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Nasal Septal Deviation in Saudi Patients: a Hospital Based Study

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ABSTRACT. To examine the types of nasal septal deviations among Saudi patients and their relation to trauma and breathing impairment. Patients attending the Otorhinolaryngology clinic were included in this study. Age, sex, history of trauma, and nasal obstruction were entered. Full nasal examination including rigid endoscopy was performed. The presence of deviations were recorded and classified. Five hundred eighty-nine patients were included. The nasal septal deviation was noted more in males than females with left side being predominant. One hundred ninety-four patients had nasal obstruction mainly associated with Type I and II. Trauma was recorded in 114 patients. Most nasal septal deviations are asymptomatic and the most common cause in this series was road traffic accidents. Each type of deviation will require special consideration when correction is indicated.

Keywords. Deviated nasal septum, Nasal obstruction, Trauma, Types of deviations

Introduction

The nasal septum, forms the foundation upon which the external nasal osserocartilagenous framework is built[1].

Nasal septal deviations are quite common but not necessarily symptomatic. The deviated nasal septum (DNS) is considered secondary to trauma during intrauterine life, birth, or trauma sustained at any time in life. Childhood is the time when the nose is particularly liable to injuries which may produce nasal and septal deformities in a later

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stage in life[2]. The presence of a DNS could be the cause of breathing impairments and changes in the nose.

The presence of a DNS does not seem to affect the nasal cycle and the nasal cycle is independent of peripheral anatomic factors of generation[3]. On the other hand DNS has been associated with chronic sinusitis. Significant differences in middle turbinate and lateral nasal wall abnormalities were noted contra lateral to the direction of septal deviation[4]. The same authors add that increasing angles of septal deviation were associated with more severe paranasal mucosal disease bilaterally.

The morphology of the skull shows variations in different parts of the world and accordingly will have effects on the different structures of the skull including the nasal septum. The incidence of DNS is higher in Caucasians than Africans or Asians[5, 6].

In 1987, Mladina[7] classified nasal septal deformities into seven types and observed that the relationship between DNS and maxillary irregularities and Guyuron *et al*[8] suggested in 1999 that each type of septal deviation requires specific management.

This study aimed at studying the types of nasal septal deviations present in Saudi Arabs, their aetiology, and relation to nasal obstruction.

Materials and Methods

Every second person attending the Otorhinolaryngology (ORL) outpatient clinic was selected for this study. Only those patients with both parents from a known Saudi Arabian tribe were included.

The exclusion criteria included the following:

- Non-Saudi patients
- Patients with past history of surgery to the nose
- Patients below 16 years of age
- Cases of coryza, allergic rhinitis, sinusitis and nasal polyposis

The following data were recorded: age, sex, complaints of nasal obstruction, sinusitis, allergic rhinitis, nasal polyposis, and past history of nasal surgery.

This was followed by full ORL examination including endoscopic nasal examination using the 30° rigid Storz® endoscope (4 mm and 2.7 mm).

The presence of any nasal septal deformity was recorded and classified. The classification used is the Mladina classification[7] (See Fig 1.).

Type I: Refers to a vertical ridge of the septal cartilage in the nasal valve area. This ridge does not reach the dorsum and does not disturb the function of the valve.

