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Clinical Profile and Associated Ent Pathologies in Patients with Deviated Nasal Septum : A Prospective Observational Study from A Tertiary Care Centre

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ABSTRACT

Background: Deviated nasal septum (DNS) is a frequent anatomical variation encountered in otorhinolaryngology practice. It may contribute to multiple nasal, ear, and throat symptoms due to altered airflow dynamics and associated mucosal changes. Understanding patterns of DNS and their clinical associations helps improve diagnostic evaluation and management planning.
Objective: To identify the types of DNS and assess their association with ENT pathologies, clinical features, and demographic characteristics among patients presenting to a tertiary care hospital.
Methods: This prospective observational study was conducted in the Department of ENT and Head & Neck Surgery at Muzaffarnagar Medical College and Hospital from January 2024 to June 2025. A total of 120 patients aged 15–55 years with clinically diagnosed DNS were enrolled using purposive sampling. Data were collected using a structured case record form including history, clinical examination, nasal endoscopy, and radiological investigations when indicated. Descriptive statistical analysis was performed using Stata version 17.0. Associations were evaluated using suitable statistical tests, and a p-value <0.05 was considered statistically significant.
Results: Most participants were aged 21–30 years (46.67%), and males constituted 64.17% of the sample. Nasal obstruction (75.8%) was the most common presenting symptom, followed by nasal discharge (50.8%) and aural fullness (42.5%). C-shaped deviation was the predominant DNS type (47.5%). Chronic otitis media (15.0%), chronic rhinosinusitis (11.67%), and rhinogenic headache (10.0%) were common associated pathologies. A significant association was observed between DNS type and site of ENT pathology (χ^2=18.9, p=0.015).
Conclusion: DNS shows varied clinical presentations and significant associations with multiple ENT pathologies. Early identification and careful clinical evaluation may support better symptom-based management strategies.

Keywords: *Deviated nasal septum; ENT pathology; Nasal obstruction; Nasal endoscopy; Rhinosinusitis; Chronic otitis media; Prospective observational study; Septal deviation.*

INTRODUCTION

Deviated nasal septum (DNS) is one of the most common structural abnormalities encountered in otorhinolaryngology practice(1). Although mild septal deviation may remain asymptomatic, significant deviations can alter normal nasal airflow and mucociliary function, resulting in a wide spectrum of symptoms involving the nose, paranasal sinuses, ear, and throat(1). Patients frequently present with nasal obstruction, nasal discharge, headache, sneezing, and reduced sense of smell. In addition to nasal symptoms, DNS has been associated with

several secondary ENT conditions, including chronic rhinosinusitis, Eustachian tube dysfunction, otitis media, and recurrent throat complaints(2).

The clinical impact of DNS depends on the type, severity, and location of deviation(3). Different patterns such as C-shaped deviation, S-shaped deviation, anterior deviation, septal spur, or thickened septum may produce varying degrees of anatomical obstruction and mucosal contact points, influencing symptom severity and associated pathology(4). Proper identification of these variations through detailed clinical examination and nasal endoscopy is therefore important for accurate diagnosis and treatment planning.

Despite the high prevalence of DNS, variability exists in the reported patterns of deviation and their association with ENT diseases across different populations. Local epidemiological data from tertiary care centres are essential for understanding symptom patterns and disease burden within specific regions. This study was therefore undertaken to evaluate the clinical profile of patients with DNS and to analyse the distribution of different DNS types in relation to associated ear, nose, and throat pathologies in a tertiary care hospital setting.

AIM

To identify the types of deviated nasal septum and to study their association with ENT pathologies, clinical features, and demographic characteristics among patients presenting to a tertiary care hospital.

MATERIAL AND METHODS

This was a single centre, single group, hospital-based, observational study was conducted in the Department of ENT & HNS at Muzaffarnagar Medical College & Hospital, Muzaffarnagar, Uttar Pradesh. The total duration of the present study was 18 months: from **January 2024 to June 2025.** The primary outcome of this study was to identify the types of deviated nasal septum (DNS) and study their association with ENT pathologies.

The participants were patients aged between 15 to 55 years, of either sex, who were clinically diagnosed with deviated nasal septum. Eligible participants were those who fulfilled the selection criteria and gave written informed consent.

- *Inclusion Criteria:*
  i. All patients aged between 15 to 55 years.
  ii. Patients with symptomatic deviated nasal septum.
  iii. Patients with asymptomatic deviated nasal septum but with associated ear and throat symptoms such as ear discharge, hearing loss, ear fullness, or throat discomfort.
  iv. Patients of both sexes.

