

Osteoma of Maxillary Sinus - A Rare Case Report

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ABSTRACT

Craniofacial osteomas are more frequently in the nasal and paranasal sinuses, particularly in fronto-ethmoidal sites; other sinus cavities are more rarely affected. Although various theories (embryogenetic, traumatic and inflammatory) have been advanced to explain the pathogenesis, it is difficult to establish a specific cause-effect relationship. Osteomas within the paranasal sinus account for .01% to .45% of patients; of these up to 80% occur in frontal sinus. An osteoma of maxillary sinus is extremely rare. Most of them are asymptomatic and appear in routine radiographic studies. These cases require surgical removal to avoid the risk of short or long term complications or to solve any that may already exist. We report a case of a large maxillary sinus osteoma that was discovered casually and underwent surgical excision.

Keywords: Bone tumour, Osteoma, Maxillary antrum.

INTRODUCTION

Osteomas are type of benign bone forming tumor occurring most commonly in craniofacial skeletal structures¹, mainly in the nasal and paranasal regions², presenting, most frequently, in young subjects, in the second and third decade of life, with the male:female ratio of 2:1.³ From an etiological view point these lesions have been correlated to abnormal enlargements of embryonal tissues, previous craniofacial trauma (20% of cases), chronic inflammatory process of nasal and sinus structures, a specific cause effect relationship between osteomas and the triggering event still remains to be

defined.^{3,4,5} Frontal and ethmoidal sinuses are mostly affected, but maxillary sinus also can be involved. These tumours are often asymptomatic at the moment of diagnosis and its finding is usually accidental on radiographic studies. Computed tomography (CT) can be helpful so as to visualize the size of the lesion as well as the relationship between the tumour and adjacent structures. As the mass increases in size, it may occlude the sinusal ostium and thus block mucociliary activity leading to retention of secretion and the onset of sinusitis or mucocele. The aim of this article is to present a case of an uncommon pathology that we can come across in our practice and discuss the main management implications.

CASE REPORT

A 33 year old female patient came to the Department of Oral and Maxillofacial Surgery, Saraswati Dental College and Hospital with a chief complaint of occasional pain in periorbital region since 2 years. There was no relevant medical history but patient gives history of trauma (abrasions) on right side of face 4 years back because of road traffic accident. The extraoral findings were not significant. Intraorally there were multiple missing teeth in upper anterior region because of extraction due to severe periodontitis (fig 1). On palpation there was mild pain in infraorbital region of right side. PNS view showed a radiopaque lesion occupying almost the entire maxillary sinus (fig 2). CT scan was performed and showed radiodense lesion in maxillary antrum with no relation to the teeth (fig 3). An incisional biopsy was performed under local anaesthesia that was consistent with mature lamellar bone.



Fig 1. Preoperative intraoral photograph showing multiple missing teeth

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Date of Submission : 02-01-2010

Review Completed : 03-02-2011

Date of Acceptance : 08-02-2011



Fig 2.PNS view showing osteoma occupying almost entire maxillary sinus

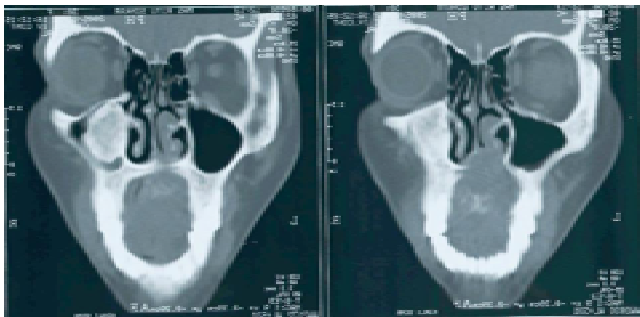


Fig 3.CT scan showing osteoma occupying entire maxillary sinus



Fig 4.Exposure through Caldwell-luc approach

Because of the large size and mild continuous discomfort in the region, patient underwent surgical excision of the lesion. Caldwell–Luc approach was performed (fig 4), and a window osteotomy of the anterior wall of the maxillary sinus was made. After the complete removal of the lesion (fig 5), intranasal antrostomy was done (fig 6) and suturing done with 3-0 silk (fig 7). Definitive histopathological analysis of the specimen confirmed the diagnosis of osteoma (fig 8). The post-operative course of the patient after one year follow-up was uneventful.



