

## Mature Ethmoid Sinus Osteoma - Incidental finding in CT

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### ABSTRACT

Paranasal osteomas are not uncommon to be found as an incidental finding in routine radiological examinations. Many a times, this entity is found while undergoing computerized tomography (CT) for some other reason. Sometimes, patient comes with vague complaints not related to this finding but indirectly is responsible for few of these symptoms. We present a case of 18-years old male who presented with the complaint of vague headache of about one year duration. He underwent CT examination and was found to be having slightly uncommon mature type of ethmoid osteomas in addition to pan sinusitis.

**Keywords:** CT, Headache, Mature ethmoid osteomas, MRI, Pan-sinusitis

**P**aranasal osteomas are discovered as incidental finding but can cause various complications because of their mass effect or obstruction to any of the sinus. These are detected in 1% of plain radiography and 3% of all CT examinations undergoing for head and sinuses. The incidence is more common in males as compared to females and common in the age group of second to fifth decade.

### CASE REPORT

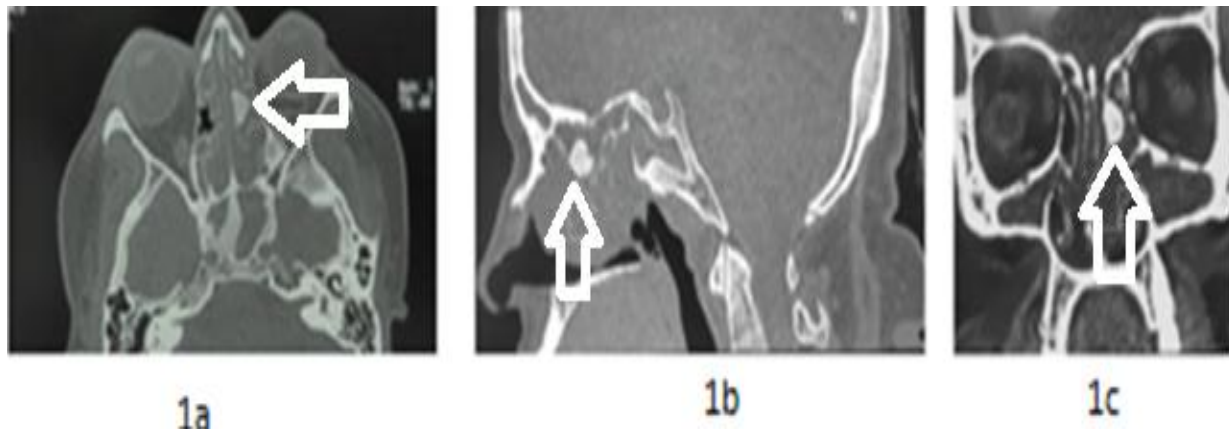
An 18-years old male reported to Otorhinolaryngology department with complaint of vague headache of one year duration. There was no history of any trauma, fever or any surgical intervention for the head and neck region. On examination no abnormality was detected and systemic examination was unremarkable.

All the biochemical parameters were normal. Plain skiagram for paranasal sinuses has shown pan sinusitis. Patient underwent Non Contrast Computerized Tomography (NCCT) for the paranasal sinuses.

It revealed opacification of all the sinuses leading to pansinusitis. There was also a hyperdense lesion in the anterior left ethmoid air cell region in addition to other findings. The lesion was of bone density in periphery comparing to slightly hypodense region in the centre (**Fig. 1a, b and c**). Magnified view of the lesion clearly depicted the central hypodense region (**Fig. 2**). The patient was diagnosed as mature ethmoid osteomas as per CT findings. Patient had been advised for surgical procedure for the sinusitis as well as for the ethmoid osteomas.

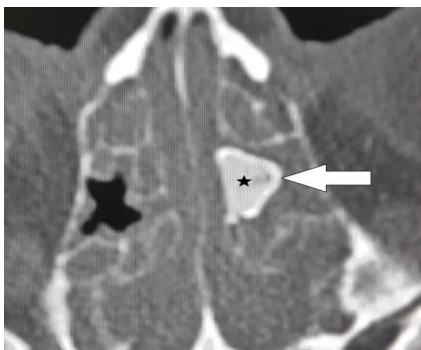
### DISCUSSION

Paranasal osteomas are slow growing benign bone tumors with varying amount of osteoid formation. Small tumors do not require surgery but imaging follow up is required for their behavior [1]. The tumor more than 3 cm is considered as giant osteoma. These are found as an incidental finding in asymptomatic patients but sometimes can present with complications like cerebrospinal rhinorrhea [2].



**Figure 1 - NCCT Paranasal sinuses (a) Axial section shows well defined hyperdense lesion in left ethmoidal region (white arrow). There is also opacification of ethmoidal air cells surrounding the lesion. (b) Left parasagittal section confirms the ethmoidal location of the hyperdense lesion (white arrow). (c) Reformatted coronal section shows the lesion located to the medial aspect of the left orbit (white vertical arrow)**

The symptomatic patients present with complaints of headache, sinusitis, nasal obstruction, pain and facial asymmetry. On histological examination, this could be formed of either compact or cancellous bone. Ethmoid osteomas are slightly less common as compared to other regions. The incidence is as follows: frontal sinuses (80%), ethmoid air cells (15%), maxillary sinuses (5%), and rarely sphenoid sinuses.



**Figure 2 - NCCT head axial section magnified view. Bone density lesion is seen in left ethmoid (white arrow) with central nidus as hypodense region in the background of opaque sinus (black star)**

The exact etiology of this entity is not known. Koivunen et al has put forward three possible theories of their formation as that of embryonic, traumatic and infective. Majority of these are found as incidental findings in CT examinations. Empty sella syndrome has also been noticed in sphenoid osteomas [3]. The size is not the

yardstick to compare with the symptomatology of the patient. The symptoms are due to the mass effect, blockage of the sinus and prostaglandin E-2 mediated mechanism. These can produce symptoms of headache, diplopia and proptosis because of the extension into the orbit [4].

CT is the modality of choice for the investigation as this describes the detailed anatomy and the extension of the tumor. The finding is seen as a radio opaque region with a nidus as a hypodense area. There can be three types of osteomas viz ivory, mature and mixed type. Ivory type has got total bone density and is seen as totally hyperdense in CT and hypointense in MRI sequences. The second type to which our present case belongs is the mature variety. This type has got central marrow surrounded by bony contents. MRI is helpful in further differentiating while showing the marrow signal in all the sequences.

Small ethmoid osteomas can easily be operated by endoscopic transnasal resection but the large size tumors require both endoscopic as well as external surgical approach [5, 6]. Large ethmoid osteomas are removed surgically by rhinotomy, midfacial degloving, osteoplastic flap and frontoethmoidectomy [7]. The opacity of the sinus is not considered as a hindrance for the removal if the overlying mucosa is intact.

## CONCLUSION

Whenever the paranasal osteomas are found as incidental findings in CT examinations then the patient

symptomatology must be verified related to this entity. The management approach is decided on case to case basis and they must be kept under follow up to monitor its behavior and the development of symptoms.

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