

## JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH

**How to cite this article:**

CHANDRA J, PRASAD B R, VEENA K M .OSTEOMA OF THE FRONTAL BONE: A CASE REPORT. Journal of Clinical and Diagnostic Research [serial online] 2009 April [cited: 2009 April 6]; 3:1426-1430.

Available from

[http://www.jcdr.net/back\\_issues.asp?issn=0973-709x&year=2009&month=April &volume=3&issue=2&page=1426-1430&id=400](http://www.jcdr.net/back_issues.asp?issn=0973-709x&year=2009&month=April &volume=3&issue=2&page=1426-1430&id=400)

## CASE REPORT

# Osteoma Of The Frontal Bone: A Case Report

CHANDRA J\*, PRASAD B R\*\*, VEENA K M \*\*\*

### ABSTRACT

Osteomas are slow growing benign tumours of osseous origin that can occur either superficially or intraosseously in any bone of the craniofacial complex. A case of an osteoma arising from the frontal bone of the skull and extending within the frontal sinus, is described here. The osteoma was treated using a surgical mode of management, after which the patient's symptoms were relieved and there has been no recurrence of the lesion. This paper also discusses the various clinico-imaging features of the osteoma with a brief note on the surgical techniques.

---

\*(MDS) Prof., Dept of Oral & Maxillofacial Surgery, Yenepoya Dental College, \*\*( MDS) Principal, Prof. and Head, Dept of Oral & Maxillofacial Surgery, AB Shetty Memorial Institute of Dental Sciences, \*\*\*(MDS) Prof., Dept of Oral Medicine & Radiology, Yenepoya Dental College Mangalore -575018  
**Corresponding Author**  
Dr Jagadeesh Chandra (MDS)  
Professor, Dept of Oral & Maxillofacial Surgery, Yenepoya Dental College, Mangalore. E.mail:bhatjags@rediffmail.com

### Introduction

Osteomas are slow growing benign tumours and are almost exclusively found in the head and neck region. They represent the most common benign neoplasm of the nose and the paranasal sinuses. Amongst the paranasal sinuses, the most commonly involved location is the frontal sinus. The incidence of osteomas affecting the frontal bone and frontal sinus ranges from 37 – 80 % in the reported cases [1]. The sinusoidal growth of the osteoma is usually very slow and they either never become clinically evident, or do so after a considerable amount of time. The osteoma does not usually cause any significant symptoms, but those that cause some degree of facial disfigurement and/or persistent headache need to be addressed surgically[2]. The factors needing attention for surgical intervention

include the tumour size, its location, duration and extensions. We report here, a case of a sizeable osteoma involving the frontal bone that extended into the frontal sinus, to highlight the clinico-imaging features of the tumour and the points that need to be considered while attempting its surgical management.

### Case Report

A 21 year old male patient reported with a complaint of facial asymmetry due to the presence of a swelling on the left side of the upper third of the face. The swelling had been present for a period of around three years and had enlarged gradually. It had been asymptomatic initially, but for the past one year, it had been associated with recurrent headaches affecting the left side only. There was no report of any sensory or visual ocular complaints. The patient could not recollect any significant injury to the forehead region or of any discharge from the swelling. On clinical examination, the patient appeared to be overall in good systemic health, other than the presence of the swelling and all his vital signs were within normal limits. Examination of the face revealed facial asymmetry due to a diffuse swelling present at the junction of the upper and middle third of the face on the left side [Table/Fig 1]. The swelling extended

from the midline upto the middle of the eyebrow and 2 cms superior and inferior to the eyebrow. The swelling appeared smooth surfaced and had caused a slight inferolateral displacement of the globe of the left eye. The swelling was hard in consistency and non-tender on palpation. No paresthesia was found on the overlying or the surrounding skin. The neurological examination for eye functions did not reveal any abnormality.

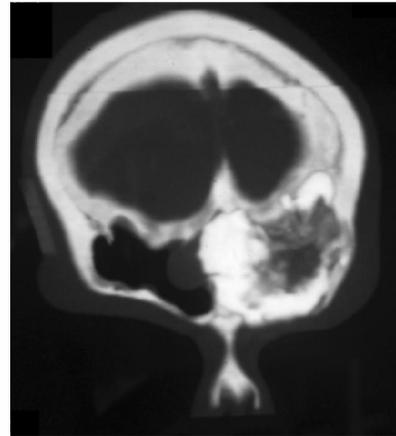


(Table/Fig 1) The facial asymmetry due to the swelling in the left forehead region

