

Case Report

Ivory Osteoma Of Temporal Bone

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Abstract:

Osteomas are slow growing bony tumors common in fronto-ethmoid regions and rare in temporal bone. These are usually asymptomatic and require treatment mainly for cosmetic reasons. We describe a case of temporal bone osteoma in a female. **Key Words:** Ivory osteoma, Temporal bone

Introduction

Osteomas are benign, new bone forming tumours located within bones or developing on them. They are often asymptomatic and are incidentally found on radiological investigations. Osteomas are frequently found in the frontal-ethmoid region.^{1,2} In the temporal bone, the external auditory canal is the predominant location, rarely present in the mastoid, the squamous portion of the temporal bone, inner ear canal and middle ear.³ When located in the mastoid they are solitary, sessile or pediculated and normally they progress to extra-cranial growth.^{2,4,5}

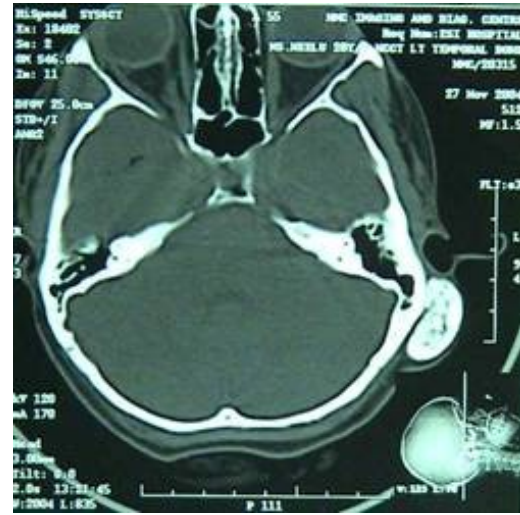
Case Report

A 25 year-old female reported with a swelling behind the left ear for more than 10 years. It was gradually increasing in size. There was no history of trauma, headache, hearing impairment, otorrhoea, dizziness, vomiting, visual trouble or neurologic deficit. On examination, it was found to be around 3 by 3 cms in size, smooth, bony hard, non-tender and fixed to underlying bone.

Fig 1 Clinical photograph of the patient



Fig 2 CT scan showing osteoma of left temporal bone



a. Axial cut



b. Coronal cut

Fig 3: Excised specimen



C.T. scan head (Fig 2) revealed a bony mass in right squamous part of temporal measuring 3 cm x 3 cms. It originated from outer table of the skull with no evidence of destruction of the inner table or extension of the mass intracranially. Hence, a diagnosis of osteoma was made. Surgical excision was carried out for cosmetic purposes using a chisel and mallet. Osteoma was attached to underlying bone with a small stalk. The gross specimen (Fig 3) was smooth, ivory white in appearance, ovoid in shape and about 3 by 3 cms. in size. Histopathology report was osteoma composed of compact bone. The patient had an uneventful recovery with no recurrence in 6-month follow up.

Discussion

Osteoma is a slow growing tumour formed by mature bone tissue. Stuart defined osteoma as a benign, circumscribed, slow growing tumor of the mastoid bone.[1] Osteomas are commonly seen in the fronto-ethmoidal region. The most common sites of osteomas are the frontal sinus followed by ethmoid and maxillary sinuses. They are rare in the sphenoid sinus and extremely rare on temporal and occipital squama.[2] Exostoses of the external auditory canal and mastoid have also been reported. It has higher incidence in female patients, predominantly in the 2nd and 3rd decades of life and it is rare in puberty.[3,4]

Most often they are localized on the sutures. Except for cortical lesions that are seen initially as cosmetic deformities, these tumors are usually unsuspected roentgenographic findings. The main clinical symptom is headache of varying intensity and quality, and in most cases not proportional to the size of the osteoma, which ranges from the size of a pepper bean to the size of a child's head. In addition to headache, there can be sensitivity to pressure in the region of the frontal sinus or dizziness. Treatment is indicated for symptomatic osteomas.[2] Tumors involving

the middle and inner ear are most frequently small and tend to remain stable in size; consequently they are usually managed expectantly. Surgery is indicated in cases of deafness, discharge, dizziness and headache.[5] Giant occipital osteomas can cause dizziness requiring surgical excision [6]. Temporal osteomas have been found to produce intracranial complications, justifying surgical removal. It may produce external deformity and push the pinna forward.[7] Even though it is normally asymptomatic, it may produce pain by invasion of neighboring structures or widening of periosteum. If located in the external auditory canal, it may lead to occlusion, progressing to chronic external otitis (30% of the cases) and conductive hearing loss.[3,8]

In our case the patient did not have any complaints and the swelling was removed because of cosmetic reasons. Excision is not mandatory, but if performed, the surgery should include careful removal of periosteal cover and safe margin of the mastoid cortex around it.[3] If the tumor is close to significant structures such as bone labyrinth and facial nerve canal, a subtotal excision ensures preservation of function. We should be very careful when providing intervention of tumors close to sigmoid sinus, because they can progress with significant bleeding, meningitis, thrombophlebitis and ophthalmologic complications.[3,8] Surgical complications thus include recurrence, facial nerve palsy, sigmoid sinus damage and sensorineural hearing loss.[4,8]

The radiological aspect enables diagnosis: well-delimited lesion situated in the mastoid, normally single, regular, with bone density given that it is formed by cortical compact dense bone. Microscopically, it presents a cover of cortical bone, adjacent to an area of connective tissue. Below the cortical bone, there are trabeculae of spongy bone, ranging in vascularization and amount of fibrous tissue present.

