

## Cemento-Ossifying Fibroma of the Mandible: A Case Report and Review of Literature

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### Abstract

Cemento-ossifying fibroma (COF) is a fibro-osseous neoplasm included among the non-odontogenic tumors derived from the mesenchymal blast cells of the periodontal ligament, with a potential to form fibrous tissue, cement and bone, or a combination of such elements. From the radiological perspective, the disorder generally manifests as a well defined and delimited, unilocular radiotransparency, as a radiopaque image with central opacifications, or as multilocular transparencies. A case of a 23-year-old male patient with cemento-ossifying fibroma is reported along with the review of the literature on the subject.

**Key words:** Cemento-ossifying fibroma, cemental dysplasia, fibrous tissue, benign neoplasm.

### Introduction

Cemento-ossifying fibroma (COF) is a benign mesenchymal odontogenic lesion characterized by well circumscribed, unilocular, radiolucency mixed with radio opacity based on presence of mineralized tissue either cementum or bone histologically.<sup>1</sup>

These lesions are categorized under fibro osseous lesions, that include fibrous dysplasia, osseous dysplasia, ossifying fibroma, cemento-ossifying fibroma and cemental dysplasia. Fibro-osseous lesions of the cranial and facial bones are usually benign and tend to grow slowly and have similar histopathological features as fibrous dysplasia, ossifying fibroma, and cemento-ossifying dysplasia.<sup>2</sup>

The report describes a case of unilocular cemento-ossifying fibroma in a 23-year-old male, with a review of the literature.

### Case report

A 23-years-old male patient reported to the clinics with a chief complaint of swelling in the left side of the lower jaw since 6 months. The swelling was gradually increasing in size and was not associated with pain. There was no significant medical and dental history.

On clinical examination, a diffused, oval shaped swelling, approximately 5x2 cms in size was noted in relation to lower left premolar and molar region intraorally. Mild bicortical expansion with bowing of the inferior border of mandible was noted (Figure 1). The swelling was non tender, bony hard in consistency with intact overlying mucosa. There was no paresthesia. Based on these clinical features, a provisional diagnosis of ameloblastoma, and differential diagnosis of cemento-ossifying fibroma was given. Central giant cell granuloma and odontogenic myxoma were also thought of. The laboratory findings like alkaline phosphatase, serum calcium levels and other routine blood investigations were within the normal limits. Orthopantomograph (Figure 2) revealed a radiolucency extending from distal to first premolar to distal of third molar with intact lower border of mandible. The patient was later subjected for Computed tomographic (CT) investigation, CT images were obtained in axial, coronal and sagittal view with 3D reconstruction. The images revealed large irregular expansile lesion measuring 5.5 x 1.9 cms with bicortical expansion and destruction of bucc-

al cortex of mandible with intact lower border of mandible (Figure 3,4). An Incisional biopsy of the specimen was carried out. Histopathology (H and E stained section) revealed fibro-cellular connective tissue composing of collagenous fibrous tissue, small foci of cementum like mineralized structures and large inter connecting trabeculae of multinucleate giant cells suggesting of cemento-ossifying fibroma (Figure 5). Surgical resection of the tumor, with reconstruction of the mandible was done under general anesthesia (Figure 6,7). No post-operative complications were observed.

### Discussion

The World Health Organization classifies cemento-ossifying fibroma as a fibro-osseous neoplasm included among the non-odontogenic tumors derived from the multipotent mesenchymal blast cells of the periodontal origin, that are able to form fibrous tissue, cement and bone, or a combination of such elements.<sup>3</sup>

Clinically, the tumor tends to present as a slow growing intra-bony mass most often located in the region of the mandibular premolars and molars and in the ascending ramus. The growth is usually asymptomatic, though there may be a degree of root resorption or displacement of neighboring teeth.<sup>4</sup>

Central cemento-ossifying fibromas occur more frequently in women than in men. They arise in the mandible in 62% to 89% of patients, 77% occurring in the premolar region. Most are diagnosed between 20 and 40 years of age.<sup>5</sup> When this tumor arises in children, it has been named the juvenile aggressive cemento-ossifying fibroma, which presents at an earlier age and is more aggressive clinically and more vascular at pathologic examination.<sup>6</sup>

