

RESEARCH ARTICLE

Criteria for Defining 'Severe Septal Deviation'

¹Owais Mattoo, ²Rahil Muzaffar, ³Raja Salman Khurshid, ⁴Shafqat Islam

ABSTRACT

Objective: Criteria for defining 'severe septal deviation' and to describe the clinical profile of the same.

Study: Retrospective study.

Materials and methods: Hundred patients who were diagnosed with severe DNS and treated with extracorporeal septoplasty (ECSP) from September 2010 to December 2012, were retrospectively evaluated for this study. A review of their clinical charts formed the basis of this study.

Results

- In this study, majority of patients (96%) had nasal obstruction as their prime symptom followed by postnasal discharge in 60% cases, headache in 40% cases and anterior nasal discharge in 30% cases. External nasal deformity was reported by 22 patients. Snoring was seen in 24% of patients with same percentage complaining of altered sense of smell and throat discomfort. Epistaxis, sneezing and facial pain were seen in 14% patients. Epiphora was complained by only 8% of patients.
- In this study, nasal endoscopy/anterior rhinoscopy was used to type the septal deformity. The commonest septal deviation was C-shaped cephalocaudal (48%), followed by S-shaped cephalocaudal (18%), C-shaped AP (16%), S-shaped AP (12%) and sharp septal deviation/angulation in 6% cases.
- All but three patients (6%) had deviated nasal septum involving multiple Cottle's areas. These three patients had sharp septal angulation involving Cottle's area 2 only.
- In this study, most common region involving DNS was area 1 + 2 + 3 (48%) followed by area 2 + 4 + 5 (28%) and 1 + 2 + 3 + 4 (18%).
- Area 2 was invariably involved in 100% of cases.
- NOSE (nasal obstruction symptom evaluation) scores.
- Preoperatively, mean NOSE score was 67.60 ± 5.26 (65.34-72.86).
- NSS (nasal symptoms score):
 - Preoperatively, mean NSS was -5.08 ± 0.38 (-5.46- -4.70).

Conclusion

- A septal deviation is regarded as 'severe' if patient satisfies all of the below-mentioned criteria:
 - Preoperatively, mean NOSE score should be 65.34 or more.

- Preoperatively, mean NSS should be -4.70 or more negative.
- The septal deviation must cause significant obstruction to Cottle's area 2 or nasal valve area.

Patients of severe septal deviation report significantly higher rates of snoring (24% in our study) and PND (60% in our study) when compared with mild/moderate cases.

- All severe septal deviations display significant obstruction of Cottle's area 2/nasal valve area and it is thus concluded that a severe septal deviation must cause significant obstruction of area 2/nasal valve.

Keywords: Severe, NOSE, NSS, PND, Snoring.

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INTRODUCTION

Deviated nasal septum (DNS) may be developmental or it may be caused by impact trauma, such as by a blow to the face. Deviated septum is associated with genetic connective tissue disorders, such as Marfan syndrome, homocystinuria¹ and Ehlers-Danlos syndrome. There have been studies describing the type of septal deviations in patients based on anterior rhinoscopy/endoscopy findings. In one study, most common septal deformity was septal tilt in 37 patients (40%). The next common type of DNS was C-shaped anteroposterior in 30 patients (32%) followed by localized septal deviation/angulations/spurs in 13 patients (14%). S-shaped anteroposterior septal deviation was noticed in 8 patients (9.00%), C-shaped cephalocaudal in four patients (4.30%) and S-shaped cephalocaudal in one patient (0.9%) only.² No study so far has been done as to classify the type of septal deviation in 'severe' cases of septal deviation. Cottle (1961) suggested to divide the internal nose into five areas: area 1, the external ostium or naris; area 2, the valve area; area 3, the area underneath the bony and cartilaginous vault, also called the attic; area 4, the anterior part of the nasal cavity, including the heads of the turbinates, the infundibulum or ostiomeatal complex; and area 5: the dorsal part of the nasal cavity, including the tails of the turbinates. Area 2 or nasal valve area is the most significant area. This is the part of the nasal cavity with major air flow and a limited septal deviation here can result in significant resistance to air flow enormous symptoms.³ Again, studies have been carried out to type the Cottle's area involvement in septal deviations but there is a surprising lack of the same in cases

