

Section

Otolaryngology

Original

Article

## A Prospective Study on Association Between Deviated Nasal Septum and Sinusitis in a Tertiary Care Teaching Hospital

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### ABSTRACT

**Background:** Chronic sinusitis (CS) is an extremely prevalent disorder. It affects up to two percent of the world population. It has a significant impact on the quality of life of people [2]. Basically, the word "sinusitis" refers to a group of disorders characterized by inflammation of mucosa of nose and paranasal sinuses. Deviated Nasal septum is one of the most common disorder that presents up to 62% of the population. Its role in the pathogenesis of chronic sinusitis remains uncertain.

**Methods:** Two groups were included in this study. Each group had 30 cases with Midline nasal septum & Deviated nasal septum. This study conducted in the Department. of ENT, Saraswathi Institute of Medical Sciences, Hapur. The duration of the study was over a period of six month.

**Results:** We were studied two groups, 30 cases involved in group I of Midline nasal septum and in group II 30 cases involved with Deviated nasal septum. In this study we showed symptom & sign of rhinoscopy. In the group I, 14 cases had congested nasal mucosa followed by 10 cases of nasal discharge, 4 cases of inferior turbinate hypertrophy & 2 cases of Middle turbinate hypertrophy.

**Conclusions:** that management of chronic maxillary sinusitis should include simultaneous treatment of any anatomical variation. For treating chronic sinusitis along with deviated nasal septum, nowadays treatment of choice is Septoplasty along with Functional Endoscopic Sinus Surgery (FESS). FESS technique is used for managing sinus infection and ostial obstruction.

**Keywords:** Deviated Nasal septum, Chronic sinusitis, Functional Endoscopic Sinus Surgery

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### INTRODUCTION

Sinusitis is one of the most significant diseases of the nose and paranasal sinuses. It is estimate that about 50 million individuals are affected by sinusitis. It is the fifth most common diagnosis for which antibiotics are prescribed.<sup>[1]</sup> The most common finding in Ent clinic is deviated nasal septum. It is observed in up to 62% of the population.<sup>[2]</sup> Previous studies showed that there is no definite role of deviated nasal septum in the pathogenesis of sinusitis. The role of sinusitis in patients with DNS and without DNS was not found significant.<sup>[3,4]</sup> though some contrary results were also found. It has been reported that deviated nasal septum can be related with significant sinonasal disease, particularly a C-shaped DNS which showed statistically significant correlation with sinus disease.<sup>[5-8]</sup>

Chronic sinusitis (CS) is an extremely prevalent disorder. It affects up to two percent of the world population. It has a significant impact on the quality of life of people.<sup>[9]</sup> Basically, the word "sinusitis" refers to a group of disorders characterized by inflammation of mucosa of nose and paranasal sinuses. Deviated Nasal septum is one of the most common disorder that presents up to 62% of the population. Its role in the pathogenesis of chronic sinusitis remains uncertain.<sup>[10]</sup> In 5th century B.C, Hippocrates stated that "In a person having a painful spot in head, with intense headaches, pus or fluid running from the nose removes the disease". It can be referred to as describing sinusitis.<sup>[11]</sup> Areas of mucosal contacts are most likely to occur in the

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narrow mucosal lined channels of the middle meatus and ethmoid air cell system anatomically.<sup>[12]</sup>

## METHODS

**Study Population:** -Two groups were included in this study. Each group had 30 cases with Midline nasal septum & Deviated nasal septum.

**Study Area:** -This study conducted in the Department of ENT in the Department. of ENT, Saraswathi Institute of Medical Sciences, Hapur

**Study duration:** -The duration of the study was over a period of six month.

**Data collection:** - Chronic sinusitis in our patients was defined as inflammation of the nasal and paranasal mucosa, with persistent mucoid or mucopurulent discharge for longer than 3 months that was resistant to repeated antimicrobial therapy. Patients with allergic rhinitis, polyps, or abnormal mass in nasal cavity and grossly deformed nose due to pathological condition were excluded from the study. After examining ears, throat, mouth, larynx, a detailed examination of the nose and paranasal sinuses was done. Maxillary sinuses are most commonly involved in chronic sinusitis as drainage is against gravity because of higher position of its Ostia. Therefore, in this study, only maxillary sinus was taken into account.

We observed following parameters:

### I. Clinical examination:

1. A detailed examination of nose and paranasal sinuses was done through various methods as:

- Rhinoscopy
- Patency test
- Antral puncture (proof puncture) - Only in selected cases with the help of antral trocar and cannula
- Nasal diagnostic endoscopy - Wherever necessary.

2. X-ray of nasal cavity and paranasal sinuses (Occipitontental [Water's] view) was done in all patients.

3. Computed tomography CT-scan - Was done in some Patients, wherever required.

The results were compared between the two groups.

### II. Histopathological examination:

Mucosal biopsies from maxillary sinus were taken from patients who underwent septal surgery to yield diagnostic information to guide post-operative treatment for optimal long-term results. These were fixed in 10% formalin and further processed for paraffin sections and were stained by Hematoxylin and Eosin method.

