

To Assess Utility of CT Scan in Patients with Deviated Nasal Septum

Vivek Gupta¹, *Pranav Kumar Dave², M Tilgam³, A Patidar³, P Gupta³

^{1,2}Associate Professor, ³Resident, Department of Radiodiagnosis, L N Medical College and J K Hospital, Kolar Road, Bhopal-462042, MP, India.

Abstract

Background: Nasal septum pathology is highly prevalent and septoplasty is a commonly developed surgery. The present study was conducted to assess utility of CT scan in patients with deviated nasal septum. **Subjects and Methods:** The present study was conducted on 82 patients reported to Department of Radio diagnosis L N medical college and J k Hospital Bhopal for CT scan of PNS which were diagnosed with DNS. The CT scans were performed with GE 128 slice CT scanner machine. **Results:** Out of 82 patients, males were 52 and females were 30. Age group 11-20 years had 32, 21-30 years had 20, 31-40 years had 15, 41-50 years had 12 and 51-60 years had 3 patients. The difference was significant ($P < 0.05$). Common features in patients were headache in 41, nasal obstruction in 74, facial pain in 33, hyposmia in 27 and epistaxis in 11. The difference was significant ($P < 0.05$). There are six types of deviated nasal septum. Common type were type V in 21, type IV in 20, type VI in 16, type III in 9, type II in 6 and type I in 5. **Conclusion:** CT scan is useful tool in diagnosis of types of deviated nasal septum.

Keywords: CT scan, Deviated nasal septum, Hyposmia.

Corresponding Author: Dr Pranav Kumar Dave, Associate Professor, Department of Radiodiagnosis, LN Medical College and JK Hospital, Bhopal, Madhya Pradesh.

Received: August 2019

Accepted: August 2019

Introduction

Nasal septum pathology is highly prevalent and septoplasty is a commonly developed surgery. The nasal septum consists of bone and cartilage and runs throughout the middle of the nasal cavity. The septum can be deviated or kinked due to a congenital anomaly or acquired trauma. Many people have some sort of imbalance in the size of their breathing passages. Nasal septal deviation is a frequently seen condition in otolaryngology, prevalence up to 76% in some populations.^[1]

The deviation might be unnoticed or results in variable clinical presentation such as cosmetic concern, noisy breathing, or even complete obstruction of one or both nostrils. Diagnosis of nasal septal deviation is clinical, based on anterior rhinoscopy and nasal endoscope.^[2] Treatment of nasal obstruction due to a deviated septum may include the use of medication to reduce tissue swelling, yet, surgery is often necessary to correct the deviation to alleviate patient symptoms.

Septorhinoplasty or rhinoseptoplasty is the surgical technique with the purpose of correcting the shape and function of the nose at the same time. It associates the reparation of the external nasal pyramid and the remodeling of the interior of the nasal fossa in the same surgical act. Modern septal surgery was developed by Cottle in the 50's. In the 80's GÜBISCH described the extracorporeal septoplasty, solving the limitations of previous techniques.^[3]

Imaging is important in the management of the deviated

septum assessment. CT scanning of the nose and paranasal sinuses is one of the common imaging modalities used in otolaryngology.^[4] The present study was conducted to assess utility of CT scan in patients with deviated nasal septum.

Subjects and Methods

The present study was conducted in the department of Radiodiagnosis. It comprised of 82 patients reported to department of Radiodiagnosis for CT scan of PNS which were diagnosed with DNS in both genders.