Radiologically, these tumors may present a number of patterns depending on their degree of mineralization. Two basic patterns have been defined: one characterized by the presence of a unilocular or multilocular radiopaque image and another showing mixed density due to a variable internal amount of radiopaque material. In some cases when the lesion is continuously enlarging, there may be associated root resorption and displacement of the roots of the neighboring teeth.<sup>1,4</sup>

Cytogenic and cariotyping analysis on cemento-ossifying fibroma was performed and it was discovered that three

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Figure 1: Intra oral view showing swelling and obliterating the left lower buccal vestibule

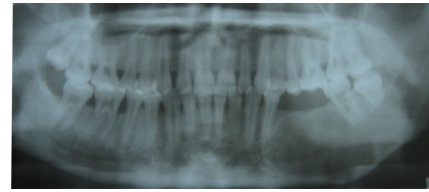


Figure 2: Orthopantomograph revealing radiolucency

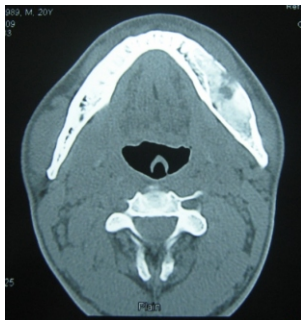


Figure 3: Axial CT showing an expansile lesion

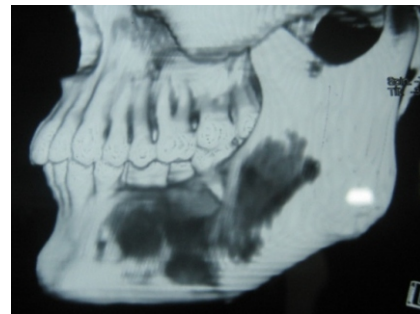


Figure 4: Three dimensional CT showing destruction of the buccal cortical plate

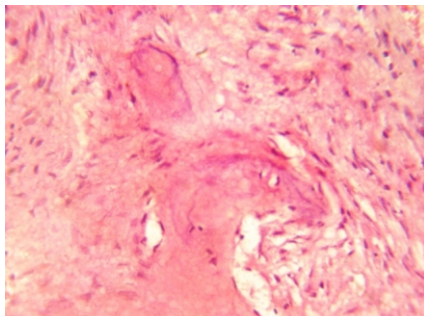


Figure 5: Histological section showing diffused areas of ossification and calcifications in stroma

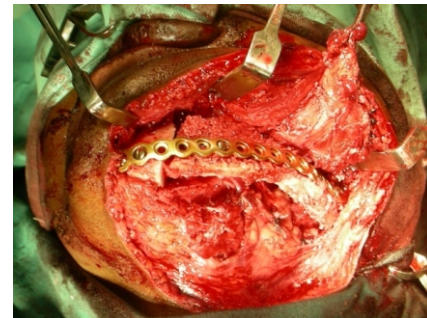


Figure 6: Operative procedure showing placement of reconstruction plate



Figure 7: Post operative photograph

translocations are responsible for it.<sup>7</sup> A close histogenetic relationship exists between the central cemento-ossifying fibroma and the central ossifying fibroma. The only difference between the two is that, in cemento-ossifying fibroma, there is cementum formation along with bony trabeculae, this cementum is not seen in ossifying fibroma.

Cemento-ossifying fibroma is a slow growing lesion composed of cellular fibroblastic tissue containing masses of cementum-like tissue. In addition, varying amounts of bony trabeculae are interspersed within the lesion, giving it its characteristic features.<sup>8</sup> Uncomplicated cases of cemento-ossifying fibroma can

be treated by simple enucleation of the lesion with curettage alone. Because the lesions are well circumscribed, they are removed easily from the surrounding tissue. Monobloc resection with bone reconstruction is indicated for large-sized cementifying and ossifying fibromas.<sup>9</sup>

Radiotherapy is contraindicated because of the radioresistance nature of the lesion and post-radiation complications.<sup>10</sup>

Prognosis of these lesions is known to be fair. Recurrence of COF has been reported in 28% of patients with mandibular central cemento-ossifying fibromas.

### Conclusion

Although fibro-osseous lesions are rare, they do occur. Hence a sound knowledge of these lesions is essential for a clinician to diagnose and differentiate the condition. Tremendous advances have been made in reconstruction and rehabilitation of the patient with such conditions. When surgical treatment is carried out at an early age, cemento-ossifying fibroma seldom recur. Their successful management therefore depends largely on the establishment of accurate clinical diagnosis aided by extensive investigation and careful interpretation of radiographs.

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