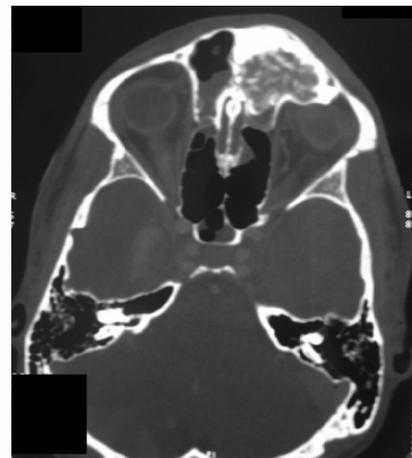
A Paranasal sinus view radiograph [Table/Fig 2] revealed a dense, well defined, radiopaque mass present within the left frontal sinus. It appeared structureless and lobulated, and seemed to arise from the sinus and extended upto the left orbit measuring about 3.5 x 4 cms approximately. A computerized tomography (CT) study of the head and neck [Table/Fig 3],[Table/Fig 4],[Table/Fig 5] revealed a hyperdense heterogeneous ossified structure arising from the anterior wall of the left frontal sinus. It extended upto the floor of the frontal sinus, pushing the left orbital roof inferiorly. The mass appeared to be well defined and with its densities matching that of the osseous structure of the surrounding areas, it suggested the diagnosis to be a benign bony lesion. These imaging findings alongwith the reported history and findings of clinical examination, prompted a differential diagnosis of either an osteoma or a Fibrous lesion.



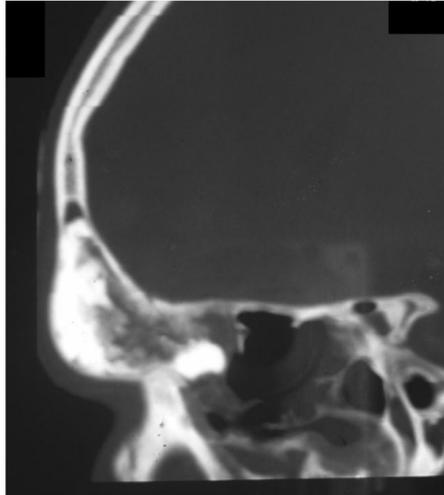
(Table/Fig 2) Dense radiopaque structure seen lying within the frontal sinus



(Table/Fig 3) Coronal CT view of the frontal sinus showing the variable density of the lesion

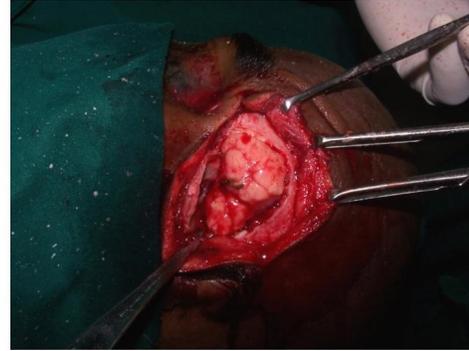


(Table/Fig 4) Axial CT view of the lesion demonstrating the extent of the lesion and distortion on the frontal sinus boundaries



(Table/Fig 5) Reformatted Sagittal CT picture showing the close proximity of the lesion to the anterior cranial fossa

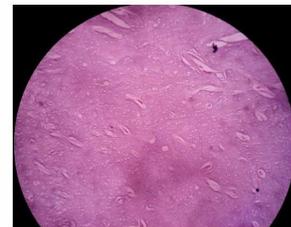
A treatment plan consisting of surgical removal of the bony mass was decided upon and after consent from the patient, surgery was performed under general anaesthesia. A supra orbital/ supraciliary incision was placed on the left side and bone fragmentation was performed. The tumour margins were dissected out [Table/Fig 6] and the site was subsequently reconstructed using micro mini plates, followed by layered suturing of the surgical wound. The excised specimen [Table/Fig 7] was subjected to histopathological examination after staining with hematoxyllin and eosin dyes. Light microscopy of the stained slides [Table/Fig 8] revealed the features of dense non-dysplastic bone with well-formed osteones, thereby confirming the diagnosis of a compact Osteoma.



(Table/Fig 6) Intraoperative view of the lesion seen arising from the anterior wall of frontal sinus



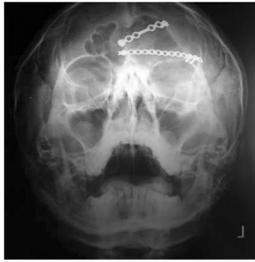
(Table/Fig 7) View of the excised bony specimen



(Table/Fig 8) Medium power view showing well formed bone and osteones (H & E stain)

A post operative radiograph [Table/Fig 9] of the frontal sinus revealed no remnants of the radiopaque mass, confirming complete removal of the tumour. The post operative course was uneventful [Table/Fig 10] and all the sutures were removed on the 10<sup>th</sup> post operative day. The patient did not report any recurrence of the headaches and was satisfied with the aesthetic results of the surgery. The patient has been under continuous surveillance for the past two years and has had no recurrence of the

symptoms nor has he exhibited any signs of recurrence.



