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Strategies In the Management Of Deviated Nose

Thesis

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By

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بسم الله الرحمن الرحيم

Dedication

I Dedicate this work to my Family. My Father for his guidance and support. My Mother who took care of me throughout my life. My husband and son for tolerating me during preparation of this thesis.

Last but not the least my sister and brother for being always there for me.

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List Of Abbreviation

SMR	**:**	**Submucous Resection**
ASR	**:**	**Anterior Septal Reconstruction**
Rt.	**:**	**Right.**
Lt.	**:**	**Left.**
No.	**:**	**Number.**
LLC	**:**	**lower lateral cartilage**
ULC	**:**	**Upper Lateral cartilage**
Col. strut	**:**	**Columellar Strut.**
Fig.	**:**	**Figure.**

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ABSTRACT

The deviated nose is a common problem. Correction of this deformity presents a challenge because frequently a functional as well as aesthetic problem must be addressed. In order to correct deviated nose, a thorough study of different structures that may lead to deviation as bony framework, septum, upper and lower lateral cartilage is mandatory.

Clinical cases with various degrees of nasal deviation as well as various degrees of nasal obstruction were studied. It was concluded that most of cases were corrected by either osteotomy of nasal bones, freeing, scoring, suturing and submucous resection of septum. Very complicated cases with severe functional problem required more complicated procedures as inferior turbinatectomy. Camouflaging was used in cases with persistent deviation.

Keywords:

- Deviated nose
- Nasal obstruction
- Septoplasty

INTRODUCTION

The deviated nose is one that varies from the straight vertical orientation of the face. Correction of this deformity presents a challenge because frequently a functional (air way obstruction) as well as an aesthetic problem must be addressed [1, 2].

Consistently attaining good aesthetic and functional results when correcting the deviated nose requires a thorough understanding of nasal anatomy and physiology, accurate pre-operative analysis and intra-operative diagnosis[5], an understanding of the skill to precisely execute the surgical steps required to alter and control all deviated structures as well as to relief obstruction as a result of this deviation[8].

AIM OF WORK

The aim of this work is to study large number of cases with deviated nose in order to find general strategy in their management, as well as an intra-operative method to assess the patency of air passages which will allow normal breathing following correction of deviation. Also, another simple surgical procedure to correct hypertrophy of inferior turbinates associated with nasal obstruction.

CHAPTER I
NASAL ANATOMY

A thorough understanding of normal nasal anatomy is a prerequisite for the surgeon to achieve a good functional as well as aesthetic result.

The anatomy of the nose is composed of the following:

1) Nasal vaults.
2) Internal nasal anatomy.
3) Skin.
4) Blood supply.
5) Nerve supply.

1)Nasal vaults:

The nose possesses three vaults:

a) Bony Vault.
b) Upper Cartilaginous Vault.
c) Lower Cartilaginous Vault [1].

(a) Bony vault:

The bony vault is the principle structural base for the nose. It is generally pyramidal in shape and comprises one third of the external hose. It consists of the paired nasal bones and the ascending frontal process of the maxilla. The bony vault supports the upper nose and the upper lateral cartilages. The maxillary

process extend in a cephalad direction from the piriform aperture to the lacrimal crest, uniting with the frontal and nasal bones. The nasal bones articulate with each other medially, the frontal bone superiorly, the maxilla laterally, the perpendicular plate of the ethmoid posteriorly, and the upper lateral cartilages inferiorly.

The nasal bones are average 2.5 cm in length, much thicker and denser above the level of the medial canthus at the radix (areas of junction between the frontal bone and the dorsum of the nose), and thin progressively toward the tip. They are also widest, at the nasofrontal suture, narrowest at the nasofrontal angle, and tend to widen again inferior to the radix before narrowing near their inferior margin, a transition zone of bony thickness exists along the fontal processes of the maxilla, from the piriform aperture to the radix along the lateral nasal wall. The bone in this region is less than 2.5mm thick [(1)].

