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PERIPHERAL OSTEOMA AN UNCOMMON PATHOLOGY OF JAW BONES- A CASE REPORT

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Abstract

Osteoma is a benign connective tissue tumor that is slow-growing & osteogenic in nature and is uncommon in the craniofacial bones. These tumor consists of well-differentiated compact or cancellous bone. It is characterised by the excessive formation of compact and/or cancellous bone.(1)

Among jaw bones, osteomas are more frequent in the mandible.(3)

Case report: A 30 year old female presented with an initially painless, slowly enlarging growth on the left posterior alveolar ridge of mandible since about 5 years and with difficulty in chewing food due to swelling recently as the enlarged growth present on the alveolar ridge area between second and third molar of left mandible as it interfered with chewing as well as talking.

The growth was a 1.5*1 cms gingival mass that extended bucco-lingually across occlusal area of color similar to adjacent normal mucosa with well-defined margins. It was sessile, firm, non-febrile and non-tender with a lobulated surface. OPG revealed a radiopaque sclerotic, well-defined mass surrounding and masking the root outline of left mandibular third molar and extending in between second and third molar with displacement of third molar posteriorly.

It had dense compact bone with bone trabeculae of mature bone and with little & paucicellular fibrous connective tissue stroma at the periphery & also with presence of Osteoid cells in the decalcified tissue section.

Discussion: Osteoma was first described by Jaffe in 1935. It is a bone tumor that may be syndromic or non-syndromic in its occurrence. Non-syndromic peripheral osteomas are believed by most researchers to be reactive lesionssecondary to trauma or lesions due to chronic muscle pull.

Keywords: Peripheral osteoma, osteogenic, non-syndromic, gardner's syndrome,exostosis

INTRODUCTION

Osteoma is a benign connective tissue tumor that is slow-growing and osteogenic in nature which is uncommon in the craniofacial bones. It is characterised by the excessive formation of well-differentiated compact and/or cancellous bone and hence it increases in size by continuous growth. Solitary osteomas may be classified as:

a) peripheral (paraosteal, periosteal or exophytic) forms from the periosteum,
b) central (endosteal), if it originates from the endosteum and
c) extraskeletal (the so-called osseous choristoma) if it occurs in soft tissue.

Peripheral osteoma (PO) is seen commonly in the paranasal sinuses and less commonly in the orbital wall, temporal bone, pterygoid processes and external ear canal. However, they rarely occur involving the mandible.

Owing to the fact that, osteomas precede the clinical and radiological evidence of colonic polyposis/ Gardner's syndrome, hence, it may serve as a sensitive marker for the syndrome with a life-saving potential owing to their early detection. Multiple osteomas tend to be a feature of Gardner's syndrome usually. (1,2)

Clinically, Osteomas most often behave as an asymptomatic, clinically silent lesion that only has focal asymmetry or disfigurement as the presenting feature. Its etiopathogeniesis is debated one and includes it being called a congenital anomaly, inflammation, muscular activity, embryogenic change and secondary consequence of trauma. (2)

Among jaw bones, osteomas are more frequent in the mandible and usually occur as compact osteomas, whereas the cancellous osteomas are comparatively rare in mandible. From among the reported cases, a large majority are located posterior to the premolars and rarely are seen in the condylar area. Osteomas occur in young adults and tend to be less than two cm in size even after years of gradual enlargement.(3)

By virtue of the clinical significance of this tumor as an early manifestation of Gardner's syndrome, osteoma patients ought to be evaluated for the features of Gardner's syndrome (GS) which is an autosomal dominant disorder with presenting features that include: gastrointestinal polyps, multiple osteomas, skin and soft tissue tumors, and multiple impacted or supernumerary teeth. Intestinal polyps are predominantly adenomas and tend to progress to malignancy in almost all patients. The fact that, the osteomas are often seen in the earlier stage of GS, makes the dentists role players of significance in the diagnosis of colonic polyposis. (4)

This article describes the case of a 30 year old female who presented with painless swelling of the left body of mandible and resultant cosmetic facial disfigurement since 5 years.

CASE REPORT

A 30 year old female presented with an initially painless, slowly enlarging growth on the left posterior alveolar ridge of mandible since about 5 years and with recent complaint of difficulty in chewing food due to swelling, as the enlarged growth present on the alveolar ridge area between second and third molar of left mandible interfered with chewing as well as talking. She had come to Oral medicine department of Government Dental College, Raipur before nine months. At that time, she had given the history of a gradually increasing growth

in the posterior alveolar region on buccal side of left mandible since 5 years and had noted that it gradually increased to the present size with bucco-lingual extension. Extra orally no abnormalities were detected. Intra oral examination revealed a round immobile nodular swelling on lower left posterior region, present on the alveolar region between second molar and third molar.

