The Use of Triangular Spreader Graft for Correction of Deviated Nasal Dorsum

USAMA ABD EL-NASEER, M.D.; AHMED NASSAR, M.D.; HASSAN EL-HOSHY, M.D. and AHMED F. EL-DEHN, M.Sc.

The Department of Otolaryngology, Faculty of Medicine, Cairo University

Abstract

Introduction: Deviated nasal dorsum constitutes a big challenge for rhinoplasty surgeons. Many techniques were described to overcome this problem. The presence of such many techniques is due to the tendency of the nose to return to its original shape and the reappearance of the deformity. In our study we used the triangular spreader graft to correct dorsal nasal deviation.

Aim of the Work: Assessment of reliability of the triangular spreader graft in correction of dorsal nasal deviation.

Patients and Methods: The population study is 15 patients with dorsal nasal deviation in which we used the insertion of the triangular spreader graft in the same side of deviation after performing osteotomies to correct the deviation and prevent its recurrence. Then assessment was done postoperative subjectively by patient satisfaction and by comparisons between the preoperative and the postoperative photographs.

Results: Of fifteen patients subjected to this study only ten were available for the follow-up in which we found that there are five with excellent results, four with good results and one with fair results requiring revision surgery.

Conclusion: The use of single triangular spreader graft in correction of deviated nasal dorsum proved to be helpful in combination with other techniques used in rhinoplasty for correction.

Key Words: Triangular spreader graft – Dorsal nasal deviation – Rhinoplasty.

Introduction

CROOKED nose is a general term used to define all deformities mainly involving deviation of the nasal pyramid with respect to the vertical midline plane of the face. The deviation can be linear (I-shaped), C-shaped or S-shaped. One side of the dorsum in a C-shaped crooked nose is concave, but the other side is convex. The dorsum and tip in an I-shaped crooked nose (linear) are shifted to one side of the vertical midline of the face [1]. Correction of the crooked nose remains one of the most challenging problems for septorhinoplasty and a wide range of surgical techniques are required to straighten the nose and improve the nasal function [1,2]. Careful assessment of the crooked nose is very important in determining optimal management and good outcomes to achieve patient’s satisfaction. However, prior to addressing the nose, facial asymmetries must be considered and carefully taken in consideration [3]. Beginning with the upper third of the nose, the width of the bony pyramid is assessed and also the length of the nasal bones. The length of each nasal bone should be assessed individually because asymmetric nasal bones will require asymmetric hump reduction to prevent foreshortening of the more vertically oriented nasal bone on the side of the convexity [4]. Analysis continues with evaluation of symmetry of the middle third of the nose. One attempts to determine the relationship of the upper lateral cartilage with the nasal bones, particularly if there is any narrowing or step-off deformity. The lower third of the nose includes the medial and lateral crura of the lower lateral cartilages. Asymmetry from septal deformity in this area must be noticed and taken into consideration. The caudal edge of the septum may be apparent if protrudes into the nostril. The lower lateral cartilages may have intrinsic deformities that lead to asymmetry. Internally, the septum is analyzed for deviations particularly those deflections that are high dorsal or caudal [5]. A history of trauma is critical and if present whether it occurred early or later in life. Even minor trauma in early life can lead to marked deformity with continued chondrocyte growth [6].
A great deal has been said in recent years about the use of spreader grafts in rhinoplasty to correct the anatomy of the cartilaginous nasal vault and thus restore the functionality of the nasal valve. While descriptions of the middle nasal vault appeared very early in the literature [7,8], the first to introduce the concept of spreader grafts was Sheen [9]. Sheen labeled this anatomic condition the “narrow nose syndrome” and stressed the predisposition to collapse of the cartilaginous vault subsequent to hump excision. The solution he proposed involved the placement of two rectangular cartilaginous “spreader grafts” alongside the dorsal septum. Other authors have since discussed this particular concept to prevent exposing patients to the risk of stenosis of the nasal valve, a situation that could appear in rhinoplasty surgery and as a subsequent to hump excision [10-13]. Toriumi [14] also claims that spreader grafts can be used to increase the width of the cartilaginous vault in cases characterized by a combination of unduly narrow cartilaginous vault and bulbous nasal tip. Careful analysis of the literature shows that many authors also use spreader grafts in the treatment of crooked nose. They adopt the unilateral placement of spreader grafts, stressing their importance in the correction of high deviations of the septum [15-19]. In our study we assessed the use of the triangular spreader graft in correction of deviated nasal dorsum.

