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A Unique Case of Mastoid Osteoma - A Case Report

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Abstract

Osteoma is a benign tumour of mesenchymal osteoplastic nature composed of well-differentiated osseous tissue with laminar structure. Temporal bone osteomas in general constitute 0.1% to 1% of all benign tumours of the skull. Clinically these tumours are asymptomatic, except for cosmetic deformities, and they are usually casual radiological findings. This case report presents a 29-year-old female patient presenting with a swelling of approximately 2 cm × 2 cm over the left post auricular region since 2 years associated with pain over the swelling since 6 months. X-RAY of bilateral temporal bone was done which showed a well-defined, round to oval dense radiopacity in the left temporal region. Computed tomography was done which was reported as bony attenuation lesion along outer cortex of mastoid, part of temporal bone on the left side in the post auricular region (mastoid osteoma). Surgical excision was done, and the sample was sent for histopathological examination which confirmed the diagnosis of an osteoma. Postoperatively, the patient was asymptomatic. On a regular follow up, that is 1 week, 1 month and 2 months there was no recurrence noted. Patient had a good cosmetic cover with no complications, recurrence, or pain.

Keywords: ***Mastoid bone; Osteoma; Temporal bone; Post auricular incision; Benign lesions***

1. Introduction

The Osteoma is a benign tumour of mesenchymal osteoplastic nature composed of well-differentiated osseous tissue with laminar structure. Temporal bone osteomas in general constitute 0.1% to 1 % of all benign tumours of the skull. 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.

The osteomas of the mastoids are slow growing benign tumours, made predominantly of mature bone. Clinically these tumours are asymptomatic, except for cosmetic deformities, and they are usually casual radiological findings.

Surgical treatment is indicated for symptomatic osteomas.

Clinically, it is difficult to classify the type of osteoma because of its similar presentation. Mastoid Osteomas are of three types, namely Osteoma compactum, Osteoma cancellare and Osteoma cartilaginous based on the histology.

Non syndromic temporal bone Osteomas are not known, and various possible causes have been reported which includes genetic origin, trauma, surgery, radiotherapy, chronic infections, and pituitary dysfunctions.

Mastoid osteomas are rare, benign tumours. If their growth significantly occludes the meatus, they may cause cosmetic deformities, conductive hearing loss, and recurrent external ear infections. Several other osseous lesions of the temporal bone should be considered in the differential diagnosis. Differential diagnosis includes osteosarcoma, osteoblastic metastasis, isolated eosinophilic granuloma, Paget's disease, giant cell tumour, osteoid osteoma, calcified meningioma and monostotic fibrous dysplasia.

The etiology of mastoid osteomas is poorly understood.

Non contrast CT scan is the imaging method of choice and Surgical resection is the treatment of choice.

2. Case Report

2.1 Patient information

A 29-year-old female reported to our OPD with a swelling behind left ear since 2 years. The patients consulted for the cosmetic deformity induced by the lesion. It was initially painless, and she gradually developed pain over the swelling since the past 6 months. The swelling was initially small in size which gradually and progressively increased to the present size since the past 1 year with no aggravating or relieving factors. It was not associated with displacement of the left pinna.

There was no history of trauma, headache, hearing impairment, otorrhea, dizziness, vomiting, facial weakness, and neurological deficit.

2.2 Clinical findings

Despite On examination, well defined smooth, bony hard, non-tender, non- pulsatile, non-reducible, non-compressible, swelling measuring 2 cm × 2 cm was present behind the left pinna not occluding the retro auricular groove and the swelling was fixed to underlying bone. Skin over swelling was free having normal local temperature (FIG. 1). EAC showed no post-

aural bulging. Tympanic membrane of left ear was intact. Right ear was normal. Audiometric evaluation showed normal hearing.

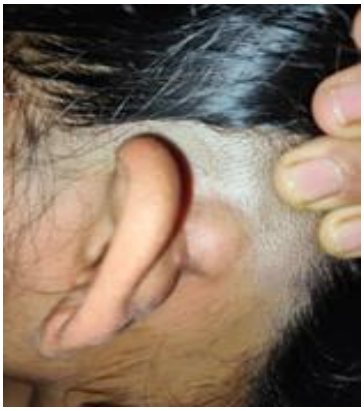

FIG. 1. **Left Post auricular swelling.**

2.3 Timeline

The patient was followed up for a period of 3 months, i.e., 1 week, 1 month and 2 months post operatively.