A thorough clinical examination was performed before the CT scanning. Pregnant women were excluded from the study. CT scans of the nasal bone and paranasal sinuses before the surgery was performed. The CT scans were performed with GE 128 slice CT scanner machine. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

Results

Table 1: Distribution of patients

Total- 82		
Gender	Males	Females
Number	52	30

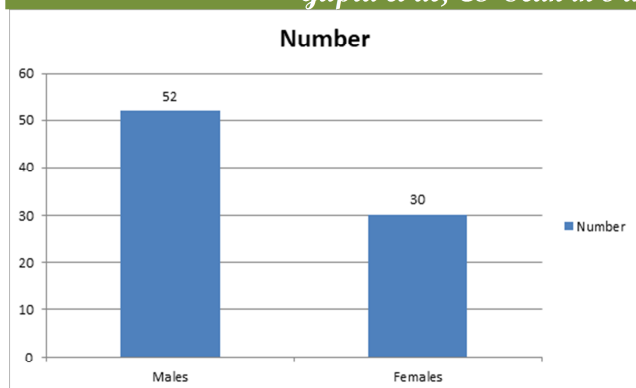


Figure 1: Distribution of patients

[Table 1] shows that out of 82 patients, males were 52 and females were 30.

Table 2: Age wise distribution of patients

Age group (Years)	Number	P value
11-20	32	0.01
21-30	20	
31-40	15	
41-50	12	
51-60	3	

[Table 2], graph I shows that age group 11-20 years had 32, 21-30 years had 20, 31-40 years had 15, 41-50 years had 12 and 51-60 years had 3 patients. The difference was significant ($P < 0.05$).

Table 3: Clinical features in patients

Features	Number	P value
Headache	41	0.05
Nasal discharge	62	
Nasal obstruction	74	
Facial pain	33	
Hyposmia	27	
Epistaxis	11	

[Table 3], graph II shows that common features in patients were headache in 41, nasal obstruction in 74, facial pain in 33, hyposmia in 27 and epistaxis in 11. The difference was significant ($P < 0.05$).

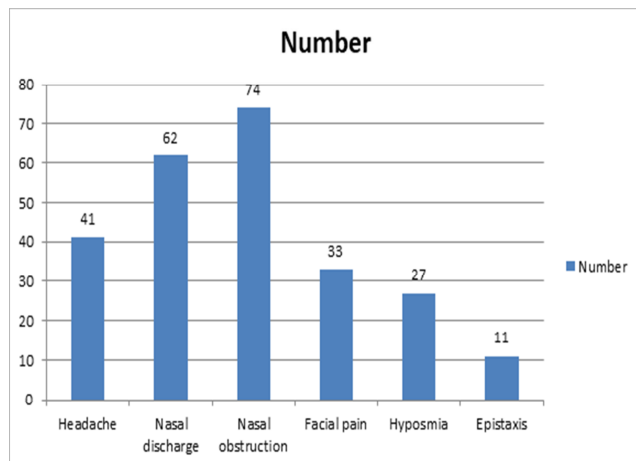


Figure 2: Clinical features in patients

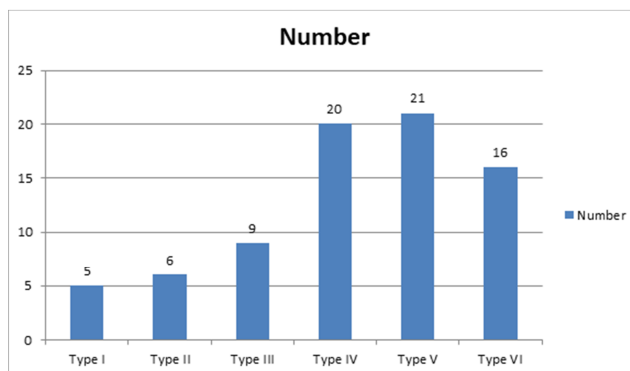


Figure 3: Type of DNS

[Figure 3] shows that common type was type V in 21, type IV in 20, type VI in 16, type III in 9, type II in 6 and type I in 5.

