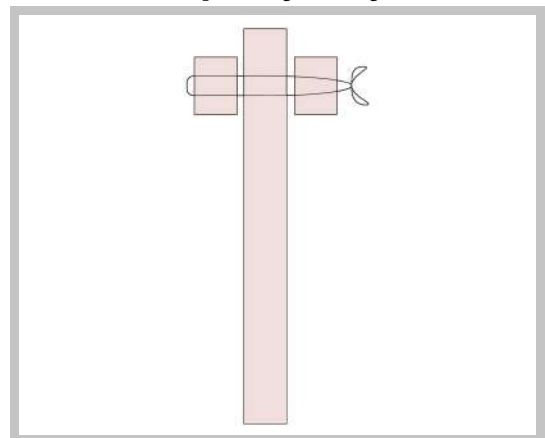


Figure 1: Spreader grafts are sutured to the nasal septum

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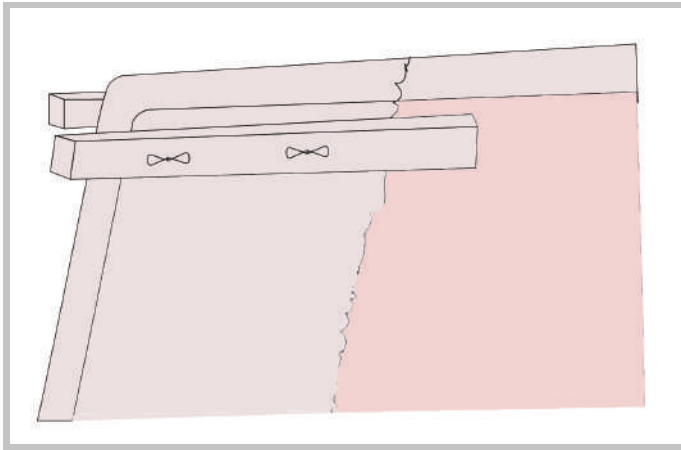


Figure 2: Front dorsal view of AASG

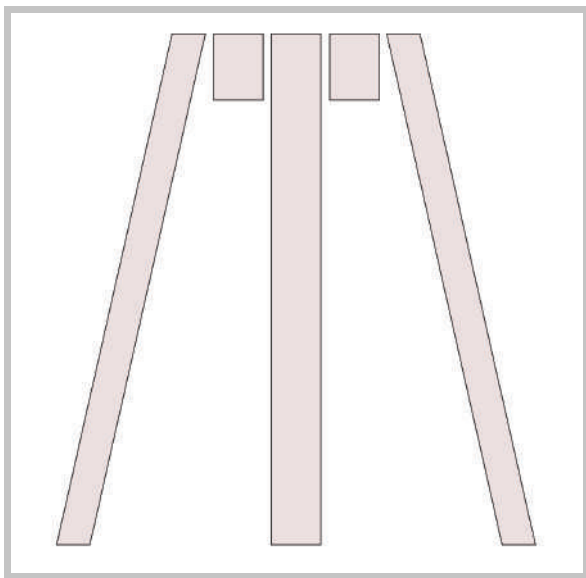


Figure 3: Shen's technique of spreader grafting

This two-staged fixation of the spreader grafts to the nasal septum and ULC produces a precise and accurate level of grafting. Fixing the spreaders to a position at 1 mm below the dorsal end of the nasal septum and fixing the dorsal ends of the ULC to a position at 1 mm below the dorsal ends of the spreader grafts creates a convex nasal dorsum, which replicates the normal anatomy of the nasal dorsum [Figure 3]. The bending of the upper ends of the ULC provides a true nasal valve angle and supports the nasal valve against dynamic collapsing forces.

Results

AASG was performed on more than 250 patients over the span of five years and is a method of recapitulating a normal nasal dorsum by reconstructing the cartilaginous nasal dorsum through effective nasal valve creation and better dorsal shaping. AASG provides effective results when considering the rate of post-rhino plastic nasal valve collapse and a narrow nasal dorsum [Figure 4 and 5]. The aesthetic and functional results were evaluated during clinical examinations on 144 randomly selected patients [Tables 1 and 2], where patients indicated a high rate of satisfaction without complaints. Preoperative and postoperative nasal valve conditions were evaluated clinically

by authors, while evaluated with questionnaire by patients asking the relief of nasal valve restriction and nasal breath improvement.



Figure 4: Frontal view of a patient with a post-rhinoplasty deformity



Figure 5: Frontal view of the same patient after correction of severe nasal valve collapse

Table 1: Clinical Examination of Patients

Condition	Number of cases	Results	
		Good	Very Good
Severe valve collapse	18	3	15
Moderate valve collapse	22	2	20
No valve collapse (primary rhinoplasty)	104	5	99

Results			
Condition	Number of cases	Good	Very Good
Severe valve collapse	18	5	13
Moderate valve collapse	22	5	17
No valve collapse (primary rhinoplasty)	104	7	97

Figure 6: The AASG technique

Discussion

In the case of dorsal hump resection, the nasal vault is destroyed and must be reconstructed. Additionally, the nasal valve mechanism is also excised and separated from the nasal septum. In traumatic and post-rhino plastic deformities, the nasal dorsum may be deformed.

