Nasal dorsum reconstruction in saddle nose deformity

Thesis submitted for fulfillment of Master's degree (M.Sc.)

In

General surgery

By

Ahmed Rezk Al-najjar

M.B.B.Ch.

Supervised by

Prof. Dr. Ahmed Gameel El-sharqawy

Professor of General and Plastic Surgery

Cairo University

Prof. Dr. Sherif Zamer Ezzat

Professor of General and Plastic Surgery

Cairo University

Dr. Hatem Helmy

Assistant Professor of General and Plastic Surgery

Cairo University

Faculty of Medicine,

Cairo University

2010

Acknowledgment

First and foremost, thanks to "GOD", who helped me to achieve this work.

My sincere gratitude to Professor Dr. Ahmed El-sharqawy, professor of General and plastic surgery, Faculty of medicine Cairo University, for giving me the privilege to work under his supervision and for his kind assistance without which, this work would not have its shape. No words are enough to express my gratitude.

I am greatly indebted to Professor Dr. Sherif Zamer, professor of General and plastic surgery, Faculty of medicine Cairo University, for his generous help, very close supervision, valuable suggestions and support throughout the work.

Last but not least I would like to thank my family whose support and encouragement was invaluable.

Abstract

Nasal dorsum reconstruction is regarded as the most challenging aspect of plastic surgery, depression of nasal dorsum may occur in the bony or cartilaginous portion. *Aim of work* is to study and implement the different surgical treatment options for management of different grades of saddle nose deformity. *The study included* 10 patients with various degrees and etiology of nasal dorsum depression through an open approach. Management of saddle nose deformity with cartilage or bony graft for nasal augmentation provides the optimum cosmetic result.

***Key words**:*

Rhinoplasty,

Nasal dorsum,

Saddle nose,

Grafts in nasal surgery

List of figures

List of figures

Introduction

Facial beauty is an art related to balance and symmetry of different parts of the face, including the nose. Therefore nose must be in harmony with the other components of the face; otherwise it loses its beauty. The balanced theory of the nose was pioneered by Dr Sheen 1975. ***(El-sahy, 2000)***

The term ‘saddle nose’ simply describes a depression of the nasal dorsum without analyzing the degree and the structures involved. Frequently the deformity is limited to the dorsum.
(Riechelmann H, Rettinger G, 2004)

Saddle nasal deformities result from lack of support to the nasal dorsum. Depression of the dorsum of the nose may occur in the bony or the cartilaginous portion. ***(Antia N. et al 1997)***

There are many different types of saddle nose which require specific surgical treatment. ***(G.J. Nolst Trenité Kugler .2005)***

Correction of saddle nose deformities is a reconstructive challenge. Optimizing aesthetic results involves not only correcting the depressed nasal dorsum but also providing additional tip support for reestablishing appropriate tip projection. ***(Daniel RK, 2007)***

A variety of graft materials have been used for nasal augmentation. These include various alloplastic implants; homograft, allograft and xenograft bone and cartilage; autografts such as temporalis fascia, dermofat; septal, costal and conchal cartilage; bone graft from iliac crest, rib, tibial and calvarial origin. ***(Gunter JP, Rohrich RJ., 1998)***

Various methods using 1-dimensional (single-piece) synthetic or biologic materials for dorsal repair have been described with mixed success. ***(Taha Z. Shipchandler, 2008)***

Several techniques use L-shaped struts to address both the dorsal support and under projection aspects of repair, all describe the use of some type of rigid fixation near the radix or anterior nasal spine, necessitating a separate incision. ***(Demirtas Y et al, 2006)***

Aim of work

The study will include 10 patients, chosen with saddle nose deformity. Management of these patients involves an open rhinoplasty accompanied with various grafts. The purpose of this study is to work out a complex of the techniques to improve the results in nasal dorsum reconstruction.

Aesthetic Anatomy of the Nose

Before analyzing the nasal deformity and planning the operative procedure, it is necessary to see the face as a whole and be aware of the fact that, in addition to the *nose*, there are four other major aesthetic components in the facial complex: *forehead, eyes, lips and chin.* Changing the proportions and angles of the nose interferes directly with the other aesthetic parts. When these components are balanced in harmony, this creates beauty. Therefore knowledge of facial proportions is essential for every rhinoplastic surgeon. ***(. Nolst Trenité G.J , 2005)***

The greatest problem in performing corrective nasal surgery is found in attempting to apply aesthetic judgment to each individual case.

The main 4 components are:

1. Radix
2. Dorsum
3. Tip
4. Alar columellar complex

To evaluate the proportions, the face is roughly divided into three equal horizontal planes (hairline-glabella-subnasalmenton). With regard to the nose, the intercanthal distance should be more or less equal to the width of the alar base, which is more or less equal to the width of the eyes.

