

ORIGINAL ARTICLE

Frequency of Anatomical Variants of Paranasal Sinuses (PNS) on Computed Tomography (CT)

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ABSTRACT

Background: The para nasal sinuses be collection of air filled spaces adjoining the nasal cavity. Para nasal sinuses build up as of the primitive choana at 25–28 weeks of gestation. Three projections ascend from the lateral wall of the nose and work as the commencement of the growth of the para nasal sinuses. The Frequency of Anatomical Variants of Para nasal Sinuses (PNS) may be illustrated on Computed Tomography (CT) by using double slice CT machine.

Aim: To reveal the anatomy of the para nasal sinuses as shown on the CT along with point out the variants lead to chronic sinusitis and escort obstacles in sino nasal operations.

Methodology: This study was conducted in Ibae-e Sieena Hospital and MMDC Multan during September 2019 to December 2019. In 50 patients without para nasal sinus diseases symptoms, head computed tomography studies were carried out after having consent from them and IRB. Para nasal sinuses coronal sections were taken. The CT studies were performed by using Dual Source multi slice CT Scanner.

Results: 50 participants included in the study, 25 men with 25 women. Out of them, 22 having anatomical variants were noticed. Most common anatomical variants found were pneumatization of center nasal turbinates (30%) then agger nasi cells 25%, Haller's cells 20%, along with septal deviation 13% and sphenoid sinus septation (12%).

Conclusion: This study shows that nasal cavity and para nasal sinuses anatomical variations are common. For the radiologic analysis of the para nasal sinuses, as of diagnosis of the pre and post -surgical evaluation and sino-nasal lesions, CT is the gold standard procedure. It can outline and explain the anatomical variants in para nasal sinuses. CT not only detect the lesion to vital constitutions which lined the para nasal sinuses but also repeated lesions that extra mural cells. CT of the para nasal sinuses has vital importance and should be passably analyze before FESS.

Keywords: Para nasal sinuses, Computed tomography, Nasal turbinate, Ostiomeatal complex

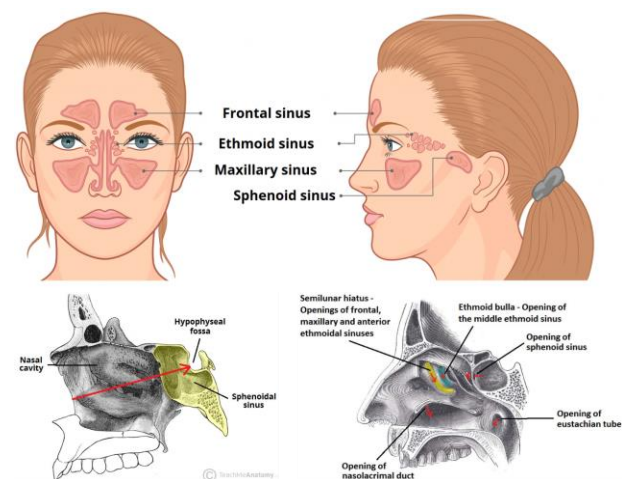
INTRODUCTION

The para nasal sinuses be collection of air filled spaces adjoining the nasal cavity. Para nasal sinuses build up as of the primitive choana at 25–28 weeks of gestation^{1,2}. Three projections ascend from the lateral wall of the nose and work as the commencement of the growth of the para nasal sinuses. The Frequency of Anatomical Variants of Para nasal Sinuses (PNS) may be illustrated on Computed Tomography (CT) by using double slice CT machine. The MS and ES are aerated at birth, while the sphenoid sinuses and frontal sinuses are pneumatized at about the 2nd and 6th year of life respectively.^{3,4,5} The sinuses reach the adult size at adolescent age.^{6,7,8}

Standard paranasal sinus radiograph can readily demonstrate the MS or FS diseases but incompletely outlines ES due to overlapping of structures.^{9,10,11}

