

# An unusual case of mastoid osteoma

Jihan A. Al-Maddah, MD, KSUF, Sami S. Ismail, MD, KSUF.

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## ABSTRACT

We present a case of mastoid process osteoma with a long history of mastoid mass. A 36-year-old lady presented with a 15-year history of slowly growing painless mass behind the left ear. The diagnosis of mastoid osteoma was confirmed on the basis of computerized tomography (CT) scan and postoperative histology result of the mass. The patient was treated surgically and followed up by postoperative CT scan, which showed that the disease was completely removed. Surgical excision is commonly carried out for cosmetic purposes.

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Mastoid process osteoma, contrary to facial skeleton osteomas is rare but should be considered as one of the differential diagnoses of a long history of mastoid mass. Mastoid process osteoma is a slowly growing tumor, affecting young adults, more common in females, this is said to occur as a result of excessive localized growth activity of the periosteal osteoblasts, commonly arising at membrano-cartilagenous bony junction. Histologically, 4 types are known: osteoma compactum, cancellare, cartilaginium and mistum. Prevention of the recurrence of the tumor could be accomplished if care in its removal with its periosteal covering and healthy margin of the mastoid cortex around it was performed. This report is an attempt to elucidate the etiology, clinical features, diagnosis, treatment, and review of the literature of this very rare bony lesion.

**Case Report.** A 36-year-old Saudi female presented to the outpatient clinic in the Riyadh Military Hospital, Riyadh, Kingdom of Saudi Arabia in September 2001 with a 15-year history of unsightly slowly growing swelling behind the left ear following a history of trauma. There was no history of pain, hearing loss, otorrhea, headache, vomiting, visual

disturbance or neurological deficit. There were no other remarkable features in the history. Physical examination showed a left post-auricular swelling which was fusiform, firm, non-tender, non-adherent to skin and approximately 4 x 4 cm in size (**Figure 1a**). Audiogram was within normal limits. Diagnosis was confirmed by computerized tomography scan (**Figure 2a**) which showed a dense bony outgrowth related to the lateral aspect of the left mastoid antrum, the mass is separated from the outer cortex of the mastoid anteriorly and posteriorly with the connecting stalk in its mid-portion. The appearance was consistent with a benign bony lesion such as ivory osteoma. Computerized scanning was most useful, both in making a diagnosis and in facilitating precise planning of the operative procedure. It was also useful post-operatively to ensure complete removal of the disease. Upon discussion with the patient, surgery was carried out mainly for cosmetic purpose. Osteoma was exposed with its periosteum intact by a post-auricular incision; it was completely excised by using a cutting drill and smoothed by diamond burr. All vital structures were intact, and the skin closed with interrupted silk suture. Postoperatively the patient was doing well, with no signs of facial nerve palsy, meningismus or visual changes. The postoperative CT

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From the Department of Oto-Rhino-Laryngology, Head and Neck Surgery, Armed Forces Hospital, Riyadh, Kingdom of Saudi Arabia.

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Address correspondence and reprint request to: Dr. Jihan Al-Maddah, Department of Oto-Rhino-Laryngology, Head and Neck Surgery, Armed Forces Hospital, PO Box 7897, Riyadh 11159, Kingdom of Saudi Arabia. Fax: +966 (1) 4161244. E-mail: jihanalmaddah@hotmail.com

