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CASE REPORT

# Cemento-ossifying Fibroma of Maxilla

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## ABSTRACT

Cemento-ossifying fibroma is classified as a fibro-osseous lesion of the jaws. It commonly presents as a progressively growing lesion that can attain an enormous size with resultant deformity if left untreated. The cemento-ossifying fibroma is a central neoplasm of bone as well as the periodontium which has caused considerable controversy because of the confusion regarding terminology and the criteria for its diagnosis. Here, we present a case of cemento-ossifying fibroma involving the anterior maxilla in a 27 years old male patient.


**Keywords:** Cementifying fibroma, Cemento-ossifying fibroma, Fibro-osseous lesion, Jaw tumor.

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## INTRODUCTION

The concept of 'fibro-osseous lesions' of bone has evolved over the last several decades and now includes two major entities: fibrous dysplasia (FD) and ossifying fibroma (OF) as well as the other less common lesions, such as florid osseous dysplasia, periapical dysplasia and focal cemento-osseous dysplasia.[1] Fibro-osseous lesions of the craniofacial bones are behaviorally diversified array of diseases that share common microscopic features. All lesions are composed of hypercellular fibrous element and an osseous element, both of which exhibit wide spectrum of variations.

Ossifying fibroma term was first used by Montgomery.[2] The OF is defined as a benign neoplasm arising in craniofacial bones, composed of proliferating fibroblasts with osseous products that include bone and ovoid calcifications; the lesion is well demarcated from the adjacent bone.[3] There is lack of agreement among pathologists regarding whether FD and OF be treated as distinct entities or as synonyms. General accordance is that this is a benign bone tumor consisting of highly cellular, fibrous tissue that contains varying amounts of calcified tissue resembling bone, cementum or both.[4] A case report of cemento-ossifying fibroma is presented hereby.

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## CASE REPORT

A 27-year-old male patient reported with a complaint of swelling on the right upper front tooth region for past 15 days. Patient had no relevant family history and had no habits related to the oral cavity. On general physical examination, no abnormality was detected and all vital signs were within the normal parameters. The onset of the swelling was on its own, slow in progress and was not associated with pain. The swelling was gradually increasing in size. It was present on the anterior maxillary region, and it involved the labial vestibule and alveolar mucosa opposing the lateral incisor and canine. It was bony hard in consistency. The swelling approximately measured 3 × 3 cm. The overlying mucosa was normal in appearance. The swelling had regular well-defined margins and showed no mobility, fluctuation, compressibility or translucency (Fig. 1).

The orthopantomogram (OPG) revealed irregular, well-defined radiopacities in relation with tooth number 12, 13. The peri-apex and lamina dura of these teeth appear normal. Surrounding bone showed normal trabecular architecture (Fig. 2). Blood investigations of the patient were found to be normal. Provisionally, the lesion was diagnosed as fibro-osseous lesion/bony exostosis. Surgical enucleation with curettage of the lesion was done. The excisional biopsy was sent for histopathological examination. Histopathological picture showed bony trabeculae, cementoid material and inflammatory fibrous tissue (Fig. 3). Under high power view, the bony trabeculae showed osteocytes and lacunae with osteoblastic rimming. Deeply hematoxyphilic cementoid material was evident (Fig. 4). Predominant inflammatory component was seen. The overall features were suggestive of cemento-ossifying fibroma based on clinicopathological correlation.

## DISCUSSION

Cemento-ossifying fibroma is a benign fibro-osseous tumor. These tumors are thought to arise from the periodontal ligament and are composed of varying

