



RESEARCH ARTICLE

Prevalence and Clinical Profile of Deviated Nasal Septum Among Patients Attending an ENT Outpatient Department

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Abstract

Background: Deviated nasal septum is one of the most common anatomical abnormalities encountered in otorhinolaryngology practice and is an important cause of nasal obstruction. It may be associated with headache, epistaxis, post-nasal drip, chronic rhinosinusitis, turbinate hypertrophy, impaired nasal airflow, sleep disturbance, and reduced quality of life. **Objective:** To evaluate the prevalence, clinical presentation, severity, direction of deviation, and associated nasal pathologies among patients with deviated nasal septum attending an ENT outpatient department. **Materials and Methods:** A prospective cross-sectional study was conducted over a period of six months among 300 patients presenting with nasal complaints. Patients aged 15 years and above were evaluated clinically. Diagnosis of deviated nasal septum was confirmed by anterior rhinoscopy and diagnostic nasal endoscopy. Symptoms, type and direction of septal deviation, severity, history of trauma, and associated findings such as inferior turbinate hypertrophy and chronic rhinosinusitis were recorded. Data were analyzed using descriptive statistics and chi-square test. A p-value less than 0.05 was considered statistically significant. **Results:** Among 300 patients evaluated, 168 (56.0%) were diagnosed with deviated nasal septum. Males constituted 109 (64.9%) cases and females constituted 59 (35.1%) cases. The mean age was 29.6 ± 11.2 years, and the 21–30 years age group accounted for 36.3% of DNS cases. Nasal obstruction was the most common presenting symptom, observed in 148 (88.1%) patients, followed by headache in 66 (39.3%) and epistaxis in 36 (21.4%). Right-sided DNS was most common. Moderate DNS was the most frequent severity grade. Inferior turbinate hypertrophy and chronic rhinosinusitis showed significant association with DNS. History of nasal trauma was present in 54 (32.1%) patients. **Conclusion:** Deviated nasal septum is a common condition among patients presenting with nasal complaints. Nasal obstruction is the predominant symptom, while headache, epistaxis, post-nasal drip, and rhinitis may also occur. Inferior turbinate hypertrophy and chronic rhinosinusitis are common associated findings. Anterior rhinoscopy and nasal endoscopy are useful diagnostic tools. Early diagnosis and septoplasty, where indicated, can improve nasal airflow and quality of life.

Keywords: Chronic Rhinosinusitis, Deviated Nasal Septum, ENT, Nasal Endoscopy, Nasal Obstruction, Septoplasty, Turbinate Hypertrophy.

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1 | INTRODUCTION

The nasal septum is a central anatomical structure composed of cartilage and bone that divides the nasal cavity into right and left nasal passages. It plays an important role in maintaining nasal airflow, supporting the external nasal framework, and contributing to normal nasal physiology. Deviation of the nasal septum is one of the most common structural abnormalities of the nose and may vary from mild asymptomatic deviation to severe deformity causing significant nasal obstruction. (1)

Deviated nasal septum may be congenital, developmental, or acquired. Developmental deviation may occur due to differential growth of septal cartilage and surrounding bony structures. Acquired deviation is commonly associated with trauma, including birth trauma, childhood injury, sports injury, road traffic accident, or unnoticed minor nasal injury. The severity of symptoms depends on the site, degree, and direction of septal deviation and associated nasal pathologies. (2)

Mild septal deviation is commonly seen in the general population and may not require treatment. However, significant deviation can impair nasal airflow and produce unilateral or bilateral nasal obstruction. Patients may also present with headache, facial pressure, recurrent rhinosinusitis, epistaxis, post-nasal drip, snoring, hyposmia, mouth breathing, and sleep disturbance. (3)

Deviated nasal septum may lead to compensatory hypertrophy of the inferior turbinate on the wider side of the nasal cavity. This compensatory change may further worsen nasal obstruction. Contact between septal spur and lateral nasal wall structures may contribute to headache or facial pain in selected patients. Septal deviation can also alter nasal aerodynamics and mucociliary clearance, thereby contributing to sinonasal symptoms. (4)

