



RESEARCH ARTICLE

A HUGE OSTEOMA OF PARANASAL SINUS-CASE REPORT

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ABSTRACT

Osteoma of paranasal sinuses is a rare benign tumour arising from the proliferation of compact or cancellous bone. They are more common in frontoethmoidal region where as osteomas of sphenoid or maxillary region are rare. These tumors may be incidentally detected on radiographs, or may grow to produce symptoms if extends into orbit or skull base. We present here a rare case of large osteoma of the maxillary antrum and ethmoidal sinus in a 60-year-old man which was removed using combined endoscopic and external approach.

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INTRODUCTION

Osteoma is a slow growing, benign, fibro-osseous tumour commonly seen in the cranio-facial region, especially in the nasal and paranasal sinuses (Savic, 1990). They are commonly detected incidentally in 1 % of sinus radiographs and 3 % of Computerised tomographic scans of paranasal sinuses. It is situated in fronto-ethmoidal region in 95% of cases, involving the frontal sinus in 60–70%, the ethmoid sinus in 20–30% and the maxillary sinus in 5 % of cases (Huang *et al.*, 2001; Brunori *et al.*, 1995). It is rarely found in the nasal cavities, with the exception of the sphenoid sinus. These are frequently seen in between the fifth and sixth decades of life. There is a slight male predominance, with ratios varying from 1.3:1 to 3:1 (Ataman, 1993). Paranasal sinus osteoma may sometimes be a component of Gardner's syndrome, an autosomal dominant disease, characterized by intestinal polyposis and bone and skin lesions (Hehar, 1997). Nasal and paranasal osteomas are usually asymptomatic slow growing tumours which can produce swelling and facial asymmetry. Orbit and anterior skull base can rarely be involved in fronto-ethmoidal type.

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Maxillary sinus osteomas are usually asymptomatic which are diagnosed accidentally and require no treatment (Mansour *et al.*, 1999). They are detected with routine radiographic examination. Computed tomography (CT) scan is best for delineating the extent of the osteoma. Other fibroosseous lesions of the paranasal sinuses like fibrous osteoma, fibrous dysplasia, and ossifying fibroma should be considered in differential diagnosis (Margo, 1986). Surgical treatment is reserved for patients with infection or complication associated with compression to the neighbouring structures. Surgical approach may vary from external approach to endoscopic approach (Atallah, 1981).

CASE REPORT

A 60-year-old male patient presented with purulent rhinorrhoea and nasal obstruction since 1 year. He also complained of double vision, watering of left eye, facial and per orbital pain, slowly progressive upward and lateral displacement of the left eye over a period of 6 months. He also had diffuse swelling of left side of the nasal bridge and medial canthus since 2 months. (Fig.1) There was no relevant medical history but patient gave history of trauma on left side of face 6 years back because of road traffic accident. Examination of eye disclosed a visual acuity of 6/6 in the right eye and 6/5 in the left eye. There was non-axial proptosis, with upward and forward displacement of the left eye.

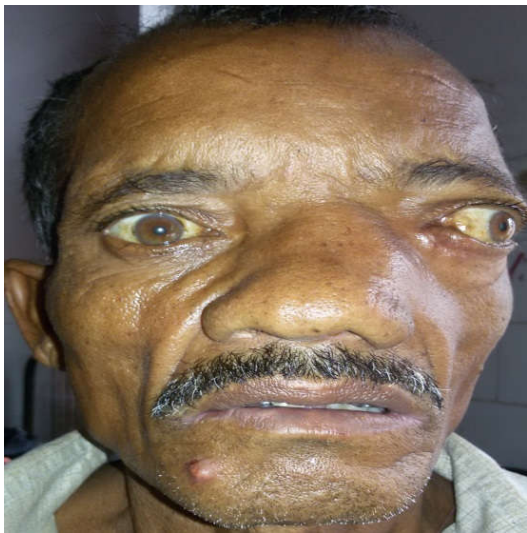


Fig. 1. Shows nasal mass causing widening of left side of nasal bridge and proptosis

The extra ocular movement was restricted in the downward and left lateral gaze. Pupils were of normal size and normally reacting to light. Anterior rhinoscopy revealed a whitish, hard mass with smooth surface filling the left nasal cavity. There was a diffuse 3 × 3 cm bony hard swelling involving upper part of left external nose.

filling the left nasal cavity, left maxillary sinus in its upper part and extending upward into the left orbit and medially involving the ethmoid and sphenoid sinus. It was extending posteriorly to fill the left nasopharynx. (Fig. 2, 3) Bone erosion of medial wall of maxillary sinus, frontal process of maxilla, floor of orbit was present. On the basis of clinical and CT findings diagnosis of osteoma of paranasal sinuses was entertained.

