

# Deflected Nasal Septum (DNS)- Types and Clinical Manifestations

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## Abstract

**Background:** To study the types of DNS and its different types, using Mladina classification as reference.

**Methods:** In this descriptive study patients who presented with nasal symptoms of nasal septal deformity were included. The exclusion criteria included patients with acute nasal infection, patients with other nasal pathologies such as nasal polypi, benign or malignant nasal growths etc and patients with history of previous septal surgery. Symptoms, age, gender, history of previous nasal surgery and query regarding the etiology of the nasal symptoms were recorded. Nasal problem especially nasal obstruction, unilateral or bilateral; nasal discharge, sneezing, sense of smell, headache and epistaxis etc, were recorded. Assessment of nasal septum was done by anterior rhinoscopic examination. Posterior rhinoscopy and nasal endoscopy were performed where required, especially in posterior deflections. A complete nasal examination of every patient was done by inspection and palpation of external nose, anterior rhinoscopy, posterior rhinoscopy; assessment of nasal patency (by fogging on cold spatula and cotton wick methods) and sense of smell, first without and then after topical spray of vasoconstrictive agent (xynosine nasal spray). In patients, with posterior deflections, nasal endoscopy was done, after preparation, to ascertain the type and site of DNS according to Mladina classification.

**Results:** The frequency of DNS was 67% in males and 58% in females. Most of the patients presented between 2<sup>nd</sup> and 4<sup>th</sup> decades. Incidence of different types (Type-1 to Type 7) of DNS was 10%, 23%, 9%, 7%, 29%, 6%, 16% respectively. The main complaints of the patients were nasal obstruction (82%), headache (45%), hyposmia (32%), epistaxis (10%), etc.

**Conclusion:** Deflected nasal septum is widely prevalent. The anterior deflections are more common than the posterior deflections. Type-2 and 5 are the commonest types, according to Mladina

classification. Nasal obstruction and headache are the common complaints. Nasal endoscopy is important for the diagnosis, especially of posterior deflections.

**Key Words:** Deflected nasal septum, Mladina classification.

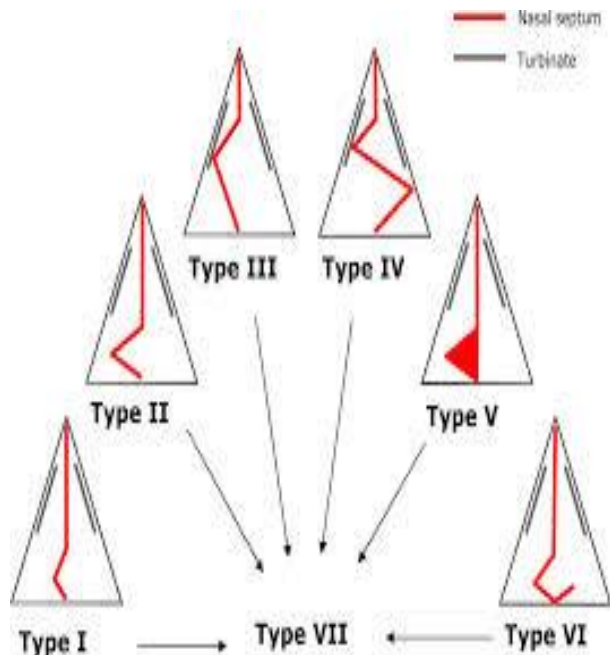
## Introduction

Nasal obstruction either unilateral or bilateral is a very common presentation in ENT out patient department.<sup>1-4</sup> Most of the cases of nasal obstruction are diagnosed as having DNS. DNS is defined as nasal septal deformity with some related problem to the patient, as nasal obstruction, headache or hyposmia etc.

**Table 1: DNS- Mladina classification**

Type	Characteristics
Type I	Presence of a unilateral crest which does not disturb the function of the nasal valve. It is situated in the area of the valve.
Type II	Disturbance of the valve function is caused by the unilateral crest. Positive Cottle's symptom can be observed after raising of the nostril, which gives a subjective and objective improvement in the nose patency.
Type III	One unilateral crest at the level of the head of the middle nasal concha
Type IV	Defines two crests - one at the level of the head of the middle nasal concha, and the other on the opposite side in the valve area, disturbing the valve functions.
Type V	A unilateral ridge on the base of the septum, while on the other side the septum is straight.
Type VI	A unilateral sulcus running through the caudal-ventral part of the septum, while on the other side there is a ridge and accompanying asymmetry of the nasal cavity
Type VII	A mix of types from I to VI.

Note: Cottle's sign is considered positive when patients experience an improvement with airflow when part of the nasal septum is lifted.



**Figure 1: Different types of septal deviations based on Mladina classification**

Nasal septum, divides the nasal cavity into two halves, consists anteriorly of quadrilateral cartilage and posteriorly bony part; consisting of perpendicular plate of ethmoid and vomer. Along the floor there is crest of maxilla and crest of palatine bones<sup>6</sup>. Nasal septum also supports the external osseo-cartilagenous structures, thus the shape of the nose, “where goes the septum, there goes the external nose.”<sup>3</sup> The aetiology of the nasal septal deformity is varied. It may be congenital, developmental, and traumatic etc.<sup>5-7</sup>

The nasal septal deformity or DNS has many classifications. It may be anterior or posterior; superior or inferior and may take the form of C or S shaped deformity, with either unilateral or bilateral nasal obstruction.<sup>4</sup> The assessment of septal deformity depends upon the site and severity of the deformity. It may be mild producing no symptoms or it may be severe, causing severe unilateral or bilateral nasal obstruction, thus disturbing the routine life of the patient. Cottle suggested five areas for the septal deviation.<sup>8</sup> Mladina (1987) described seven different types of septal deformities (Table 1; Figure 1).<sup>5,6</sup>

### Patients and Methods

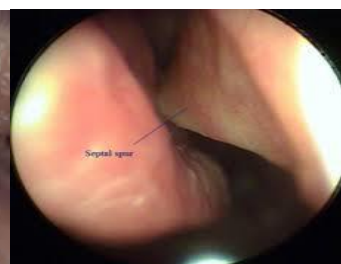
This descriptive study was conducted between January 2015 to June 2015, in a Teaching hospital. Inclusion criterion was the patients presented in ENT

OPD, with nasal symptoms. The exclusion criteria included patients with acute nasal infection, patients with other nasal pathologies such as nasal polypi, benign or malignant nasal growths etc and patients with history of previous septal surgery.