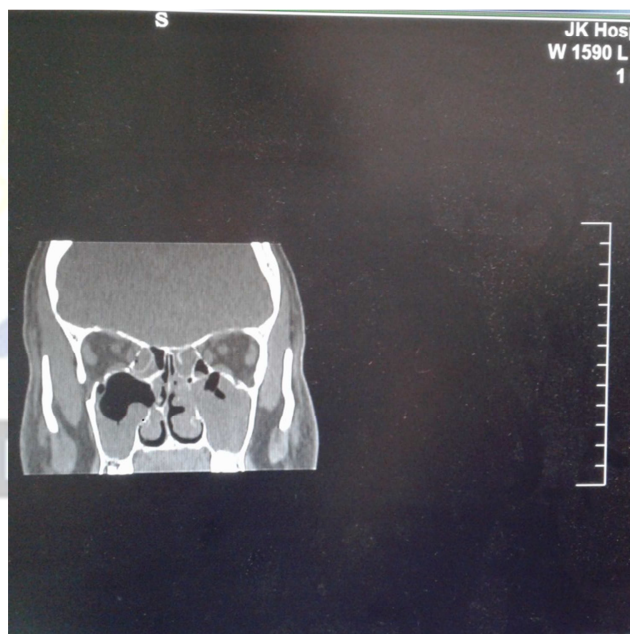


Figure 4: Right sided deviation of nasal septum with bone spur, in addition changes of sinusitis.

Discussion

CT could recognize pathological findings that could not be found on physical examination and is helpful to decide the location and the type of surgery. However, no strict guidelines are available for the diagnostic use of CT scanning in nasal septal deviation. CT scan is the technique of choice for the study of nasal septum.^[5] Unlike plain radiography, CT values both bone and cartilage portion and thereof provides a detailed anatomical information of nasosinus structures. In addition, once the image is obtained reconstructions can be performed. The main types of useful reconstructions in the nasal region are multiplanar reconstructions (MPR) which allow to display images in the three planes of the space. In particular, the reconstruction in

the coronal plane aptly reflects the anatomy as seen by the otolaryngologist, as well as the osteomeatal unit and the relationship of the ethmoid roof with the anterior cranial fossa.^[6]



Figure 5: S shaped deviation of nasal septum.

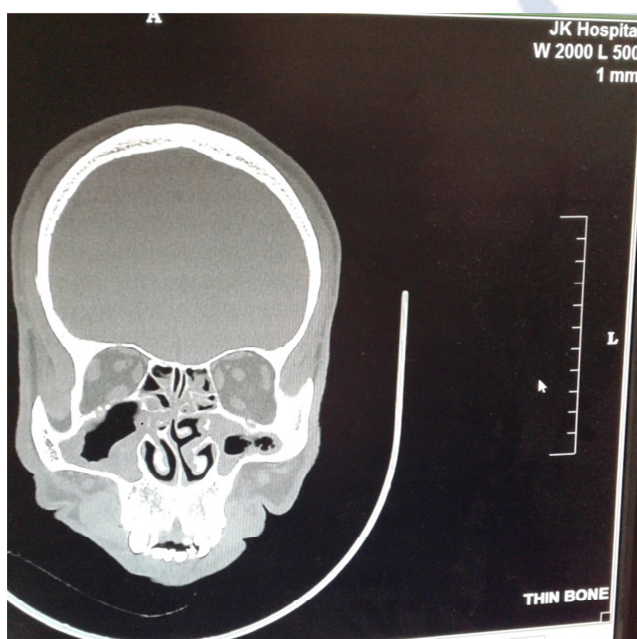


Figure 6: Right sided DNS with horizontal spur. Maxillary sinusitis.

Sedaghat et al,^[7] concluded that patients with evidence of sinusitis on CT scanning had a higher degree of septal deviation. They showed a strong correlation between septal deviation and sinus disease, although the degree of septal deviation was never qualified. The present study was conducted to assess utility of CT scan in deviated nasal septum.

In this study, out of 82 patients, males were 52 and females were 30. Karatas et al,^[8] found that seventy-two patients booked for corrective septal surgery (septoplasty) was conducted. Each patient's record was reviewed for CT request prior to surgery and if deviated nasal septum was mentioned in the report. Seventy-two patients were included in the study, 27 (37.5%) females and 45 (62.5%) males. Age ranged from 16 to 72 years (mean of 31.58). Twenty-two (30.5%) patients had CT imaging prior to surgery; two (2.7%) scans were for patients booked for only septoplasty surgery. Twenty-one (29.2%) of the scans reported deviated nasal septum in the report. One (1.4%) report mentioned central nasal septum.

