IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 23, Issue 9 Ser. 8 (September. 2024), PP 38-42
www.iosrjournals.org

A Rare Presentation Of Osteoma Of External Auditory Canal

Avishek K R, Srinivas V, Prashanth V
Junior Resident (1), Professor (2), Professor (3),
Department Of Ent & Hns, Bgs Global Institute Of Medical Science, Bengaluru.

Abstract:
Osteoma of external auditory canal is a rare, slow growing benign tumor with an estimated incidence of 0.05%. Osteoma in external auditory canal is usually asymptomatic but can cause symptoms such as conductive hearing loss, aural fullness in large osteoma occluding the external auditory canal. Osteoma is diagnosed by clinical presentation, radiological and histological investigations.
We present a case report of 28year old female with left external auditory canal osteoma with dehiscent facial ridge and complete tympanic membrane and malleus erosion.
Keywords: *Osteoma, External auditory canal, Exostosis, Temporal bone, Radiological.*

Date of Submission: 15-09-2024 Date of Acceptance: 25-09-2024

I. Introduction:

Osteoma is a slow growing benign tumor which occurs in regions of temporal bone which includes External auditory canal, Mastoid portion, squamous Portion, Middle ear, Eustachian tube, petrous apex, internal auditory canal, zygomatic process, Glenoid fossa and styloid process[1,2]. External Auditory canal is the most common area of temporal bone osteoma with an estimated incidence of 0.05% of total otologic Surgeries[3-6]. The Exact etiology is unknown, probably it might arise from pre osseous connective tissue that is localized at suture line[8], Because of its solitary, unilateral and slow growing nature it is usually asymptomatic, but large Osteomas can cause symptoms such as conductive hearing loss and aural fullness[3-6], Complications such as External auditory canal cholesteatoma can occur due to EAC obstruction by Osteoma[4,7].

Several cases of osteoma has been reported, but we present a rare case of EAC osteoma with middle ear erosion, dehiscent facial ridge & complete Tympanic membrane and malleus erosion

II. Case Report:

A 28 years old female patient presented in ENT OPD with complaints of reduced hearing and aural fullness in Left ear since 2 weeks. On examination, there was a mass occluding left external auditory canal and on probing it was bony hard in consistency and non tender. Tympanic membrane could not be visualized as the lesion was circumferentially involving EAC. HRCT of Temporal bone showed Solitary bony, homogenous density mass with Smooth margin seen in the medial aspect (bony) of the left EAC Measuring 0.9 & 1.1 x 0.6 (AP x TR x CC) causing near complete narrowing of the EAC. Pure tone audiometry showed moderately severe hearing loss (70dBhl) in left ear

Surgery- Left canalopasty with complete excision of osteoma and skin grafting of bare area and myringostapediopexy using Temporalis fascia graft through endaural approach under general anaesthesia.

Procedure- Posterior based metal flap elevated, osteoma was excised using cutting and diamond burrs, a wedge was sent for histopathological examination. Tympanic membrane and facial ridge were found dehiscent, malleus was absent and incus was not in continuity with stapes, myringostapediopexy was done using Temporalis Fascia graft. Raw area was covered with full thickness skin graft approximated to posterior metal flap skin.

Post operative period was uneventful, Patient was hearing whispering voice at 3ft. Histopathological reports confirmed the specimen to have features suggestive of osteoma – which shows dense lamellar bone with bland osteocytes and haversian canal. The inter trabecular spaces shows loose fibrous stroma. There is no evidence of atypia / Malignancy.

III. Discussion:

Osteoma are benign tumors which are made up of Mature bone and are slow growing tumors[9]. Frontoethmoidal region is the most common site in head and neck region; In temporal bone, osteoma is very rare with highest predisposition for external auditory canal (from tympanomastoid and tympanosquamous suture lines)[10]. Exact Mechanism for osteoma formation is unknown, many theories have been proposed till now such as Persistent embryonic periosteum, Congenital Origin, Trauma, Muscle traction, Hormonal factors, chronic infection, Radiotherapy, glandular factors Such as pituitary dysfunction.[3-6, 11, 12]

Varboncoeur et al [13]– proposed that osteoma arise from embryonic cartilaginous rest or persistent embryologic periosteum.

Yamoasoba et al [8]- proposed osteoma may be congenital

Kaplan et al [14]- proposed osteoma develops due to muscle traction and trauma.

Fredberg et al [15]- suggested trauma with subsequent ossifying petrositis

As the Osteomas are slow growing, they remain asymptomatic and stable for many years. Symptoms like reduced hearing or aural fullness can occur due to osteoma itself or due to cerumen[1]. They present with solitary, unilateral, slow growing often pedunculated mass which has smooth surface and hard consistency on palpation.