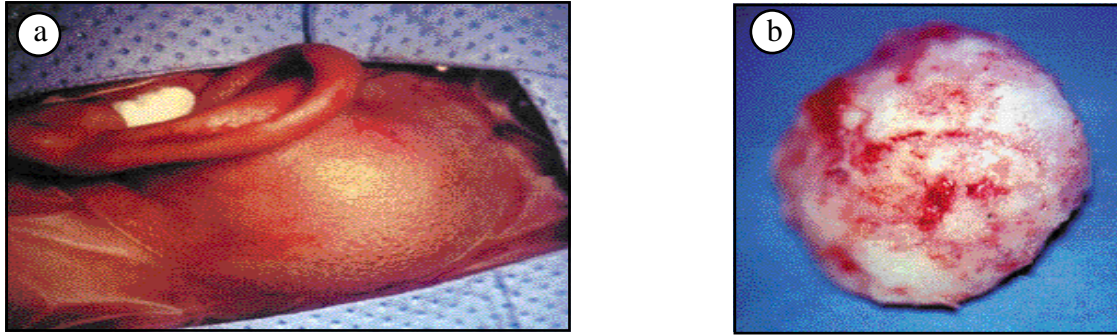


Figure 1 - Photograph of mass a) preoperative postauricular measuring 4 x 4 cm. b) Following excision.

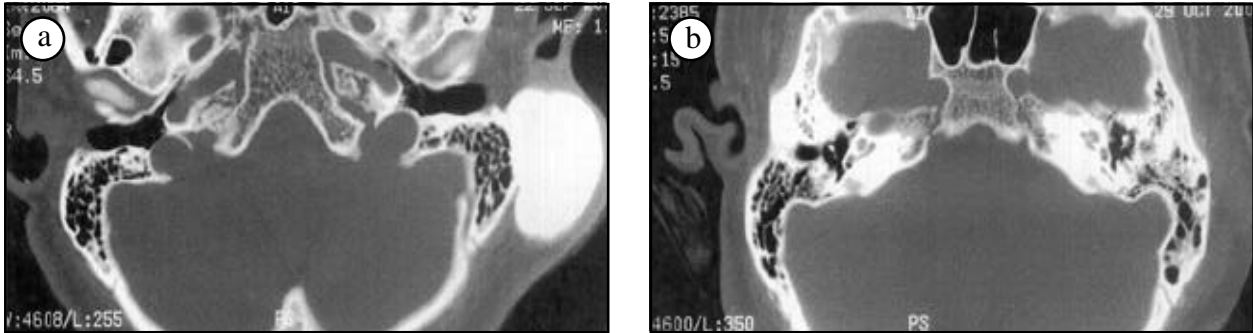


Figure 2 - Computerized tomography scan of the coronal section of the skull a) preoperatively and b) postoperatively.

scan showed complete removal of the osteoma with intact mastoid and no other abnormalities seen (Figure 2b). A 4 x 4 cm specimen of hard bone was sent for histopathological study; the result confirmed the diagnosis of compact osteoma with surrounding bone of normal cortex (Figure 1b).

**DISCUSSION.** Osteomas of the facial skeleton are common benign tumors, which produce no symptoms unless they extend beyond the site of origin, for example blocking the sinus ostium, causing pressure on a nerve or displacing other structures. They are very slow growing tumors of compact lamellar bone or cancellous bone.<sup>1</sup> They are commonly seen in frontoethmoid regions, orbit and maxillary antra. Osteoma of temporal bone was reported by Beal and Phelps<sup>2</sup> in the following situations: External auditory canal - where they are asymptomatic unless they become large enough to cause obstruction, with consequent hearing loss or retention of wax and skin debris. Squama of the temporal bone - where they cause a hard bulge above and behind the pinna encroaching upon the facial nerve canal, causing paralysis. Mastoid - where they are asymptomatic

unless encroaching upon the facial nerve canal, causing paralysis. Petrous pyramid - where they can occur in the region of the porus of the internal auditory meatus. Middle ear - where they may impinge upon the ossicular chain, causing conductive hearing loss.