The patient was planned for surgery under general anaesthesia. Pledgets soaked with 1:1000 epinephrine were placed in the nasal cavity. Ten minutes after application, the pledgets were removed. Using 0° endoscope drilling of the mass was started using cutting burr. It was difficult to approach the posterior and lateral extent of tumour by endoscopic approach. So it was decided to remove the tumour by external approach via Weber-Fergusson incision. The soft tissues and periosteum were dissected to expose the anterior wall of maxilla. A window was made in the anterior wall of maxilla. There was a 4 × 5 × 3 cm bony hard mass filling upper part of left maxillary sinus going to the inferomedial part of the orbit through a defect in the floor of the orbit. The osteoma was removed piecemeal with help of gouge and hammer. The bony mass in the sphenoid sinus and nasopharynx was drilled and removed. A small incision was given over lacrimal sac to allow lacrimal flow. The defect in the orbital floor was repaired with cartilage and prolene mesh. Nasal packing was given.

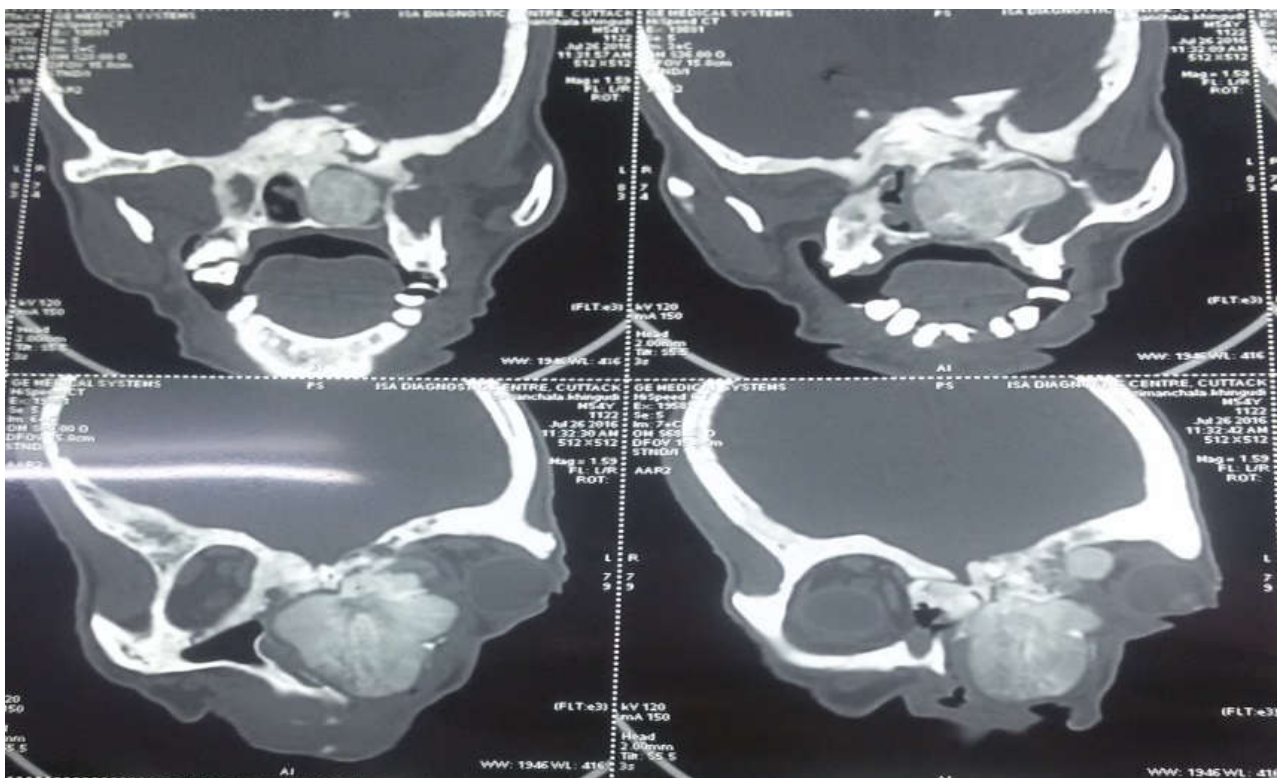


Fig. 2 CT Scan of Nose & Paranasal sinuses (Coronal View) showing a huge osteoma involving left nasal cavity, ethmoidal sinus, maxillary sinus and sphenoid sinus