Her past medical and dental history was unremarkable. Patient gave a habit history of using gudaku 3-4 times a day for about 15 years. Extra orally no abnormalities were detected. Intra oral examination revealed a round immobile nodular swelling on lower left posterior region, extending from second molar to third molar.

On Intra-oral inspection, the growth was a gingival mass of pale pink color, similar to adjacent normal mucosa with a smooth surface, well-defined margins and it was sessile. The size of the growth was 1.5*1 cms and it extended bucco-lingually across occlusal area. Therefore, it interfered with mastication and patient had pain on mastication.

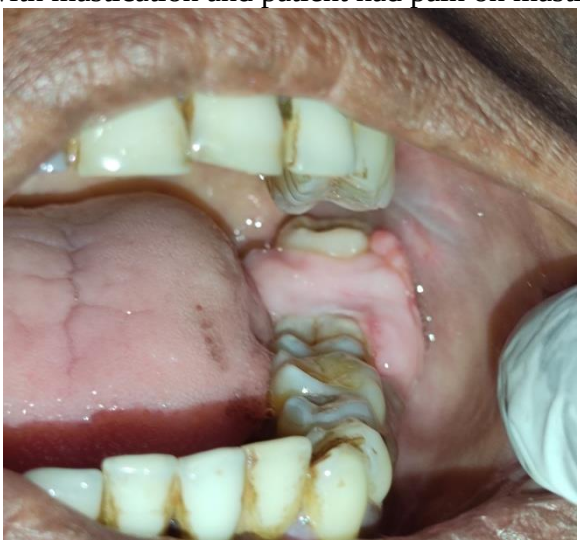

Fig1: Growth on posterior mandibular alveolar ridge displacing third molar posteriorly

On Palpation, it was firm, non-febrile and non-tender with a lobulated surface. OPG revealed a radiopaque sclerotic, well-defined mass surrounding and masking the root outline of left mandibular third molar and extending in between second and third molar with displacement of third molar posteriorly. All other teeth of dentition were present and in normal alignment.

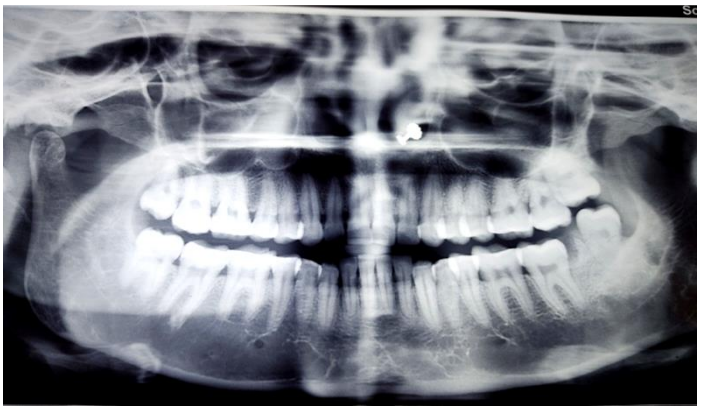

Fig2: OPG of the patient showing radiopaque mass with left mandibular third molar

The bony mass was surgically excised with sufficient safety margins and later sent for histopathological investigation. So, considering the clinical history and radiographic interpretation a clinical diagnosis of Peripheral ossifying fibroma was given. Also, as the review of systems did not reveal any other systemic abnormalities hence, the diagnosis of Gardner's syndrome was excluded. The excised gross specimen consisted of whitish bony pieces, some soft tissue and third molar.

