

## CASE REPORT

# Peripheral Osteoma of the Zygomatic Arch: A Rare Entity

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### ABSTRACT

Osteomas are the most prevalent benign tumors found in the head and neck, particularly in the nose and paranasal sinuses. They frequently develop from the regular bone of the sinus spaces. The origin of osteoma development is unclear, although it is believed they arise from trauma or infection. Osteomas are typically asymptomatic and found incidentally, although larger osteomas can produce symptoms due to their mass effect. While prevalent in the nasal cavity and sinuses, osteomas that develop from the external facial skeleton are incredibly uncommon and not thoroughly documented in the literature. This report discusses an uncommon case regarding the diagnosis and surgical treatment of an osteoma located on the zygomatic arch.

**Keywords:** Case report, Computed tomography, Osteoma, Surgical treatment, Zygomatic arch.

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### INTRODUCTION

Osteomas are noncancerous, slowly growing tumors that consist of mature bone tissue. These tumors can be categorized as peripheral, central, or extraskeletal, with peripheral osteomas being the most common type.<sup>1</sup> The cortical plate of long bones is the usual location for osteomas, although they can also appear in the maxillofacial region. The mandible and paranasal sinuses are the most commonly affected areas by peripheral osteomas in the craniofacial region.<sup>2</sup> Zygomatic osteoma is, nevertheless, a rare condition. Usually, it is without symptoms and continues to grow during adulthood, but it has the potential to reach large sizes, leading to facial asymmetry or considerable dysfunction.<sup>3,4</sup> Given its rare occurrence as a pathological condition affecting the external facial bones, there is limited information available on the surgical treatment of these tumors. This case report discusses a rare case of a peripheral osteoma located on the zygomatic arch and the approach to its surgical management.

### CASE DESCRIPTION

A 40-year-old male with an unremarkable medical history came in with concerns about asymmetry in his face, noting swelling on the right cheek and difficulty fully opening his mouth for the past six months. The swelling appeared gradually. He denied experiencing any vision or sensory issues. There was no reported history of facial trauma. During the extraoral examination, a distinct, round, and solid mass was identified along the upper border of the right zygomatic arch. The mass measured approximately 2 × 3 cm. Apart from the swelling, no other signs or symptoms were present (Fig. 1). The margins of the mass were clear and smooth, with no noticeable deformities elsewhere. The surrounding soft tissue exhibited no changes. A computed tomography scan confirmed the existence of a 2 × 3 cm well-defined radiopaque lesion situated on the upper edge of the right zygomatic arch (Fig. 2). Taking into account the clinical and radiographic observations, an osteoma was diagnosed. The bony mass was removed under general anesthesia using an extraoral right hemicoronal approach (Fig. 3). The specimen

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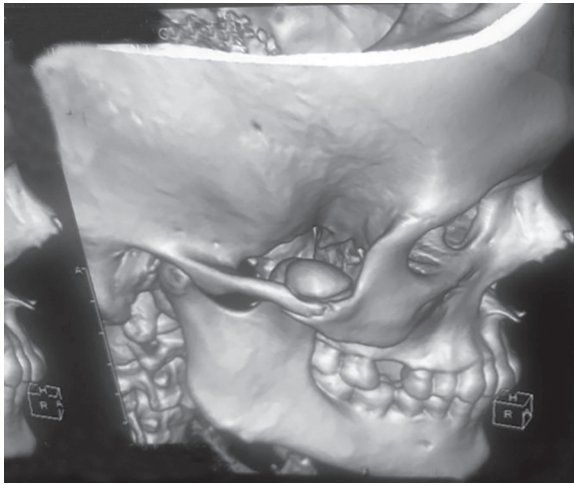
**Conflict of interest:** None

**Patient consent statement:** The author(s) have obtained written informed consent from the patient for publication of the case report details and related images.