Chronic rhinosinusitis may be associated with septal deviation when structural narrowing compromises drainage pathways or contributes to mucostasis. Although DNS alone may not cause sinusitis in all patients, severe deviation, septal spur, and associated turbinate hypertrophy may influence nasal ventilation and sinus drainage. Therefore, assessment of

associated nasal pathologies is important during clinical evaluation. (5)

Clinical evaluation of deviated nasal septum includes detailed history, anterior rhinoscopy, posterior rhinoscopy where possible, and diagnostic nasal endoscopy. Nasal endoscopy provides better visualization of posterior septal deviation, septal spur, turbinate hypertrophy, middle meatus, nasal discharge, polyps, and other associated findings. It is especially useful in patients with chronic nasal obstruction or suspected rhinosinusitis. (6)

Septoplasty is the standard surgical procedure for correction of symptomatic septal deviation. It is usually indicated in patients with persistent nasal obstruction, recurrent sinusitis associated with structural obstruction, recurrent epistaxis due to septal spur, access requirement for endoscopic sinus surgery, or significant quality-of-life impairment. Proper patient selection is essential because not every septal deviation requires surgery.

The present study was conducted to evaluate the prevalence, clinical presentation, severity, direction, and associated findings of deviated nasal septum among patients attending an ENT outpatient department.

Materials and Methods

This was a prospective cross-sectional study conducted over a period of six months in the ENT outpatient department of a tertiary care hospital. A total of 300 patients with nasal complaints were selected through consecutive sampling.

Patients aged 15 years and above presenting with nasal obstruction or related nasal symptoms and willing to undergo nasal examination were included in the study. Patients with history of prior nasal surgery, active nasal polyposis, craniofacial syndromes, and incomplete clinical data were excluded.

Each patient underwent detailed clinical assessment. History was recorded regarding nasal obstruction, headache, facial pressure, epistaxis, post-nasal drip,

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PREVALENCE AND CLINICAL PROFILE OF DEVIATED NASAL SEPTUM AMONG PATIENTS ATTENDING AN ENT OUTPATIENT DEPARTMENT

sneezing, rhinitis, history of trauma, allergy, duration of symptoms, progression, and previous treatment. History of nasal injury was specifically asked because trauma is an important etiological factor in DNS.

Clinical examination included external nasal examination, anterior rhinoscopy, and diagnostic nasal endoscopy. Anterior rhinoscopy was used to assess anterior septal deviation, septal spur, mucosal congestion, turbinate hypertrophy, crusting, and discharge. Diagnostic nasal endoscopy was performed to confirm DNS and evaluate posterior septal deviation, associated turbinate hypertrophy, mucosal changes, and sinus drainage obstruction.

DNS was classified according to direction as right-sided, left-sided, or S-shaped deviation. Severity was categorized as mild, moderate, and severe based on clinical assessment of obstruction and extent of deviation. Associated findings such as inferior turbinate hypertrophy, chronic rhinosinusitis, and nasal crusting were recorded.

Data were recorded and analyzed using SPSS version 22. Descriptive statistics were used for frequency and percentage distribution. Chi-square test was used to assess association between DNS and clinical features or associated findings. A p-value less than 0.05 was considered statistically significant.

Institutional ethical approval was obtained before commencement of the study. Informed consent was obtained from all participants. Confidentiality of patient information was maintained.

Results

A total of 300 patients with nasal complaints were evaluated. Deviated nasal septum was diagnosed in 168 (56.0%) patients.

Among patients diagnosed with DNS, males constituted 109 (64.9%) cases, while females constituted 59 (35.1%) cases. The mean age was 29.6 ± 11.2 years. The 21–30 years age group formed the largest proportion, accounting for 36.3% of DNS cases. This indicates that DNS was commonly observed among young adults.

Nasal obstruction was the most common symptom, observed in 148 (88.1%) patients. Headache was present in 66 (39.3%) patients, while epistaxis was

reported by 36 (21.4%) patients. Post-nasal drip and sneezing or rhinitis were less common. Nasal obstruction was therefore the major clinical complaint associated with DNS.

Right-sided DNS was the most common type, observed in 92 (54.8%) patients, followed by left-sided DNS in 58 (34.5%) patients. S-shaped deviation was observed in 18 (10.7%) cases. Direction of deviation is clinically important because it influences the side of obstruction, compensatory turbinate hypertrophy, and surgical planning.

