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Osteoma of Facial Nerve Canal with Cholesteatoma: A Rarest of Rare Presentation

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Abstract

Objective: Osteoma Occurs Almost Exclusively in The Head and Neck Region, only Rarely Present into the Facial Canal. We Reported an Incidental Finding of Osteoma in Facial Nerve Canal.

Material Methods: A 35 yrs. female patient present with left ear foul smelling discharge and hearing loss since last 10yrs. On microscopic examination there was mass in post superior quadrant of tympanic membrane. On high magnification there was eroded facial canal with cholesteoma. On detail history patient give history of facial weakness which gets recovered within in 2 month on medication. High resolution computed tomography of temporal bone done to rule out exact pathology in middle ear and mastoid.

Result: On otoendoscopic examination there was mass in postero superior quadrant of tympanic membrane and eroded posterior canal wall with choesteatoma. Two pathology were there one is the osteoma at facial nerve canal in vertical segment of facial nerve approximately 0.7cmx 0.8cm and cholesteoma in attic, aditus, antruma and eroding facial canal extending to mastoid tip and sinodural angle, eroding sinus plate. We removed both the pathology that is osteoma and cholesteoma and send to histopathology for confirmation.

Conclusion: Osteomas are diagnosed incidentally in asymptomatic patients. Our case was symptomatic and raised the question of surgical management. This case report discusses the presentation and management of exceptional osteoma occurrence site along with presentation of cholesteoma with history of facial nerve palsy operated by mastoid exploration.

Keywords: Facial nerve dysfunction; Middle ear lesions; Middle ear osteoma; Cholesteoma

Introduction

Tumors of the middle ear space are rare. Like middle ear effusions, they can cause conductive hearing loss and other otologic symptoms. Vascular lesions, such as glomus tumors, most commonly affect the middle ear [1]. Normal anatomic variants, such as dehiscent jugular bulb or high-riding carotid artery, may also invade the middle ear

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space. Lesions arising from the temporal bone itself are rare [1,2]. Osteomas are the most widespread neoplasms of the temporal bone [3]. They tend to occur in the external auditory canal but can also occur in other parts of the temporal bone, such as the middle ear space, where the facial nerve is situated [3,4]. Subsequently, middle ear lesions can cause facial nerve dysfunction. However, facial nerve weakness is usually caused by other pathologies, such as Bell's palsy or central lesions. Middle ear osteomas are rare benign tumors that may present with conductive hearing loss and tinnitus [5]. Facial nerve involvement is extremely rare but requires early recognition. In the present study, we report a case of middle ear osteoma causing incidental facial nerve paresis 2 years back which on medication and physiotherapy gets relieved after one 1month and later on patient present with left ear foul smelling discharge and hearing loss along with facial nerve weakness.

Case Report

We reported a case of 35 years female patient present with foul smelling ear discharge since 2 years with pain in left ear with hard of hearing since 6 month. Patient had history of facial nerve weakness 2.5 yrs backs. On through clinical examination there were no other symptoms and signs of neurological involvement. Opposite ear was normal on otoscopic examination. Patient had history of left sided facial nerve palsy 2.5 years back on medication and physiotherapy facial nerve palsy get relieved. After 1.5 year patient comes to our ENT department opd for ear discharge. On examination of the patient with otoscope there was discharge and external auditory canal mass seen. High resolution computed tomography of temporal bone advised to rule out exact middle ear pathology. High resolution computed tomography suggestive of the left ear Cholesteatoma [Figure 1].

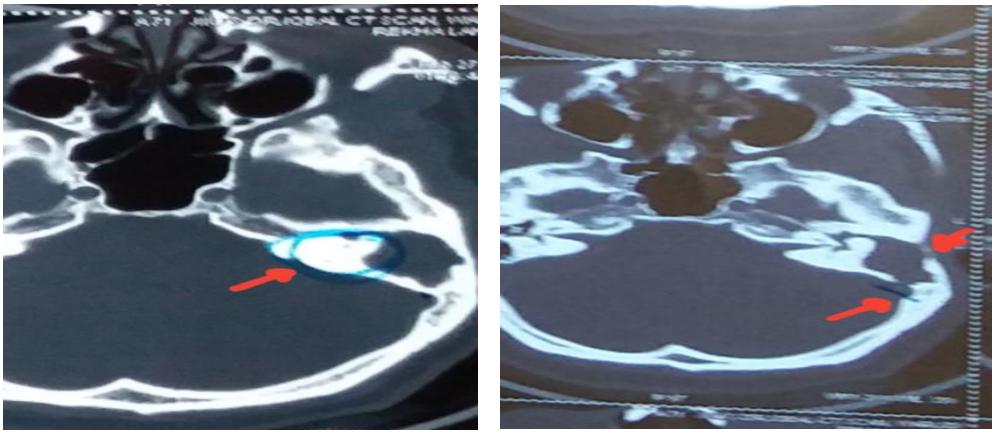

Figure 1: Showing cholesteoma.

