ORIGINAL RESEARCH PAPER

Otorhinolaryngology

A HIDDEN CAUSE OF EAR BLOCKAGE: EXTERNAL AUDITORY CANAL OSTEOMA IN A 24-YEAR-OLD MALE

KEY WORDS: Osteoma, External Ear Canal, Extoses, Benign

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ABSTRACT

External auditory canal (EAC) osteoma is a rare benign osteogenic tumor characterized by slow-growing proliferation of mature lamellar bone within the EAC. Progressive growth can cause conductive hearing loss and canal occlusion, even though it is frequently asymptomatic. We describe the case of a 24-year-old man who had otalgia, ear obstruction, and left-sided hearing loss for two months. Otoscopic examination revealed a mass occupying the left external auditory canal and obscuring the tympanic membrane. While high-resolution computed tomography of the temporal bone revealed a lesion in the external auditory canal linked to bony erosion and fragmentation, pure-tone audiometry revealed mild conductive hearing loss. The lesion was completely removed during the canaloplasty procedure. The diagnosis of osteoma was confirmed by histopathological analysis, which showed mature lamellar bone with marrow voids lined by keratinized stratified squamous epithelium. This case highlights the importance of considering EAC osteoma in patients presenting with unilateral conductive hearing loss and emphasizes the role of imaging, histopathology, and timely surgical management in achieving favorable outcomes.

INTRODUCTION

A rare benign osteogenic tumor called an external auditory canal (EAC) osteoma is characterized by the growth of mature lamellar bone inside the EAC. Usually, it appears as a single, unilateral, pedunculated bony mass that originates from the tympanomastoid or tympanosquamous suture line. Chronic inflammation, trauma, developmental defects, and hereditary factors have all been suggested as potential causes, while the precise cause is still unknown. The majority of EAC osteomas are asymptomatic, slow-growing, and frequently found by accident during normal otologic examinations or imaging tests. Patients may exhibit hearing loss, tinnitus, cerumen impaction, recurrent otitis externa, aural fullness, or, in rare cases, the development of cholesteatoma as a result of external auditory canal obstruction. Because EAC osteomas differ from other bony lesions like exostoses in terms of genesis, clinical behavior, and therapy, it is crucial to distinguish between the two. High-resolution computed tomography is essential for diagnosis since it shows the size, location, and extent of the lesion [1–4].

Due to the rarity of this condition and its potential to mimic other external auditory canal pathologies, reporting individual cases contributes to a better understanding of its clinical presentation, diagnostic challenges, and treatment outcomes. We present a case of external auditory canal osteoma in a 24-year-old male patient presenting with complaints of reduced hearing and a sensation of blockage in the left ear, highlighting the diagnostic workup, surgical management, and postoperative outcome. There was no history of ear discharge, tinnitus, vertigo, trauma, or previous ear surgery.

Case Description

A 24-year-old male presented with complaints of reduced hearing and a sensation of blockage in the left ear for the past 2 months. There were no apparent aggravating or alleviating variables, and the symptoms were mild, progressive, and persistent. For a month, he also complained of mild, progressively worsening left-sided ear ache, without any specific aggravating factors, and was partially relieved with medication.

General physical examination: The patient was a 24-year-old male who was moderately built and well nourished. He was conscious, cooperative, and well oriented to time, place, and person. His vital signs were within normal limits, and systemic examination was unremarkable.

Otoscopic examination: Otoscopic examination of the left ear revealed a mass occupying the external auditory canal, obscuring visualization of the tympanic membrane. Examination of the right ear showed a normal external auditory canal with an intact tympanic membrane.

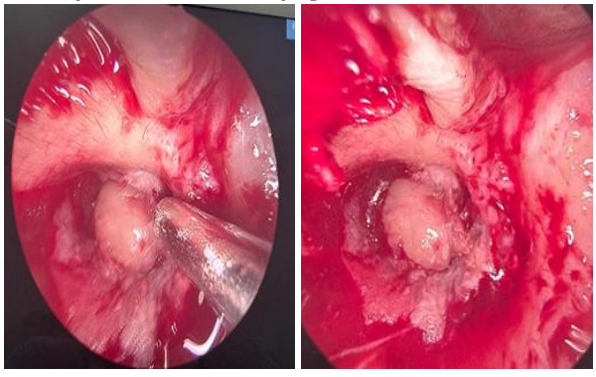

Figure 1: Otoscopic Examination Documented a Mass Occupying the Left EAC.