2.4 Diagnostic assessment

The diagnosis was based on the clinical presentation and non-contrast CT. X-RAY of bilateral temporal bone was done which showed a well- defined, round to oval dense radio-opacity in the left temporal region. Computed tomography was done which was reported as bony attenuation lesion along outer cortex of mastoid, part of temporal bone on the left side in the post auricular region (mastoid osteoma).

FNAC was not possible due to the hardness of the swelling.

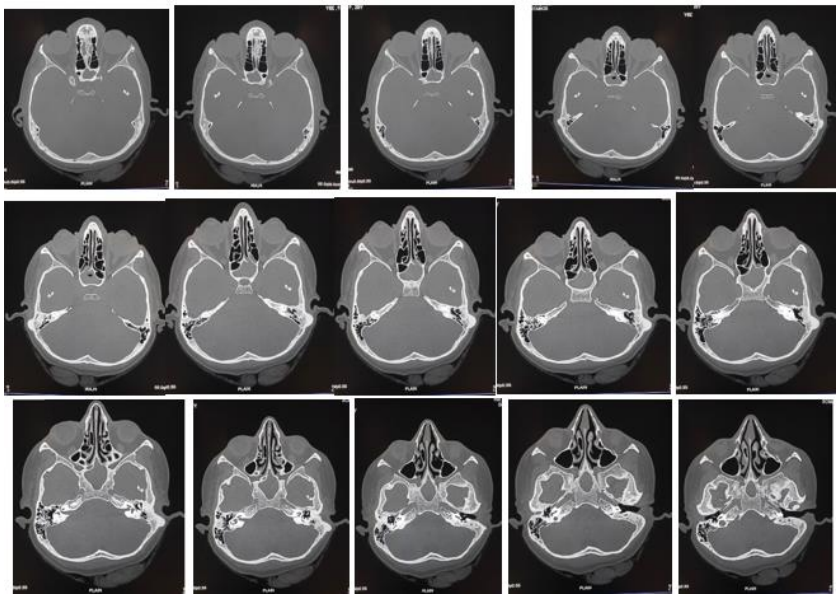

FIG. 2. **CT scan showing the bony lesion over the left mastoid region.**

2.5 Therapeutic intervention

The indication for surgery in this case were the patient's sensation of a mass effect and pain over the swelling. The tumour was removed in its entirety via a postauricular approach.

Patient posted for surgical excision of tumour (FIG. 3) under general anesthesia. Local infiltration was given using lignocaine and adrenaline over the left post auricular region.

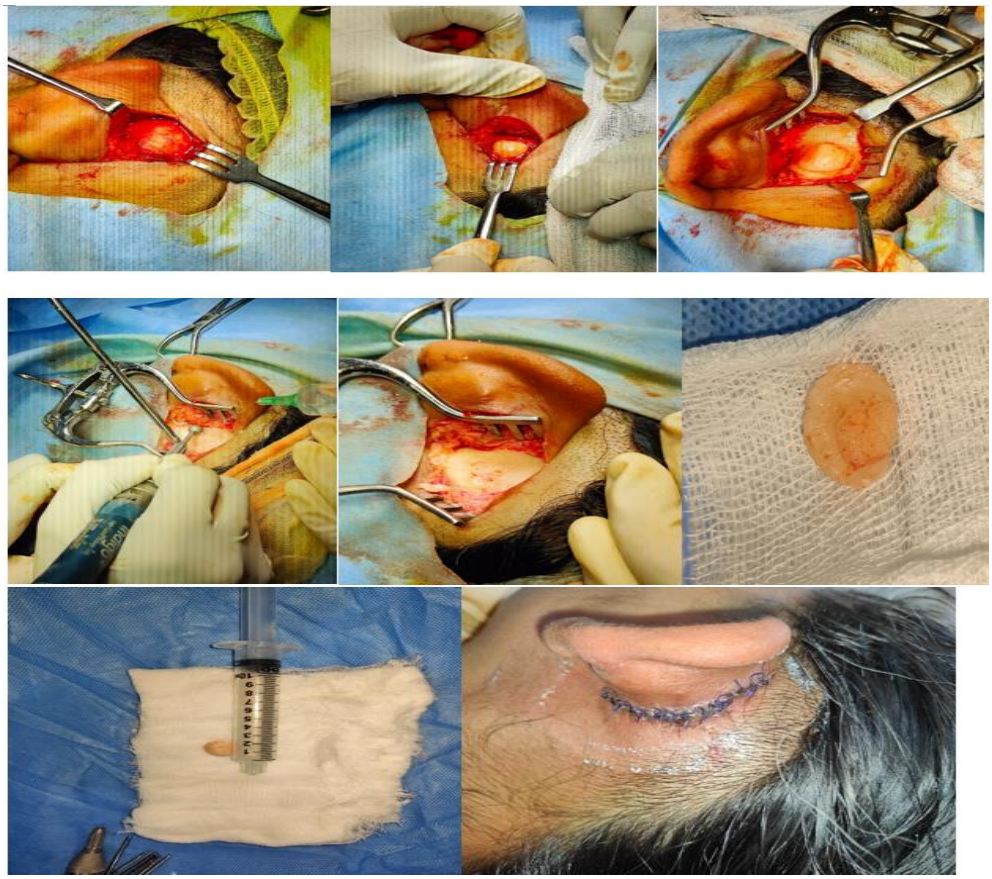

FIG. 3.

