

Osteoma And Exostosis Of External Auditory Canal

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Abstract

Osteoma is a benign, slow growing tumor which can arise from various sites in the temporal bone. Osteoma of the external auditory canal should be differentiated from exostoses. These can produce similar clinical picture. The various differentiating clinical features between osteoma and exostoses of the external auditory canal, the controversies of histological features and management are presented.

INTRODUCTION

Osteomas of the external auditory canal are considered clinically to be discrete, pedunculated bone lesions arising along the tympano-squamous suture while exostoses of external auditory canal are broad based elevations of bone usually multiple and bilaterally symmetric, involving the tympanic bone. The clinical features usually overlap in the two conditions but the histologic studies do not agree on the differentiating features^{1,2}. A case of external auditory canal osteoma along with a review of the differentiating features and management is being presented.

CASE REPORT

A 23 year-old female reported with a swelling in the left ear of 6 years duration. It was gradually increasing in size. The patient gave history of intermittent headache and hearing impairment. There was no history of swimming, trauma, dizziness, vomiting, visual disturbance and neurological deficit. On examination, the swelling was found to arise from the posterior wall of the external auditory canal. It was about 1 x 1 cm, smooth, bony hard, non-tender swelling fixed to underlying bone. Computer tomography (CT) scan of the temporal bone (Fig1) revealed a pedunculated bony mass arising from the posterior wall of the left external auditory canal and almost obliterating the canal. The diagnosis of osteoma was made.

Figure 1

Figure 1: CT scan showing pedunculated bony mass arising from the posterior wall of the left external auditory canal and almost obliterating the canal.



The patient was taken up for the excision of the osteoma under local anesthesia. A chisel was placed at the junction of the tumor and the cortex. Light blows were applied using a mallet on all sides of the tumor and it was separated from the bony external auditory canal. The edges of the bone were polished with a diamond burr. The removed tumor measured 1 x 1 cm. After placing back the elevated skin the external auditory canal was packed with antibiotic impregnated gauze. Post-operative period was uneventful. Histological examination report was osteoma. After four months of follow up the patient was symptom free.

DISCUSSION

Skull base osteomas are most commonly located in the fronto-ethmoid regions, but may also occur in the maxillary and sphenoid sinuses, mandible, and occasionally arise in the

temporal bone³. The most common location of osteomas in the temporal bone is the external auditory meatus, followed by the mastoid and temporal squame with other sites being exceptional^{4,5}.

It is widely accepted that external auditory canal (EAC) exostoses and osteomata are separate clinical entities that differ in their gross appearance. The age and sex incidence of these distinct clinical entities are similar. Exostoses are a benign growth of bone originating from periosteum. These are multiple, bilateral often with anterior and posterior sessile lesions, broad based and are found medial to the sutures on the tympanic bone. These are thought to be a reactive condition secondary to multiple cold water immersions, or recurrent otitis externa. Ears with exostoses have been called surfer's ear or Australian ears. A prevalence rate of 73.5% of exostoses is reported in surfing population⁶.

Exostoses are usually asymptomatic, unless it grows to considerable size or there are multiple exostoses in the ear canal, trapping water and debris or impinging on the motion of the ossicular chain. Most common symptom of exostoses is conductive hearing loss, which may fluctuate in early stages. Water and debris trapped medial to it can cause otitis externa, otorrhea and otalgia. Total obstruction can lead to, complications, including acquired post-obstructive cholesteatoma that can extend medially into the middle ear cavity, superiorly through the tegmen into middle cranial fossa or posteriorly to involve the mastoid air cells⁷.

Osteoma are considered true bony tumors that are single, unilateral and pedunculated and arise from the tympano-squamous or tympano-mastoid suture line, often found at the anterior aspect of the bony-cartilaginous junction of external auditory canal⁸. Osteomas manifest with similar symptoms as exostoses including conductive hearing loss, otorrhea, otalgia, otitis externa and cholesteatoma. Unusual presentations of osteoma include unilateral headache⁹ and as an EAC polyp¹⁰.

On CT scan findings of exostoses appear as broad based lesion with no deep extension, while an osteoma is seen as a well-demarcated, hyper-dense attenuating outgrowth tumor. Both coronal and axial scans are helpful in demonstrating the exact dimensions and complications, such as canal cholesteatoma developing medial to osteoma and exostosis^{1,11}.