Investigations

Tuning Fork Tests and Pure Tone Audiometry

A positive Rinne's test on the right side and a negative Rinne's test on the left were shown by tuning fork testing. The left ear was lateralized in Weber's test. Both facial nerve functions were unharmed. The left ear had a minor conductive hearing loss, with an average hearing threshold of 36.6 dB, according to pure tone audiometry, whereas the right ear's hearing sensitivity was within normal bounds, with an average threshold of 10 dB.

High-Resolution Computed Tomography (HRCT) of the Temporal Bone: Imaging demonstrated a soft-tissue density lesion within the left external auditory canal associated with bony erosion and bony fragments.

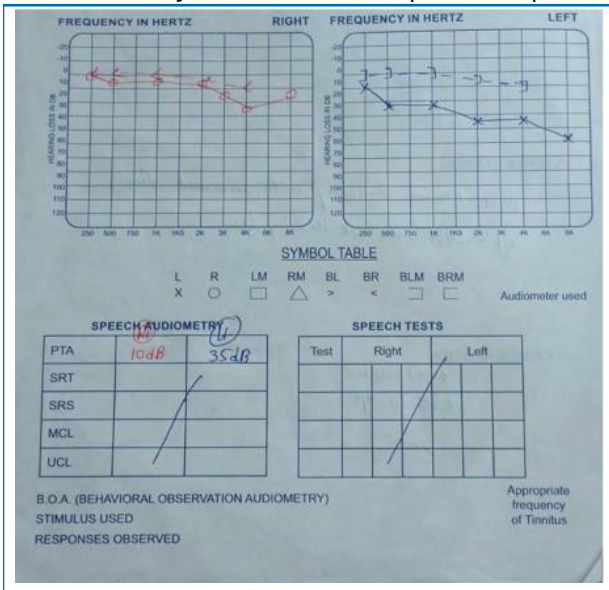

Figure 2: PTA Demonstrating Mild Conductive Hearing Loss in the Left Ear with an Average Hearing Threshold of 36.6 dB, While the Right Ear Showed Hearing Sensitivity Within Normal Limits with an Average Threshold of 10 dB.

Diagnosis and Management:

Based on the clinical and radiological findings, a diagnosis of osteoma of the left external auditory canal was made. After receiving intravenous antibiotic treatment, the patient had a left ear canaloplasty in which the lesion was completely removed.

A well-defined lesion made of mature lamellar bone with intervening marrow gaps and bordered by keratinized stratified squamous epithelium was discovered upon histopathological analysis of the removed specimen. These results supported the external auditory canal osteoma diagnosis.

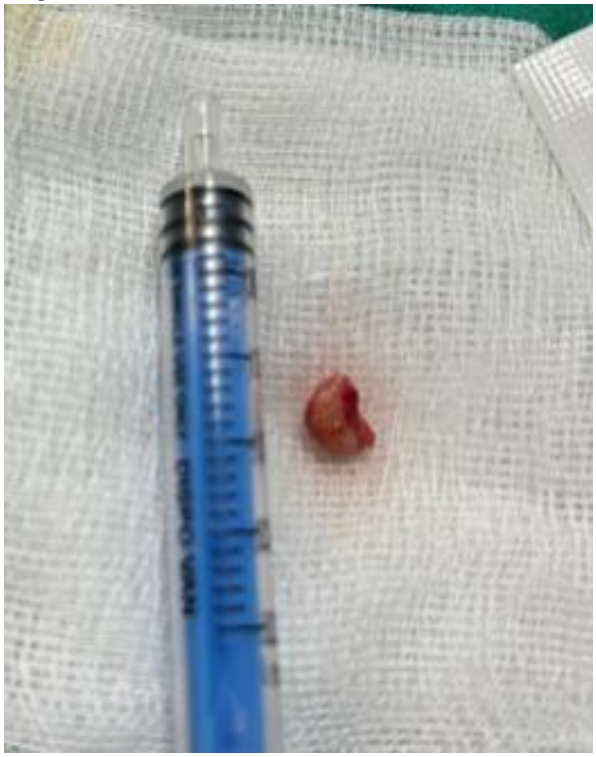

Figure 3: Gross Patient Specimen of [size] of Left EAC

DISCUSSION

Osteomas are categorized as bony neoplasms with a predilection for the mandible, mastoid cortex, EAC, and facial bones[5]. A proliferation of mature lamellar bone inside the bony external auditory canal is the hallmark of osteoma of the EAC, a rare benign osteogenic tumor. It usually manifests as a single, unilateral, pedunculated lesion originating from the tympanosquamous or tympanomastoid suture line and is far less prevalent than exostosis[1,6]. Osteomas are typically isolated lesions with a distinct stalk, in contrast to exostoses, which are typically numerous, bilateral, and broad-based lesions linked to recurrent exposure to cold water[7]. Even though EAC osteomas have been identified for many years, their pathophysiology is still unclear. Numerous theories have been put forth, such as genetic predisposition, trauma, hormonal factors, chronic inflammation, embryologic remains, and prior surgery [8]. However, the majority of documented patients—including our patient—do not have any identifiable risk factors, which lends credence to the theory of an idiopathic or developmental origin.