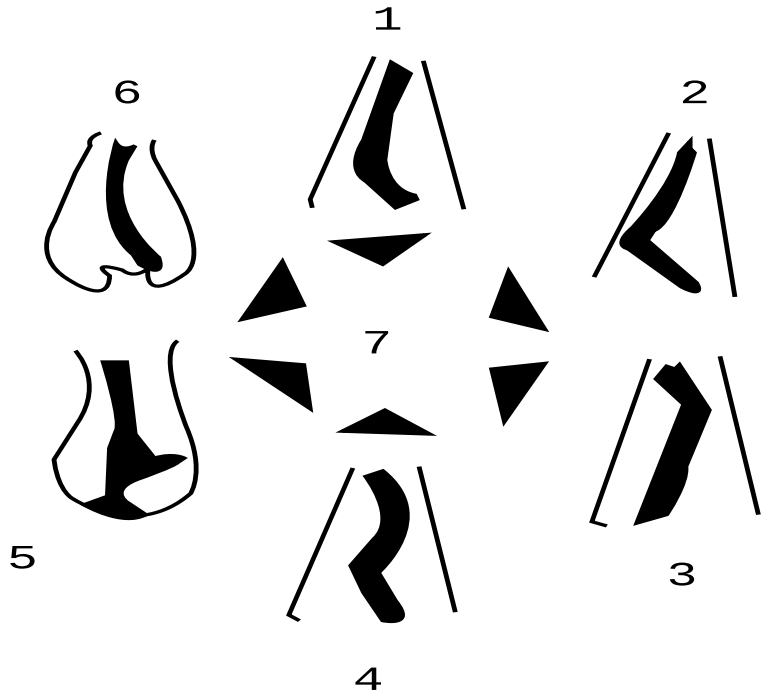

Fig. 1. The Mladina classification of nasal septal deviations

Type II: Refers to a vertical ridge in the region of the nasal valve, but in this case it reaches the nasal dorsum and thus disturbs the functions of the valve.

Type III: Refers to the vertical ridge but in the deeper areas of the nose.

Type IV: Refers to vertical ridges, one to the left and the other to the right. One in the anterior part and the other in the deeper parts of the nose.

Type V: Refers to a horizontal deformity which manifests itself in a sabre like shape. It begins in the anterior part of the septum and becomes lateral the deeper it continues. The other side of the septum is completely flat.

Type VI: Refers to bilateral deformities in the horizontal plane with anterior dislocation to one side and the deviation to the other side.

Type VII: Where there is a combination of multiple deformities.

Results

Five hundred eighty-nine (589) patients were included in this study. There were 345 males and 244 females. The age range was 16 - 84 years old with a mean age of 38

years old.

The general distribution of types of DNS is shown in Table 1. This shows the majority of cases to be type deviation. The sides involved are shown in Table 2. The majority 328 (55.6%) were to the left side.

TABLE 1. Types of nasal septal deviations.

Type	Number (n = 589)	Percentage (%)
I	205	34.8
II	181	30.7
III	96	16.2
IV	40	6.7
V	28	4.7
VI	35	5.9
VII	4	0.6

TABLE 2. Distribution of sides.

Type	Side (n = 589)	
	Right	Left
I	95	110
II	78	103
III	36	60
IV	19	21
V	6	22
VI	22	13

TABLE 3. Relation of type of deviation to nasal obstruction.

Type	Number (n = 194)	Percentage (%)
I	29	14.9
II	72	37.0
III	42	21.6
IV	24	12.3
V	8	4.0
VI	15	7.7
VII	4	2.0

One hundred ninety-four patients (32.9%) gave a history of nasal obstruction. Out of these patients, 72 (37%), were associated with Type II deviation making it the most common type involved in nasal obstruction in this series. (Table 3).

Only 114 (19.3%) patients gave a history of trauma. The causes were as follows: 60 due to traffic road accidents; 22, a fall; 7, injury at work; and 25, sports related. The relationship between the different types and the aetiology is shown in Table 4.

TABLE 4. Aetiology of different types.

Type of Deviation	Trauma (n = 114)			
	RTA	Sports	Fall	Work
I	9	2	9	1
II	27	12	4	3
III	4	1	-	-
IV	8	4	2	-
V	2	-	5	-
VI	10	6	2	2
VII	-	-	-	1
TOTAL	60	25	22	7

Discussion

Nasal septal deviation is quite common, but not necessarily symptomatic. Their incidence is higher in the leptorrhine noses found in Caucasians rather than Africans or Asians[5, 6]. This study aimed at studying the types of nasal septal deviations present in Saudi Arabs and their aetiology and relation to nasal obstruction. As such nasorhinomanometric measurements were not employed.