Fig 5. Specimen of osteoma



Fig 6. Showing Intranasal Antrostomy



Fig 7.Photograph showing suturing after excision

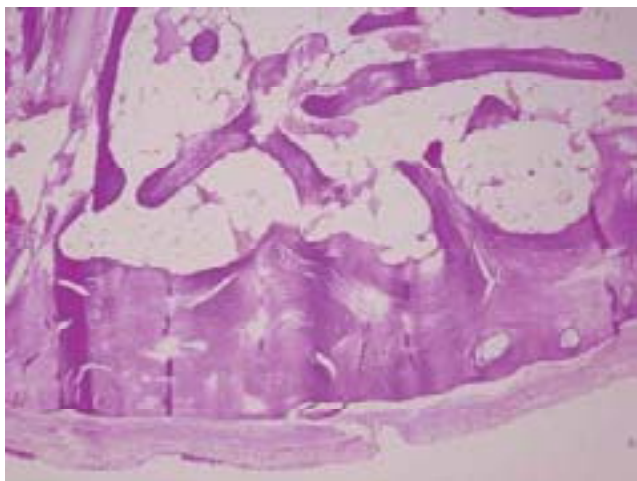


Fig 8. Histopathological slide of osteoma

DISCUSSION

Osteomas are benign tumours that can be solitary or multiple. Earwaker⁶ has reported an overall incidence of 3% in a survey of 1500 CT scans with a predilection for the frontal sinus. As a benign osteogenic lesion characterized by the proliferation of compact or cancellous bone with sparse marrow tissue. Osteomas of the maxillofacial region show a predilection for the mandible, especially the ramus and the inferior border below the molars.⁷ Furthermore, the paranasal sinus osteomas, with their reported incidence ranging from 0.01% to 0.43%, are generally found in frontal, ethmoidal and rarely in maxillary sinuses, in decreasing order of frequency.⁸ They present mainly in 5th and 6th decade of life.

The pathogenesis of osteoma in general still remains unknown. Possible aetiological factors include trauma, infection and the stimulation of embryological cartilaginous rests. Minor trauma followed by periosteal bleeding and oedema formation has been suspected to trigger a reactive osteogenic process that initiates abnormal development of bone structure. On the other hand, infection has also been suggested to stimulate bone turnover, resulting in osteoma formation.⁹ The theory based on stimulation of embryological remains relies on the junctions between membranous and cartilaginous elements which could render the bone susceptible to the development of cell rests and tumours formation.¹⁰

According to clinical and radiological topography, three variants of osteoma can be distinguished: central, peripheral or extraskeletal. Central osteomas arise mainly from endosteum, whereas peripheral variants originate from the periosteum and the extraskeletal type resides within a muscle. The peripheral type quickly produces swelling, asymmetry and erosion of the surrounding structures.¹¹ Intraoral clinical examination of this case revealed no bony specula or prominent mucosal swelling in the affected region, indicating

