Main Article

CLASSIFICATION OF NASAL SEPTAL DEVIATIONS – RELATION TO SINONASAL PATHOLOGY

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ABSTRACT: *The relationship between sinonasal disease and septal deviations is well known, albeit vaguely. There was no serious attempt to classify deviations except calling them mild deviations, gross deviations, spur, high deviations, etc. The airflow changes in these deviations, which lead to mucosal changes predisposing to polyps or infection have not been documented clearly. In this study we made a classification of septal deformities by modifying the classification described by Mladina in 1987. This classification has been applied to 100 consecutive cases who have been advised nasal surgery and 100 normal individuals who did not have any nasal symptoms. All patients had CT scan of PNS and their CT findings were studied in relation to the type of deviation. This paper presents an analysis of the incidence of various types of deviations in patients and controls and the relationship of different deformities to the sinus pathology.*

Key Words:

Mladina[1] suggested classification of DNS into vertical and horizontal types with vertical being classified into four types and horizontal into two types. If the original Madina's classification was applied, most of our cases were being classified into type-VII. So based on our experience, we modified the classification in some aspects. The aim of the modification was to make it more user-friendly and easy to apply. The criteria we follow are as follows:

Type I: Midline septum or mild deviations in vertical or horizontal plane, which do not extend throughout the vertical length of the septum.
Type II: Anterior vertical deviation.
Type III: Posterior vertical deviation (OM and middle turbinate area).
Type IV: 'S' septum – posterior to one side and anterior to other side.
Type V: Horizontal spur on one side with or without high deviation to the opposite side.
Type VI: Type V with a deep groove on the concave side.
Type VII 0: Combination of more than one type, in Types II–VI. The side of the deviation is marked L (Left) or R (Right). In type IV whichever side is anterior deviation is marked L or R.

MATERIALS AND METHODS

During the period April 1998–July 1999, 100 cases, which were advised septal surgery with or without FESS at our hospital were studied. Each patient's clinical details were taken down on a proforma. The type of nasal septal deviation (NSD) as per the classification was diagnosed by careful clinical examination if necessary by using local decongestants. The CT scan of patients was also used to confirm the type of NSD [Table 1].

Table 1: Types of nsd - Incidence

Presenting complaint(s)	Total: 100 cases
Nasal obstruction	74
Nasal discharge	41
Headache	20
Sneezing	15
Throat discomfort	8
Postnasal drip	8
Nasal bleeding	3
Snoring	3
Anosmia	3
Cacosmia	I

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Table 2: Types Of NSD - Incidence

	Cases-100;		Controls-100	
Type	(RL)	Total	(RL)	Total
I	(1# 1)	02	(– # –)	56
II	(64)	10	(9 # 6)	1
III	(7 # 1)	08	(2 # 3)	05
IV	(5 # 5)	10	(2 # 0)	02
V	(20 # 26)	46	(9 # 6)	15
VI	(9 # 8)	17	(1 # 1)	02
VII	(– # –)	07	(– # –)	02

Type-I septum was considered normal as it is unlikely to interfere with the nasal air passage. Most of the cases were assigned a particular type ignoring minor deviations and taking into consideration the major deformity. For example, if a spur is noticed on one side, this is classified as type V and any small vertical ridges on the other side, which do not extend throughout the length of the septum, were ignored. We observed that if we do not do this, most of the cases will end up being classified in type VII. Similarly many of types V and VI (spurs) septum's had high deviations to opposite side. This is also considered as part of the deformity instead of considering this as a separate deviation to the opposite side. The type of sinus pathology as seen in CT scans of patients was noted. Anatomical variations, such as concha bullosa and paradoxical turbinate, were also correlated to the type of deviation. An analysis of various types of NSD in relation to sinus pathology and anatomical variants was made [Table 2]. During the same period, 100 normal individuals, who never complained of any nasal problems, were examined for the type of NSD. The incidence of these types in normal individuals is compared to the incidence in the patient group [Table 1]. An analysis was made to determine whether any particular type (s) of deviation is more prone to develop problems than the other type (s).

RESULTS

The male: female ratio in the present series of patients is 69:31. The age incidence shows that most of the patients were in the second–fourth decades. A study of the presenting complaints showed that 74 of the 100 patients had nasal obstruction while 41 had nasal discharge. Headache was the complaint in 20 and sneezing in 15. The other problems seen in a small number of patients [Table 1] were throat discomfort, post-nasal drip, epistaxis, snoring and anosmia.

