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A rare case of a giant mastoid osteoma

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ABSTRACT

Osteomas are true benign bone-forming neoplasms. Their occurrence in the skull is relatively rare. They arise primarily in the Sino nasal area. And to a lesser extent, in the temporal bone. Mastoid osteoma presents as a slow-growing, usually asymptomatic mass. Patients sometimes complain of tenderness or occasional pain; some seek medical assistance because of cosmetic effects. Management includes watchful waiting and surgical removal. Surgery of mastoid osteoma carries a low risk of complication but must proceed with CT scan images to evaluate the extent and relation to vital structures. Osteoma may be in tight proximity to the sigmoid sinus, facial nerve, the base of the skull, or the semicircular canal. In this case, we report on the presentation and management of a twenty-seven-year-old patient with a giant mastoid osteoma.

Keywords: Osteomas, temporal bone, mastoid bone.

1. INTRODUCTION

Osteomas are true neoplasms of the bone. There are three types of osteomas which are compact, spongy, and mixed (Greenspan, 1993). Its occurrence is 0.1% to 1% of all benign tumors of the skull. Osteomas mostly arise in the frontoethmoidal area (Kandakure et al., 2019). They may rise in different areas within the temporal bone. Mastoid osteoma is the second most common localization within the temporal bone (21%). The most common localization of osteomas is the external auditory canal (66%) (Arslan et al., 2016). In this case, we present a patient with asymptomatic mastoid Osteoma.

2. CASE REPORT

History and Examination

A 27-year-old male patient presented to the ENT outpatient clinic with a history of slow-growing mass behind the ear over the last three years. We performed a thorough clinical examination, CT scan of the temporal bone, and pure tone audiometry.

Results

Clinical Examination showed a normal ear canal with a normal tympanic membrane on both sides. There was a 4 cm swelling retroarticular on the right side with displacement of the auricle (Figure 1), the swelling was fixed and bony hard. There were no overlying skin changes. The audiogram

showed normal hearing on both sides. CT scan showed a pedicled round homogenous bony mass arising from the cortical bone of the mastoid. The CT scan also showed normal middle and inner ear structure. The mass had no close relation to vital structures. This includes the facial nerve, semicircular canal, or sigmoid sinus (Figure 2, 3, 4).

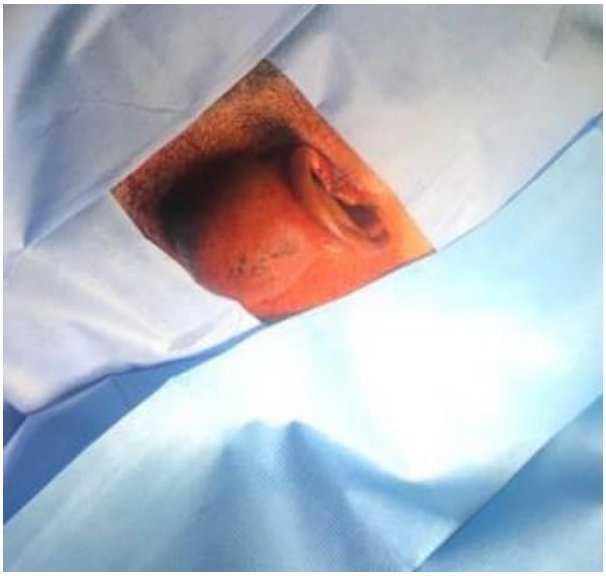

Figure 1 Preoperative image of retroarticular round mass with displacement of the auricle on the right side.