Osteotomies may be performed to narrow or widen the nasal base, repair an openroof deformity after dorsal hump resection, and correct symmetrical or asymmetrical bone deformities. Osteotomies may be executed at the transition zone of relatively thin bone along the frontal processes of the maxilla, from the piriformaperature to the radix along the lateral nasal wall. Osteotomies are rarely indicated above the canthal level because this area is quite narrow and has thick bone [(2)].

Osteotomies may be relatively contraindicated in some patients with short nasal bones (distal border 1cm beneath the intercanthal line) and in certain non-Caucasian races with extremely low and broad noses, because of the risk of middle vault collapse and the associated functional airway compromise. Elderly

patients with excessively thin nasal bones, patients with heavy glasses, and patients with thick skin over the dorsum should be approached with caution [(1)].

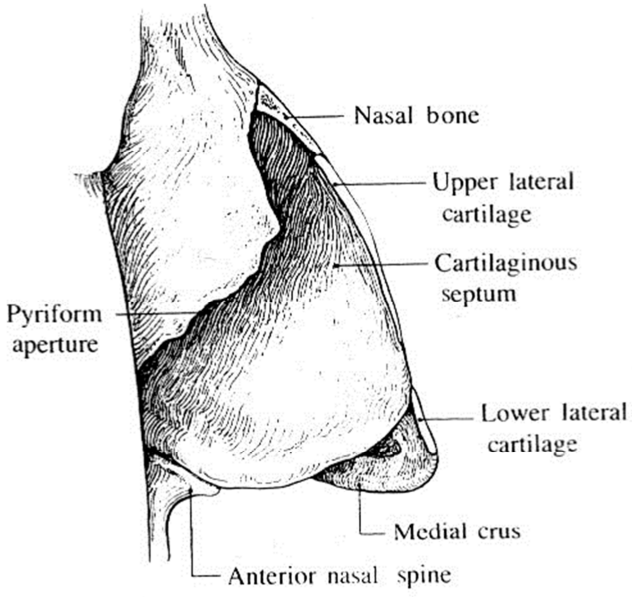

Fig.(1): lateral view showing nasal structure: nasal bone, septum, upper lateral cartilage, and lower lateral cartilage[(5)].

(b) <u>Upper Cartilaginous Vault:</u>

The most important component of the upper cartilaginous vault is the internal nasal valve, which is bordered by the septum (medially), the nasal floor (inferiorly), the inferior turbinate (laterally), and the caudal border of the upper lateral cartilage (superiorly).

The junction of the upper lateral cartilages with the nasal bones and the septum defines the keystone area, which has a T-shaped contour. The nasal bones actually overlap the cephalic upper lateral border by 6 to 8mm, thus producing a firm adherence between both structures, enhancing support. The junction between the septum and upper lateral cartilage is normally 10 to 15 degrees. Caudally the junction of the upper lateral cartilages with the cephalic edge of the

lateral crus defines the scroll areas. Most patients have some overlap of the cartilages, which may enhance support at this level.

Studies have indicated that the nasal valves contribute much more to, obstruction than previously realized and that the septum may play a much smaller overall role. Therefore injury and/ or destabilization of the keystone area during rhinoplasty must be avoided at all costs because deformation of the normal 10-15 degree angle between the upper lateral cartilages and the septum will result in impaired airflow through the internal valve [1, 3]. For example, dorsal reductions greater than 1 to 2mm should be performed using an incremental component dorsal septal reduction technique, which avoids excessive resection of the upper lateral cartilage. This will tend to preserve the internal valve, avoiding disruption of the dorsal aesthetic lines, an inverted v deformity, and airway compromise. In secondary Rhinoplasty patients with these deformities, grafting, osteotomy and suture techniques may be used to increase the cross-sectional area of the internal valve, improving the functional and aesthetic status of the nose[2].

