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Archives of Dental Research

Journal homepage: https://www.adr.org.in/

Case Report

Solitary benign peripheral osteoma of angle of mandible diagnosed using cone beam computed tomography: A case report

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ARTICLE INFO

Article history:
Received 21-05-2023
Accepted 27-06-2023
Available online 31-07-2023

Keywords:
Osteomas
Benign
Cone beam computed tomography
Peripheral
Mandible

ABSTRACT

Few examples of osteomas of the facial bones have been documented in the literature making them a rare condition. When found in the craniofacial skeleton, osteomas are benign, slow-growing osteogenic tumors of the bone that are distinguished by the growth of compact or cancellous bone. The case report in this article describes a peripheral osteoma near the angle of the mandible which was diagnosed incidentally by the cone beam computed tomography scan. We report a rare case of a solitary periosteal osteoma on the buccal aspect of the angle of the mandible in a 20-year-old man and also highlight the importance of advanced imaging modality in the diagnosis of bony lesions of craniofacial region.

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1. Introduction

A benign osseous lesion called an osteoma is characterized by the growth of cancellous or cortical bone. It can be categorized as extra skeletal, central, or peripheral. The periosteum gives rise to peripheral osteomas, the endosteum to central osteomas, and the soft tissue to extraskeletal osteomas. Osteomas' pathophysiology is not well understood. They are described as reactive lesions brought on by trauma, muscular traction, or infection, or as developmental malformations, true neoplasms, or lesions.[1]

The most frequent subtype of osteomas to develop in the bones of the skull and face is peripheral osteoma. It can happen at any age and has a 2:1 male to female ratio.[2] Clinically, peripheral osteomas manifest as a well-defined, unilateral, sessile or pedunculated mass that is 10 to 40 mm in diameter or greater.[3]

Solitary peripheral osteomas of the jaws are a rare entity. They involve the mandible more frequently than the maxilla with the sites of greatest predilection being the lingual aspect of the body, the angle, and the inferior border of the mandible.[4]

In the general population, osteomas account for only 4% of all benign oro-facial tumors. The percentage of osteoma in one research with familial adenomatous polyposis syndromes ranged from 57 to 82. Since osteomas are typically asymptomatic, unless, accidentally observed on a regular radiography survey, they frequently go unnoticed.[3]

An osteoma typically appears on radiographs as a round or oval, well-circumscribed radiopaque mass with a broad base. The size of the tumor and its location in respect to significant nearby structures can be precisely defined with the help of computed tomography.[5]

Differential diagnosis of peripheral osteoma includes exostosis (torus), osteoblastoma, osteochondroma, osteoid osteoma and ossifying fibroma. Exostosis is frequently bilateral and symmetrical and occurs in a region of attached gingiva whose growth ceases at puberty. Osteoblastoma is a bony lesion which is usually attached to the cortical bone and is painful and rapidly expanding in nature.

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https://doi.org/10.18231/j.adr.2023.010
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Osteochondroma typically develops on the mandible's condylar or coronoid region and is rather painful disease that frequently exhibits rapid growth. Ossifying fibroma in its advanced stage, typically containing a fibrous component within a cemento-osseous structure and can resemble peripheral osteomas.[6]

2. Case Presentation

A 20 year-old Asian male patient reported to Department of Maxillofacial Radiology for routine radiography. Oral radiologist noticed an unusual growth on the left angle of the mandible. Patient gave a history that this kind of growth is present since few years now and does not bother him in his daily routine like chewing food, phonation and mouth opening. He also reported that he never had any episodes of pain or pus discharge from the same site. He had no previous facial trauma, and his medical history was not contributory. Patient was convinced for advanced imaging of the left mandibular region after informed consent.