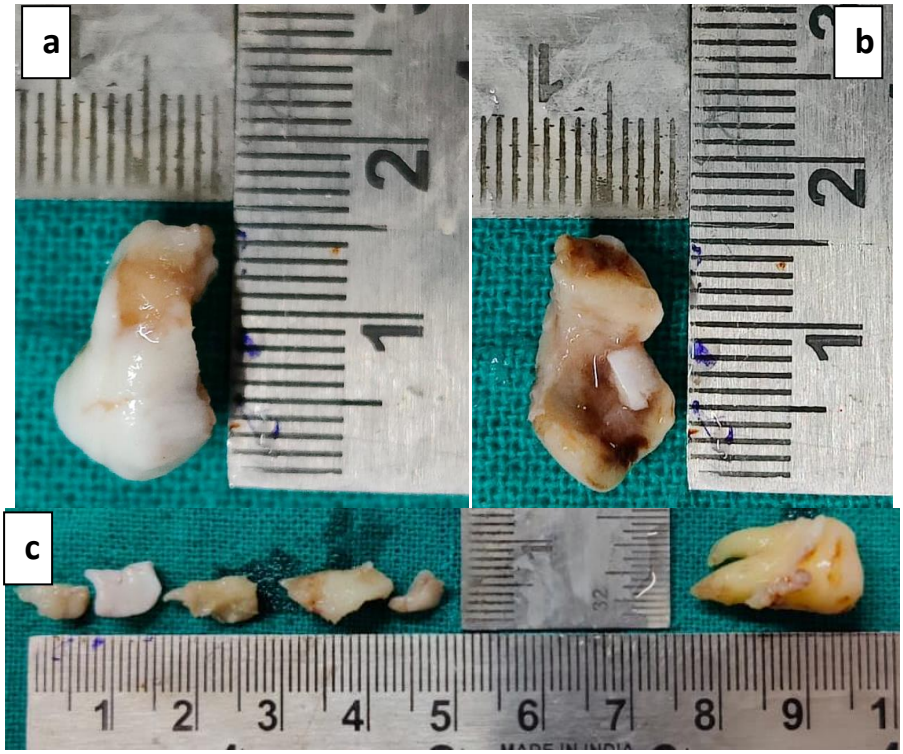

Fig 3(a,b): Gross specimen of Bone outer & Inner surface
Fig 3c: Gross specimen of soft tissue and mandibular left third molar

The histopathological specimen revealed Gingival soft tissue with surface epithelium and moderately inflamed connective tissue in one specimen and dense compact bone with bone trabeculae of mature bone and with little & paucicellular fibrous connective tissue stroma in the decalcified tissue.

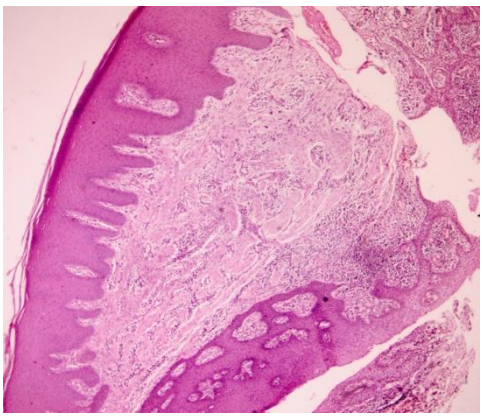

Fig 4: Gingival tissue (4x magnification)

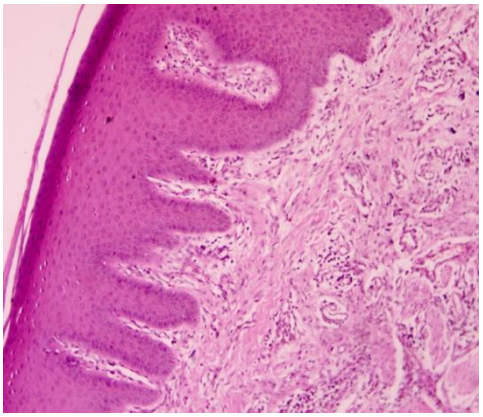

Fig 5: Gingival tissue(10x magnification)

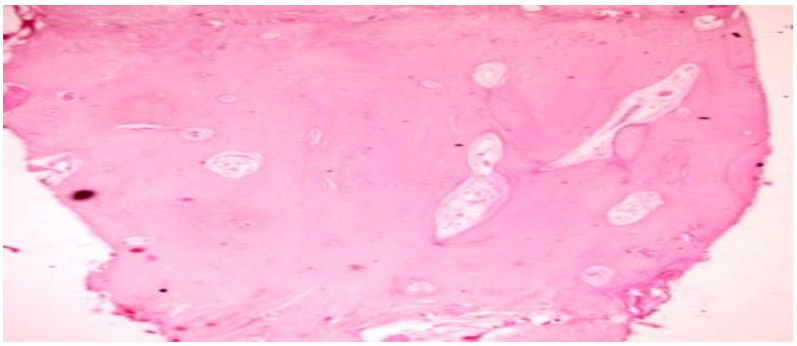

Fig 6: Bone tissue decalcified section(4x magnification) showing lamellar compact bone with minimal soft tissue