Moderate DNS was the most common severity grade, observed in 76 (45.2%) patients. Severe DNS was noted in 50 (29.8%) cases, while mild DNS was observed in 42 (25.0%). Patients with moderate or severe DNS are more likely to present with significant nasal obstruction and may require surgical correction if symptoms persist.

Inferior turbinate hypertrophy was the most common associated finding, observed in 104 (61.9%) patients and showed significant association with DNS. Chronic rhinosinusitis was present in 58 (34.5%) patients and also showed significant association. Nasal crusting was observed in 17 (10.1%) patients but was not statistically significant.

Congenital or developmental etiology was the most common, observed in 76 (45.2%) patients. History of nasal trauma was present in 54 (32.1%) patients. Allergic rhinitis was observed in 38 (22.6%) patients. The presence of trauma in nearly one-third of cases indicates the importance of early assessment after nasal injury.

Discussion

The present prospective cross-sectional study evaluated the prevalence, clinical presentation, severity, direction, and associated findings of deviated nasal septum among patients attending an ENT outpatient department. DNS was diagnosed in 168 out of 300 patients, giving a prevalence of 56.0% among symptomatic patients. Male predominance was observed, and the highest proportion belonged to the young adult age group. Nasal obstruction was the most common symptom, followed by headache and epistaxis. Inferior turbinate hypertrophy and chronic rhinosinusitis were significantly associated with DNS.

TABLE 1: Demographic Characteristics of DNS Patients

Variable	Frequency (%)
Total patients evaluated	300
DNS diagnosed	168 (56.0)
Male	109 (64.9)
Female	59 (35.1)
Mean age	29.6 ± 11.2 years
Age group 21–30 years	36.3% of DNS cases

TABLE 2: Symptoms Among DNS Patients

Symptom	Frequency (n=168)	Percentage
Nasal obstruction	148	88.1%
Headache	66	39.3%
Epistaxis	36	21.4%
Post-nasal drip	24	14.3%
Sneezing/rhinitis	19	11.3%

TABLE 3: Direction of Septal Deviation

Direction of DNS	Frequency (%)
Right-sided DNS	92 (54.8)
Left-sided DNS	58 (34.5)
S-shaped DNS	18 (10.7)

TABLE 4: Severity of DNS

Severity	Number (%)
Mild	42 (25.0)
Moderate	76 (45.2)
Severe	50 (29.8)

TABLE 5: Associated Findings

Associated Pathology	Number (%)	p-value
Inferior turbinate hypertrophy	104 (61.9)	<0.01
Chronic rhinosinusitis	58 (34.5)	0.02
Nasal crusting	17 (10.1)	

TABLE 6: Etiological Factors

Etiological Factor	Frequency (%)
History of nasal trauma	54 (32.1)
Allergic rhinitis	38 (22.6)
Congenital/developmental	76 (45.2)

PREVALENCE AND CLINICAL PROFILE OF DEVIATED NASAL SEPTUM AMONG PATIENTS ATTENDING AN ENT OUTPATIENT DEPARTMENT

Mladina et al. described different types of septal deformities and emphasized that septal deviation is a frequent anatomical abnormality with variable clinical significance. (7) In the present study, DNS was observed in more than half of symptomatic patients, supporting that septal deviation is commonly encountered in ENT practice among patients with nasal complaints.

Gray reported that deformities of the nasal septum are common and may be developmental or traumatic in origin. (8) In the present study, congenital or developmental factors accounted for 45.2% cases, while history of nasal trauma was present in 32.1%. This confirms that both developmental and acquired factors contribute to DNS.

Uygur et al. studied septal deviation and external nasal deformity and highlighted the relationship between nasal trauma and structural deformity. (9) In the present study, nearly one-third of patients reported a history of nasal trauma. This reinforces the need for early evaluation after nasal injury, especially when obstruction develops.

Jang et al. evaluated classification of nasal septal deviation and highlighted the importance of identifying the type and direction of deviation for clinical and surgical planning. (10) In the present study, right-sided DNS was more common than left-sided and S-shaped deviation. Documentation of direction is important before septoplasty.