Post-auricular William Wilde's incision was placed, and dissection done in layers, exposing osteoma.

Mastoid bone identified. Excision was done by drilling out a groove at base of osteoma over the surface of mastoid cortex under continuous irrigation. Intact, pedunculated osteoma was removed with chisel and hammer.

After excision, the contour of mastoid cortex was found intact without any evidence of bony invasion. Excessive skin was removed, and suturing was done in layers using 4-0 vicryl.

Excised mass sent for histopathological examination. The report mentioned the lesion showed dual population of mature lamellar and woven bone in trabecular pattern with haversian- like canals with intervening spaces filled with loose fibrous stroma. These features are consistent with the diagnosis of mastoid osteoma.

Patient was followed up after 7 days post operatively. Wound was healthy. Patient's follow up was done for 3 months. There was no evidence of recurrence.

3. Discussion

Osteoma of the temporal bone seems to arise from pre-osseous connective tissue from suture line which relatively has thick subcutaneous layers with rich blood supply. As the osteomas are slow growing, they are asymptomatic and stable for many years. They present as a smooth surface with characteristic hard, bony consistency on palpation.

Osteomas in the mastoid region are solitary and grow out from surface producing external swelling.

Osteomas have been classified in many ways by their pattern of growth into outgrowing or ingrowing, unilateral, or bilateral and on histopathological types, they are made up of discrete fibrovascular channels surrounded by lamellar bone.

a) OSTOMA COMPACTUM- It is the common type, hard and attached to cortex of mastoid process. Histologically it is composed of dense lamellated bone tissue and is traversed by a few vessels. They have a wide base and are very slow growing.
b) OSTEOMA CANCELLARE- It consists of fibrous cellular tissue and cancellous bone.
c) OSTEOMA CARTILAGENEUM- Rare, consisting of bone and cartilage.
d) OSTEOMA MIXTUM- It consists of mixture of types of bone found in osteoma compactum and osteoma cancellare.

Extra canalicular osteomas of temporal bone are primarily composed of mature bone and they have predominance in young females.

Osteoma occurrence can be divided into syndromic and non-syndromic. Etiology of non-syndromic temporal bone osteomas are not known, and various possible causes have been reported.

Osteomas of the external auditory canal have an estimated incidence of 0.5% of the total ear surgeries and they manifest as solitary, unilateral and pedunculated bony mass of unknown origin.

Osteomas of middle ear are extremely rare and when they do, they arise from promontory and results in progressive conductive hearing loss usually due to the involvement of the ossicular chain. Other sites involved are pyramidal eminence, hypotympanum and lateral semicircular canal.

Osteomas of internal auditory canal exhibit as a wide variety of symptoms including asymmetrical sensorineural hearing loss, vertigo, tinnitus, facial nerve palsy and vestibular dysfunction.

Differential diagnosis may include osteosarcoma, osteoblastic metastasis, isolated eosinophilic granuloma, paget's disease, giant cell tumour, osteoid osteoma, calcified meningioma.

Non contrast CT is the imaging method of choice. On imaging ivory osteoma appears radio dense, similar to normal cortex, whereas mature osteoma may demonstrate central marrow. It is seen as a high opacity, well demarcated and dense growth of sclerotic lesion.

In case of extra canalicular osteoma, surgery is indicated if it is causing cosmetic disfigurement and reduced hearing. Surgery is the treatment of choice for external auditory canal osteoma if it obstructs the canal or associated with external auditory canal cholesteatoma, for middle ear osteoma if it is causing hearing loss and for symptomatic internal auditory canal osteoma.

4. Conclusion

Mastoid osteomas of temporal bone are rare benign slow growing asymptomatic tumours. They are usually asymptomatic unless it gradually increases in size to cause cosmetic disfigurement and sometimes pain. Radiological investigations are required to find out the extent with non-contrast CT as the modality of choice.

Complete surgical excision is the treatment of choice with drilling of the mastoid cortex if necessary to prevent recurrences.

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