The size and location of the lesion have a major impact on how an EAC osteoma presents clinically. Small lesions are frequently asymptomatic and discovered incidentally during routine otoscopic examination. Symptomatic lesions generally occur when progressive enlargement causes obstruction of the EAC. Conductive hearing loss, auditory fullness, recurrent otitis externa, cerumen impaction, otalgia, tinnitus, and, in more severe cases, cholesteatoma formation are common presenting symptoms that have been documented in the literature. The most commonly reported symptoms among patients with symptoms include hearing loss, ear obstruction, and mild otalgia, all of which were present in our case [9,10]. Rather than middle-ear pathology, our patient's conductive hearing loss was caused by mechanical blockage of the EAC.

A combination of radiological imaging, audiological evaluation, clinical examination, and histological confirmation are used to diagnose EAC osteoma. A hard, smooth, white mass that arises from the bony part of the external auditory canal is usually seen during otoscopic examination. In the present case, the lesion occupied the external auditory canal and completely obscured visualization of the tympanic membrane. An audiological evaluation revealed a 36.6 dB hearing threshold and mild conductive hearing loss. Similar audiometric results, where canal obstruction caused conductive hearing impairment proportionate to the degree of luminal obstruction, have been reported in other investigations.

One of the most crucial diagnostic criteria for EAC osteoma is HRCT, which is still the preferred imaging modality. A single, hyperdense, pedunculated bony lesion connected to the tympanosquamous or tympanomastoid suture line is one of the classic CT findings. In addition to making the diagnosis, HRCT assesses the size, extent, attachment site, degree of canal obstruction, and presence of sequelae such cholesteatoma or bony erosion [11,12]. HRCT revealed a lesion in our patient's left external auditory canal that was connected to bone fragments and erosion. These results supported surgical intervention and made preoperative planning easier.

The gold standard for an accurate diagnosis is histo-pathological investigation. Osteomas are composed of mature lamellar bone containing fibrovascular channels and marrow spaces covered by keratinized stratified squamous epithelium. Three histological variants have been described: compact (ivory), cancellous (spongiotic), and mixed osteoma[13]. The current case showed characteristics of a cancellous osteoma, including mature lamellar bone with marrow voids beneath keratinized squamous epithelium.

The findings of comparable cases documented in the literature are highlighted in the table below:

Table 1: Findings of Documented Cases in Literature

Author (Year)	Age/ Sex	Clinical Presentation	Radiological Findings	Associated Findings	Management	Outcome
Lee et al. 10	19/M	Hearing disturbance and aural fullness	Solitary unilateral EAC osteoma	Spongiotic osteoma on histopathology	Surgical excision	Excellent recovery, no recurrence
	23/M	Hearing disturbance and ear fullness	Unilateral EAC osteoma	Histologically confirmed spongiotic osteoma	Surgical excision	Favorable postoperative outcome
Mahalle et al. 14	23/M	Chronic ear symptoms, hearing loss, canal obstruction	EAC osteoma with canal obstruction	EAC cholesteatoma and mastoid granulation tissue	Surgical excision	Good recovery
Dosemane D et al. 15	39/M	Unilateral hearing loss and ear blockage	EAC osteoma causing canal obstruction	Coexisting canal wall cholesteatoma	Excision of osteoma and cholesteatoma	Favorable outcome
Present Case (2026)	24/M	Reduced hearing, ear blockage (2 months), otalgia (1 month)	HRCT showed a soft-tissue density lesion in the left EAC with bony erosion and fragments	No cholesteatoma; mild conductive hearing loss (36.6 dB)	Canaloplasty with complete osteoma excision	Uneventful postoperative recovery; histopathology confirmed osteoma

In summary, the current case illustrates the typical radiological, histological, and clinical characteristics of EAC osteoma. Unilateral presentation, conductive hearing loss, distinctive HRCT findings, and histological evidence of mature lamellar bone were all major diagnostic criteria that the patient met. Our case has several characteristics in line with previously documented symptomatic osteomas, according to a comparison with published literature. This highlights the significance of early identification and surgical care to avoid sequelae like cholesteatoma and canal wall damage.

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