Sheen described the use of the spreader graft to achieve a spreading effect [1]. Since 1995, my clinic has been commonly using Sheen’s spreader grafts for a variety of procedures. In doing so, we have observed a smooth and stable nasal dorsum, but no true widening effect on the nasal valve mechanism. According to Sheen’s technique, the medial side of the ULC is sutured to the lateral side of the nasal septum [Figure 6]. This spreader technique can widen the nasal dorsum, but does not widen the nasal valve due to conventional physical constraints.

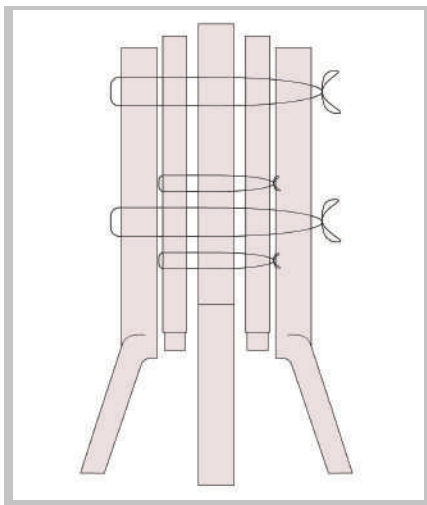


Figure 6: Front dorsal view of AASG

Recently, spreader flaps have become popularized and are a common method of spreading the nasal valve [3, 4]. While we have never used the spreader flaps in our clinic, spreader flaps do not intuitively resemble an anatomic method of spreading and does not widen the nasal valve.

We therefore sought to develop a spreading technique that makes use of an anatomically accurate method of spreading the nasal dorsum and dynamically widening the nasal valve. In doing so, we developed the AASG.

While performing the AASG technique, spreaders and the ULC are incrementally sutured, thereby resulting in a pyramidal shape, rather than a square shape, of the nasal dorsum, as is observed in the normal anatomy. The length of the ULC is adjusted to the same level with the dorsal end of the nasal septum. Then, the dorsal ends of the ULC are sutured at a position that is 2 or 3 mm below the dorsum of the nasal septum. Next, the ends of the ULC are bent medially and sutured to the spreader grafts [Figure 3].

In performing this procedure, it is possible to obtain a convex shape of the ULC and create dynamic support of the nasal valve mechanism. This convex shape of the ULC provides resistance to collapsing forces in a manner that is similar to constructing a bridge.

The main advantage of AASG is the creation of a true nasal valve angle when compared to Jack Sheen’s spreader graft technique.

Several surgical techniques have been published in the field of nasal valve mechanism repair [2, 5-10]. Among these, AASG is a superior technique for nasal valve surgery. In our experience with hundreds of patients over five years, the AASG technique is an anatomic method for reconstructing the cartilaginous nasal dorsum through the creation of an effective nasal valve and more accurate shaping of the nasal dorsum.

References

1. Sheen JH. Spreader graft: a method of reconstructing the roof of the middle nasal vault following rhinoplasty. *Plast Reconstr Surg*. 1984; 73:230-239. [Crossref]
2. Celik M, Tuncer S and Eryilmaz E. Running W Incision in Open Rhinoplasty: Better Scar Quality. *Aesthetic Plast Surg*. 2003; 27:388-389. [Crossref]
3. Toriumi DM. Management of the middle nasal vault in rhinoplasty. *Operat Tech Plast Reconstr Surg*. 1995; 2:16-30. [Crossref]
4. Gruber RP, Park E, Newman J, Berkowitz L and Oneal R. The Spreader Flap in Primary Rhinoplasty. *Plast Reconstr Sur*. 2007; 119:1903-1910. [Crossref]
5. Toriumi M, Josen J, Weinberger M and Tardy ME. Use of alar batten grafts for correction of nasal valve collapse. *Arch Otolaryn*. 1997; 123:802-808. [Crossref]
6. Millman B. Alar batten grafting for management of the collapsed nasal valve. *Laryngoscope*. 2002; 112:574-579. [Crossref]
7. Spielmann PM, White PS and Hussain SSM. Surgical techniques for the treatment of nasal valve collapse: a systematic review. *Laryngoscope*. 2009; 119:1281-1290. [Crossref]
8. Weber SM and Baker SR. Alar cartilage grafts. *Clinics Plast Surg*. 2010;37:253-264. [Crossref]
9. Cervelli V, Spallone D, Bottini JD, Davide Bottini, Erminia Silvi, Pietro Gentile, et al. Alar batten cartilage graft: treatment of internal and external nasal valve collapse. *Aest Plast Surg*. 2009; 33:625634. [Crossref]
10. Gruber RP, Lin AY and Richards T. Nasal strips for evaluating and classifying valvular nasal obstruction. *Aest Plast Surg*. 2011; 35:211–215. [Crossref]