- *Exclusion Criteria:*
  i. Patients with any associated sinonasal or nasopharyngeal malignancy.
  ii. Patients with granulomatous disease of nose or other nasal pathologies like nasal polypi.
  iii. Patients refusing to give informed written consent.
  iv. Patients with history of previous septal surgery.

All eligible participants who visited the hospital during the data collection period and who gave informed consent were enrolled in the present study. Following this approach, a total of **120 participants** were enrolled in the present study. The study followed non-probability purposive sampling. The participants were selected purposefully from among patients attending OPD, IPD, and Casualty who matched the inclusion and exclusion criteria. A structured case record form was designed to collect data. Data was collected from direct clinical examination, diagnostic nasal endoscopy, X-ray PNS, CT scan PNS (if required), and patient interviews. Observations were recorded from ENT examination and radiological findings. Patient complaints and medical history were noted during interviews.

Statistical Analysis: Descriptive statistics were applied. Suitable statistical significance tests were used. A P-value of less than 0.05 was considered significant. The data from paper-based data collection was initially entered into MS Excel and was imported in Stata 17.0. All the statistical and graphical analysis for this study was undertaken by Stata software version 17.0.

- **Data Collection Procedure**:
  1. All patients attending the ENT OPD, IPD, and Casualty were screened for symptoms and clinical signs of deviated nasal septum. The investigator explained the study details using a bilingual (Hindi and English) patient information sheet. Written informed consent was obtained from each participant before inclusion in the study.
  2. Each participant underwent a thorough clinical evaluation by the Principal Investigator after obtaining informed written consent. This process included history taking, systemic and detailed ENT examination, endoscopic evaluation, and radiological imaging.

a. **Detailed History Taking**: A complete clinical history was obtained for every patient using a structured case record form. This included demographic information (age, sex, occupation, address), medical and surgical history, family history of nasal conditions, and personal history such as smoking or allergies.
b. **Nose Examination**: The external nose was visually inspected for shape, symmetry, deformity, scars, swelling, or trauma marks. Palpation was done to assess tenderness, crepitus, or structural irregularities. Each nasal cavity was checked separately for airflow using the cold spatula test or asking the patient to breathe out forcefully through one nostril while occluding the other. A 4 mm 0° rigid endoscope was introduced gently into each nostril. In patients with narrow nasal cavities, a 2.7 mm scope was used.
c. **Radiological Investigations**
   - **X-Ray of Paranasal Sinuses (PNS)**:
   - **CT Scan PNS** (when required):

3. **Ear and Throat Examination**
   - **a. Ear**: Otoscopic and endoscopic examination was done again. Any new ear discharge, signs of otitis media, or worsening of tympanic membrane appearance were checked.
   - **b. Throat**: A repeated inspection of the oropharynx, posterior pharyngeal wall, and tonsillar region was done. If indicated, laryngeal endoscopy using a 70° scope was performed to examine laryngeal inlet and vocal cord mobility.

RESULTS

Table 1: Characteristics of Participants (n=120)

Age of participant (years)	No. of patients	Percentage (%)
11-20	8	6.67
21-30	56	46.67
31-40	49	40.83
41-50	7	5.83
Gender		
Male	77	64.17
Female	43	35.83
Occupation		
Student	4	3.33
Housewife	12	10.00
Shopkeeper	22	18.33
Laborer	28	23.33
Professional	23	19.17
Other	31	25.83

A total of 120 patients with deviated nasal septum were included in the study. The majority of participants were in the 21–30 years age group (46.67%), followed by 31–40 years (40.83%). Male participants predominated, accounting for 64.17% of the study population, while females constituted 35.83%.

Table 2: Presenting Symptoms

Symptoms	No. of patients	Percentage (%)
Nasal obstruction	91	75.8
Nasal discharge	61	50.8
Excessive sneezing	41	34.2
Epistaxis	18	15.1
Post nasal drip	20	16.7
Hyposmia/Anosmia	18	15
Headache	37	30.8
Ear discharge	22	18.3
Decreased hearing	40	33.3
Otalgia	42	35
Aural fullness	51	42.5

Nasal obstruction was the most common presenting complaint, reported by 75.8% of patients. Other frequent nasal symptoms included nasal discharge (50.8%), excessive sneezing (34.2%), headache (30.8%), post-nasal drip (16.7%), epistaxis (15.1%), and hyposmia/anosmia (15%).