Head, neck and vestibular examinations were normal, an audiogram revealed left ear mild to moderate conductive hearing loss. On otoendoscopic examination there was mass in posterosuperior quadrant of tympanic membrane, with white flecks of choesteatoma seen in attic with eroded posterior canal wall. All routine blood investigation done for anesthetic purpose. We planned this patient for mastoid exploration under general anesthesia with the consent of patient for facial nerve palsy during operation and other relevant complication of procedure. Middle ear exploration was then performed, which revealed an osseous lesion present over the facial canal in tympanic part facial nerve. There was huge extensive choesteatoma eroding the post canal wall extending from attic, aditus and antruma reaching towards sinodural angle and towards the tip of mastoid eroding the sinus plate posteriorly. Cholesteatoma removed completely along with osteoma and the specimen sent for histopathological examination [Figures 2&3] which resulted in a diagnosis of a middle ear osteoma with cholesteatoma.

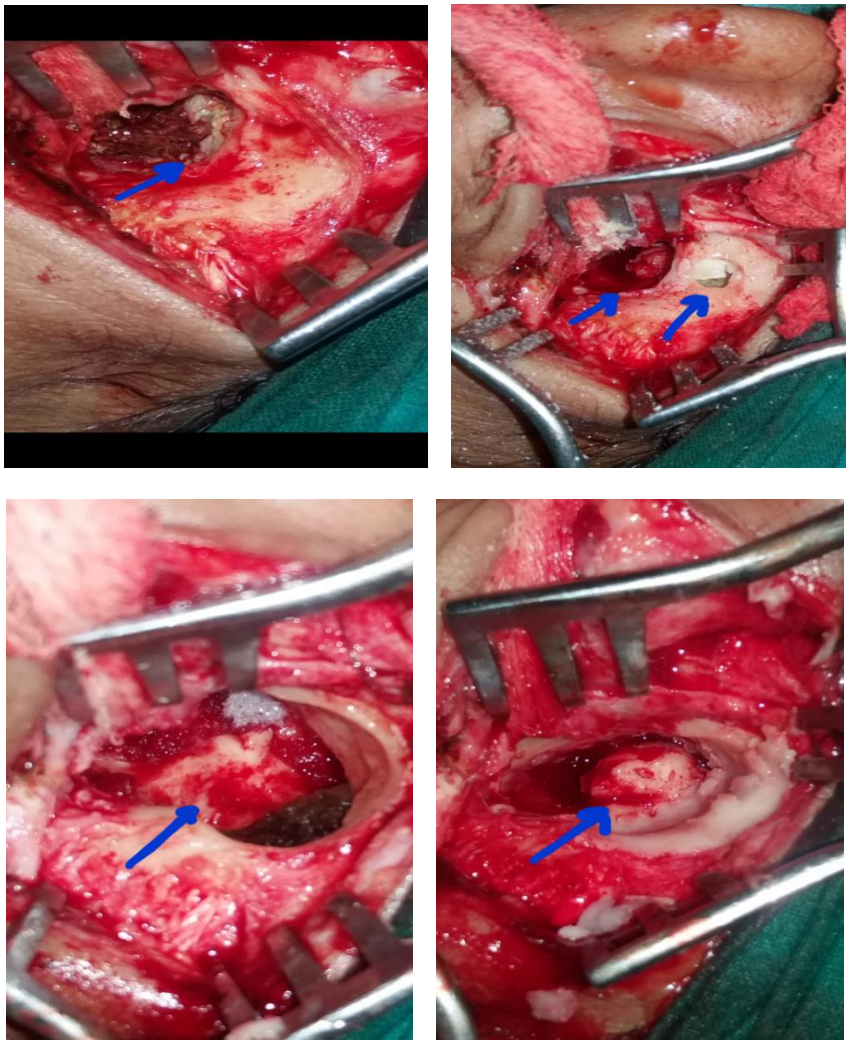

Figure 2: A: Cholesteoma eroding posterior canal wall, B: osteoma with choesteatoma eroding cortex C: Osteoma arising from facial canal, D: Facial canal.

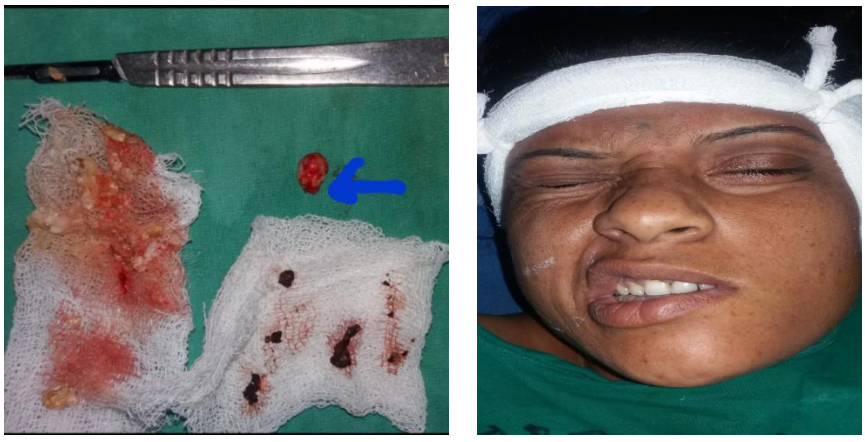

Figure 3: A: specimen of osteoma and cholesteatoma; B: Facial palsy.