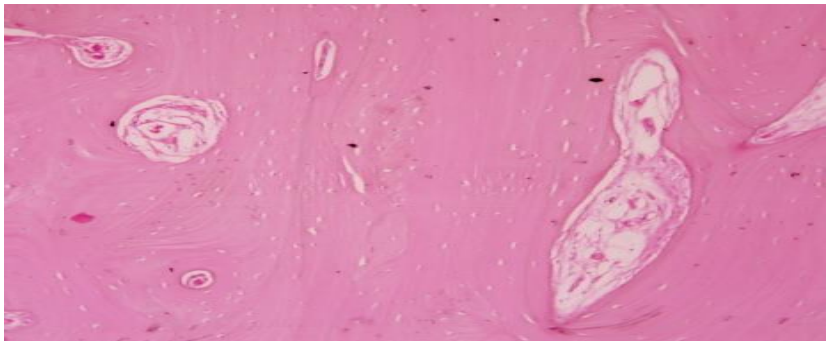

Fig 7: Bone tissue decalcified section(10x magnification) showing lamellar compact bone with soft tissue

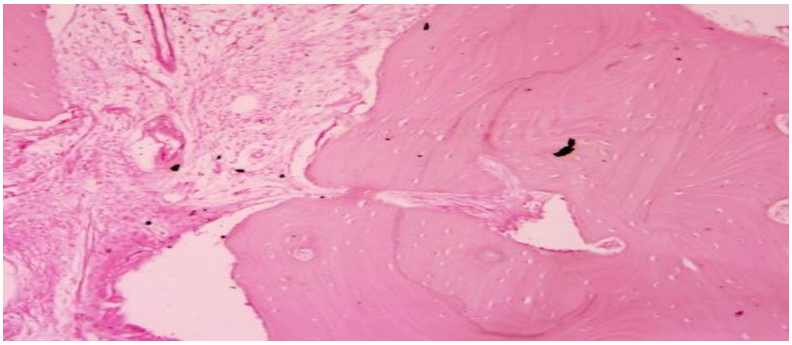

Fig 8: Bone tissue decalcified section(10x magnification) showing lamellar compact bone with soft tissue

DISCUSSION

Osteoma was first described by Jaffe in 1935. It is one of the less common jaw bone tumors whose incidence rate is approximately 12.1% from among benign bone tumours and 2.9% within all the bone tumours. Therefore, it is an uncommon, benign, osteogenic tumour which shows proliferation of compact or cancellous bone. It does not have a particular age predilection but shows a slight predilection for occurrence in males. (5)

Among jaw bones, the peripheral osteoma occurs in mandible more commonly particularly, in the posterior region of the mandible and the inferior mandibular border of mandible below the molars. Other less common locations of osteoma include the condylar and coronoid region. Noteworthy is the fact that, the location of peripheral osteoma of the jaws is very often found to be in close proximity to areas of muscle attachment which, therefore, seems to be suggestive of an etiological role of persistent muscle pull in formation of peripheral osteoma. (6)

Clinically, peripheral osteoma tends to be a unilateral and well-circumscribed mass that ranges from 10 to 40 mm in diameter usually. Osteomas present as non-symptomatic growth and are typically seen to elicit a slow but continuous growth pattern. They are frequently an incidental finding on routine X-ray examination. Peripheral osteomas may however, show one or more symptoms from among discomfort, pain, facial asymmetry, headaches, occlusal dysfunction, a limitation of mandibular motion, or, more rarely, paresthesia due to nerve compression, depending on their volume and location. (4,7, 8)

Radiographic findings: Panoramic radiography and/or computed tomography is used for imaging investigations of the tumor and it has been noted by various researchers that, CT is the better imaging modality for evaluating the exact position and 3-D extension of the lesion. Peripheral osteomas are usually easily recognizable owing to their distinctive radiographic features in the mandible as a well-circumscribed, round or oval, mushroom-like radiopaque mass with distinct borders. When peripheral osteomas are sessile, they tend to be attached to the cortical plates with a broad base. In cases where, a peripheral osteoma is pedunculated, it shows a narrower contact area with the cortical plate of compact bone. In our case, the lesion consisted of dense, uniformly opaque compact bone. (4,8,10)

Etiology of osteoma is controversial and unclear. Irrespective of its etiology, it can be broadly grouped into syndromic and non-syndromic in its occurence. (5,9)