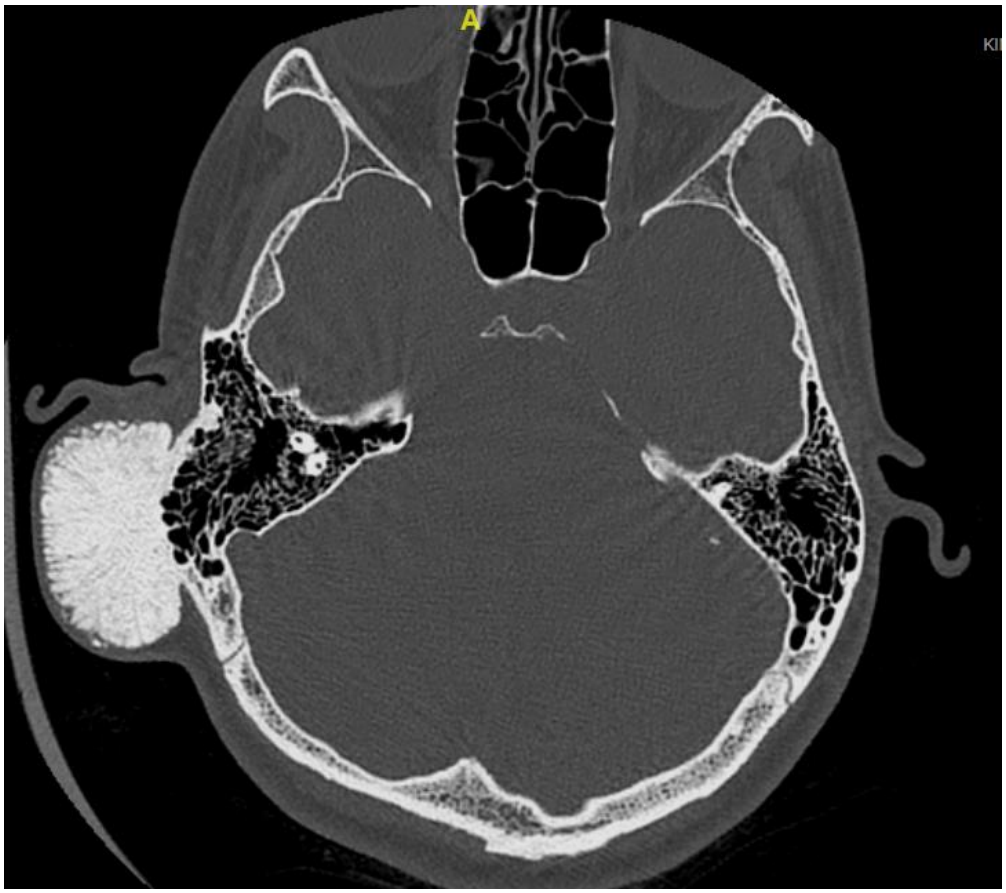

Figure 2 Axial native CT Scan image showing a bony homogenous round mass with a clear border and narrow attachment to the mastoid on the right side.