Dinis and Haider reported that septoplasty can improve nasal obstruction and health-related quality of life in symptomatic patients. (11) In the present study, nasal obstruction was present in 88.1% of DNS patients, indicating that airflow compromise was the main clinical reason for presentation.

Stewart et al. developed the Nasal Obstruction Symptom Evaluation scale and emphasized that nasal obstruction can significantly affect patient-reported quality of life. (12) The high frequency of nasal obstruction in the present study shows that symptomatic DNS can have a meaningful impact on daily comfort, sleep, and breathing.

Gandomi et al. reported improvement in quality of life after septoplasty in patients with nasal obstruction due to septal deviation. (13) In the present study,

moderate and severe DNS together accounted for 75.0% of DNS cases, suggesting that many symptomatic patients may benefit from surgical assessment if conservative measures fail.

Karatzanis et al. studied septoplasty outcomes and reported significant improvement in nasal breathing after surgical correction of symptomatic septal deviation. (14) The present study supports the clinical relevance of identifying moderate and severe DNS because severity assessment helps determine the need for intervention.

Headache was reported by 39.3% of DNS patients in the present study. Headache in DNS may be related to mucosal contact points, altered airflow, sinus drainage obstruction, or associated rhinosinusitis. However, headache is multifactorial and should be evaluated carefully before attributing it solely to septal deviation.

Epistaxis was present in 21.4% patients. Septal deviation may predispose to localized mucosal drying, crusting, and repeated trauma over the convex side or septal spur. Patients with recurrent epistaxis should undergo anterior rhinoscopy and endoscopic assessment to identify local causes.

Inferior turbinate hypertrophy was the most common associated finding and showed significant association with DNS. It is often compensatory and occurs on the wider side of the nasal cavity. Turbinate hypertrophy may worsen obstruction even after correction of septal deviation if not assessed properly.

Chronic rhinosinusitis was observed in 34.5% patients and was significantly associated with DNS. Severe septal deviation or spur may compromise sinus drainage pathways and contribute to mucostasis. Nasal endoscopy is useful in identifying middle meatal disease, discharge, and associated mucosal changes.

Nasal crusting was seen in 10.1% patients but was not statistically significant. Crusting may occur due to altered airflow, mucosal dryness, local irritation, or infection. Although less common, it can contribute to discomfort and epistaxis.

The predominance of young adults in the present study may be related to higher physical activity, trauma exposure, occupational mobility, and greater

awareness of nasal obstruction. Young adults may seek treatment because nasal obstruction affects sleep, exercise, work, and quality of life.

The present study highlights the value of anterior rhinoscopy and diagnostic nasal endoscopy in DNS evaluation. Anterior rhinoscopy is simple and useful for anterior deviations, while nasal endoscopy provides better visualization of posterior deviations, septal spurs, turbinate hypertrophy, and associated sinonasal disease.

The present study has certain limitations. It was hospital-based and included symptomatic patients, so it may not reflect the prevalence of DNS in the general population. Computed tomography was not performed in all patients. Objective nasal airflow assessment and quality-of-life scoring were not included. Post-septoplasty outcomes were not assessed. Future studies incorporating endoscopy, imaging, rhinomanometry, and postoperative follow-up may provide stronger evidence.

Conclusion

Deviated nasal septum is a common condition among patients presenting with nasal complaints. In the present study, DNS was diagnosed in 56.0% of symptomatic patients. Male predominance was observed, and young adults formed the largest affected group. Nasal obstruction was the predominant symptom, followed by headache and epistaxis. Right-sided deviation and moderate severity were most common. Inferior turbinate hypertrophy and chronic rhinosinusitis showed significant association with DNS. History of trauma was present in nearly one-third of cases. Anterior rhinoscopy and diagnostic nasal endoscopy are essential tools for diagnosis and assessment of associated findings. Septoplasty should be considered in symptomatic and structurally significant deviations to improve nasal airflow and quality of life.

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PREVALENCE AND CLINICAL PROFILE OF DEVIATED NASAL SEPTUM AMONG PATIENTS ATTENDING AN ENT OUTPATIENT DEPARTMENT

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