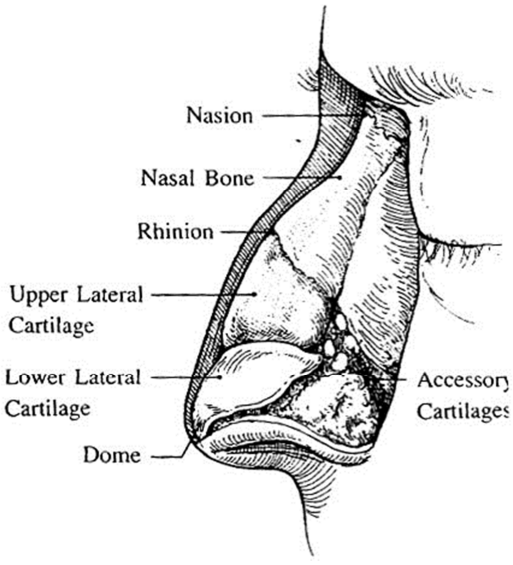

Fig.(2): lateral view showing the position of upper lateral cartilage[57].

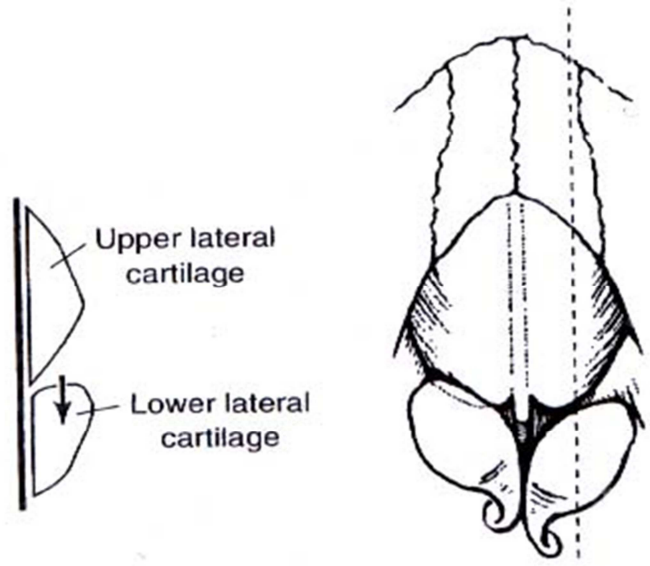

Fig.(3): Showing relation between nasal bone, upper lateral cartilage and lower lateral cartilage[(1)].

(c) <u>Lower lateral cartilaginous vault</u>:

The external nasal valve exists at the level of the inner nostril. It is formed by the caudal edge of the lateral crus of the lower lateral cartilage, the soft tissue alae, the membranous septum, and the sill of the nostril. The framework of the nasal tip is formed by the medial, middle, and lateral crura of the lower lateral cartilages. The accessory cartilages connect each lateral crus to the piriform aperture. All of these cartilages are bound together by a continuous perichondrium, which gives stability to the cartilages and causes them to act as a single structural and functional unit. This unit will be referred to as the lateral crural complex. The shape and position of this unit, the thickness of the overlying skin, and the fibrous attachments to the adjacent anatomic structures are interrelated and determine the appearance of the tip[(3)].

The lateral cruralcomplexes are supported by the suspensory ligament of the tip, the ligamentous connection between the cephalic margins of the lower lateral crura as they diverge from each other in thesupratip area, and rest on the septal angle as well as the fibrous connections to the upper lateral cartilages. The medial crura are supported by their elastic fibrous attachments to the caudal septum and the soft tissue interposed between their feet and the premaxillary area.

The external nasal valve is an occasional site of obstrucion in rhinoplasty patients, particularly in secondary patients with a pinched alae deformity which is caused by overresection of the lower lateral cartilage and injury of its supporting structures[(1)].

There are several surgical techniques that are used to shape the tip cartilages. Modifications of these structures are used to change tip projection, alter tip rotation, decrease the distance between the tip-defining points, reduce tip fullness, create a supratip break, and adjust the relationship between the columella and the alar rims.

The cartilaginous framework of the tip has been described as a tripod. With the patient upright, the tripod lies on its side with one lower leg and two upper legs. The lower leg is represented by the medial crura, whereas each upper leg consists of a lateral crural complex based bilaterally on the piriform aperture. In theory, if the base of the tripod is fixed, reduction (by resection and closing dead space) or augmentation (by using grafts or struts) of the length of the legs should change variables such as projection and tip rotation[(1,2)].