¹⁻³Senior Resident, ⁴Consultant

¹Department of ENT, Hindu Rao Hospital, New Delhi, India

²Department of ENT, Government Medical College, Mewat Haryana, India

³Department of ENT, Zain Hospital, Kuwait City, Kuwait

⁴Department of ENT, District Hospital, Budgam, Jammu & Kashmir, India

Corresponding Author: Owais Mattoo, Senior Resident Department of ENT, Hindu Rao Hospital, New Delhi, India Phone: 9910469751, e-mail: owaisdani@gmail.com

of severe septal deviations. Defining criteria for severe septal deviation is important because it has been argued by many authors that severe septal deviations cannot be corrected by conventional septoplasty in a significant proportion of patients and that extracorporeal septoplasty should be the procedure of choice for such patients. Extracorporeal septoplasty has been regarded as procedure of choice for correcting severe septal deviations by many authors, the pioneer being Wolfgang Gubisch.⁴⁻⁷ However, there is a remarkable absence of literature defining 'criteria' for severe septal deviation. So far, it is purely clinician's judgment which classifies a particular septal deviation as 'severe'. The symptomatological profile of septal deviations has been studied by many authors. In one study of J Janardhan Rao symptomatology of patients was as follows: nasal obstruction 74%, nasal discharge 41%, headache 20%, sneezing 15%, throat discomfort 8%, postnasal drip 8%, nasal bleeding 3%, snoring 3% and altered sense of smell in 4% cases.⁸ Leandro Castro Velasco carried out a study to assess the symptom improvement following septoplasty with or without turbinectomy. Most prevalent complaint in the patients of deviated nasal septum among study subjects was nasal obstruction (74%) followed by anterior nasal discharge (41%), headache (20%), sneezing (15%), postnasal drip (8%), epiphora (7%), hyposmia (3%), bleeding (3%) and snoring (3%).⁹ Again, there is a remarkable absence of any similar study on severe septal deviations.

MATERIALS AND METHODS

This study was conducted in Department of Otorhinolaryngology of SMHS Hospital, an associated hospital of Government Medical College, Srinagar, Jammu & Kashmir, India. Review of the clinical charts of the patients who were diagnosed as having severe septal deviation and operated using extracorporeal septoplasty (ECSP) technique was done. Hundred patients who were diagnosed with severe DNS and treated with ECSP, from September 2010 to December 2012, were retrospectively evaluated for this study. The following were the inclusion/exclusion criteria used to undertake ECSP.

Inclusion Criteria

1. All patients with markedly or severely deviated nasal septums.
2. Patients of age >12 years of either gender. However, younger patients with significant symptoms were also operated.

Exclusion Criteria

1. Patients with mild to moderate septal deviation of all ages and either gender.

2. Patients with associated disorders like benign lesions, malignant lesions, cysts of nose or where septoplasty is done to gain surgical access only.
3. Patients with general medical contraindications to surgery.

Method

The detailed and comprehensive study of each patient was made according to the proforma of study design. Detailed preoperative examination with anterior rhinoscopy and nasal endoscopy aided in the diagnosis and thereby management of severe septal deviations. A complete history and clinical examination with relevant investigations aided in selecting the patient for ECSP. Nasal obstruction symptom evaluation (NOSE) score and nasal symptom score (NSS) were computed preoperatively for each patient.

RESULTS

The following table shows the clinical profile of patients with severe septal deviation (Table 1).

In this study, majority of patients (96%) had nasal obstruction as their prime symptom followed by postnasal discharge in 60% cases, headache in 40% cases and anterior nasal discharge in 30% cases. External nasal deformity was reported by 22% of patients. Snoring was seen in 24% of patients with same percentage complaining of altered sense of smell and throat discomfort. Epistaxis, sneezing and facial pain was seen in 15% patients. Epiphora was complained by only 8% of patients.