Osteoma of the mastoid part of temporal bone is a relatively rare or seldom reported tumor. Fleming<sup>3</sup> reported 39 cases of mastoid osteoma in the literature, in addition to reporting a case of his own. Gupta and Samant,<sup>4</sup> Van Dellen<sup>5</sup> and Marrocco et al<sup>6</sup> have reported patients with mastoid osteoma; the last author described a case of mastoid osteoma associated with neurofibromatosis. In our case the mastoid osteoma is confined to the outer cortex of mastoid, but osteomas can infiltrate the cortex to produce auditory meatal obstruction and conductive hearing impairment.<sup>4</sup> Chronic otitis externa is also possible, although otitis media is unusual. These symptoms were absent in our patient despite a long duration of the swelling. Inward growth of osteoma to involve the inner table of skull has been considered a cause of local pain or tenderness,<sup>5</sup> but this was not found in our case. The mastoid osteoma has reported to produce intracranial complications;<sup>6</sup> in this case surgical removal at the

earliest opportunity must be carried out. The case discussed showed no mastoid erosion. These benign bony lesions are said to arise at the junction between membranous and cartilaginous bone, and are usually composed of a cancellous core with varying amounts of dense compact bone peripherally. Histologically, our case belonged to the compact type, the most common variety that is a hard, ivory-like tumor of lamellated bone.

The tumor is usually single and grows from the outer table of the mastoid cortex, producing an external swelling. One reported case, however, had multiple osteoma of the mastoid process, and the tumors were growing from its inner table. Osteoma generally occurs in young adults, and those of the mastoid process are seen more often in females.<sup>7</sup> They are said to occur as a result of excessive growth activity of periosteal osteoblasts and may vary in size. Harrison<sup>8</sup> in a review of osseous tumor emphasized the need to correlate the clinical features with radiological and histopathological findings to understand the natural history of the tumor and plan its management. Osseous facial tumors tend to occur at an earlier age in Arabs and often grow to quite large sizes in this ethnic group.

The cause of osteoma has still not been defined, since the tumor has been found to develop after puberty, Haymann<sup>9</sup> believed it to depend on conditions regulating growth in cranial bones. Friedberg<sup>10</sup> suggested trauma, with consequent periostitis, as a predisposing factor, which was seen in our patient but not in most reported cases. Stuart<sup>7</sup> suggested an influence of pituitary dysfunction, as his patient had a family history of dyspituitarism. The association of neurofibroma with mastoid osteoma has been reported, this might have been coincidental, or it might have been associated with a common underlying constitutional or glandular factor.

As a rule, removal of these tumors is easy and they do not tend to recur. Sometimes the dura, or sinus, is exposed, but there is no reported case in the literature in which the facial nerve has been in danger. The unusual site of origin of tumor in some cases and erosions around it rendered the facial nerve extremely vulnerable.<sup>11</sup>

In conclusion, mastoid process osteoma is a relatively rare tumor but should be considered in the differential diagnosis of slowly growing mastoid mass especially in young adults. Surgical intervention is usually carried out mainly for cosmetic purposes.

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## References

1. Hasso AN. CT of tumors and tumor-like conditions of the paranasal sinuses. *Radiol Clin North Am* 1984; 22: 119-130.
2. Beale D, Phelps PD. Osteoma of petrous temporal bone, a report of three cases. *Clin Radiol* 1987; 38: 67-69.
3. Fleming JP. Osteoma of the mastoid. *Can J Surg* 1966; 9: 402-405.
4. Gupta OP, Samant HC. Osteoma of the mastoid. *Laryngoscope* 1972; 82: 172-176.
5. Van Dellen JR. A mastoid osteoma causing intracranial complications: a case report. *S Afr Med J* 1977; 51: 597-598.
6. Marrocco WA. Multiple osteoma of the mastoid cavity. *Arch Otolaryngol* 1948; 47: 673-677.
7. Stuart EA. Osteoma of the mastoid. *Arch Otolaryngol* 1940; 31: 838-854.
8. Harrison DFN. Osseous and fibro-osseous conditions affecting the craniofacial bones. *Annals of Otolaryngology* 1984; 88: 1-7.
9. Haymann D. Zur Kenntniss der Knochenschwulste des Warzenfortsatzes. *Z Ohrenheilkd* 1919; 78: 23-25.
10. Friedberg SA. Osteoma of mastoid process. *Arch Otolaryngol* 1938; 28: 20-26.
11. Neil JF. Osteoma of the mastoid process. *J Laryngol Otol* 1952; 66: 519-521.