A typical example of a syndromic origin of osteoma is its occurrence as one of the manifestations of Gardner's syndrome together with other manifestetions like, multiple intestinal polyps, mesentery and skin fibromas, cutaneous sebaceous cysts, multiple supernumerary teeth, and craniomaxillofacial osteomas, that show a predilection for membranous bones, such as the maxilla and mandible. Sondergaard et al. (1993) in their study, noted that mandibular osteomas were also found in most patients with the hereditary dominant pre-malignant syndrome familial adenomatous polyposis, and concluded that mandibular osteomas are probably genetic markers for the development of sporadic colorectal carcinoma. Smrithi et al. (2012) observed another interesting correlation in their study of familial history or genetic transmission that ought to be taken into account for osteoma. According to them, although the probability of an osteoma occurring in a mother and a child is 0.0016%, the predisposition to osteoma formation in humans is possibly dominantly inherited even though, it may be a recessive trait for vertical transmission in inbred strains of mice. (9,12,13)

Osteomas of non-syndromic origin are etiologically ill-defined, yet, several possible contributing factors have been implicated in their pathogenesis, like, trauma, reactive, neoplasm, metaplasia, surgery, irradiation, chronic infection, the alteration of calcium metabolism, and genetics. From among these contributing factors, many investigators have suggested that, an osteoma is possibly a reactive condition triggered by local trauma of the magnitude that is capable of inducing the onset of the lesion in more susceptible sites, such as the angle or lower border of the mandible. Some researchers also believe that, the proximity of osteomas to masseteric muscle attachments suggests that the muscle pull force alone or in combination with a trauma might induce, the initiation of the lesion.(9)

However, in the case described in this paper, we have no information as to the possible cause, there being no history of previous trauma or infection.

There are various lesions that should be considered in differential diagnoses of peripheral osteoma, with the need to rule them out and such lesions include exostoses, osteochondroma, osteoblastoma, osteoid osteoma, peripheral ossifying fibroma and paraosteal sarcoma. These pathologies can be ruled out based on the following criteria:

a) A simple exostosis (torus), is mostly bilateral and symmetrical and tends to occur in a zone of attached gingiva in which growth ceases at puberty. It is histologically identical to osteomas.
b) A Periosteal osteoblastoma, presents frequently as a painful and fast growing round or ovoid heterogeneous mass attached to the cortical bone. Microscopically it is composed of trabeculae of woven bone with osteoblasts and osteoclasts.
c) An osteoid osteoma, is also a consistently painful lesion with a rapid growth but microscopically it has a highly vascular cellular tissue containing osteoid tissue.
d) An osteochondroma, usually has a condylar or coronoid location on the mandible which is an uncommon site for peripheral osteoma.
e) A peripheral ossifying fibroma is a reactive focal lesion with a predilection for the anterior maxilla besides it being a rapidly growing tumor of youger age group with a combination of a fibro-cellular component and a cemento-osseous tissue formation. The peripheral ossifying fibroma commonly presents as a radiopaque mass, but does not intrude into the osseous cortex unlike peripheral osteoma.
f) The central ossifying fibromas are discernible by their borders which are usually well defined with a thin radiolucent line that separates the lesion from the surrounding bone. A sclerotic border may be present in the bone next to the lesion.
g) A complex odontoma has a radiographic opacity which is close to that of a tooth.
h) Peripheral Osteoma shows an appearance and monogenicity of osteoma and, is usually not difficult to characterize and diagnose. (8,7,1,2)

Peripheral osteoma consists of compact cortical bone with scanty intervening fibrovascular stroma and may sometimes elicit a peripheral rim of dense sclerotic lamellar bone surrounding trabeculae of lamellar or occasionally woven bone that are usually separated by fibrofatty vascular tissue.

Treatment of the osteoma is done by complete surgical removal of the tumor from the base where it unites with the cortical bone is preferred. There are no reports of osteoma undergoing malignant transformation and recurrence is extremely rare.(9,12)

In a nutshell, in the presented case, the age, sex, and site of the lesion are in agreement with the earlier reports of osteomas. In our patient, there was no history of trauma, but there could be a chance that patient experienced minor trauma which she is not aware of. It is believed that massetter traction, in particular, plays a role in the occurrence of such lesions. The lesion in our case was an isolated one and no corroborating syndromal features were found.

CONCLUSION:

We have presented a case of a large osteoma on the buccal surface of the mandibular body. The lesion had grown slowly for five years and caused intraoral swelling but no facial asymmetry. Histological diagnosis was done following surgical excision of the lesion. Recurrence of peripheral osteoma after surgical excision is extremely rare. However, it is recommended that, periodic clinical and radiographic followup after surgical excision of a peripheral osteoma is done as delayed recurrence is a possibility.

Conflicts of Interest – None

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Corresponding author contribution- Matter selection & Article design

Co-author contribution – Data material assimilation

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