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Central Ossifying Fibroma of Bone –A CBCT Expedition

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Abstract: *The ossifying fibroma of bone is a central neoplasm of bone. Central ossifying fibroma a tumor accepted by most investigators as being odontogenic in origin. These are neoplasms consisting of fibrous tissue containing varying amount of mineralized materials. In this presentation, we have described 2 case series, 1.A male aged 57 year with clinical findings of pulsatile socket & expansion of cortical bone with mandibular left side. 2. A female aged 43 year asymptomatic patient who presented an impacted 38, 48 and accidently we have found radiographic changes on OPG. We have done CBCT (3D Carestream) scan and radiographically diagnosis was confirmed. Radiographic imaging such as intraoral, panoramic & CBCT had been performed and radiographic diagnosis of Central ossifying fibroma of bone was made. CBCT extending its arm to explore easier possibilities of diagnosis.*

Keywords*: Central ossifying fibroma, Fibrous lesions, CBCT Scan.*

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I. Introduction

The ossifying fibroma of bone is a central neoplasm of bone. Central ossifying fibroma a tumor accepted by most investigators as being odontogenic in origin. These are neoplasms consisting of fibrous tissue containing varying amount of mineralized materials.[(1,2)] The central ossifying fibroma is a relatively rare lesion which is commonly found in 3rd to 4th decade of life and in females than in males, and has a predilection for mandible than maxilla.[(3)]

Radiographically, it is mostly a mixed radiolucent radiopaque. The density of radiopacity depends on the amount and form of calcified material. Lamina dura of involved teeth usually in missing, resoption of teeth may occur. The article reports 2 cases of ossifying fibroma of mandible with a brief discussion on its literature.

II. Case Report 1:

A male age 57 year reported to outpatient department of a Dental College with a history of non-healing wound in lower right back region of jaw since a month, which was result of extraction of tooth a month ago(figure1). The past medical and dental histories were non-contributory. Also the family history was not contributory. Clinical examination revealed a pulsatile socket measuring approximately 1x0.5cm in size in the 44 region of the jaw (figure.2). Buccal expansion was noted in relation to 42 to 45 region of the jaw. There was mobility with 45 and displacement of 43 noted (figure 3). A clinical diagnosis of non-healing socket with 44 was made.

In radiographic evaluation, intraoral periapical radiograph was taken which shown evidence of radiopaque fleck suggestive of calcification (figure 4). Mandibular occlusal cross-sectional view showed evidence of bucco-lingual expansion of cortex at the level of 42 to 47 region (figure 5).

