

## Case report

### **Giant ethmoidal sinus osteoma with intraorbital extension: a case report**

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#### Abstract

Osteoma is the most frequent benign tumor of paranasal sinuses. Usually osteomas are asymptomatic and discovered incidentally during radiological imaging for other reasons. A giant osteoma with intraorbital extension is rare. Plain radiograph may be useful; however CT scan is the best modality of investigation for diagnosing and treatment planning. In asymptomatic osteomas, serial follow-up can be done. Surgery is performed in the presence of symptoms and signs. We report a case of 60 years old woman with a large osteoma of right ethmoid sinus extending into the ipsilateral orbital cavity.

**Key words:** large osteoma; ethmoid sinus; intraorbital extension; computed tomography large osteoma; ethmoid sinus; intraorbital extension; computed tomography

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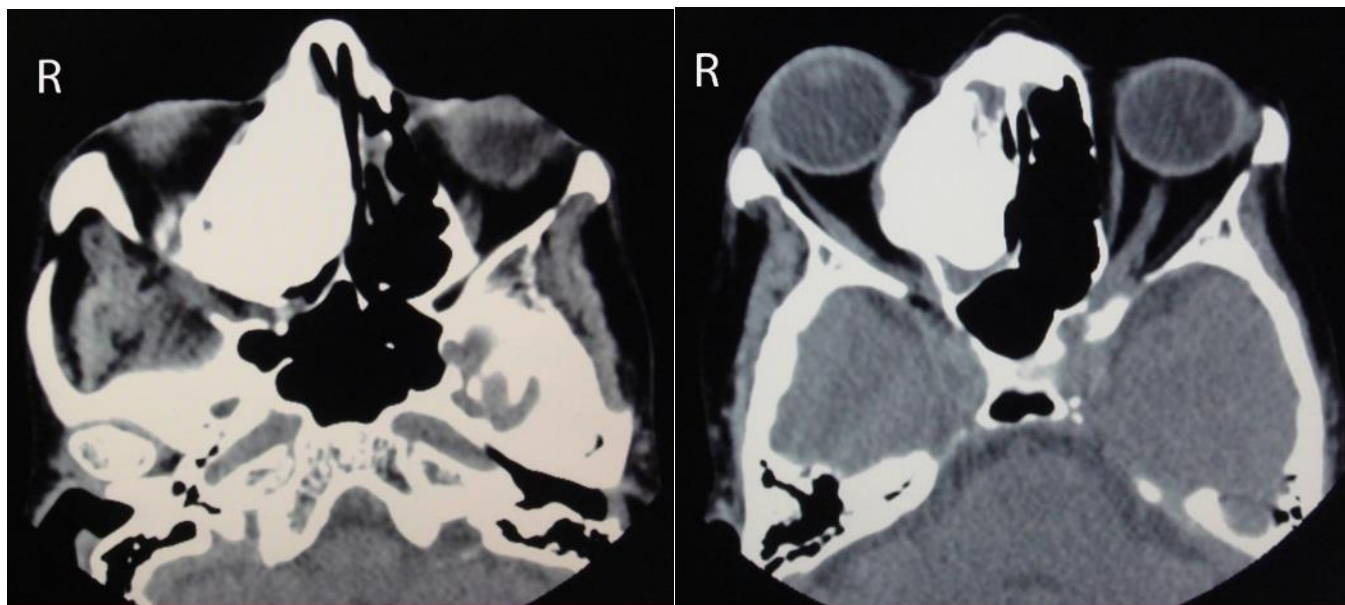
#### Introduction

Osteomas are the common benign tumor of paranasal sinuses frequently arises in the paranasal sinuses<sup>1,2,3,4</sup>. Most commonly found in the frontal and ethmoid sinuses. Osteoma invading the orbit is rarely seen resulting in complications with ocular symptoms. There is a male preponderance, with male to female ratio of 1.5-3:1. Age range varies from 8 to 77 years with highest incidence in 4th to the 7th decades of life<sup>3,4</sup>. We report rare case of a 60 years old female with a giant osteoma of right ethmoid sinus extending into the ipsilateral orbital cavity.

#### Case report

A 60 year old woman presented with intermittent nasal obstruction for 9 months. There was no history of rhinorrhea and epistaxis. Physical examination showed facial asymmetry with lateral displacement of the right eye. Her visual acuity and visual field was normal. Her vital parameters were normal.