Osteomas are classified into 4 types histopathologically and they are made up of discrete fibro vascular channels surrounded by lamellar bone [16] Osteoma compactum: composed of dense lamellated bone & traversed by few vessels, commonest type, Osteoma cancellare: consists of fibrous cellular tissue and Cancellous bone, Osteoma cartilagineum: Rare, consists of bone and cartilage, Osteoma Mixtum: Mixture of compactum and cancellare

A slow growing mass in EAC: osteoma should also be differentiated from exostosis, fibrous dysplasia and ossifying fibroma. However, those are even rare in temporal bone, Exostoses are usually considered to be reactive condition Secondary to multiple cold-water immersions or recurrent otitis externa. Exostoses are generally multiple, bilateral, symmetrical bony elevations attached to the canal with broad base without deep extensions and lie close to tympanic membrane, histologically they are characterized by parallel, concentric layers of Subperiosteal bone with abundant osteocytes lacking fibrovascular channels[17-19].

Fibrous dysplasia shows typical radio-opaque ground glass, ill defined appearance in CT-Temporal bone, histopathologically it shows bony trabeculae with woven bone without lamellar transformation.

Ossifying fibroma shows radiolucent, well-defined appearance on CT and histopathologically it shows evenly spaced Spicules of woven bone with lamellar transformation at the periphery[20]. Thus, osteoma can be differentiated by radiologic and histopathologic evaluations.

Surgical excision is the recommended treatment for symptomatic osteoma. Usually, recurrence is not reported. Osteoma can also be removed using piezoelectric device. It is a bony scalpel using micro vibrations at ultrasonic frequency so that soft tissue will not be damaged even on accidental contact with cutting cup[5].

IV. Conclusion:

Osteoma even though rare in temporal bone but commonly seen in EAC, a case of huge osteoma completely occupying the EAC causing atresia and medially extending into middle ear cavity causing loss of TM and malleus and also causing dehiscent facial nerve canal is reported for its rare behaviour.

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Figures:

Figure 1: Preoperative image of osteoma showing occlusion in bony EAC

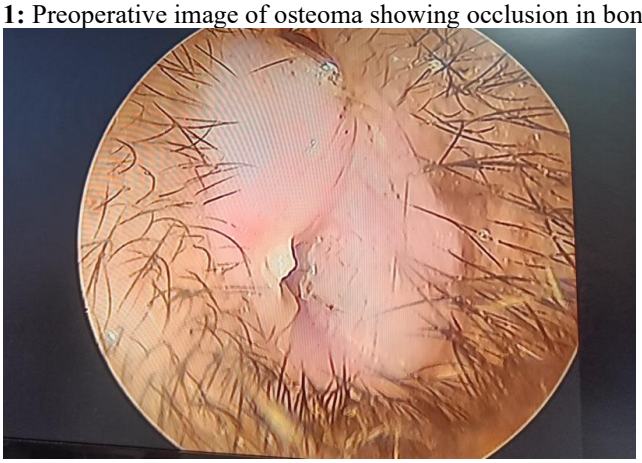

Figure 2: Intraoperative image showing osteoma after rising the skin flap

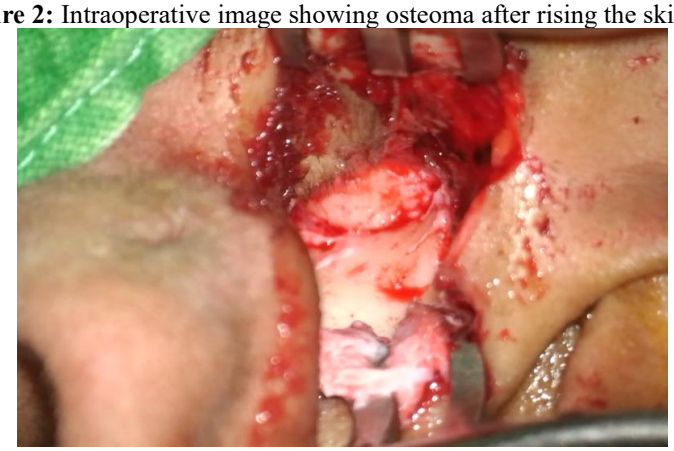

Figure 3: Intraoperative image while creating a wedge to send for histopathological examination

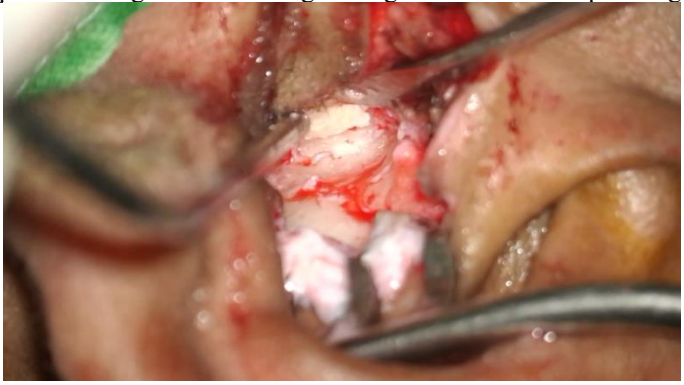

Figure 4: HRCT Temporal bone - Axial view showing osteoma occurring in Bony part of left EAC, right middle ear showing middle ear ossicles.

