

# FIBRO-OSSEOUS LESION OF THE EXTERNAL AUDITORY CANAL: A CASE REPORT

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The aim of this study was to differentiate a novel type of benign circumscribed bone lesion of the external auditory canal from lesions described previously, such as exostoses and osteomas. We present a 43-year-old male patient who suffered from ear discharge of the right ear. Local findings showed bloody discharge from his right auditory canal, which was occupied by a mass-like tissue. Computerized tomography (CT) carried out before resection of the lesion disclosed the absence of a bony connection to the underlying structures. The pathologic findings showed lesions consisting of an osteoma-like bone formation with sparse osteoblastic areas. Mature lamellar bone and bone marrow containing adipose tissue were also noted. There was no evidence of a relationship to the cartilaginous tissue or bony structures of the external auditory canal. Therefore, we present this rare case and review the reported literature in which clinical, CT, surgical, and pathologic findings suggest that this lesion was unlike those previously known, and may be related to ossifying reactions in other parts of the organism.

**Key Words:** fibro-osseous lesion, external auditory canal, ossifying reaction  
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The term fibro-osseous lesion is a generic designation of disorders (ranging from inflammatory to neoplastic) that microscopically exhibit a connective-tissue matrix and islands/trabeculae of bone. Although the histologic appearance, and frequently the clinical and radiographic features, may be similar to other lesions, these lesions demonstrate a wide range of biologic behaviors. They can arise from any part of the facial skeleton and skull, with more than 70% of cases arising in the head and neck region [1]. They mainly involve the mandible and maxilla but, occasionally, they are reported in the orbitofrontal bone, nasopharynx, paranasal sinuses, and skull base.

Much rarer are other types of ossifying lesions found in the external auditory canal, which are classified together under the common term benign fibro-osseous lesion [2]. These include lesions consisting of formless trabeculae of compact bone embedded in the surrounding connective tissue. They are characteristically located over healthy bone, from which they are abruptly differentiated.

Exostosis of the external auditory canal is also a common disorder related to local irritation. It characteristically has multiple, and frequently bilateral and symmetrical, lesions, with a broad implantation base in the deepest regions of the canal, near the tympanic ring [3]. While exostoses are very common, osteomas are rare [4]. Osteomas occur predominantly in the mastoid process, the squama, and the internal auditory canal; other locations are infrequent [5]. Histologically, there are many differences between exostoses and osteomas.

This report deals with a case of an osseous lesion with clinical, computerized tomography (CT), surgical, and

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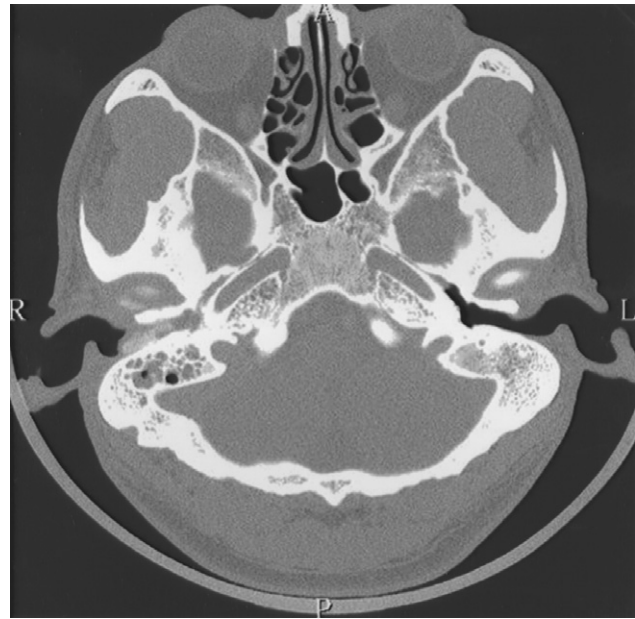
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pathologic features that differentiated it from the classically accepted characterization. It suggests the existence of a lesion unlike exostoses and osteomas, possibly related to ossifying reactions in other parts of the organism.