The following table depicts the type of DNS in patients of severe septal deviation (Table 2). In this study, nasal endoscopy was used to type the septal deformity. The commonest septal deviation was C-shaped cephalocaudal (48%), followed by S-shaped cephalocaudal (18%), C-shaped AP (16%), S-shaped AP (12%) and sharp septal deviation/angulation in 6% cases.

The following table depicts the Cottle's area involvement in patients with severe DNS (Table 3).

Table 1: Symptomatic profile of the patients

Symptoms	Percentage
Nasal obstruction	96
PND	60
Headache	40
Anterior nasal discharge	30
END [#]	22
Snoring	24
Hyposmia/anosmia	20
Throat discomfort	20
Epistaxis	14
Sneezing	14
Facial pain	14
Epiphora	8

[#]END secondary to septal deviation only was considered

Table 2: Type of DNS

Type of DNS (ECSP, n = 50)	No. of patients (%)
Simple tilt only	0 (0)
C-shaped cephalocaudal	24 (48)
S-shaped cephalocaudal	9 (18)
C-shaped AP	8 (16)
S-shaped AP	6 (12)
Sharp septal deviation/angulation [#]	3 (6)

[#]Sharp septal spur in relation to area 2

Table 3: Cottle's area involvement

DNS involving combined Cottle's area	No. of cases (%)
Cottle's area 1 + 2 + 3	24 (48)
Cottle's area 2 + 4 + 5	14 (28)
Cottle's area 1 + 2 + 3 + 4	9 (18)

Three patients had sharp septal spur obstructing area 2 only

As is evident from the table, almost all the patients had deviated nasal septum involving multiple Cottle's areas. However, three patients had sharp septal angulation involving Cottle's area 2 only. A limited septal deviation in this area causes significant resistance to air flow and hence significant symptoms.

In this study, most common region involving DNS was area 1 + 2 + 3 (48%) followed by area 2 + 4 + 5 (28%) and 1 + 2 + 3 + 4 (18%). Area 2 was invariably involved in all of the cases. In severe septal deviation, it is therefore concluded that area 2 is invariably involved in all.

NOSE Score

Preoperatively, mean NOSE score was 67.60 ± 5.26 (65.34-72.86).

NSS Score

Preoperatively, mean NSS was -5.08 ± 0.38 (-5.46 - -4.70).

DISCUSSION AND CONCLUSION

Defining criteria for severe septal deviations is important since the literature presently lacks the objective assessment of severe septal deviation and relies mostly on the surgeon's subjective valuation. Authors round the world are currently laying emphasis on ECSP and almost all the authors favoring ECSP share a universal consensus that ECSP should be the procedure of choice for markedly or severely deviated nasal septums. In our institution, ECSP has been used to treat severe septal deviations and a retrospective study of these patients formed the basis for defining criteria to treat a particular septal deviation as 'severe'. The criteria used included the symptomatological profile of DNS as well as the objective clinical assessment/clinical examination by the

clinician. Following are the criteria and the clinical profile of severe DNS:

A septal deviation is regarded as 'severe' if patient satisfies all of the below-mentioned criteria (Ow's criteria):

1. Preoperatively, mean NOSE score should be 65.34 or more.
2. Preoperatively, mean NSS should be -4.70 or more negative.
3. The septal deviation must cause significant obstruction to Cottle's area 2 or nasal valve area.

The involvement of nasal valve or Cottle's area 2 was universally observed by us in all patients of severe septal deviation. As is known, this is the area with maximum air flow and a limited deviation in this area results in significant resistance to airflow dynamics and enormous symptoms. We had three patients with sharp septal spurs obstructing area 2/nasal valve only without involvement of other areas. These patients had severe symptoms and a clinical profile similar to other patients, thus strengthening the fact that a septal deviation causing significant obstruction of area 2 only can lead to severe symptoms. All hundred patients diagnosed as severe DNS in our series displayed a significant obstruction of Cottle's area 2 or nasal valve area.

The clinical profile of severe septal deviations also varies when compared with the current literature. Patients of severe septal deviation report significantly higher rates of snoring (24% in our study) and PND (60% in our study) when compared with mild/moderate cases which is around 3% for snoring^{8,9} and 8% for PND^{8,9} (this data was generated on comparing our results with the data available in current literature).

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