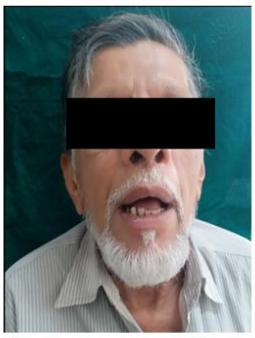


Figure 1: Facial profile

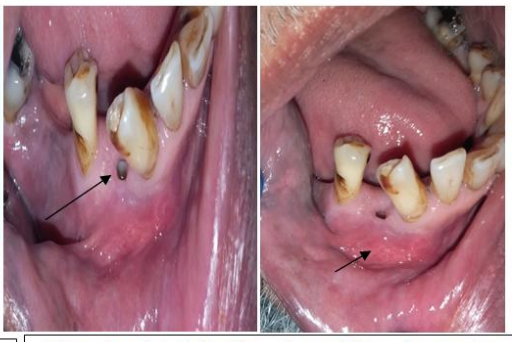


Figure 2 and 3: Pulsatile socket and buccal expansion

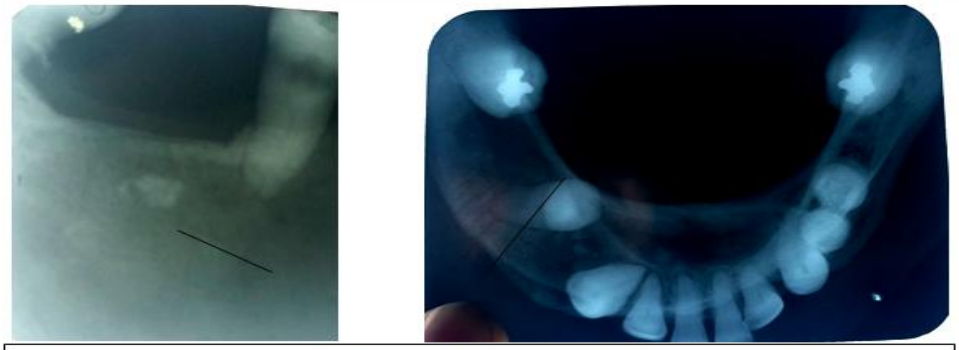


Figure 4 and 5: IOPA shows calcification and Occlusal radiograph revealed bucco-lingual expansion with 43 to 47 region.

OPG revealed a mixed radiolucent-radiopaque lesion of well demarcated radiolucency extending from mesial aspect of 33 to distal aspect of edentulous area of 46. Displacement of 43 and 45 was noted. There was evidence of root resoption with 43, multiple radiopaque flecks seen suggestive of calcifications (figure 6).

CBCT scan revealed in 3 sections in which axial section showed well demarcated radiolucency size of anterioposteriorly 39.9mm and buccolingually 14.4mm with thinning of labial cortex. Sagittal section showed multiple radiopaque structure towards lingual and buccal cortex, and mandibular canal displaced towards the lower border of mandible (figure 7, 8, 9) These finding led to a radiographic diagnosis of central ossifying fibroma of bone.

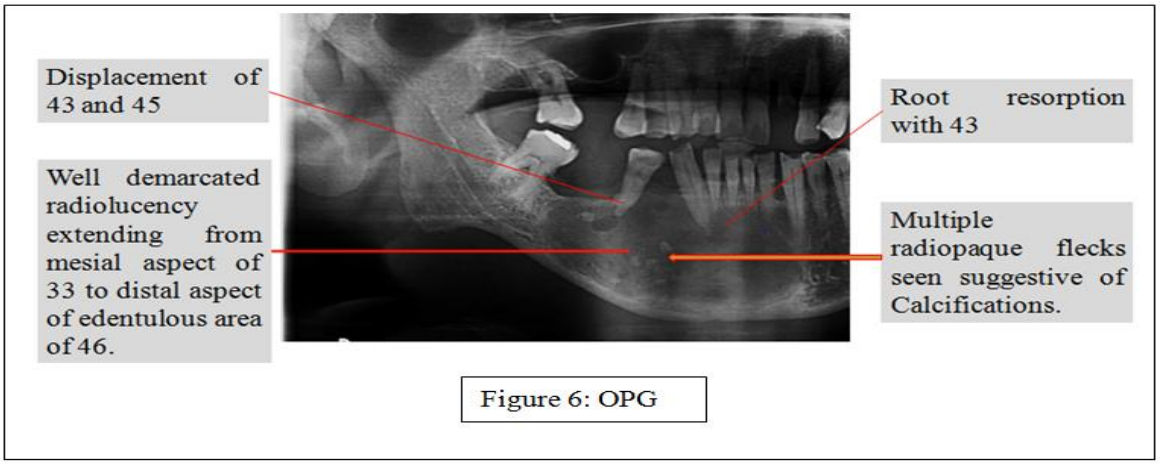
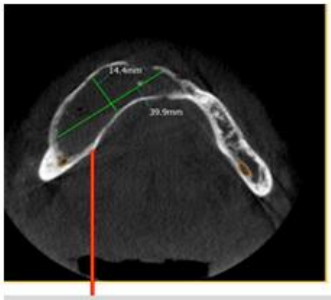
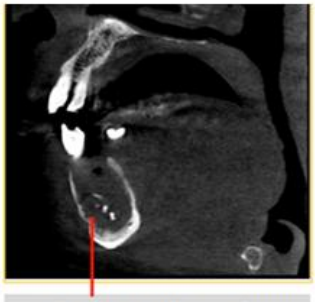


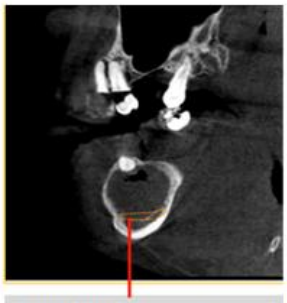
Figure 6: OPG



Axial section: Well demarcated radiolucency shows size of AP-39.9mm and BL-14.4mm with thinning of labial cortex.