(Table/Fig 9) Postoperative radiograph exhibiting the complete removal of the tumor and the reconstruction plates



(Table/Fig 10) View of the surgical site just before removal of the sutures on the 10<sup>th</sup> postoperative day

**Note: All the photographs have been obtained after taking consent from the patient for use in academic purposes.**

### Discussion

The osteoma is a benign neoplasm that occurs due to proliferation of either compact or cancellous bone, usually in an endosteal or periosteal location. The exact pathogenesis of the osteoma has not been accurately delineated [2]. It has been suggested that it may occur secondary to a traumatic or an inflammatory event, with possible aetiological factors, including stimulation of the embryonic cartilaginous rests [2],[3]. Osteomas can manifest at any age and have been reported from infancy upto old age. However, in the case described, neither trauma nor infection seemed to be the causative factor. The clinical manifestations of osteomas of the frontal sinus are variable and have been described to be so due to the slow growth of the tumour. Frequently, the

tumour is asymptomatic until it causes obstruction of the frontal duct, resulting in frontal sinusitis, which consequently causes either localized or radiating pain [4]. The headache experienced by our patient can be explained by this observation. The osteoma has a propensity for extension into all directions, with the growth invading empty spaces. The sinuses provide such an environment for large growths to occur insidiously, without any apparent symptoms. In rare instances, the osteoma can outgrow the confines of the frontal sinus, wherein anterior extensions may produce facial deformity and inferior growth encroaches on the orbit and can cause optic nerve compression-related symptoms [4]. In this case, the facial deformity was present; however, no visual complaints were reported. Posterior extensions can occur into the anterior cranial fossa, that can lead to intracranial air, meningitis and cerebral abscess.

Radiography of a compact osteoma typically demonstrates a well defined, extremely dense, structureless blastic mass within the sinus. Usually, the osteoma does not exhibit any surrounding bone destruction. Computed tomography is a modality that shows up the features of osteomas clearly. On CT, the osteoma appears as a smoothly demarcated, frequently lobulated, homogenously hyperdense mass in cases of compact osteomas, while the cancellous osteomas may have a variable appearance [5]. The plain film image may show up a radiopaque mass, while the CT scans demonstrate a more variable range of ossification within the lesion. All these features are consistent with the case described. CT scans are helpful, not only in diagnosing an osteoma and the anatomic relationship with the surrounding craniofacial structures, but also to rule out Gardner's syndrome (where multiple osteomas may be present) [2].

The surgical handling of an osteoma necessitates understanding the three approaches that can be employed: the supraciliar, endonasal and the bicoronal [1]. The choice of the operative approach and the extent of the osteotomy depend upon the dimension of the neoplasm and the sinus, and also its relationship with the anterior and posterior walls of the frontal sinus[1]. In this case, after careful consideration and evaluation, a supraciliar frontal-ethmoidal approach was chosen, as this does not require a large incision, thereby providing better aesthetic results later. Also, the size of the neoplasm was large enough to preclude the use of an endonasal approach, but not that large to indicate a bicoronal approach.

In conclusion, it can be stated that osteomas of the frontal sinus are usually benign, innocuous lesions. However, their size and prominent location on the

visible parts of the face can necessitate surgical interventions that need careful decision making for successful results both functionally and aesthetically.

## References

- [1]. Savastano M, Guarda-Nardini L, Marioni G, Staffieri A. The bicoronal approach for the treatment of a large frontal sinus osteoma. A technical note. *Am J Otolaryngol Head Neck Surg* 2007; 28: 427-29
- [2]. Park W, Kim HS. Osteoma of maxillary sinus: a case report. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2006; 102: e26-e27
- [3]. Firat D, Sirin Y, Bilgic B, Ozyuvaci H. large central osteoma of the maxillary antrum. *Dentomaxillofac Radiol* 2005; 34: 322-25
- [4]. Gossios K, Bai M, Psilas K. Giant aggressive osteoma of the frontal sinus. *Clin Radiol* 1999; 54(3) : 193-96
- [5]. Bilaniuk LT, Atlas SW, Zimmerman RA. The orbit. In: Lee SH, Rao KCVG, Zimmerman RA, eds. *Cranial MRI and CT*. 2<sup>nd</sup> ed. New York; Mcgraw-Hill Inc, 1992: 119-91