Page-3

Nasal endoscopy revealed a whitish colour bony hard mass completely occupying the left nasal cavity obscuring the view of middle meatus and nasopharynx. The remainder of the head and neck examination was unremarkable. Routine blood tests, chest X-rays, electrocardiogram were normal. Computed tomography (CT) of nose and PNS (axial & coronal views) showed a large, well circumscribed densely calcified lesion

Intravenous fluids, IV antibiotics and analgesics were administered. The patient's postoperative course was uneventful. The nasal packing was removed on the third postoperative day. The patient subsequently made a complete and uneventful recovery. The gross specimen is shown in Fig 4. Histopathology of surgical specimen showed relatively dense, mainly compact bone with interconnected bony trabeculae and well developed vascular spaces in between

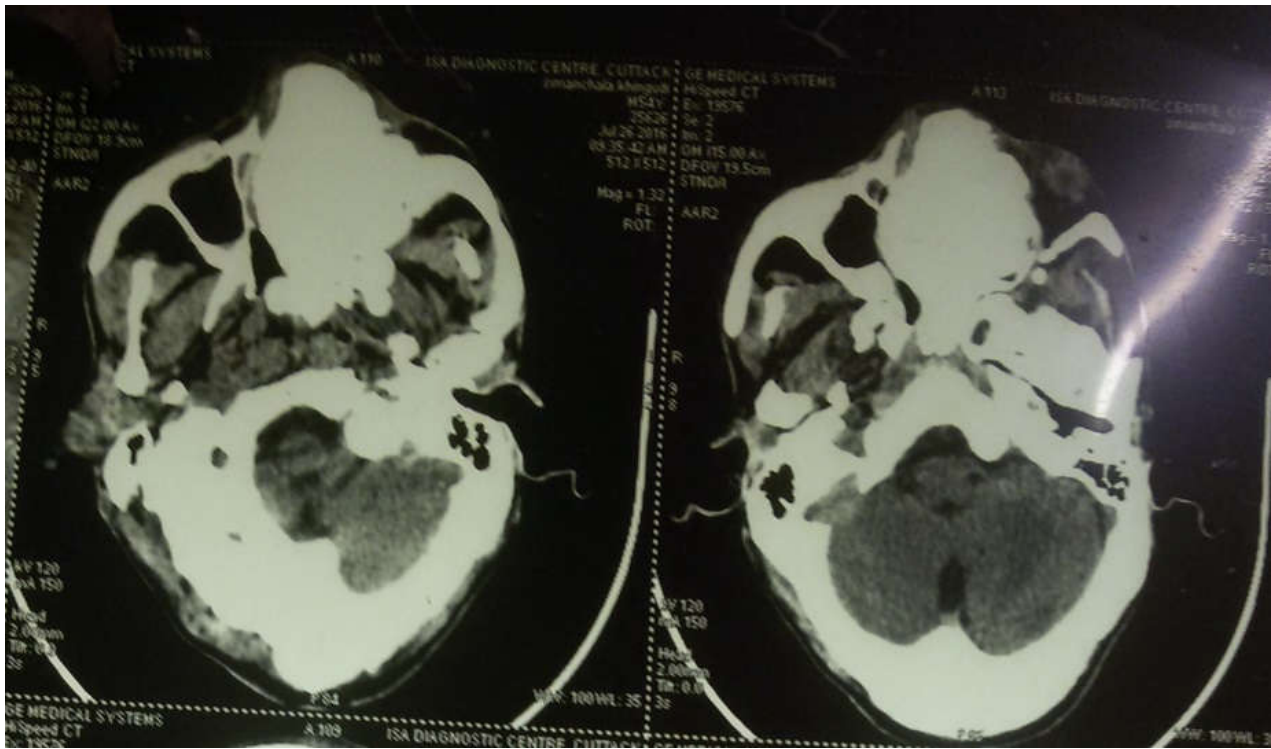


Fig. 3. CT scan (Axial view) shows huge osteoma completely occluding left nasal cavity and nasopharynx with extension to left orbit



Fig.4. Gross Specimen showing osteoma removed in peices

which was typical of osteoma. Post-operative CT scan after 3 months showed no residual mass. She last came. He was asymptomatic and had no ocular complaints or secondary sinusitis after 1 months of surgery.

DISCUSSION

Paranasal sinus osteomas has an incidence ranging from 0.01% to 0.43%, are generally found in frontal, ethmoidal and rarely in maxillary sinuses, in decreasing order of frequency.⁽¹⁾ They are usually asymptomatic and are discovered as a coincidental radiological finding. This case report describes a 60-year-old male with a giant osteoma of ethmoidal and maxillary sinus extending into the orbit and nasopharynx. From this point of view, the lesion in our case may be considered rare and atypical because of its unusual location. Most of the paranasal sinus osteomas are asymptomatic due to their slow growth rate. Symptoms are generally related to the location, size and growth rate of the osteoma. Headache or facial pain localized over the area of osteoma is the most common symptom.