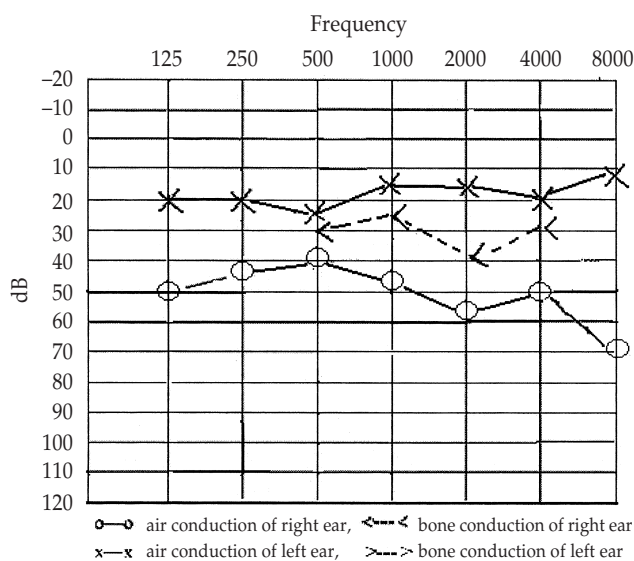
### CASE PRESENTATION

A 43-year-old male, who had suffered from persistent right ear bloody discharge and hearing impairment for more than 6 months, visited our clinic. No other medical diseases or psychiatric problems were found. Otoscopy revealed considerable bloody discharge and an extensive firm mass filling his right external auditory canal. Pure tone audiogram showed a 46 dB hearing loss and an air-bone gap of 25 dB in the right ear (Figure 1). High-resolution CT of the temporal bone showed a soft-density mass with high-density material in the right external auditory canal and no obvious contact with the underlying bone structure. In addition, the ossicle chains were intact, and the middle ear cavity was free of lesion involvement (Figure 2). The patient's history revealed that his ears had previously been well, without trauma. The mass was removed under general anesthesia, leaving the skin under the mass intact except where it attached to the mass; the eardrum was also intact. He felt that hearing impairment was improved after surgical management.

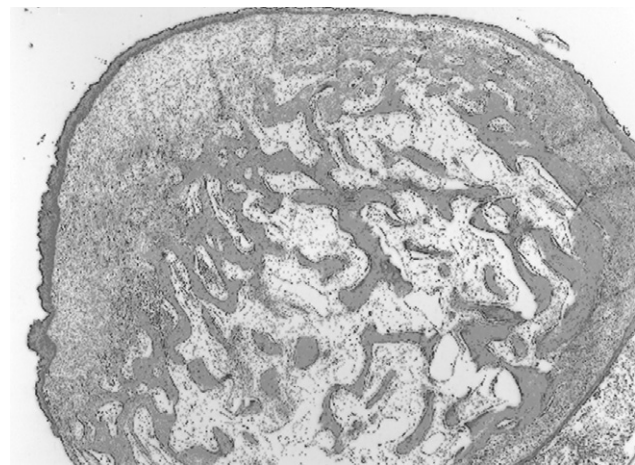


**Figure 2.** Temporal computerized tomography scan shows a soft-density mass with high-density material in the right external auditory canal and no obvious contact with the underlying bone structure.

Histology showed lesions consisting of an osteoma-like bone formation with sparse osteoblastic areas. The low-power image showed a polypoid-like tumor containing trabeculae and fibrous tissue covered by epidermis (Figure 3). The bone marrow was found to contain adipose tissue. There was no obvious inflammatory bone formation. Some



**Figure 1.** Pure tone audiogram shows right conductive hearing loss with an air-bone conduction gap (A-B gap) of 25 dB.