Graham reported histological findings of osteoma and exostoses². Osteoma is covered by a dense squamous

epithelium with an underlying periosteum. The internal structure is characterized by a great abundance of discrete fibro-vascular channels surrounded by lamellated bone. The appearance of bone between these channels varies considerably, being primarily dense and oriented in different directions. Exostoses are covered by a squamous epithelium with underlying periosteum. The internal structure of the lesion is characterized by parallel concentric dense layers of sub-periosteal bone abundant in osteocytes and devoid of fibro-vascular channels and their contents so characteristic of osteomas. The newly formed, mature bone is arranged in layers, suggesting periodic growth. A concentric, lamellar bony organization gives rise to the classic 'onion-skin' histologic appearance^{2,7}.

Fenton et al disagreed with Graham's principle finding, namely the presence or absence of fibro-vascular channels in osteomas and exostoses respectively. They further stated that osteomata from different temporal bone sites were similar, and it is not possible to differentiate them histologically^{1,2}.

There is a relative paucity of the pathologic illustrations since both osteomas and exostoses seldom require surgical removal. Moreover, the diffusely-based, often multiple exostoses are usually drilled away and not submitted for histopathologic study².

The treatment of both exostoses and osteoma are essentially the same. For small lesions frequent cleaning of debris from the EAC is needed, while large lesions causing EAC obstruction and hearing impairment require surgical removal. The skin of EAC should be preserved and injury to the tympanic membrane should be prevented. Anterior lesions should be treated first, because their removal is less likely to damage the facial nerve or dura. Further, removing anterior lesions enables the surgeon to better visualize the posterior lesions of the ear canal^{7,8}.

During removal of anterior lesions the temporo-mandibular joint can be violated resulting in temporo-mandibular joint prolapse and sub-cutaneous emphysema secondary to air entry into the joint through a bony defect. Other complications include canal stenosis, sensori-neural hearing loss, tympanic membrane perforation and facial nerve injury¹². Facial nerve may be uncovered posteriorly and inferiorly where it often lies lateral to the tympanic annulus⁸. Green and co-workers reviewed 22 patients who had sustained iatrogenic facial paralysis resulting from otologic procedures, reported that 14% of cases were a result of exostoses surgery; this cause was second only to

mastoidectomy¹³.

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References

1. Fenton JE, Turner J, Fagan PA. A histopathologic review of temporal bone exostoses and osteoma. *Laryngoscope* 1996; 106: 624-28.
2. Graham MD. Osteoma and exostoses of the external auditory canal: A clinical, histopathological and scanning electronic microscopic study. *Ann Otol Rhinol Laryngol* 1979; 88:566-72.
3. Ben-yaakov A, Wohlgelernter J, Gross M. Osteoma of the lateral semicircular canal. *Acta Oto-laryngologica* 2006; 126: 1005-7.
4. Denia A, Perez F, Canalis RR, Graham MD. Extracanalicular osteomas of the temporal bone. *Arch Otolaryngol Head Neck Surg* 1979; 105: 706-9.
5. Camacho RR, Vicente J, Cajal SR. Imaging quiz case 2. *Arch Otolaryngol Head Neck Surg* 1999; 125: 349, 351-52.
6. Wong BJ, Cervantis W, Doyle KJ, Karamzadeh AM, Boys P, Brauel G et al. Prevalence of external auditory canal exostoses in surfers. *Arch Otolaryngol Head Neck Surg* 1999; 125: 969-72.
7. Tran LP, Grundfast KM, Selensnick SH. Benign lesions of the external auditory canal. *Otolaryngol Clin North Am* 1996; 29: 807-25.
8. Sheehy JJ. Diffuse exostoses and osteomata of the external auditory canal: a report of 100 operations. *Otolaryngol Head Neck Surg* 1982; 90: 337-42.
9. Shedny P, Paulose KO, Khalifa SA, Sharma R. Osteoma of the external auditory canal presenting with headache. *J Laryngol Otol* 1989; 103: 683-84.
10. Toma AG, Fisher EW. Osteoma of the external auditory canal presenting as an aural polyp. *J Laryngol Otol* 1993; 107: 935-36.
11. Agarwal A, Deschler DG, Baker KB. Exostoses of the external auditory canal. *Am J Otol* 1999; 20: 807-8.
12. Fischer EW, McManus TC. Surgery of the external auditory canal exostoses and osteoma. *J Laryngol Otol* 1994; 108: 106-10.
13. Green MD, Shelton C, Brackmann DE. Iatrogenic facial nerve injury during otologic surgery. *Laryngoscope* 1994; 104: 922-26.

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