**Statically analysis:** - Data were analyzed by using Microsoft excel.

## RESULTS

We were studied two groups, 30 cases involved in group I of Midline nasal septum and in group II 30 cases involved with Deviated nasal septum. In this study we showed symptom & sign of rhinoscopy. In the group I, 14 cases had congested nasal mucosa followed by 10 cases of nasal discharge, 4 cases of inferior turbinate hypertrophy & 2 cases of Middle turbinate hypertrophy. While in group II, 10 cases had congested nasal mucosa followed by 9 cases of nasal discharge, 9 cases of inferior turbinate hypertrophy & 2 cases of Middle turbinate hypertrophy. In our study, we were showing prevalence of patency test, endoscopy, X-ray & CT-scan in table number 3,4,5,6 respectively.

**Table 1: Distribution of cases according to group**

Groups		Number of cases
Group I	Midline nasal septum	30
Group II	Deviated nasal septum	30
Total		60

**Table 2: Prevalence of symptoms and signs by rhinoscopy**

Sign & symptoms	Group I	Group II
Inferior turbinate hypertrophy	4	9
Middle turbinate hypertrophy	2	2
Nasal discharge	10	9
Congested nasal mucosa	14	10
Total	30	30

**Table 3: Prevalence of symptoms and signs by rhinoscopy**

Side	Group I	Group II
Right side	10	14
Left side	14	12
Booth side	6	4
Total	30	30

**Table 4: Prevalence of findings by endoscopy**

Endoscopy finding	Group I	Group II
Inferior turbinate hypertrophy	4	10
Middle turbinate hypertrophy	3	4
Spur	0	2
Concha bullosa	5	1
Paradoxical middle turbinate	3	2
Accessory ostia	5	1
Mucoid discharge	6	4
Mucopurulent discharge	4	6
Total	30	30

**Table 5: Prevalence of cases by X-ray**

X ray	Group I	Group II
Mucosal thickening	12	30
Inferior turbinate hypertrophy	4	24
Air-fluid level	0	8

**Table 6: Prevalence of cases by CT-scan**

CT scan	Group I	Group II
Mucosal thickening	2	14
Inferior turbinate hypertrophy	2	8
Air-fluid level	2	6

## DISCUSSION

The present study observed that nasal septal deviation is one of the prime causes of chronic sinusitis. The incidence of all findings of clinical study in patients related with sinus disease

was high in Group II in comparison to Group I. Some cases of chronic sinusitis were confirmed with other pathological abnormalities in ostio meatal area in patients with midline septum. CT-scan was performed in patients of both groups (Group I and II) to confirm and differentiate the pathogenesis of chronic sinusitis. Histological findings from mucosal biopsies correlated well with clinical findings. There were noticeable changes in mucosa of maxillary sinus like acute as well as chronic inflammation. In a study by Inagi<sup>6</sup> revealed the histological changes in mucous membrane of human nasal septum in relation to the deviation of septum. Schall<sup>[13]</sup> did a detailed study on the histology of mucosa of maxillary sinuses in humans. Collet *et al.*<sup>[14]</sup> assessed the role of septal deviation in pathogenesis of chronic sinusitis in adults. Arslan *et al.*<sup>[15]</sup> did CT study and observed most common anatomical variant was septal deviation in 36% cases. Both anatomically and physiologically, the nasal septum divides nasal cavity into the left and right halves. It is a well-known fact that some amount of deviation of nasal septum is common and having a perfectly straight septum is a rarity.<sup>[16]</sup> Several reasons have been ascribed to the occurrence of deviated nasal septum such as racial factors, birth molding of septum during parturition trauma and developmental deformities of septum.<sup>[17]</sup> Nasal obstruction and symptoms of rhinosinusitis can be caused by deviated nasal septum. Usually paranasal air sinuses drain the mucous and fluid into the nose through various openings. These openings can be blocked by severe obstruction and leads to chronic sinusitis. Tocik<sup>[18]</sup> studied the relationship between deviation of the nasal septum and diseases of the paranasal sinuses. According to Aust *et al.*<sup>[19]</sup> if ostium size is <2.5 mm, it predisposes to the development of disease. Smith and Cable<sup>[20]</sup> evaluated maxillary antral mucosa in chronic sinusitis patients. In this study, detailed clinical and radiological examination of patients was done along with histo-pathological examination of maxillary sinus mucosa. Results showed that all cases of chronic maxillary sinusitis were related with anatomical variations and most common was deviated nasal septum. Hence, it is suggested that the treatment of chronic maxillary sinusitis should include simultaneous observation of any anatomical variation. Nowadays, the treating of choice for chronic sinusitis along with deviated nasal septum is Septoplasty along with Functional Endoscopic Sinus Surgery (FESS). This technique is widely used for managing sinus infection as well as ostial obstruction.

## CONCLUSION

Conclusion of present study, detailed clinical and radiological

examination of patients was done along with histo-pathological examination of maxillary sinus mucosa, which proves that all cases of chronic maxillary sinusitis were associated with anatomical variations and most common was deviated nasal septum. Therefore, it is recommended that management of chronic maxillary sinusitis should include simultaneous treatment of any anatomical variation. For treating chronic sinusitis along with deviated nasal septum, nowadays treatment of choice is Septoplasty along with Functional Endoscopic Sinus Surgery (FESS). FESS technique is used for managing sinus infection and ostial obstruction.

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