The nasal width is aesthetically about 70% of the nasal length NT (nasion-tip). In its midfacial proportions, the nose should make a gentle curve (unbroken line) from the supra orbital ridge to the tip-defining point on the same side. ***(Nolst Trenité G.J, 2005)***

Radix

The nose should have no discernible beginning but should be a continuation of lines that are graceful extensions of the other facial parts. The root of the nose, or radix, should be part of an unbroken curve that begins in the superior orbital ridge and continues along the lateral nasal wall. The width of the radix is in good alignment with the supraorbital curve in most patients. With few exceptions, the use of surgical procedures designed to narrow the radix is unnecessary and contradicts a basic aesthetic premise, that is, that lines should flow uninterrupted, fig.2 (**Thorne et al. , 2007)**

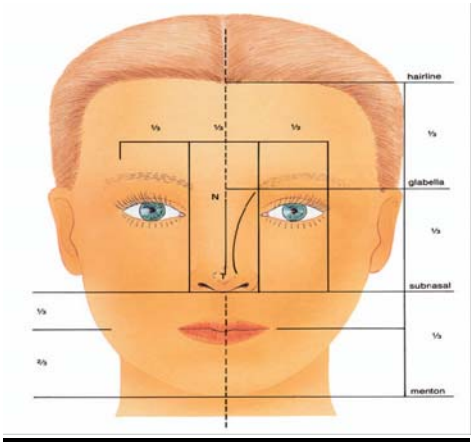

Figure (1) Frontal view of the face divided into aesthetic proportions (equal thirds) with a gently curving unbroken line from the supra-orbital ridge along the lateral border of the dorsum to the tip-defining point on the same side. ***(Nolst Trenité G.J, 2005)***

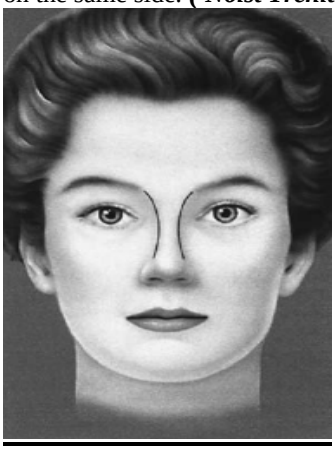

Figure (2), Aesthetics of the nasal radix, (**Thorne et al., 2007)**

Dorsum

There is no absolute standard for the aesthetic proportions of the face. This differs depending on *sex*, *age*, *body type* and *facial characteristics*. The female nose is relatively smaller, the **dorsum** and lobule narrower, than that of the male. In profile, the female dorsum may show a slight concavity while, in the male dorsum, a slight convexity is acceptable. ***(Nolst Trenité G.J, 2005)***

Dorsum on front view:

Viewed from the front, *the dorsum connects the radix with the lateral projections of the crura of the lower lateral cartilages by two divergent concave lines that are unbroken extensions of the superciliary ridges.* Though the dorsum is generally considered to be of greatest importance in profile , the impact of the frontal view of the dorsum on the appearance of the midface must be appreciated. The dorsum on front view should be of sufficient height to provide the appearance of an anatomic part separating the eyes. Over reduction of the dorsum causes change in the characteristic orbital-nasal relationship of each individual ***(Sheen, 1978).***

Dorsum on lateral view:

The relationship between the dorsum and the tip has a strong influence on the apparent shape of the tip. *The dorsal line begins at the radix and descends in a relatively straight line to the tip, which is the highest point in the nasal profile*. The oblique view of the dorsum can be omitted in evaluation of the nose (***Sheen, 1978).***

The collapse of the nasal dorsum imparts a flattened appearance and an illusion of increased interorbital distance. This can be accompanied by conditions that interfere with the nasal function. Over-reduction of the nasal hump and radical submucous resection of the septum usually lead to saddling. ***(Naci Karacaoglan, 1997)***

The nasal septum :

The nasal septum is composed of three structures: the perpendicular plate of the ethmoid posteriorly and cephalically, the vomer posteriorly and caudally and the quadrangular (i.e., cartilaginous) septum anteriorly. The septum functions as a support structure for the mid-portion of the nose and it also comprises the medial component of the internal nasal valve (completed posteriorly by the nasal floor and laterally by the upper lateral cartilages). ***(Zol B. Kryger and Mark Sisco. 2007)***

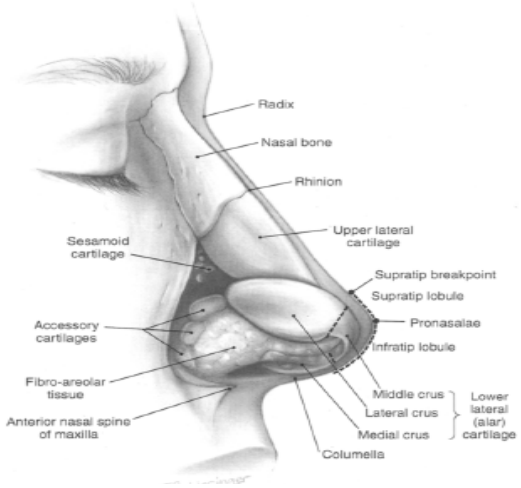

Figure (3), Right lateral view of the nose, showing components of nasal dorsum. ***(Oneal et al.,2000).***