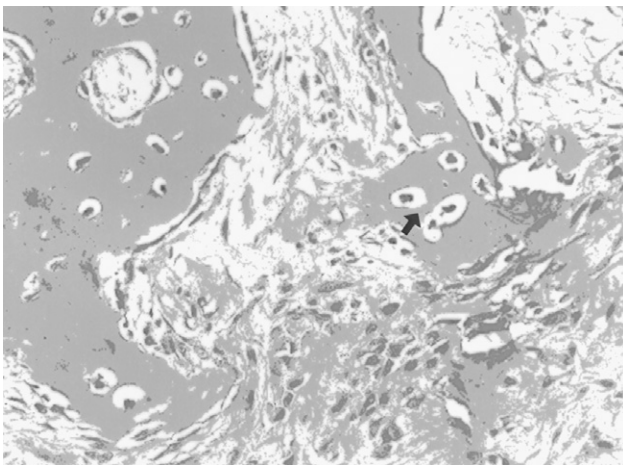


**Figure 3.** Polypoid tumor composed of bone trabeculae and fibrous tissue covered by epidermis. (Hematoxylin & eosin; original magnification,  $\times 4$ .)

degeneration was noted in the border of bone trabeculae and there was maturation of the bony component. No cartilage component was found in the lesion (Figure 4). There was no evidence of a relationship with the cartilaginous tissue or the bony structures of the external auditory canal.

## DISCUSSION

Benign fibro-osseous lesions include non-neoplastic lesions such as fibrous dysplasia and neoplastic lesions such as ossifying fibroma, giant cell tumor, osteoma, osteoblastoma, and aneurysmal bone cysts [6]. Unknown etiology, pathogenesis, and diverse histopathologic pictures make the lesion a complex entity. Because of insidious growth, patients present at a broad range of ages. Spherical bone tumors implanted in the lateral aspect of the external auditory canal are usually osteomas or exostoses or, less commonly, fibro-osseous lesions. Clinically, osteomas of the external auditory canal are usually solitary, pedunculated, bony growths attached to the tympanosquamous or tympanomastoid suture line [5]. Occasionally, they may be small, multiple, and asymptomatic. Graham insists that osteomas have never been encountered anywhere but on the squamotympanic or tympanomastoid suture, to which they are invariably joined by a bone pedicle [3]. Imaging



**Figure 4.** Dense collagenous stroma and bone trabeculae contain adipose tissue (arrow) in the marrow space. (Hematoxylin & eosin; original magnification,  $\times 40$ .)

study in the present case and the surgical procedure disclosed the presence of a pedicle joining the lesion to the nearest bone.

Histology showed that the lesions in the present case corresponded to mature, well-defined, osteoma-like lesions. Clinical and histologic differential diagnosis involved the exclusion of osteomas and osteocartilaginous lesions. Our case presented a mature bony component that suggested a mesenchymal, metaplastic, histogenetic origin at the level of the dermis or connective tissue of the external auditory canal. These features are similar to those observed in mesenchymal lesions such as myositis ossificans, which are considered to be secondary and reactive to local processes [3]. Histology in the present case did not reveal any cartilage component. Similar lesions have been referred to as florid reactive periostitis, including fibro-osseous tumor of the fingers [3].

This lesion represents an entity other than osteoma and was diagnosed by histopathologic and clinical features including location. There were no features similar to exostosis. The diagnostic factors of benign fibro-osseous lesion are bone formation through connective tissue, lamellated versus woven bone patterns, and osteoblastic rimming [7,8]. Many of the histologic findings in our case support a diagnosis of fibro-osseous lesion. We hypothesize that the lesion developed from a progressive inflammatory reaction with fibrosis, osseous metaplasia, and eventual calcification until it became mature bone. This may have been due to irritation of the tissue of the superficial portion of the external auditory canal or some unknown factor or circumstance [4].

Chronic stenosed external otitis is a difficult condition to treat. The essentials of surgery involve complete removal of all tissue, a large canalplasty, and reconstruction [9]. For patients with external ear canal mass presenting with hearing impairment and persistent ear discharge, fibro-osseous lesion should be included in the differential diagnosis.

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