Discussion

Osteomas in head neck region are always interesting for ENT surgeon. Their location is always challenging to surgeon for excision. When they occurs on the surface of skull bone then they are easily to excise but when their presentation in the sinuses, middle ear and at frontal ethmoidal sinuses then these cases become challenging to excise for surgeons. Temporal bone osteomas are rarely encountered benign neoplasms resulting from lamellar bone deposition most commonly in the external auditory canal [1,2]. Typically, these tumors appear as solitary, unilateral, and pedunculated lesions located in the lateral bony ear canal [3]. Osteomas can be differentiated from exostoses, since the latter usually presents as multiple, bilateral, and broad-based elevations of the medial bony external auditory canal [4]. Till date only one other case of middle ear osteoma presenting with facial nerve weakness is found in the literature [5]. In most cases, the confirmation of a diagnosis requires computed tomography imaging, along with visual inspection during surgical exploration with histopathological analysis of the biopsied or excised specimen [6].

A review of the literature of middle ear osteoma cases revealed a male preponderance (2:1) with a median age at diagnosis of 28 years (mean 28.5 years; range, 5 to 27) [2]. The first report cases involved a pair of siblings and thus a genetic etiology was suggested [7]. However other possible causes, such as chronic inflammation due to exudative otitis, have also been proposed and the precise etiology of middle ear osteoma has yet to be clarified. On histopathological examination, osteomas of the middle ear resemble those of the external auditory canal and can generally be characterized by the benign proliferation of cancellous bone [7]. They exhibit an abundance of fibro vascular channels surrounded by lamellar bone, which contains few osteocytes or lacunae [4,8].

Given that external auditory canal osteomas have a tendency for very slow growth and many cases are not associated with any significant clinical problems, some authors suggest long-term monitoring as a viable management option [7]. Yet, most middle ear osteomas present with an associated feature, such as conductive hearing loss and tinnitus, and therefore surgical excision is more readily applied to these lesions [2,7]. Further, middle ear osteomas can irreversibly injure the facial nerve and erode into the inner ear, causing vertigo and sensor neural hearing loss [5]. Hence, surgical excision to prevent these severe complications may be warranted. Within the middle ear, promontory is the most commonly involved site, followed by incus, pyramidal process, and the anterolateral wall of the epitympanum [2]. In our case it involves the facial nerve canal which is uncommon for middle ear osteoma to occur as per the literature.

Other middle ear lesions that may present similarly include fenestral otospongiosis, ossifying hemangioma, osteoid osteoma, benign osteoblastoma, ossifying fibroma, fibrous dysplasia, osteochondroma, chondroma, calcified meningioma, isolated eosinophilic granuloma, giant cell tumor, and malignant masses, such as osteosarcoma and osteoblastic metastasis [2].

Our patient presented with a left ear foul smelling discharge and conductive hearing loss and history of facial nerve weakness 2.5 yrs back which get relived in month on medication but later patient symptoms of ear discharge foul-smelling get progressive facial nerve weakness, in addition to conductive hearing loss and tinnitus. This was the direct result of the osteoma and compressing the tympanic portion of her facial nerve. Subsequently, surgical removal of the osteoma, along with the extensive cholesteoma that extends from attic, posterior canal wall extending to sinodural angle and mastoid tip, eroding sinus plate and dural plate, was performed. Her facial nerve was also decompressed at the same time. This has resulted in partial recovery of her facial nerve function (House-Brackmann grade II) in follow up period of one year. Central lesions affecting the facial nerve, such as cerebellopontine angle tumors, can also present similar to our case. Early recognition, referral, and treatment may also prevent permanent facial nerve dysfunction in these cases [9].

Conclusion

Osteomas are diagnosed incidentally in asymptomatic patients. Our case was symptomatic and raised the question of surgical management. This article discusses the presentation and management associated with this exceptional osteoma location along with presentation of cholesteoma with history of facial nerve weakness operated by mastoid exploration. Common causes of facial nerve weakness include cerebrovascular accidents, cerebellopontine angle tumors, and Bell's palsy. Very rarely, middle ear tumors present with facial nerve dysfunction. The weakness is typically due to a compressive effect on the middle ear portion of the facial nerve. Early recognition is crucial since removal of these lesions may lead to the recuperation of facial nerve function.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

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