Figure 1: 3D Reformatted image

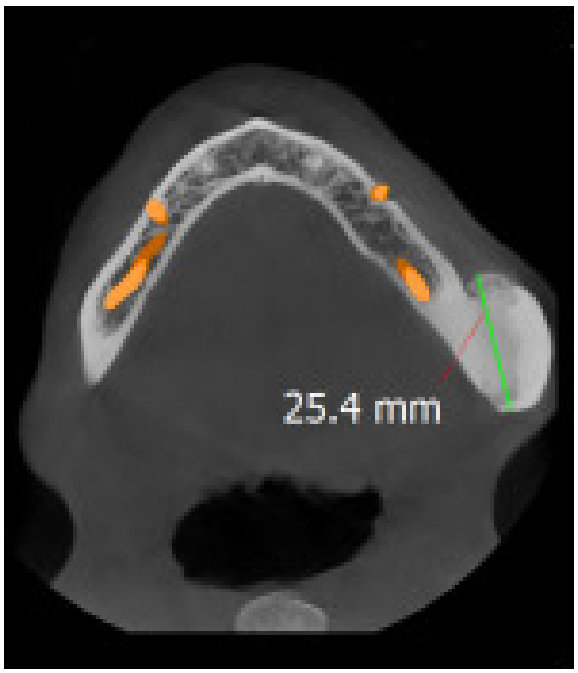

Figure 2: Axial view

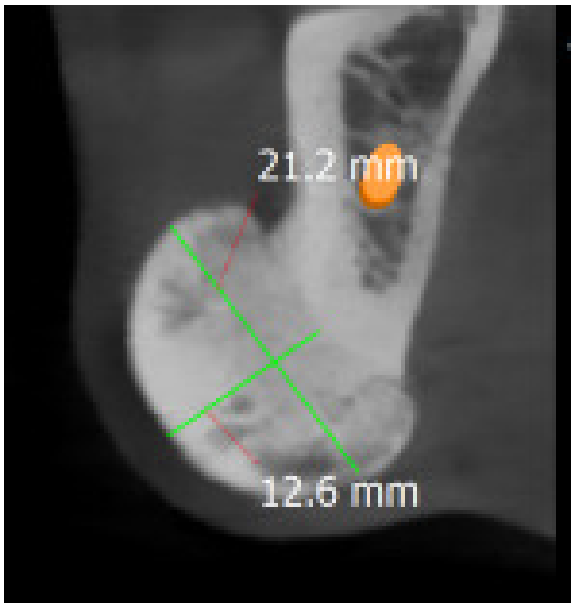

Figure 3: Cross sectional view

Figure 4: Sagittal view

A small FOV CBCT scan with voxel size of 90μm at 120kVp was carried out. CBCT revealed a solitary, well circumscribed radiopaque lesion present in left posterior mandible at the angle region. (3D reformatted images Figure 1 A, B) Axial sections revealed that the lesion is arising from the buccal cortex in relation to 37, 38 and is extending inferiorly to involve the lower border of the mandible. (Figure 2) The lesion is mushroom shaped. Dimension of the lesion is 25.4mm x 21.2mm x 12.6mm in its greatest dimensions. Lesion measures 25.4mm antero-posteriorly, 12.6mm bucco-lingually, and 21.2mm supero inferiorly in its greatest dimensions. The margin of the

lesion is regular, well defined, having the same density as that of cortex. (Figure 3) The mass has a sessile base and is attached to the lower border of the mandible. (Figure 4) Internal structure is completely homogenous having bony architecture with random & sufficient bony trabeculae.

There is marked evidence of expansion of buccal cortex wrt 37, 38. No perforation is observed in the cortices and left inferior alveolar canal seems to be normal. The lesion doesn't involve the left inferior alveolar canal. No periosteal bone reaction is observed. No root resorption seen wrt 37, 38.

Radiographic diagnosis of benign peripheral osteoma of left body and angle of mandible was put forth. Patient was counseled for surgical removal of the growth. However, since patient was asymptomatic, he denied for any surgical intervention at that moment. Patient was motivated for biannually follow up.

3. Discussion

Osteomas are benign tumors that develop gradually and painlessly over time. They are distinguished from other tumors by the growth of compact or cancellous bone. Three main varieties of the tumor can be seen: the central osteoma grows in the soft tissues, the peripheral type comes from the periosteum, and the extra skeletal type which is usually seen in the periosteum.[7]

The external auditory canal and less frequently the temporal bone and pterygoid plates have also been reported to have peripheral osteoma. Mandibular peripheral osteomas are more common than those of the maxilla.[8]

There was no history of trauma in our instance, the lesion was typically isolated, and no corroborating syndromal symptoms were discovered.[9] The real prevalence of this pathology is unknown. It is estimated that the frequency of the osteoma is low, affecting 0.01-0.04 % of the population only.[9]

The frontal bone, mandible, and paranasal sinuses are the main areas of the maxillofacial region affected by peripheral osteomas. In our case, the angle region of the left posterior mandible is involved. The lesion appears to originate from the buccal cortex and is spreading inferiorly to include the lower border of the mushroom-shaped jaw.[5]

To date, there has not been a single instance of an osteoma turning malignant, and recurrence has very sometimes been noted.[10] For patients unwilling to get these osteomas surgically removed, bi-annual radiographic evaluation should be done. Table 1 enumerates few recent cases of peripheral osteomas of mandible published in dental literature.

4. Conclusion

Peripheral osteomas being rare can cause facial asymmetry and considerable expansion of the buccal or lingual cortex.

Table 1: Clinical and radiographic characteristics of the cases from the literature

Source	Age	M/F	Jaw	Location	Radiodensity	Border Definition	Size(cm)	Expansion	Symptoms
Kalu U.E. Ogburekea (5) (2007)	50	F	Mandible	Premolar/Molar	RO	WD	2.5 cm X 3 cm	yes	Facial and intraoral Swelling and difficulty in swallowing
Emel Bulut(1) (2010)	37	F	Mandible	Premolar/Molar	RO	WD	3×3 cm	Yes	facial and intraoral swelling
Hemant Shakya(9) (2011)	34	F	Mandible	Premolar/Molar	RO	WD	1X1 cm	yes	Facial and Intraoral Swelling
S.soni(3) (2014)	35	F	Mandible	Canine/Molar	RO	WD	6 x 3cm	yes	Deviation of Tongue and midair way obstruction
Manekar(8) (2014)	27	M	Mandible	Molar	RO	WD	5 x 3cm	No	Trismus , Difficulty in chewing
Borghesi(2) (2017)	50	F	Mandible	Premolar	RO	WD	1 x 1cm	No	None
Fourcade(6) (2018)	41	M	Mandible	Retromolar Area	RO	WD	1.5 x 1 cm	No	None
Present Report (2023)	20	M	Mandible	Angle	RO	WD	2.54 x 2.12 cm	No	Facial asymmetry

WD = Well Defined, RO = Radiopaque

Radiology plays a vital role in diagnosing such lesions and general dentists should be aware of such pathologies and their radiological features. Differentiating between benign and malignant tumors should be the primary focus of a treating dentist to reduce the agony of the patients.

5. Source of Funding

None.

6. Conflict of Interest

None.

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Cite this article: Kashwani R, Kumari P, Sawhney H, Singh M, Gahlot J. Solitary benign peripheral osteoma of angle of mandible diagnosed using cone beam computed tomography: A case report. *Arch Dent Res* 2023;13(1):49-52.