Other symptoms include facial deformity, anosmia, nasal obstruction or secondary sinusitis.^(4, 5, 7) They may also produce orbital or intracranial complications when they extend beyond the sinuses. Orbital symptoms include diplopia, proptosis, exophthalmus, and decreased vision. Neurologic complications such as subdural abscess, meningitis, and intracranial pneumocele are also reported in various literatures (Atallah *et al.*, 1981; Aldren, 1993; Regezi, 1993). Several theories have been proposed to explain the pathogenesis of osteoma. Embryological theory suggests that these osteomas arise from osseous proliferation due to the opposition of membranous and enchondral tissue forming close to the bony sutures, such as fronto-ethmoidal one (Aldren, 1993). Traumatic theory has been which the development of these tumours is due to traumatic events in the past (in 20% of cases). Minor trauma followed by periosteal bleeding and edema formation triggers a reactive osteogenic process that initiates the abnormal growth of bone. Inflammatory theory suggests a determinant role that may possibly be played by a previous inflammation of the sinuses,

which would act as a stimulus for the proliferation of osteoblasts situated along the muco-periosteal junction of paranasal sinus (Aldren *et al.*, 1993). On the basis of clinical examination and radiological topography, three variants of osteoma are described: central, peripheral or extraskeletal. Central osteomas arise mainly from endosteum, whereas peripheral variants originate from the periosteum and the extra skeletal type resides within a muscle. The lesion reported is of peripheral type which produces swelling, facial asymmetry and erosion of neighbouring bone i.e. medial wall of orbit, medial wall of maxillary sinus (Regezi *et al.*, 1993). Osteomas develop mainly during skeletal growth and have a slow progression related to peripheral subperiosteal bone apposition which creates a puffy shell. As it spreads gradually outward, the osteoma can produce marked deformities of the face, neuralgia and nasal and paranasal inflammatory processes, but if it develops mainly inside the sinus it may not be diagnosed for a long time (Aldren, 1993; Shady, 1994). Diagnosis is usually made by radiological imaging if a person has a persistent facial or orbital pain, headache. CT scan is considered to be the most suitable imaging modality for the diagnosis of osteoma. The use of CT scan with 3-D reconstruction makes it possible to achieve a better resolution and more precise localization.

The asymptomatic osteomas usually do not require any treatment. Regular follow-up with serial radiographs is required to determine any change in size. Savic and Djeric in 1990 suggested surgical removal for osteomas enlarging and extending beyond the confines of the sinus, filling more than 50 % of the volume of frontal sinus (Savic, 1990; Shady *et al.*, 1994). They also recommend removal of osteomas associated with unexplained headache, facial pain, recurrent sinusitis, ocular symptoms, central nervous system symptoms or those causing cosmetic deformity. External surgical procedures have been the method of choice in the treatment of paranasal sinus osteomas. Various surgical approaches for osteomas have been described, including osteoplastic flap technique, lateral rhinotomy, Caldwell-Luc and direct anterior surgical approach. Some disadvantages with these procedures include permanent scar formation, blood loss, mucocele formation, and paresthesias. Osteomas are usually removed either in toto or broken up and sucked out under direct control (Akmansu *et al.*, 2002; Seiden *et al.*, 1995). Recently, endonasal endoscopic sinus surgery offers a minimally invasive alternative in the treatment of selective ethmoidal and frontal osteomas. Lesions limited to sinuses without orbital or intracranial extension, are suitable for this treatment. In this case, our patient was appropriately treated by open procedure as the osteoma was filling more than 50 % of volume of sinuses and it was extending to orbit. It was also difficult to reach the most posterior and lateral part of osteoma with endoscopic approach. Removal can be difficult and incomplete, with possible recurrence of the tumour, if done endoscopically. There are no reports of malignant transformation of osteomas in the literature.

Histologically, osteomas are characterised of two types-eburneous or spongy. Eburneous forms are usually frontal osteomas which are solid bones. Spongy forms are usually ethmoidal which have gaps in the marrow of irregular structural arrangement (Ataman *et al.*, 1993; Seiden *et al.*, 1995; Al-Sebei, 1998). To conclude, although the recurrence of paranasal sinus osteoma is rare and they are completely curable after surgical excision, they still present a diagnostic challenge because of their slow progression.

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