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Uses of Spreader Graft in Septorhinoplasty

Systematic review
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master degree in otorhinolaryngology.

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List of Abbreviations

SG	Spreader graft
ULC	Upper lateral cartilage
LLC	Lower lateral cartilage
Pros.	Prospective study
Retros.	Retrospective study
HDPP	High density porous polyethylene
PT's no	Number of the patients
PHDPE	Porous high density poly ethylene
Imp	Improved
No-imp	Not improved

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INTRODUCTION

Man has considered the nose to be the key feature of facial appearance, beauty, and dynamics. However, because of its central facial location and weak cartilaginous support, the nose is susceptible to trauma, disfiguring infection, pathologic entities, and human-associated carnages.

Patients undergo septorhinoplasty surgeries for functional or cosmetic reasons. Some patients have a history of nasal trauma and they want a better appearance, others have functional problem needing correction ***(Belinfante, 2012).***

The reconstruction of skeletal deformities about the nose still presents a formidable challenge to the surgeon. The use of variety of miscellaneous substances, including the precious metals and ivory, gave way to biological transplants, of which autogenous bone and cartilage have proved the most reliable ***(Eisenberg, 1982).***

In1984, Sheen first described spreader grafts as a method of reconstructing the internal nasal valve and/or re-contouring the aesthetic appearance of the nasal dorsum in cases of primary and secondary rhinoplasty ***(Robert et al., 2004).***

Spreader graft is one of the known techniques used in septorhinoplasty. It is a strip of cartilage which placed along the dorsal border of the septum. It has proved to be an effective method for reconstructing the roof of the middle vault. It is recommended in all primary rhinoplasty patients in whom resection of the roof of the upper cartilaginous vault is a necessary part of the surgical plan.

Spreader graft is placed in a submucoperichondrial tunnel between the dorsal border of the nasal septum and the dorsal border of the upper lateral cartilage; effectively widens the dorsal septal edge and stabilizes the upper lateral cartilage to correct functional airway obstruction at the internal nasal valve; commonly placed bilaterally ***(Sheen, 1984).***

The evolution of open rhinoplasty technique has refined spreader graft placement and expanded indications for its use. The open technique obviously provides a clearer view of the nasal structures while making the placement and attachment of the spreader grafts easier and more precise ***(Boccieri et al., 2005).***

Septal cartilage is usually the first choice as donor material in nasal surgery; however, when indicated, auricular cartilage grafts can serve as a safe, effective, and versatile alternative ***(Murrell, 2004).***

In recent years, some surgeons started to use synthetic materials for creating spreader grafts. These range from bio-absorbable polylactic acid-based materials tonon-absorbable implants made of porous polyethylene.

Use of a synthetic material as a graft substitute has the obvious advantages of unlimited supply, ease of use, and absence of donor site morbidity. Although results can be satisfying with use of these materials, concern exists regarding long-term stability with bio-absorbable grafts and rejection with porous polyethylene. Thus, surgeons prefer to use autogenous cartilage grafting for these purposes ***(Gürlek et al., 2006).***

AIM OF THEWORK

Evaluate the efficacy of using spreader graft for different indications in septorhinoplasty.

APPLIED SURGICAL ANATOMY OF THENOSE

Although the anatomy of the nose has been fundamentally understood for many years, only relatively recently has there been an increased understanding of the long-term effects of surgical changes of the function and appearance of the nose. A detailed understanding of nasal anatomy is critical for successful rhinoplasty ***(Toriumi and Becker, 1999)*.**

Accurate assessment of the anatomic variations presented by a patient allows the surgeon to develop a rational and realistic surgical plan. Furthermore, recognizing variant or apparent anatomy is critical to preventing functional compromise or untoward aesthetic results ***(Toriumi and Becker, 1999).***

1.The Nasal Septum:

The septum can be further divided into a bony and a cartilaginousportion.

a. The Bony septum:

The bony septum is a singular, midline structure comprising the perpendicular plate of the ethmoid superiorly, and the vomer inferiorly (Fig. 1). The perpendicular plate of the ethmoidis continuous superiorly with the cribriform plate. Any unintended or traumatic manipulation of the superior bony septum, therefore, has the potential to cause a CSF leak and/or anosmia. If this superior portion of the septum is contributing to an obstruction, it must be resected sharply rather than pulled or twisted during a septoplasty

procedure. Infero-posteriorly, the vomer forms the midline bony nasal septum. Inferior to it, the nasal crest of the maxilla is positioned anteriorly, and the nasal crest of the palatine bone is positioned posteriorly. These may be deviated or dislocated to form inferior septal spurs that should be resected during septoplasty. The antero-inferior edge of the caudal septum is attached to the anterior nasal spine. In patients with a retruded or under developed maxilla, the anterior nasal spine, and, therefore, the anterior edge of the caudal septum, will be more posteriorly located ***(Tardy, 1990).***

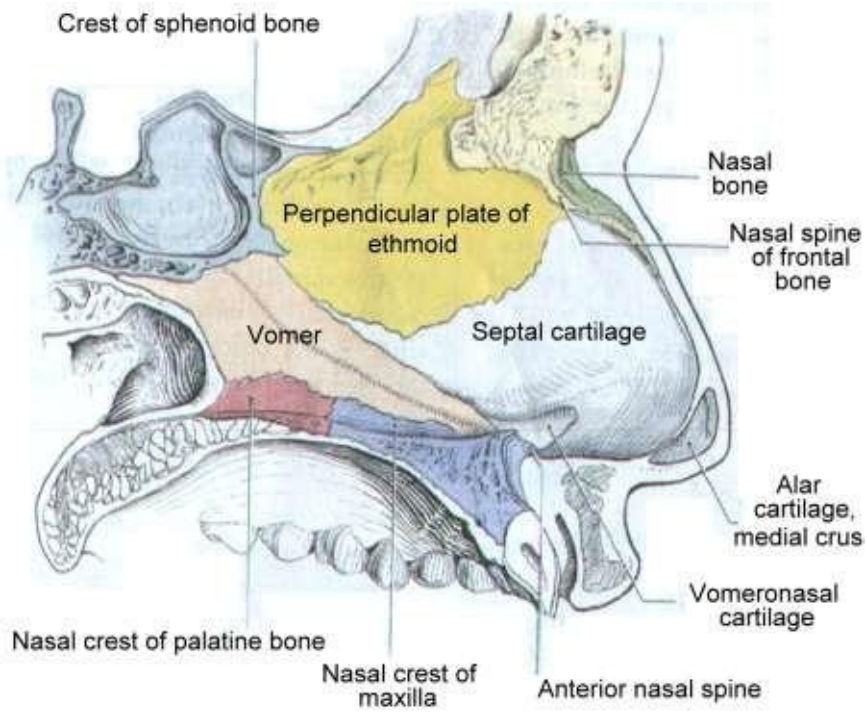

Fig.(1):Anatomy of the nasal septum ***(after Huizing and De Groot, 2003).***

b. The cartilaginous septum:

The septal cartilage is typically described as being quadrangular in shape. It lays in the midline of the nasal septum nestled between the nasal bones, the perpendicular plate of the ethmoid superiorly, and the vomer and palate inferiorly. The septal cartilage is a major support mechanism of the nose and projects anteriorly to form part of the dorsal profile. The anterior and posterior septal angles are important landmarks during septoplasty and rhinoplasty. The anterior septal angle is the area at the junction of the dorsal and caudal septum. The posterior septal angle is the area where the septum articulates with the nasal spine anteroinferiorly***(Tardy,1990).***

2. The Lateral Nasal Wall:

The inferior, middle, and superior turbinates function to direct airflow through the nose. They also serve as important landmarks for sinus surgery. Inrhinoplasty, contact with the turbinates is largely avoided in order to prevent bleeding. The inferior turbinate is useful landmark in osteotomies. Mucosal incisions for osteotomies are placed just superior to the inferior turbinate to allow access to the pyriform aperture. The middle turbinate serves as a landmark for the sphenopalatine ganglion, which is an important consideration in nerve blocks for complete intranasal anesthesia ***(Enlow, 1968).***