Sagittal section shows Multiple radiopaque structures seen towards lingual and buccal cortex.



Mandibular canal displaced towards the lower border of mandible.

Figure 7, 8, 9 : CBCT revealed axial and sagittal section

With the working diagnosis of central ossifying fibroma the patient was advised surgical excision of the lesion. The excised specimen was sent for histopathologic evaluation. Histological examination confirmed the diagnosis by revealing presence of lesional tissue was composed of numerous interconnecting mature bony trabeculae shows presence of osteoblastic rimming, osteocytes and occasional osteoclasts. Foci of immature bone can also be noted. (figure 10).

III. Case Report 2:

A female age 43 year reported to outpatient department of a Dental College with a complain of pain in lower left back teeth region since a week. During investigation of 38, 48 for which OPG was advised.(figure 11,12) We noticed marked changes in periapical region of 33,32,31,41,42,43 following which vitality test was done, that showed 31,41,42 are vital and 32,33 gave delayed response. The past medical and dental histories were non-contributory. Also the family history was not contributory. Abnormality was detected in relation to the vitality of teeth in the affected area. A clinical diagnosis of chief complain was impacted 38, 48.

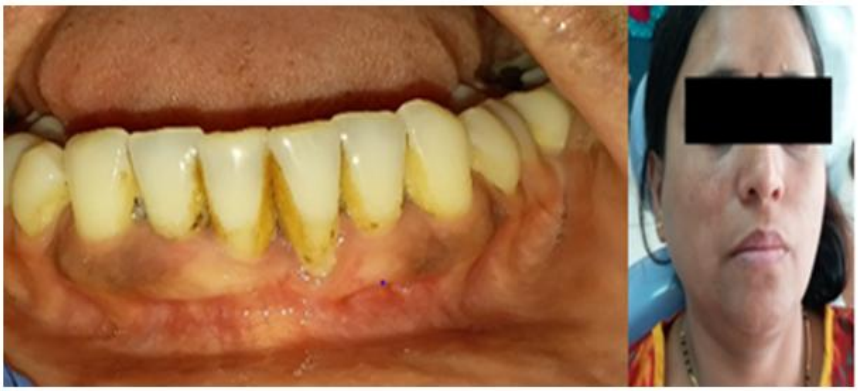


Figure 11, 12: facial profile and intraoral view

In radiographic OPG evaluation unusually we noticed marked radiographic changes in periapical region of 33, 32, 31, 41, 42, 43. Mixed radiopaque and radiolucent lesion was evident that was extending from mesial aspect of 34 to mesial aspect of 44 associated with scalloped borders impregnation with multiple radiopaque flecks (figure 13).

CBCT scan revealed, Axial section showed expansion and thinning of labial cortical plate with anteroposterior dimension 28.0mm. Coronal section showed multiple radiolucent well demarcated scalloped borders with multiple radiopaque flecks. Sagittal section slices of resolution 0.1mm (high definition) were obtained at 1mm interval showed evidence of radiolucency started from root of mesial aspect of 44, with radiopaque flecks within radiolucent lesion. Thinning of cortical plate at the level of 41. There was evidence of loss of lingual cortical plate and breach in continuity of buccal cortical plate, root resoption with 41, 31, 32.

Expansion of labial cortical plate at the level of 32, 33 region (figure 14). These finding led to a radiographic diagnosis of Central Ossifying fibroma of bone.