**Fig. 1:** Preoperative image of the patient

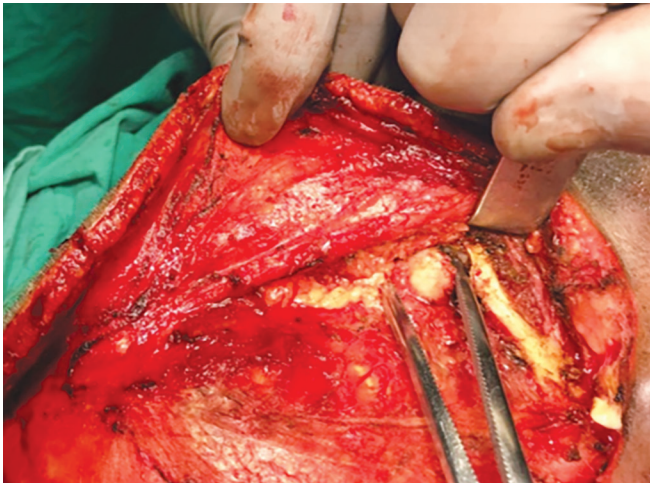
obtained during surgery was a lobulated, hard bony mass (Fig. 4). A mouth opening of 30 mm (Fig. 5) was achieved through ipsilateral



**Fig. 2:** Cone-beam computed tomography scan showing a round well-circumscribed radiopaque lesion originating from the superior surface of the right zygomatic arch



**Fig. 5:** Postoperative interincisal distance (30 mm)



**Fig. 3:** Intraoperative clinical photo of the exposed peripheral osteoma on the zygomatic arch



**Fig. 6:** Resected coronoid process



**Fig. 4:** Excised specimen

coronoidectomy (Fig. 6). The patient was discharged the day after the surgery without experiencing any complications.

## DISCUSSION

Craniofacial osteomas are uncommon, with incidence rates between 0.002 and 3%.<sup>5</sup> Osteomas are non-cancerous bone formations that develop gradually. They arise from either the growth of compact bone or cancellous bone.<sup>2</sup> The clinical manifestations of osteomas vary based on their exact location. The osteomas that are most frequently found in the maxillofacial area usually originate in the paranasal sinuses, often leading to symptoms such as sinusitis, pain, and nasal obstruction.<sup>2</sup> Osteomas situated in the outer facial skeleton can lead to considerable disfigurement and facial asymmetry. Cases of osteomas emerging from the zygomatic bone are quite uncommon.<sup>6</sup> Osteomas are non-cancerous bone lesions that grow gradually. Central (endosteal) osteomas develop as tumors on the endosteum. Extraskelatal osteomas (osseous choristomas) are found in soft tissues. Instances of extraskelatal osteomas are uncommon. Osteomas can arise at any stage of life, although they

are more frequently seen in young adults. They occur more often in males than females. Generally, osteomas are characterized by slow growth and lack of symptoms, which often leads to their incidental discovery during radiological assessments.

The occurrence of craniofacial osteomas can indicate the possibility of Gardner's syndrome, an autosomal dominant disorder characterized by digestive tract polyps, numerous osteomas in the skull and facial regions, soft tissue tumors, skin tumors, and a significant number of impacted teeth. Because osteomas generally appear prior to the development of colorectal polyposis, timely recognition of the syndrome is crucial for enhancing the prognosis of the condition.<sup>7</sup>

Peripheral osteomas can typically be diagnosed with a radiograph, but the best method for precise osteoma localization and surgical treatment planning is a three-dimensional reconstruction using computed tomography. It is advisable to create a tailored strategy for managing osteomas, considering their size and location. Generally, treatment is not necessary for minor, asymptomatic peripheral osteomas, while larger symptomatic lesions show growth or cause functional problems and may need surgical intervention. The intraoral method for surgically removing a peripheral zygomatic osteoma is favored to prevent unwanted facial scars, although it can present accessibility challenges. As a result, an extraoral technique is often employed. However, the selected surgical procedure should be based on the osteoma's anatomical location, the risk of complications, and the cosmetic preferences of the patient.

Surgical intervention for a symptomatic osteoma requires the total excision at its base where it attaches to the cortical bone.<sup>8</sup> In this instance, the surgical excision performed was completely successful, and there were no complications with the hemicoronal approach noted after a 1-year follow-up. A different case report conducted by Starch-Jensen T and his team examined the clinical, radiographic, surgical, and histological characteristics of a peripheral osteoma located in the left zygomatic arch of a 55-year-old female patient, in addition to an analysis of the existing literature regarding this rare pathological condition.<sup>9</sup>

## CONCLUSION

An isolated osteoma located on the zygomatic arch has been documented in this case, and the existing understanding of this rare condition has been explored. The clinical and imaging characteristics of a solitary osteoma in the zygomatic arch are notably unique. The present case did not pertain to Gardner syndrome, as there was no evidence of intestinal issues or impacted teeth. It's crucial to keep in mind the association between osteomas and Gardner's syndrome, and general dental practitioners should be informed about this important condition.

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