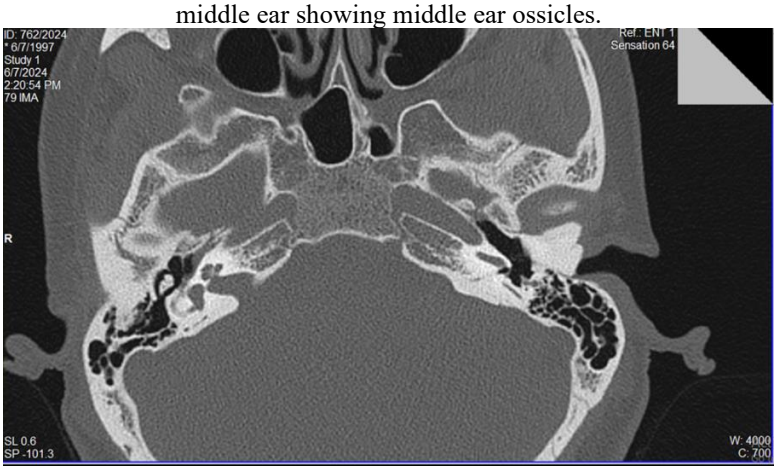

Figure 5: HRCT Temporal bone – coronal view showing osteoma occurring in Bony part of Left EAC.

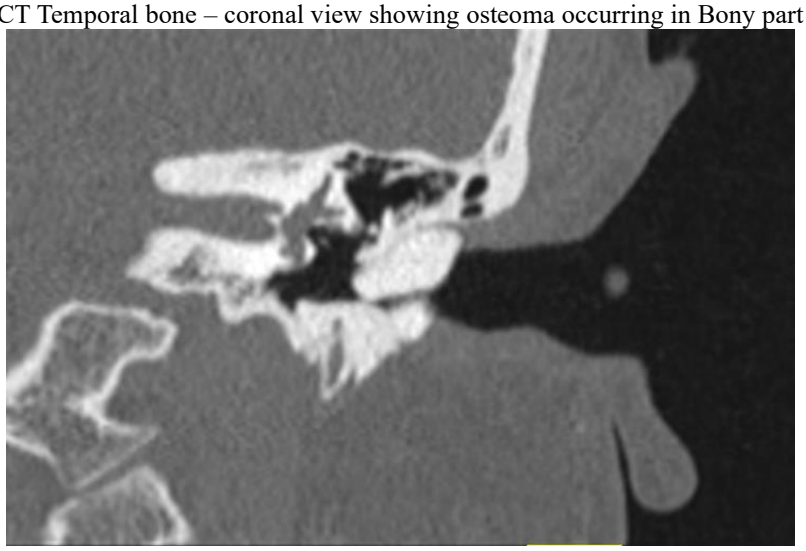

Figure 6: Histopathological slide of excised specimen, stained using hematoxylin and eosin, observed under 200X magnification showing lamellar bone with osteocytes suggestive of osteoma.

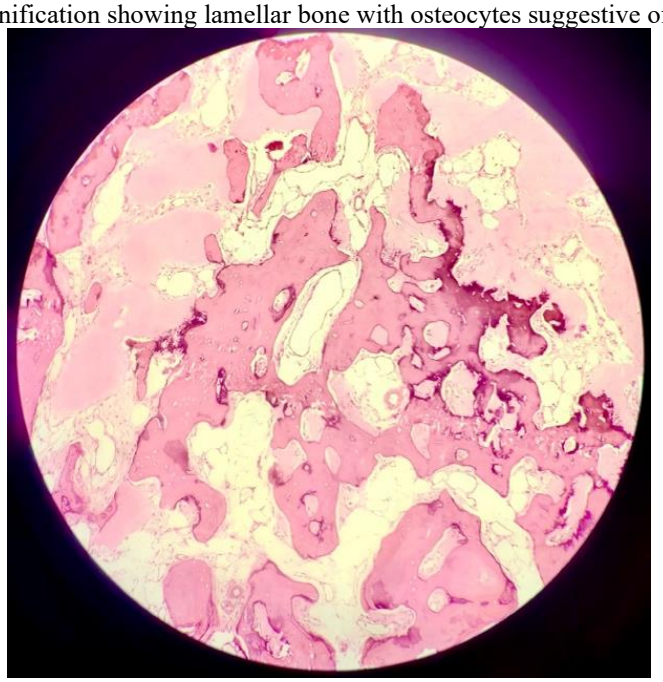

Figure 7: Histopathological slide of excised specimen, stained using hematoxylin and eosin, observed under 200X magnification showing loose fibrous stoma.