Table 3: Details of Deviated Nasal Septum		
Side of deviated nasal septum	**No. of patients**	**Percentage (%)**
Right	61	50.83
Left	35	29.17
Bilateral	16	13.33
Central Septum (with spur or thickened septum)	8	6.67
Type of DNS		
C-shaped deviation (including posterior septal deviation)	57	47.5
Spur impinging on Turbinate / Lateral Wall	28	23.3
Anterior deviation (including Caudal dislocation)	15	12.5
S-shaped deviation	16	13.3
Thickened septum	4	3.3

Right-sided deviation was the most frequently observed pattern, seen in 50.83% of participants, followed by left-sided deviation (29.17%). Bilateral deviation was present in 13.33% of cases, while central septum deviation with spur or thickening accounted for 6.67% (Table 3).

Table 4: Associated ENT Pathology		
Associated ENT Pathology	**No. of patients**	**Percentage (%)**
Chronic adeno-tonsillitis	3	2.50
Chronic otitis media	18	15.00
Chronic pharyngitis	7	5.83
Chronic rhinitis	11	9.17
Chronic rhinosinusitis (CRS)	14	11.67
Eustachian tube dysfunction	11	9.17
Laryngopharyngeal reflux	5	4.17
Laryngitis	2	1.67
Maxillary sinusitis	8	6.67
Obstructive sleep apnea	1	0.83
Otitis media with effusion	4	3.33
Recurrent acute rhinosinusitis	10	8.33
Recurrent epistaxis	9	7.50
Recurrent otitis media	1	0.83
Rhinogenic headache	12	10.00
Snoring	4	3.33

Among associated ENT conditions, chronic otitis media was the most frequently identified pathology (15.00%), followed by chronic rhinosinusitis (11.67%), rhinogenic headache (10.00%), chronic rhinitis (9.17%), and Eustachian tube dysfunction (9.17%) (Table 4).

Table 5: Distribution of Type of DNS in relation to Associated ENT Pathology			
Type of DNS	**Ear n (%)**	**Nose n (%)**	**Throat n (%)**
C-shaped deviation	10 (17.5)	35 (61.4)	12 (21.1)
Spur impinging on turbinate / lateral wall	12 (42.9)	14 (50.0)	2 (7.1)
Anterior deviation	3 (20.0)	6 (40.0)	6 (40.0)
S-shaped deviation	5 (31.3)	6 (37.5)	5 (31.3)
Thickened septum	1 (25.0)	3 (75.0)	0 (0.0)
Total	**31**	**64**	**25**
Chi-square (χ^2) = 18.9; P-value = 0.015			

A significant association was observed between the type of DNS and the distribution of ENT pathology ($\chi^2 = 18.9$, $p = 0.015$) (Table 5). C-shaped deviation was predominantly associated with nasal pathologies (61.4%), followed by throat (21.1%) and ear conditions (17.5%). Septal spur impinging on the turbinate or lateral wall showed greater association with ear pathologies (42.9%) and nasal conditions (50.0%), with minimal throat involvement (7.1%). Anterior deviation demonstrated a relatively balanced distribution between nasal and throat pathologies (40.0% each). S-shaped deviation showed comparable involvement of ear (31.3%) and throat (31.3%) pathologies, while thickened septum was mainly associated with nasal disease (75.0%).

DISCUSSION

The present study evaluated the clinical profile of patients with deviated nasal septum (DNS) and its association with related ENT pathologies in a tertiary care setting. The findings demonstrate that DNS is commonly seen in young adults, with a male predominance. This pattern has been reported in several clinical studies and may be explained by greater exposure of males to trauma, outdoor activities, and occupational risks that predispose to septal deviation. A similar age pattern was reported by Mogarnad M et al., (2017), where the majority of patients with deviated nasal septum were young adults, with a mean age of 29.3 years and most cases clustered between 21 and 40 years(5). In another Indian study, Khan MN et al., (2016) found that 37.18% of patients were in the 11–20-year age group, followed by 26.44% in the 21–30 year group, with an overall younger skew but continued predominance of adolescents and young adults seeking care(6).