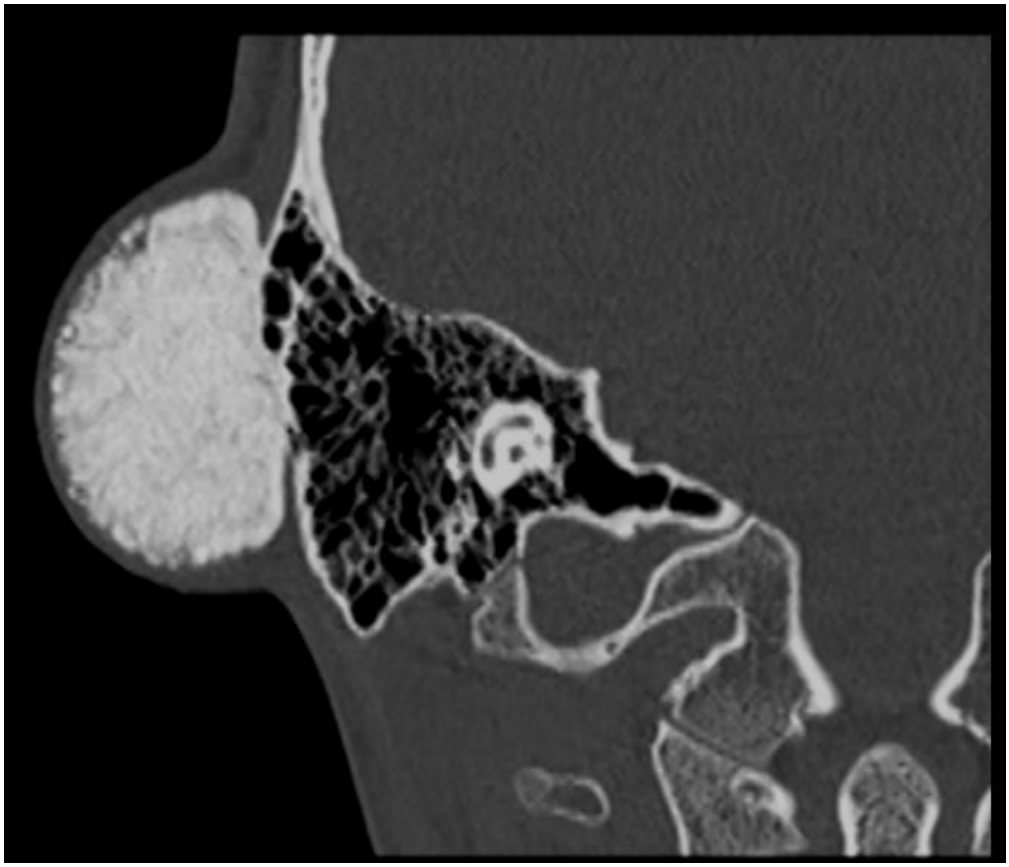

Figure 3 Axial CT Scan image showing the round osteoma on the outer surface of the mastoid on the right side.

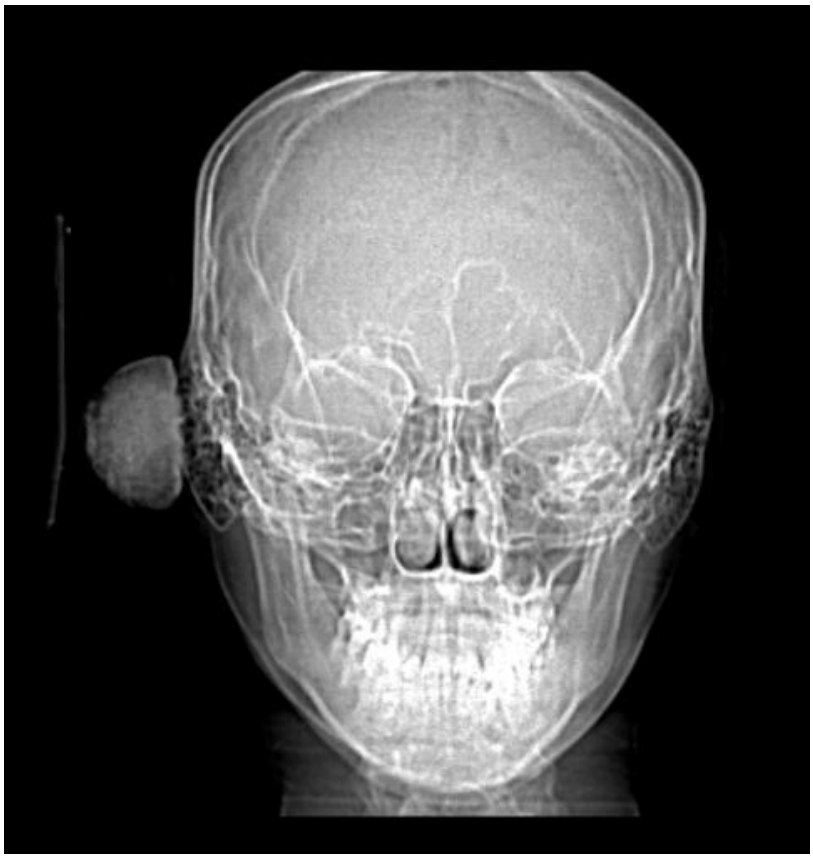

Figure 4 X-ray image showing the mass on the right side

Operation

The operation was done under general anesthesia. First, a skin incision along the mass was performed, and then the subcutaneous tissue and periosteum were dissected. Afterward, wound self-retainers were inserted (Figure 5). Then with the help of a drill, the base of the mass was thinned and carefully separated from the mastoid with a chisel (Figure 6, 7, 8). In the end, the wound was closed using subcutaneous resorbable suture and skin non-resorbable suture.

Postoperative Result

The wound showed normal healing. The follow-up Audiogram showed no changes in hearing. The patient had no Tinnitus or vertigo after the operation. The sutures were removed a week after the operation. The pathology report showed a 4x3x1 cm bone-forming tumor consisting of mastoid osteoma.