The results of the types of deviation in patients and controls [Table 2] reveal that horizontal deviations (Types V and VI) accounted for the majority of patient deviations (63%) followed by vertical deviations – Type 11 (10%), Type IV (10%) and Type 111(8%). Type I was seen only in 2% of the present series of patients who were advised septal/FESS surgery. As compared to this, in the normal individuals Type I was the most common type followed by Types II, III and V. Only 17% of cases were Types V and VI.

Anatomical variants noted were concha bullosa (20%) and paradoxical turbinates (6%). About 16 of the 20 concha bullosa cases had horizontal deviations. Polypoidal mucosa or OM block was present in 22 and pansinus disease in 33 cases. A correlation of NSD and various types of sinus pathology and anatomical variants is show in [Table 3].

DISCUSSION

The lack of a single universally accepted classification of septal deviations is why till now, we do not have any study on whether NSD influence the development of osteomeatal unit disease or not. If yes, to what extent they do, is not clear. Can a mild deviation influence the OMD in the same way as a gross deviation? Although the obvious answer is 'no', there are not many specific studies in this aspect. If we have a clear classification of NSD then we would be able to analyse this. Once this is done, probably we can recommend the specific type(s) of deviation(s), which needs to be corrected at the time of FESS. Also if the patient does not have OMD, then these deformities should be corrected as they are more likely to develop OMD.

Yousem et al[2] evaluated 100 CT PNS scans and concluded that patients with more severe NSD and more horizontally oriented uncinate process had a higher degree of sinus opacification. Bolger[3] studied 202 patients for FESS and found bony anatomic variations in 14.9% of the patients. He detected mucosal abnormalities in 153 of the 166 cases.

Table 3: Correlation of NSD and various types of sinus pathology and anatomical variants

			Anatomical			
Type		Omd	Disease		Ct Pns	
				Pt	Cb	
I	02	—	2	—	—	—
II	10	2	4	2	1	4
III	08	5	—	—	1	3
IV	10	2	1	1	1	7
V	46	7	20	3	12	12
V I	17	6	6	—	4	
VII	07	—	1	—	—	1

Deron[4], Clemant and Derde[5] studied the influence of septal deviations and septal surgery on tubal function and un the basis of results concluded that surgical correction of NSD improved tubal functions. Kennedy[6] reported septoplasties in 88% of the patients undergoing FESS. Gaskins[7] reported septal reconstruction in 21.8% of his patients at the time of FEES. Lloyd[8] found that septal deviations of 3 mm or more are associated with an increase in sinus opacity. Mladina[1] classified the NSD into seven types and in 1995 studied the relation of staging in rhino sinusitis to septal deformities. He suggested that the classification should be followed and included in the data of chronic rhino sinusitis so that a final elucidation of the real role and importance of the septal deformities in the onset of this pathological entity is more clearer. Djanic[9] showed that Type III septum is more associated with metaplasia of middle turbinate.

The aim of the present study is to analyse 100 normal asymptomatic individuals and 100 patients, who were advised FESS/septoplasty surgery. About 63% of symptomatic patients were of Types V and VI (horizontal, deviations or spur) while 28 patients were of Types II–IV. Only two patients had Type I septum. As compared to this, in the parallel study of normal population 59% had Type I septum, 17% had horizontal deviation and only 22 had vertical deviations. This suggests that people with horizontal spurs have significant increased probability of developing OMD and people with Types III and 1V also have significant higher probability of developing OMD. Conversely, people with Types I and II septum have lesser chances of developing OMD. Conventionally, it is believed that smooth air flow in the nasal valve area is vital for the normal function of the nose. In the present study, in the 81 out of 100 patients who were advised surgery obstruction was posterior (Types II, IV–VI NSA) where as only in 19 out of 100 cases the obstruction was mainly in the nasal valve area. Further studies on wider groups are indicated to confirm this. Such studies are important because if we can determine exactly the relations of the nasal septal deviations to OMD then, it might be advisable to combine septoplasty with FESS in some groups.

CONCLUSION

A standard classification of NSD should be developed and followed so that it can be included in evaluating rhino sinusitis. The present study reveals:

- In asymptomatic normal individuals, Type I is most common followed by Types II, V and VI in that order. Types I and II are statistically less likely to develop OMD.
- In patients advised septal surgery or FESS, TypesV and VI are more common followed by Type II, IV and III in that order. Posterior deviations were found to be more prone for OMD.
- The disturbance to the air flow in posterior area (Types III–VI) appears to play a major role is sino nasal disease rather than obstruction to airflow in the nasal valve area (Types I and II).

Every classification is always modified as time passes by and this leads to improvement in classification and wider acceptability. This classification has to be made more simple and useful especially in relation to the NSD predisposing to OMD. Many more such studies are required to determine if a particular type(s) of NSD is more likely to develop OMD than other type(s).

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