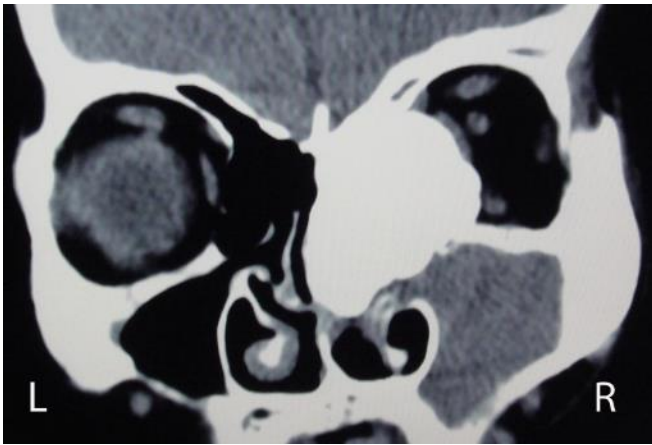
Multidetector computed tomography (CT) of the paranasal sinuses was done in axial section (Figure 1a and 1b) with coronal reconstruction (Figure 1c, 2 and 3). CT scan revealed a large, well defined, dense lesion of size 4x3.5x3 cm with soft tissue attenuation areas



**Figure 1a and 1b:** Axial CT image (soft tissue window) showing a large well-defined, dense lesion partially occupying the right nasal cavity and ethmoid sinus and extending into the right orbit.

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**Figure 1c:** Coronal reformatted CT image (soft tissue window) showing large dense lesion partially occupying the right nasal cavity and ethmoid sinus and extending into the right orbit by displacing the lamina papyracea, medial rectus muscle and globe towards left side.

within, partially occupying the right nasal cavity and right ethmoid sinus and obstructing the right osteomeatal complex with resultant right maxillary sinusitis. The mass was extending into the right orbit by displacing the lamina papyracea, medial rectus muscle and globe towards left side. The lesion was also obstructing the right fronto-ethmoid recess resulting in frontal sinusitis. Surgical removal of the lesion was performed and histopathological investigation confirmed the diagnosis of osteoma. Post-operative period was uneventful. There was no sign of recurrence on follow-up.

### Discussion

Osteomas are the mesenchymal tumors commonly seen in the nose and paranasal sinuses (16). The most frequent sites of origin are the frontal sinus (71.8%)<sup>4,5</sup> followed by ethmoidal (16.9%), maxillary (6.3%) and sphenoidal (4.9%) sinuses. Orbital invasion of osteoma



**Figure 2:** Coronal reformatted CT image (bone window) showing large dense lesion with soft tissue attenuation within, partially occupying the right nasal cavity and ethmoid sinus and extending into the right orbit with no obvious bone destruction.

is rarely seen with incidence of about 0.9 to 5.1% of all orbital tumors<sup>6,7</sup>.

Majority of the osteomas are asymptomatic at early stage and is found incidentally on radiological examinations for other reasons. Symptoms and signs are related to the tumor size, location and rate of growth<sup>8</sup>. Headache, sinusitis, nasal obstruction, anosmia, rhinorrhea, facial pain or facial asymmetry are the most common symptoms<sup>9,10</sup>. Intraorbital extension may produce proptosis, orbital pain, decreased visual acuity, chemosis, diplopia or epiphoria. They may also extend intracranially causing complications.

Osteomas are slow growing, benign, osteogenic tumours made up of mature bone. Several theories have been described regarding the pathogenesis of these tumors<sup>11,12</sup>. Embryological theory suggests that these tumors arise from osseous proliferation due to the apposition of membranous and enchondral tissue forming particularly close to the bone sutures. Genetic factors includes Gardner's syndrome which is characterized by intestinal polyps and multiple osteomas. According to another theory, it develops due to skeletal trauma in the past giving rise to a proliferative rearrangement of the bone, particularly in males and during puberty. Some researchers suggest bony metaplasia is secondary to a chronic infectious and inflammatory state.

The differential diagnosis of osteoma includes periosteal osteosarcoma, periosteal osteoblastoma, osteochondroma, ossified periosteal lipoma and myositis ossificans<sup>3</sup>. Osteoma typically appears as a dense, sclerotic, homogenous mass with well defined margins. Osteoma is non-enhancing on CT and does not show any cortical invasion. However, the malignant



**Figure 3:** Raysum reformatted image showing a large radiodense lesion in right nasal cavity and ethmoid sinus extending into right orbit.

lesion usually appears as variably enhancing heterogeneous lesion with irregular margins along with bone destruction.

Plain radiograph may be useful; however CT scan is the best modality of investigation for diagnosing and treatment planning. In asymptomatic osteomas, serial follow-up can be done. Surgery is performed in the presence of symptoms and signs and rarely for aesthetic purposes. Recently, endoscopic excision is rapidly increasing, offering aesthetic advantages and reducing

the morbidity rate<sup>13</sup>. Post-operative CT scanning is done for confirming the complete resection and recurrence<sup>14</sup>

### **Conclusion**

Osteomas are common benign lesions of the paranasal sinuses; however a large ethmoidal sinus osteoma with intraorbital extension is rare. Most osteomas are asymptomatic and are incidentally found imaging. Signs and symptoms are related to the tumor size, location and rate of growth. CT scan is the best modality of investigation for diagnosis and treatment planning.

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