that the lesion did not cause significant resorption of the neighbouring bone. The results of CT scan also supported this assumption as buccal and palatal bone cortex of the maxilla was found to be intact. Moreover, during the surgical intervention, the bony-hard mass was observed to be directly connected to the surrounding bone. These details have led us towards the diagnosis of a central localized osteoma of the maxilla. CT is considered to be the most suitable imaging modality for the diagnosis of osteoma. Besides, CT scanning of the maxillofacial region is required for patients with osteoma to rule out Gardner's syndrome. These patients may present severe gastrointestinal disorders with rectal bleeding and abdominal pain. The triad of colorectal polyposis, skeletal abnormalities and multiple impacted teeth is consistent with this syndrome. However there was no such findings in our case.^{11,12} Although osteomas are initially often asymptomatic, maxillary sinus osteomas may develop symptoms with the progressive growing. Koivunen *et al.*¹³ have reported a mean growth rate of 1.61 mm per year. Treatment is required in symptomatic cases or when the lesion occupies more than 50% of the sinus volume. On the other hand, similar growth characteristics and also the radiographic appearance of osteoma may also be seen in odontoma or focal sclerosing osteomyelitis, therefore requiring a differential diagnosis.¹¹ Different surgical approaches are available which depends on the size/location of the lesion and the experience of the surgeon. We decided surgical removal of the lesion based upon its large size. An open access through the classical Caldwell-Luc approach was chosen in this case to ensure the complete removal and due to its low morbidity. More recently, endoscopic sinus surgery has been described as a safe and effective option in well selected cases of paranasal osteomas.¹⁴ No recurrences have been reported after surgical treatment.

CONCLUSION

Although completely curable with adequate surgical treatment, osteomas of the paranasal sinuses still present a diagnostic challenge depending mostly on their late discovery and unpredictable behaviour. In order to preserve stability of life quality of patients, new research efforts must be made to enlighten particularly the unknown aetiology of osteoma formation.

REFERENCES

1. Moretti A, Croce A, Leone O, Agostino LD. Osteoma of Maxillary Sinus: case report Acta Otorhinolaryngol Ital 2004; 24: 219-222.
2. Park W, Kim HS. Osteoma of Maxillary Sinus- A Case Report. Oral Surg Oral Med Oral Pathol, Oral Radiol Endod 2006(6);102:e36-e27.
3. Coste A, Chevalier E, Beaufray R, Abd Alsamad I, Salvan D, Peynegre R. Osteome des cavites naso-sinusiennes. Ann Otolaryngol Chir Cervicotac 1996;113:197-201.

4. Bourdial J. Osteomes des sinus frontaux et ethmoïdo-frontaux. Indications opératoires et traitement par usure contrôlée à la fraise. *Ann Oto-Laryngol Paris* 1972;89:285-314.
5. Atallah N, Jay MM. Osteomas of the paranasal sinuses. *J Laryngol Otol* 1981;95:291-304.
6. Earwaker J. Paranasal sinus osteomas: a review of 46 cases. *Skeletal Radiol* 1993;22:417-23.
7. Theodorou DJ, Theodorou SJ, Sartoris DJ. Primary non odontogenic tumors of the jawbones: an overview of essential radiographic findings. *Clin Imaging* 2003; 27: 59-70.
8. Rajayogeswaran V, Eveson JW. Endosteal (central) osteoma of the maxilla. *Br Dent J* 1981; 150: 162-163.
9. Firat D, Sirin Y, Bilgic B, Ozyuvacir H. Case Report - Large central osteoma of the maxillary antrum. *Dentomaxillofacial Radiology*(2005); 34:322-325.
10. Onerci M, Hosal S, Korkmaz H. Nasal osteoma: a case report. *J Oral Maxillofac Surg* 1993; 51: 423-425.
11. Sayan NB, Ucok C, Karasu HA, Gunhan O. Peripheral osteoma of the oral and maxillofacial region: a study of 35 new cases. *J Oral Maxillofac Surg* 2002; 60: 1299-1301.
12. Takeuchi T, Takenoshita Y, Kubo K, Iida M. Natural course of jaw lesions in patients with familial adenomatosis coli (Gardner's syndrome). *Int J Oral Maxillofac Surg* 1993; 22: 226-230.
13. Koivunen P, Löppönen H, Fors AP, Jokinen K. The growth rate of osteomas of the paranasal sinuses. *Clin Otolaryngol Allied Sci* 1997;22:111-4.
14. Schick B, Steigerwald C, el Rahman el Tahan A, Draf W. The role of endonasal surgery in the management of frontoethmoidal osteomas. *Rhinology* 2001; 39:66-70.