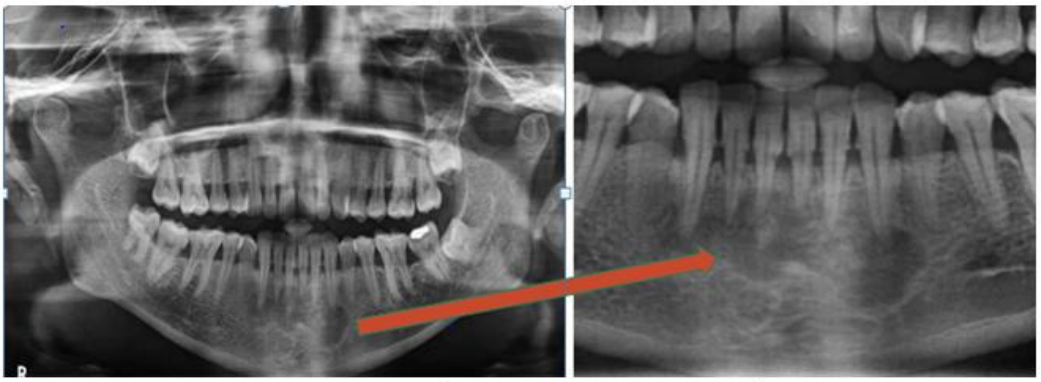


Figure 13: OPG

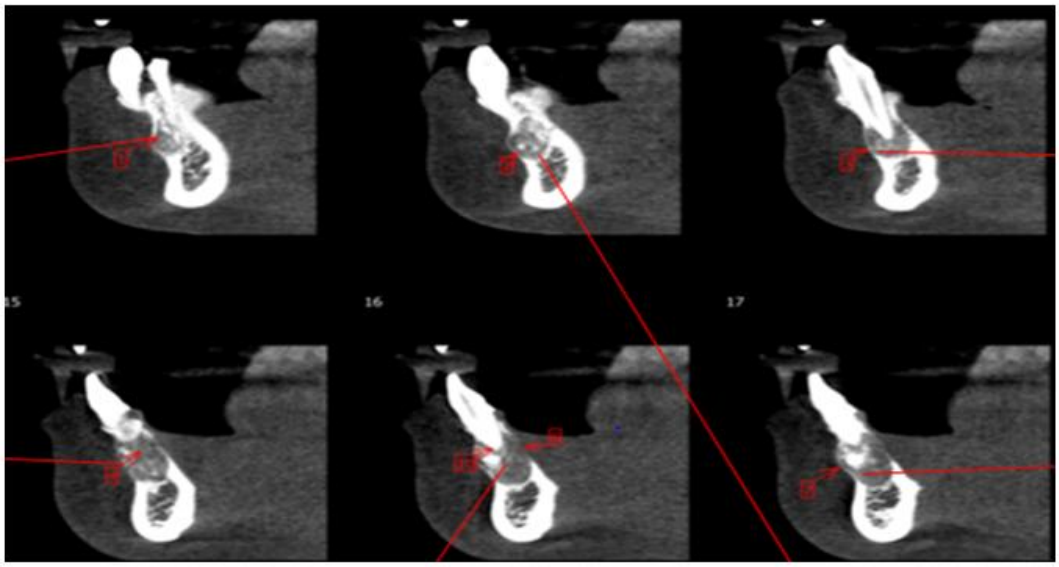


Figure 14: Sagittal section of CBCT

With a working diagnosis of central ossifying fibroma the patient was advised surgical excision of the lesion. The excised specimen was sent for histopathologic evaluation. Histological examination confirmed the diagnosis by revealing presence of immature bone trabeculae with highly cellular comprising of plump spindle shaped cells suggestive of fibroblast, delicate collagen fibers and masses of globular calcified material suggestive of cellular cementum. Few delicate capillaries and areas of hemorrhage can be noted (figure 15).