**Patients and Methods**

The study included 15 patients who attended outpatient clinic ENT Department Kasr Al-Ainy Hospitals in the period between January 2012 and January 2014. They underwent open approach rhinoplasty for correction of deviated nasal dorsum. The lower lateral cartilages are separated one from another at the interdomal ligament. The upper lateral cartilages are detached from the septum, while intranasal mucosal integrity is preserved. The septum is exposed dorsally and the deviated portion is excised leaving a 10-mm dorsal and caudal strut. If there is caudal septal deflection, it is repositioned in the midline via either a suture to the nasal spine alone or combined with cutting and suture technique to the most deviated part of the dorsal nasal septum. Osteotomies are also done to correct the bony dorsal deviation. The triangular spreader graft is inserted in a gap between the upper lateral cartilage and the septum in the same site of deviation. It is carved in a triangular shape from harvested cartilage and secured in the space between the septum and upper lateral cartilage with 5-0 prolene sutures. Other procedures can be done if necessary as sutures for tip modification or other types of grafts. Then follow-up of the patients done and assessment of improvement done by postoperative pictures taken and compared with the preoperative ones. The results are classified into excellent improvement, good improvement and fair results that require revision rhinoplasty.

**Results**

Of fifteen patients underwent this procedure only ten were available for the postoperative follow-up. Three females and seven males with age range from 29 to 45 years old. History of trauma was in eight patients. During the postoperative period we found that five patients showed excellent improvement, four with good improvement and one patient with fair result that required revision rhinoplasty.

![Fig. (1): The triangular spreader graft is created to bridge the space between the septum and upper lateral cartilage after correction of the deviated nasal dorsum.](image-url)
Fig. (2): Male patient 34 years old with no history of trauma. (A,B,C) are the pre-operative pictures. (D,E,F) are the post-operative pictures.

Fig. (3): Male patient 22 years old with no history of trauma. (A,B,C) are the pre-operative pictures. (D,E,F) are the post-operative pictures.
Discussion

Correction of a crooked nose poses one of the greatest challenges in septrhinoplasty. The goal in the reconstruction of crooked noses is to obtain a nose that is aesthetically good and functionally adequate. There are many procedures can be done to correct a deviated nasal dorsum and can be either camouflage techniques [4,15], complete deconstruction and anatomic reconstruction of the nose [22,23] or a combination of both [4,15]. For proper and effective treatment, a therapeutic plan that takes balance, proportion, symmetry and correction of nasal function into account should be performed. For this reason, a careful preoperative analysis of the anatomical factors contributing to the deviation of the septum and nose as well as evaluation of facial symmetry is essential. A crooked nose is almost always associated with a crooked septum. Correction of the nasal septum is the key to achieve satisfactory aesthetic and functional results in the management of the crooked nose. Support of the nose should never be compromised for obtaining a nose that simply appears straight. However, others propose that true correction of the deformity requires release of all extrinsic deforming forces on the nose as well as correction of all intrinsic deforming factors. Extrinsic forces are those forces acting on the deviated nasal pyramid, such as the forces acting through the attachments of the upper and lower lateral cartilages and forces from deviation or injury to the vomer, the perpendicular plate of the ethmoid or the maxillary crest. Intrinsic deforming forces are due to growth and development of the cartilage or injury of the cartilage. To correct the deformity, the extrinsic forces must be released and the intrinsic forces must be overcome by weakening the cartilage or over powering the deforming forces with sutures or grafts [22]. Additionally, others [4,15] support using more aggressive forms of tissue modification as well as camouflaging techniques while maintaining support and function of the nose.

Reorientation of underlying support structures is more easily accomplished using the open septrhinoplasty approach. This approach allows wide, three-dimensional and complete visualization of nasal structures, providing both an accurate intraoperative diagnosis and the best opportunity for symmetric reconstruction. Grafts are placed more readily using the open approach, also stabilizing sutures can be applied accurately. Septorhinoplasty frequently requires a wide range of grafts. This is especially true for crooked noses. Spreader grafts were included for functional or aesthetic reasons in all patients. They were fashioned from harvested septal cartilage. During rhinoplasty, various osteotomies are commonly performed to correct an asymmetric lateral nasal wall contour. Extrinsic deforming forces on septal cartilage may result from the deviation of the bony pyramid, requiring medial and lateral osteotomies to bring the nose back to the vertical midline [4,22].

In summary, the approach to the patient with a crooked nose should follow a methodical analysis and complete treatment of each deforming factor while support of the nasal skeleton is maintained. The technique we have presented has proven useful in the management of this challenging problem.

Conclusion:

The use of single triangular spreader graft in correction of deviated nasal dorsum proved to be helpful in combination with other techniques in rhinoplasty.

References