Morphologically, C-shaped deviation was the most common type of DNS observed. Similar trends have been noted in previous clinical reports, where C-shaped deformities predominate due to developmental variations or minor trauma. A similar predominance of C-shaped deviation was reported by Sriprakash V et al., (2017), who found C-shaped deviation to be the most frequent type in their cohort of adult patients, accounting for the largest proportion of diagnosed cases(7). Khan MN et al., (2016) also reported C-shaped deviation as the most common type, seen in 59.09% of patients(6). In their study, S-shaped deviation was present in 15.15%, which closely parallels the 13.3% observed in the present cohort. They further noted that septal spurs were frequently found in combination with other deviation types, occurring in 28.79% of cases. Prasad S et al., (2013), using Mladina's classification, reported that vertical deviations were the most frequent, particularly type I and type II deviations, accounting together for nearly half of their cases(8). Rao N et al., (2020) reported that type I and type II deviations were the most common forms of deviated nasal septum, with these types showing a strong association with rhinosinusitis(9). A strong association between deviated nasal septum and sinonasal disease has been reported by Rao N et al., (2020), who found that 84% of patients with DNS had coexisting rhinosinusitis on CT evaluation(9). They demonstrated a statistically significant correlation between septal deviation and sinus pathology, particularly on the same side as the deviation. Prasad S et al., (2013) evaluated the relationship between DNS and rhinosinusitis and reported sinusitis in 52.5% of patients on CT imaging(8). Khan MN et al., (2016) highlighted that deviated nasal septum predisposes patients to Eustachian tube dysfunction and middle ear disease, although their primary focus was on surgical outcomes(6). The presence of Eustachian tube dysfunction in 9.17% of patients in the present study supports this association and suggests that nasopharyngeal airflow disturbance and chronic nasal inflammation may impair middle ear ventilation. Sriprakash V et al., (2017) reported that deviated nasal septum may lead to rhinosinusitis and secondary involvement of the ear and throat, particularly when sinonasal pathology is present(7). Alshehri A et al., (2022) reported that DNS was associated with nasal obstruction, nasal discharge, sore throat, and snoring, although chronic middle ear disease was less emphasised(10).

CONCLUSION

This prospective observational study demonstrates that deviated nasal septum is a common structural abnormality associated with a broad spectrum of ear, nose, and throat manifestations. C-shaped deviation was identified as the most prevalent morphological pattern, followed by septal spur and anterior deviations. The findings further highlight that DNS is not limited to isolated nasal complaints but is frequently associated with otological and throat-related symptoms such as aural fullness, decreased hearing, and recurrent throat discomfort.

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- **Conflict of Interest**: There was no conflict of interest in the design, implementation, and interpretation of findings of this study.
- **Authors Contribution:** The study was done under the continuous and expert guidance of Dr. Sandip M Parmar.

REFERENCES

1. Kim TK, Jeong JY. Deviated nose: Physiological and pathological changes of the nasal cavity. Arch Plast Surg [Internet]. 2020;47(6):505–15. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC7700847/#ref-list1
2. Malpani SN, Deshmukh P. Deviated Nasal Septum a Risk Factor for the Occurrence of Chronic Rhinosinusitis. Cureus [Internet]. 2022;14(10):e30261. Available from: http://dx.doi.org/10.7759/cureus.30261
3. Teixeira J, Certal V, Chang ET, Camacho M. Nasal Septal Deviations: A Systematic Review of Classification Systems. Plast Surg Int. 2016;2016:7089123.
4. Mladina R, Skitarelić N, Poje G, Šubarić M. Clinical Implications of Nasal Septal Deformities. Balkan Med J. 2015 Apr;32(2):137–46.
5. Mogarnad M, Mohta V. A study on clinical profile of deviated nasal septum and to determine the efficacy of the surgery. Clin Rhinol. 2017;10(2):70–3.
6. Khan M, Nath K, Uddin S. A clinical study of deviated nasal septum with special reference to conventional and endoscopic septoplasty. Int J Res Med Sci. 2016;4(12):5165–71.
7. Sriprakash V. Prevalence and clinical features of nasal septum deviation: a study in an urban centre. Int J Otorhinolaryngol Head Neck Surg. 2017;3(4):842.

8. Prasad S, Varshney S, Bist SS, Mishra S, Kabdwal N. Correlation study between nasal septal deviation and rhinosinusitis. Indian J Otolaryngol head neck Surg Off Publ Assoc Otolaryngol India. 2013 Dec;65(4):363–6.
9. Rao N, Datta G, Singh G. To Study the Role of Nasal Septal Deviation and Its Relation to Sinonasal Pathology. Indian J Otolaryngol Head Neck Surg [Internet]. 2022;74(s2):755–9. Available from: https://doi.org/10.1007/s12070-020-01800-5
10. Alshehri, Abdullah A. Prevalence and Clinical Features of Deviated Nasal Septum in the Pediatric Age Group in Najran Region, Saudi Arabia. Saudi J Otorhinolaryngol Head Neck Surg. 2022;24(1).