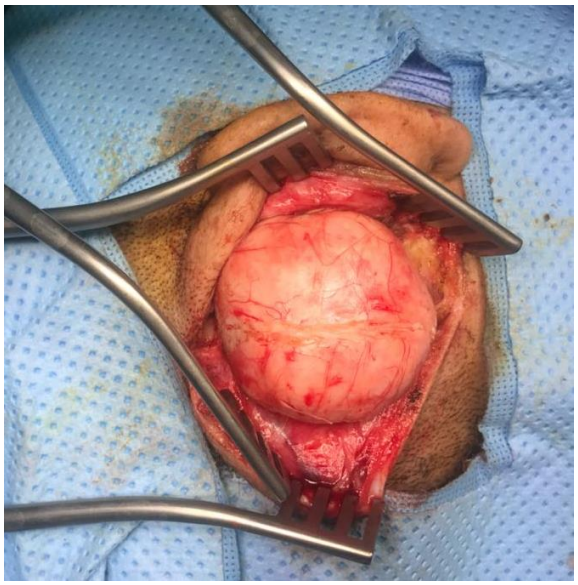

Figure 5 Intraoperative image showing exposed retroarticular mass.

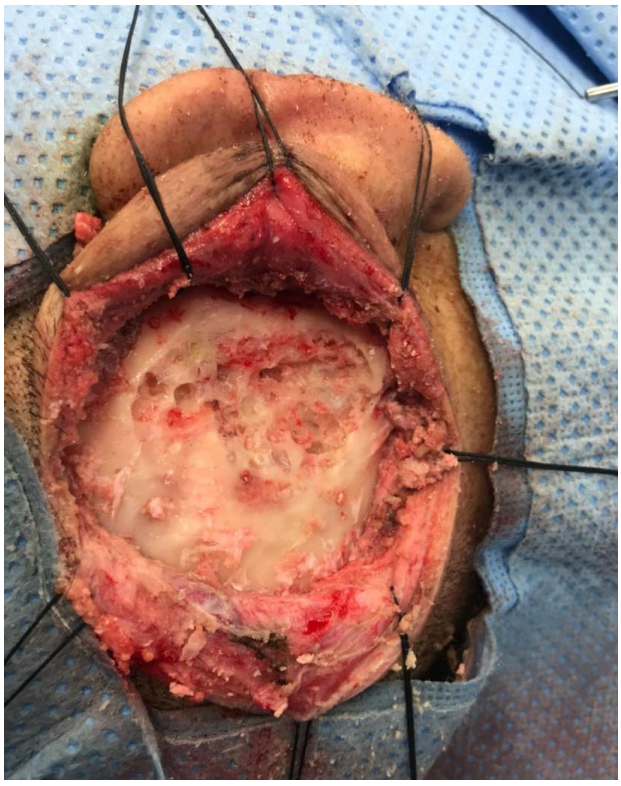

Figure 6 Intraoperative image after complete removal of the mass.

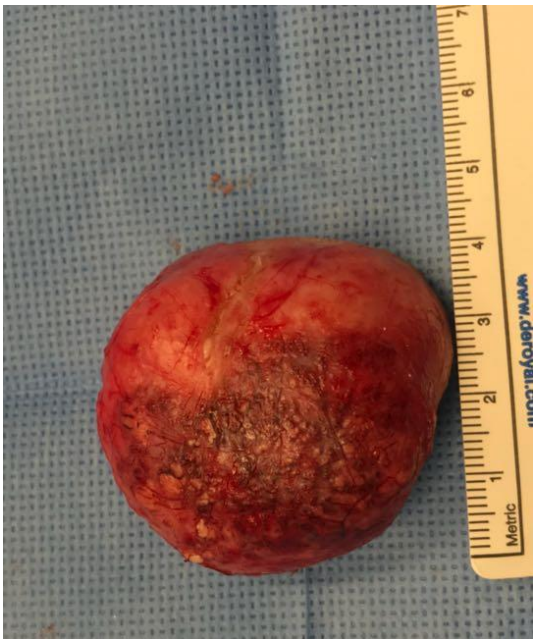

Figure 7 Image of the specimen after removal showing the diameter of the mass.