Approximately 80% of humans have some kind of nasal septal deformity[9]. It is believed that a straight septum is the exception rather than the role[6]. In this series, all types of septal deformities were seen in 589. According to Mladina classification, the most common type of DNS was Type I, followed by the types, II, III, IV, VI, V, and VII. Min *et al.*,[10] reported the types in their series as types: I, II, III, V, VII, and IV while the order in Mladina's series[7] is I, II, VI, V, VII, IV, and III. The first two types in this series constitute the majority of deformities at 65.5% while Min *et al.*,[10] reported their figure to be 72.6%.

Deviated or crooked septal cartilage is usually due to two causes; congenital disproportion with the cartilage being too long to its location or due to trauma sustained earlier in life[11]. The nose is the most commonly injured facial structure[12]. This should produce a higher incidence of past history of trauma. However, in many people with DNS there is no obvious history of trauma[13]. It is also difficult for people to remember injuries or small accidents that occurred early in life or in their childhood. Only 114 (19.3%) patients in our series gave a history of trauma. Thirty-nine of these were due to traffic road accidents. This figure seems to be small compared to the rate

of traffic road accidents in Saudi Arabia. When analyzing the type of DNS with the nature of the injury, we find that traffic road accidents were associated mostly with Type II, sports with Type II, fall with Type I, and injury at work mostly with Type II.

According to Hinderer[14], there are three growth periods in the early development of the nose: the first five years of rapid growth; the next five years of relative quiescence; and the last five years of rapid growth. Hence, injuries in periods of rapid growth will result in lasting deformities. The cause according to some can be explained by birth molding theory of Gray[15]. The incidence of nasal deformities in newborn infants varies from 1.45% to 6.3%[16, 17].

The cadual border of the septal cartilage extends beyond the nasal spine and thus can be subjected to forces that will lead to either dislocation from its attachment to the nasal spine or fracture of the cartilage vertically[11]. In our series, only 35(5.9%) showed anterior septal dislocation. The most common type of septal deformity in our series was a unilateral caudal deviation (Table 1) and the left side being more commonly involved (Table 2). Min *et al.*[10] reported 56% of left sided deformities and 39% right sided deformities in their series. This is almost exactly the same as in our series.

Out of 689 patients in this series, 194 (32.9%) complained of breathing impairment which is in accordance with the fact that the majority of DNS are asymptomatic. However, it is imperative to remember that nasal obstruction is a relative and subjective sensation. It is also important to remember that nasal obstruction is the most common symptom of DNS[18]. In this series Type II was the most common type associated with nasal obstruction while in Min *et al.*,[10] series it was type 6.

In conclusion, most DNSs are asymptomatic and trauma of various kinds seems the only aetiological factor patients remember. Each type of deviation will require special consideration when correction is indicated. The incidence of these deformities in Saudi population seems to be as high as reported in Caucasian races[5].

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تشوهات الحاجز الأنفي لدى المرضى السعوديين

كمال جلال داغستاني

قسم الأنف والأذن والحنجرة ، كلية الطب والعلوم الطبية ،

جامعة الملك عبدالعزيز

جـــدة – المملكة العربية السعودية

المستخلص. من المعروف أن نسب اعوجاج الحاجز الأنفي هي الأعلى لدى الأجناس القوقازية عنها لدى الأفريقيين و الآسيويين. ويهدف هذا البحث إلى دراسة تشوهات الحاجز الأنفي لدى السعوديين وعلاقتها بصعوبة التنفس والإصابات. وتم الكشف على 589 مريض ووجد أن اعوجاج الحاجز الأنفي أكثر لدى الرجال عنه لدى النساء والجهة اليسرى أكثر من الجهة اليمنى. و شكي 194 من صعوبة التنفس وذلك في النوعين رقم 21. كما كانت الإصابات هي من أسباب الاعوجاج في 114 من الحالات. إن اعوجاج الحاجز الأنفي كثير الحدوث ولكن بدون أعراض في الغالبية العظمى. و تأتي حوادث الطرق في مقدمة الأسباب. كما أن أنواع الاعوجاج متعددة ويحتاج كل واحد منها لطريقة خاصة بها لعلاجها.