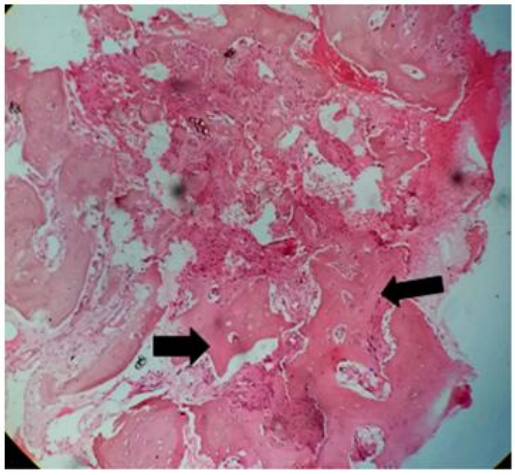


Figure 10

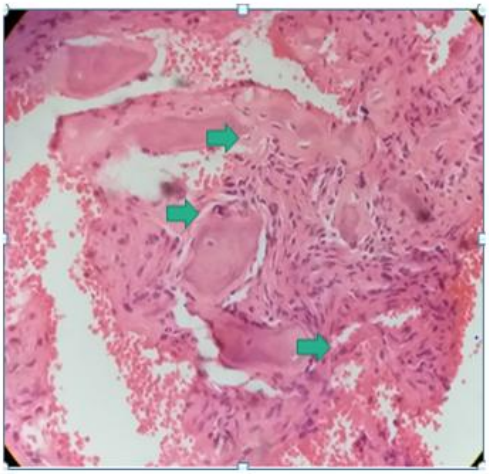


Figure 15

IV. Discussion

Lack of standardized terminology and classification of central or intraosseous cement-osseous lesions of the jaws have long posed a dilemma for pathologists and clinicians. In 1872, Menzel was the first person who report ossifying fibroma under the name of cement-ossifying fibroma, involving mandible in a 35 years old female patient, appointed by Montgomery in 1927. [3, 4] Branon and Fowler first used the term ossifying fibroma in place of cement-ossifying fibroma, which was accepted by WHO in 2005 and later replaced by term central ossifying fibroma with ossifying fibroma.[5]

Clinically, ossifying fibroma presents as a painless, slow growing mass in the jaw, where early clinical features may be displacement of teeth.[2] Large tumors result in a painless swelling of the involved bone, they may cause obvious facial asymmetry. Pain and paresthesia are rarely associated with an ossifying fibroma. Typical of grows centrifugal producing ball-like circular manner because the lesion enlarge equally in all directions, producing expansion of buccal and lingual cortex and inferior cortex of the mandible. [9]

All the above clinical features were evident in the present cases. Ossifying fibroma are usually found in 3rd to 4th decades of life with female predominance in ratio of 5:1. [3, 6] The most common site of occurring being mandible (62% to 89%), in premolar-molar region (77%). [7] But one of the case reported here was of a male patient of 5 decade.

Radiographically , Degree of mineralization shows different pattern of tumors. MacDonald-Jankowski described ossifying fibroma into three stages; an initial radiolucent stage, mixed stage and followed by sclerotic stage. [6]

The differential diagnosis of central ossifying fibroma is based on radiographic features. As a completely radiolucent lesion, central ossifying fibroma can be differential diagnosed as a lesion with a radiographically similar appearance, such as focal cement-osseous dysplasia, odontogenic cyst, traumatic bone cyst, unilocular ameloblastoma, and central gaint cell granuloma. A mixed radio-opaque and radiolucent lesion shows similar radiographic features to other fibro-osseous lesions like calcifying odontogenic cyst, adenomatoid odontogenic tumor, odontogenic fibroma. A completely radiopaque ossifying fibroma may be differentially diagnosed as retained root, odontoma, idiopathic osteosclerosis, condensing osteitis, cemento-osseous dysplasia(late stage).

Histopathologically, central ossifying fibroma is composed of numerous interconnecting mature bony trabeculae. These trabeculae show presence of osteoblastic rimming, osteocytes and occasional osteoclasts. Foci of immature bone were seen. Intervening soft tissue is highly cellular comprising of plump spindle shaped cells suggestive of fibroblasts, delicate collagen fibers and masses of globular calcified material suggestive of cellular cementum. Few delicate capillaries and areas of hemorrhage were seen. [8, 9]

V. Conclusion

The overall radiographic as well as histopathological features are required to label the diagnosis of central ossifying fibroma of bone. CBCT an extended arm towards exploration of easier possibilities of diagnosis.

Declaration of patient consent:
The authors certify that they have obtained all appropriate patient consent forms.

In the form the patients have/has approved his/her/their voluntary participation in this report after understanding the information thoroughly. Patients decision to participate in this report is completely voluntary and is not driven by any undue pressure or enticement. Patients fully aware that he/she shall not be receiving any monetary remuneration for participation in this report. Patients hereby declare that data/information gathered shall be a proprietary of the institution and the researcher. Thus it can be used for educational and scientific publication purpose.

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Nil.

Conflicts of interest:
There are no conflicts of interest.

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