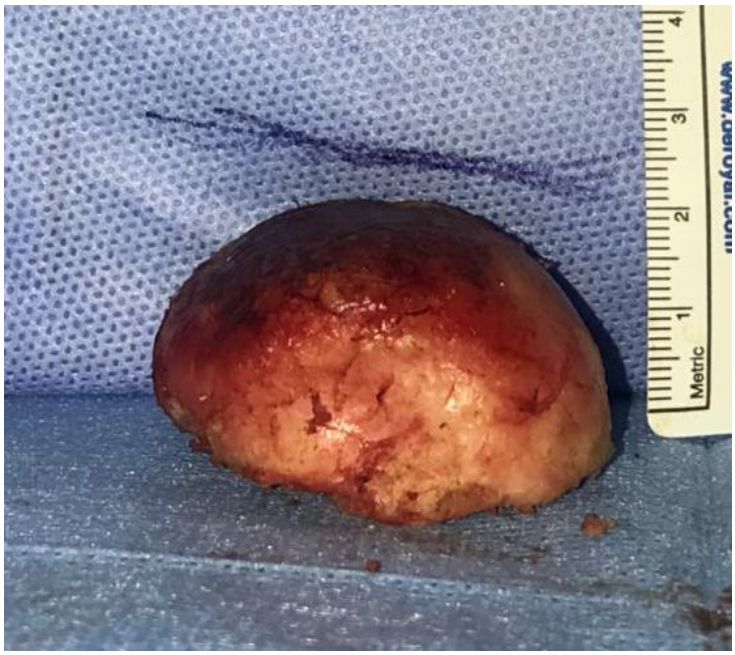

Figure 8 Image of the specimen after removal showing the height of the mass.

3. DISCUSSION

The osteoma is a slowly growing neoplasm of the bone. Rarely affects long bones. it mostly develops in the Paranasal sinus system. It is usually single pedunculated bony growth. Histologically it resembles normal bone with prominent bony elements and reduced marrow, they show minimal cellularity (Greenspan, 1993; Das and Kashyap, 2005). They are mostly sporadic but can be part of Gardner Syndrome along with multiple cutaneous and subcutaneous lesions and intestinal polyposis (Gardner and Plenk, 1952). The development of Osteoma is not yet understood. Congenital, infection, trauma, and constant vascular irritation (Kandakure et al., 2019; Conforti et al., 2015; Akamatsu et al., 2009).

Osteoma may arise in different sites within the temporal bone including the internal auditory canal where it may lead to hearing loss and vestibular dysfunction (Conforti et al., 2015; Beale and Phelps, 1987). They may arise also in CPA and present with headaches as a symptom (Yilmaz et al., 2019). They arise in inner and middle ear structures like the semicircular canal, Malleus,

Incus, and promontory and cases associated with cholesteatoma have been reported (Ben-Yaakov et al., 2006; Chang et al., 1997; Jang and Cho, 2009; Ramirez-Camacho and Pinilla, 1997). The most common occurrence is in the external auditory canal Arslan et al., (2016), unlike exostoses they are true bone neoplasms, and they are mostly unilateral and pedunculated (Fenton et al., 1996). Their growth may obstruct the external auditory canal or be associated with canal cholesteatoma (Puttamadaiah et al., 2014).

Osteoma of the mastoid is usually solitary but multiple osteomas have been reported (Marrocco, 1948). They may arise near vital structures like the facial nerve or Sigmoid sinus (Lee and Balkany, 2008; Govind, 2018). Radiologically the tumor is a well-defined radiopaque round mass on the plain radiograph. Computer tomography is mandatory before surgery to delineate the relation to temporal bone structures. In CT, the tumor demonstrates the above-mentioned morphology and lacks cortical invasion, confirming its benign nature (Greenspan, 1993). They are usually asymptomatic. Many patients seek medical help for cosmetic concerns. Surgical excision is an option besides watchful waiting for non-symptomatic osteoma. Surgery is relatively low risk as the tumor is limited to the external cortex with identifiable separation between the tumor and normal bone. In cases where tumor encroach facial nerve or removal is not readily possible because of the labyrinth or sigmoid sinus then incomplete resection is acceptable (Denia et al., 1979).

5. CONCLUSION

The Author favors surgical excision then watchful waiting. The tumor is slow-growing in most cases, but the patient must be consulted about serial imaging where patient compliance is necessary.

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Ethical approval

The study was approved by the Medical Ethics Committee of the Faculty of Medicine, Al-Baha University (Ethical approval code: REC/SUR/BU-FM/2023/68).

Informed consent

Written and oral informed consent was obtained from the participant included in the study. Additional informed consent was obtained from the participant for whom identifying information is included in this manuscript.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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