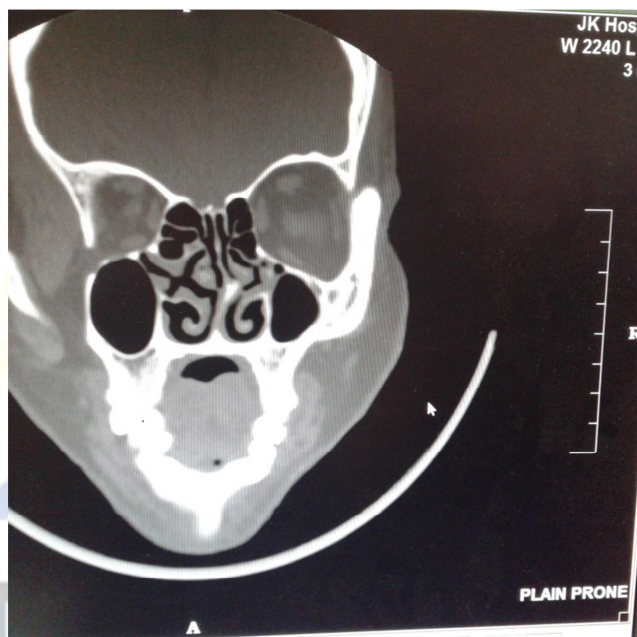


Figure 7: Right sided DNS with bony spur.

We found that age group 11-20 years had 32, 21-30 years had 20, 31-40 years had 15, 41-50 years had 12 and 51-60 years had 3 patients. We observed that common features in patients were headache in 41, nasal obstruction in 74, facial pain in 33, hyposmia in 27 and epistaxis in 11.

Günbey et al⁹ found statistically significant correlation was detected between physical examination including nasal endoscopy and radiographic assessment of septal deviation only at the osseous septum with low quantitative agreement. No significant correlation was detected at the cartilaginous septum, inferior septum or nasal valve. Quantitative agreement at the nasal valve suggested a bias in CT to underestimate physical exam findings.

We found that Mladina Classification (1987)^[10] to be useful for the nasal septal deviation evaluation.

These include

- Type 1: midline septum or Mild deviation
- Type 2: Anterior vertical, C-Shaped
- Type 3: Posterior vertical, C-Shaped
- Type 4: S-shaped deviation
- Type 5: Horizontal spur
- Type 6: Horizontal spur with deep groove on the concave

side

and observed that common type was type V in 21, type IV in 20, type VI in 16, type III in 9, type II in 6 and type I in 5. Surgical planning for septoplasty is dependent on accurate assessment of a deviated nasal septum. Physical examination that includes both anterior rhinoscopy and endoscopic examination is the gold standard for evaluation of the nasal septum. Previous work has shown obstructive sinonasal anatomic variants, which are Clinical vs CT assessment of deviated septum associated with nasal septal deviation, to be risk factors for CRS. Nasal septal deviation may be a risk factor for development of CRS as well. It is not surprising then that many patients with a deviated nasal septum may additionally undergo sinus CT scan for evaluation of CRS in the setting of chronic sinonasal symptoms.^[11]

Conclusion

CT scan is useful tool in diagnosis of types of deviated nasal septum.

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How to cite this article: Gupta V, Dave PK, Tilgam M, Patidar A, Gupta P. To Assess Utility of CT Scan in Patients with Deviated Nasal Septum. Asian J. Med. Radiol. Res. 2019;7(2):89-92.
DOI: dx.doi.org/10.21276/ajmrr.2019.7.2.19

Source of Support: Nil, **Conflict of Interest:** None declared.