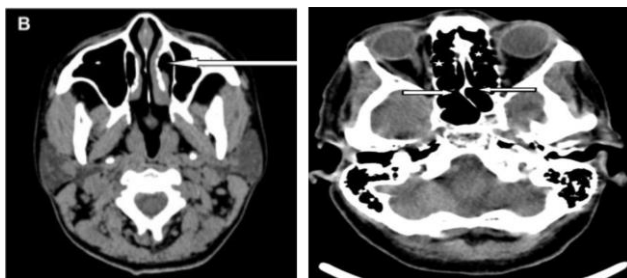
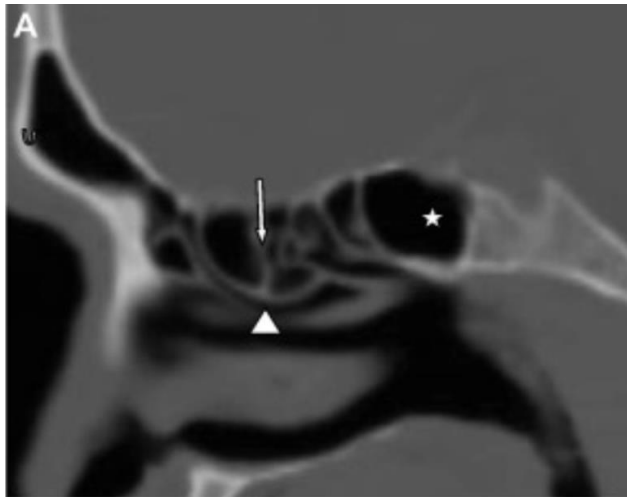
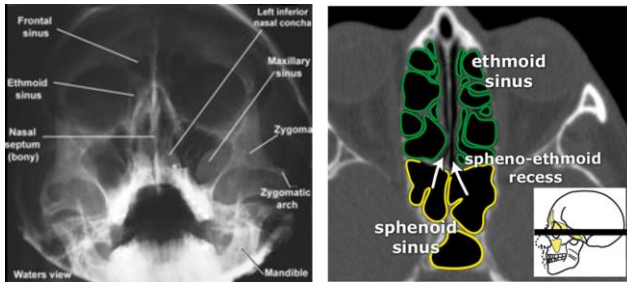
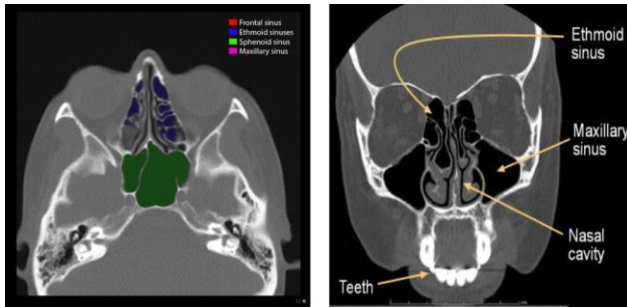
The growth of the para nasal sinuses particularly the ethmoid labyrinth is related to anatomical disparities^{12,13,14}. This study was conducted to reveal the anatomy of

the para nasal sinuses as shown on the CT along with point out the variants lead to chronic sinusitis and escort obstacles in sino nasal operations.



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METHODOLOGY

This study was conducted in Ibae-e Sieena Hospital and MMDC Multan during September 2019 to December 2019. In 50 patients without para nasal sinus diseases symptoms, head computed tomography studies were carried out after having consent from them and IRB. Para nasal sinuses coronal sections were taken. The CT studies were performed by using Dual Source multi slice CT Scanner.

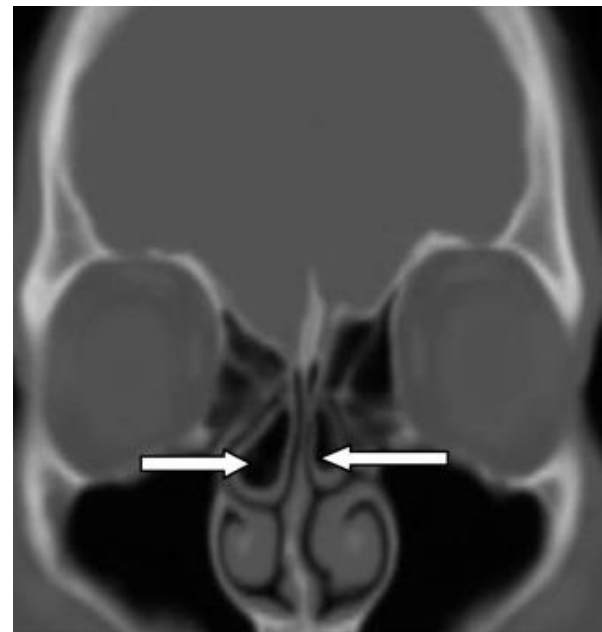
RESULTS

Fifty participants included in the study, 25 men with 25 women. Out of them, 22 having anatomical variants were noticed. Most common anatomical variants found were pneumatization of center nasal turbinates (30%) then agger nasi cells 25%, Haller’s cells 20%, along with septal deviation 13% and sphenoid sinus septation (12%).

DISCUSSION

Maxillary sinus variants: Maxillary sinus irregularity in size and shape is common. MS pneumatization may be extended to the palatine recess and alveolar recess. Septations of the maxillary sinuses may also be observed. Accessory ostiums may be present that is in general solitary, and also many. AMO be there inherited. It may be due to sino nasal ailments.^{15,16,17,18,}

Nasal turbinates variants: Middle turbinate for pneumatization is mostly while the ST and the IT are fewer. Their occurrence were here found as 30% Asruddin et al.⁷ Mamitha et al.⁸ Zinreich et al.² and Weinberger et al.⁹ reported occurrence of 28%, 26%, and 14% respectively. High occurrence was stated by Aramani et al.¹⁰ Perez-Pinas et al.¹¹ and Scribano et al.¹² who got 53.7%, 73% and 67% respectively.



Arrow shows the bilateral middle turbinate pneumatization

Irregular bend of the MT to the midline may occur that’s identified as the paradoxical middle turbinates. Extra or lesser middle turbinate septation may also occur but not found here. Inferior turbinates anatomical variations are rare.

CONCLUSION

This study shows that nasal cavity and para nasal sinuses anatomical variations are common. For the radiologic analysis of the para nasal sinuses, as of diagnosis of the

pre and post -surgical evaluation and sino-nasal lesions, CT is the gold standard procedure. It can outline and explain the anatomical variants in para nasal sinuses. CT not only detect the lesion to vital constitutions which lined the para nasal sinuses but also repeated lesions that extra mural cells. CT of the para nasal sinuses has vital importance and should be passably analyze before FESS.

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