Three types of mastoid osteomas have been described, based on structural characteristics.[7,8,9]

- **Compact:** The most frequent one. Comprising dense, compact and lamellar bone, with few vessels and Haversian canals system. Those with dense sclerotic bone are called ivory osteoma. Compact osteomas have a wider base and are very slow growing
- **Cartilaginous:** Comprising bone and cartilaginous elements
- **Spongy:** Rare type. Comprised by spongy bone and fibrous cell tissue, with tendency to expand to the diploe and involving the internal and external lamina of the affected bone, have bone marrow and also known as cancellous or osteoid osteomas. They are more likely to be pedunculated and grow relatively faster.
- **Mixed:** Mixture of spongy and compact types.[10]

In the literature, the first publication of mastoid osteoma was made in 1887 by Adam Politzer in his book; since then, isolated cases of this benign tumor have been published.

The cause of osteoma has still not been defined. According to congenital theory, presence of embryonic cartilage results in intensified bone growth after puberty. Friedberg suggested trauma with consequent periostitis as a predisposing factor.[11] Hormonal theory in which there is increase of periosteal osteoblast activity, stimulated by endocrine mechanisms which results in increased bone growth has also been suggested.[9] In another hypothesis infection as a result of otitis media was advocated but this is relevant only to middle ear osteoma. Most authors feel that it originates from the pre-osseous connective tissue.[4,7,8,10,12] The clinical presentation and radiological features of osteoma are characteristic but differ-

ential diagnosis should include eosinophilic granuloma, giant cell tumor, monostotic fibrous dysplasia, osteoid osteoma, and osteoblastic metastasis.[10] One should also rule out Gardner's syndrome in patients presenting with large skull osteomas.[13] It includes a clinical triad of familial polyposis coli, osteomas, and soft tissue tumors.

It is important to differentiate osteomas from exostoses. They should be considered separate clinical entities. Osteomas are bony growths that are single, unilateral and pedunculated and arise from the tympanosquamous or tympanomastoid suture lines laterally, whereas exostoses are multiple, usually bilateral and broad based and are found medial to the sutures of the temporal bone.[14] Osteomas are true bone tumors and exostoses are thought to be a reactive condition secondary to multiple cold-water immersions or recurrent otitis externa. Disagreement still exists whether external auditory canal exostoses and osteoma should be considered as separate histopathological entities. JE Fenton et al in their study have concluded that they cannot be differentiated on routine histopathological examination.[15]

References

1. Stuart EA. Osteoma of the mastoid: report of a case with investigations of the constitutional background. *Arch Otolaryngol.* 1940;31:838.
2. Sente M, Topolac R, Peic-Gavran K, Aleksov G. Frontal sinus osteoma as a cause of purulent meningitis. *Med Pregl* 1999; 52(3-5):169-72.
3. Gupta OP, Samant IC. Osteoma of the mastoid. *Laryngoscope* 1972;82(2):172-6.
4. Denia A, Perez F, Canalis RR, Graham MD. Extracanalicular osteomas of the temporal bone. *Arch Otolaryngol* 1979; 105(12):706-9.

5. Singh I, Agarwal AK, Aggarwal S, Yadav SPS. Giant Osteoma of Mastoid Bone. *Indian J of Otol* 1999;5(2):97-98.
6. Meher R, Gupta B, Singh I, Raj A. Osteoma of occipital bone. *Indian J Surg* 2004;66:372-3.
7. Fleming JP. Osteoma of the mastoid bone. *Can J Surg.* 1966; 9:402-404.
8. Burton DM, Gonzalez C. Mastoid osteomas. *Ear Nose Throat J* 1991;70(3):161-2.
9. Singh I, Sanasam JC, Bhatia PL, Singh LS. Giant osteoma of the mastoid. *Ear Nose Throat J* 1979;58.
10. Probst LE, Shankar L, Fox R. Osteoma of the mastoid bone. *J Otolaryngol* 1991;20(3):228-30.
11. Friedberg SA. Osteoma of mastoid process. *Arch Otolaryngol.* 1938;28:20-26.
12. Ishikawa T, Saito H, Takashaki K. Osteoma of the mastoid. *Arch Otorhinolaryngol.* 1977;217:93-97.
13. Noterman J, Massager N, Vloeberghs M, Brotchi J. Monstrous skull osteomas in a probable Gardner's syndrome: case report. *Surg Neurol* 1998; 49(3):302-4.
14. Sheehy JJ. Diffuse exostoses and osteomata of the external auditory canal: A report of 100 cases. *Otolaryngol Head Neck Surg* 1982;90:337-42.
15. Fenton JE, Turner J, Fagan PA. A histopathological review of temporal bone exostoses and osteoma. *Laryngoscope* 1996; 106:624-8.