Symptoms, age, gender, history of previous nasal surgery and query regarding the etiology of the nasal symptoms were recorded. Nasal problem especially nasal obstruction, unilateral or bilateral; nasal discharge, sneezing, sense of smell, headache and epistaxis etc, were recorded. Assessment of nasal septum was done by anterior rhinoscopic examination but posterior rhinoscopy and nasal endoscopy were performed where required, especially in posterior deflections. A complete nasal examination of every patient was done by inspection and palpation of external nose, anterior rhinoscopy, posterior rhinoscopy; assessment of nasal patency (by fogging on cold spatula & cotton wick methods) and sense of smell; first without and then after topical spray of vasoconstrictive agent (xynosine nasal spray) (Figure 2 &3). In patients, with posterior deflections, nasal endoscopy was done, after preparation, to ascertain the type and site of DNS according to Mladina classification.



**Figure 2: Anterior Rhinoscopy showing DNS**



**Figure 3: Endoscopic view showing posterior Septal spur**

### Results

Majority of the patients were in age group 20-30 years (Table 2). Majority were male, consisting 65% (n=338/520) with a male to female ration of 1.85:1.

**Table- 2: Age distribution**

Age range	Number	Percentage
10-20	48	9.22
20-30	192	36.9
30-40	171	32.88
40-50	67	12.88
50-60	42	8.07

Nasal obstruction (82%) and headache (45%) were the commonest complaint (Table 3). History of trauma was seen in 58% (Table 4) and type 2 was commonest (Table 5).

**Table-3: Presentation of the patient.**

Main complaint (overall)	Number	Percentage
Nasal obstruction	426	82%
Headache	234	45%
Nasal discharge	104	20%
Hyposmia	166	32%
Epistaxis	52	10%
Misc.(ext. def.)	26	5%

**Table-4: Etiology of DNS**

Etiology	Number	Percentage
Trauma	301	58%
No h/o trauma	219	42%

**Table-5: Type of Nasal septal deformity (Mladina classification)**

Type of DNS	Number	Percentage
Type:1	52	10%
Type:2	119	23%
Type:3	47	9%
Type:4	36	7%
Type:5	152	29%
Type:6	31	6%
Type:7	83	16%

## Discussion

Nasal septum is the central pillar in the nasal cavity and plays a vital role both for the function and external appearance of the nose.<sup>2</sup>Deflected nasal septum is one of the commonest anatomic defects of the human body.<sup>3</sup> The incidence of DNS is higher in Caucasians than in Asians and Africans.<sup>12,13</sup> More than 80% of humans have one or the other type of nasal septal deformity.<sup>13</sup> Straight septum is exceptional.<sup>10</sup> One study stressed the need for nasal endoscopy for the assessment of the nasal septal deformity after anterior rhinoscopy and posterior rhinoscopy.<sup>13</sup> In present study we stressed upon the complete clinical examination as well as on endoscopic examination when required.

Cottle described five areas of septal deflections, which are mainly involved in nasal septal pathologies.<sup>8</sup> This study depends upon Mladina classification which divides the septal deflections into seven different types.<sup>5,6</sup> In literature several studies have been conducted, using different classifications of septal

pathologies.<sup>14-15</sup> Type-2 and type-5 deflections were the commonest in this study and anterior deflections are more common (83%) than posterior deviations.<sup>16</sup> This is in congruence with other studies which used Mladina classification.<sup>12,13</sup>

There are seven types of septal deformities according to Mladina classification. In our study the commonest type of septal deformity was Type-5, followed by Type-2 and Type-7. This was according to a study conducted by Rehman A et al.<sup>12</sup> DNS most commonly presents during second (36.9%) and third decades (32.8%) of life; and presentation falls during fourth (12.8%) and fifth decades (8%). A study conducted in Turkey found that posterior deflections of nasal septum increase with increasing age.<sup>17</sup> Nasal trauma during the rapid development of the face and nose, gives rise to more severe deformities in the nasal septum.<sup>18,19</sup> There was male predominance of the disease. The male to female ratio was 2:1. This is in conformity to the study conducted by Rehman A et al.<sup>12</sup>

In facial injuries, the nose is the commonest structure injured.<sup>21</sup> In present study, 58% patients gave history of nasal trauma. About 15 % patients gave family history of DNS. Septal deformities are more common in older children and adults. There is correlation of age and race with nasal trauma.<sup>20,22</sup> Takahashi also documented the racial distribution of septal deformities.<sup>22,23</sup> In one study, septal deformity was more common in children born by spontaneous vaginal delivery (22.2%) than in patients delivered by caesarean section (3.9%), again identifying the traumatic etiology of deflected nasal septum.<sup>24</sup>

## Conclusion

Anterior deflections are more common than the posterior deflections. Type-2 and 5 are commonest types, according to Maldina classification. Nasal obstruction and headache are the common complaints. Nasal endoscopy is very important for the diagnosis, especially of posterior deflections.

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