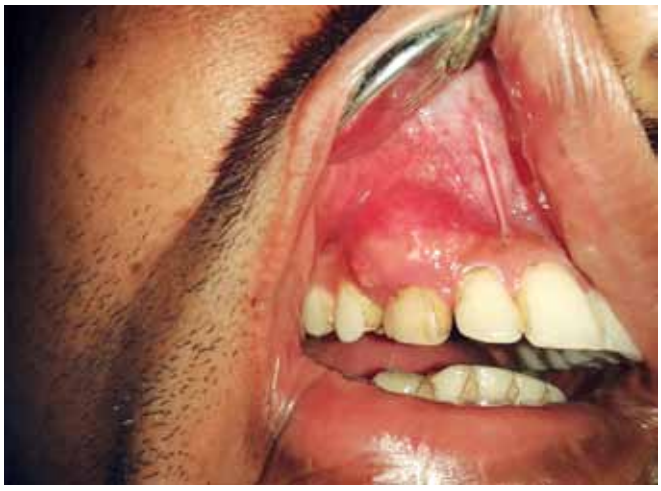

**Fig. 1:** Intraoral examination reveals swelling

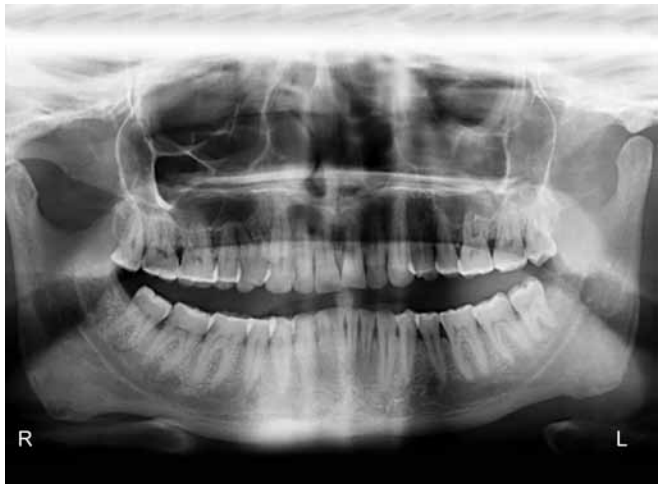


**Fig. 2:** OPG reveals unilocular radiolucency in relation to tooth number 12 and 13

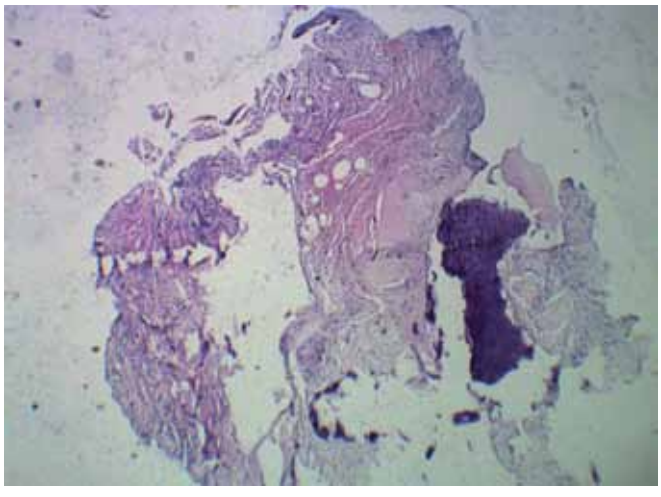

**Fig. 3:** Scanner view showing bony trabeculae, cementoid material and inflammatory fibrous tissue

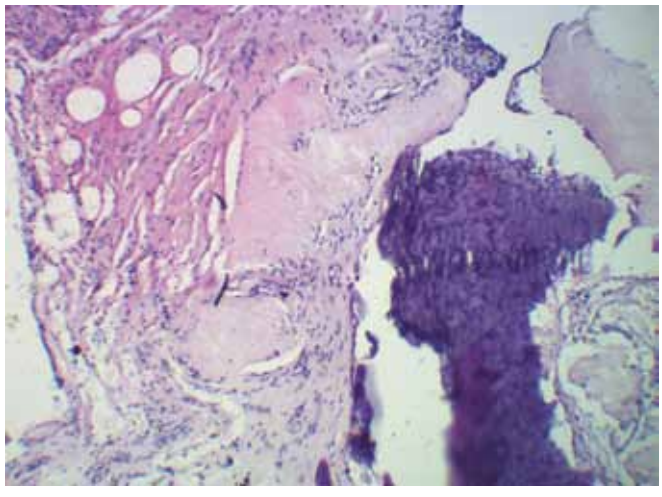

**Fig. 4:** High power view showing bony trabeculae consisting of osteocytes within lacunae, osteoblastic rimming and cementoid material

amounts of cementum, bone, and fibrous tissue. Lesions with these types of calcifications were termed as cementifying lesions.[5] Lesions with such ovoid calcific deposits, identical to cementicles in jaw bone fibro-osseous lesions, were also noted in the facial and the cranial bones. The OFs of the jaw bones were referred to as purely ossifying, cementifying or cemento-ossifying whereas identical lesions in other craniofacial bones were being classified as FD, OF, cementifying fibroma of facial bones, or psammomatoid OF.[3] According to the second WHO classification, benign fibro-osseous lesions in the oral and maxillofacial regions were divided into two categories: osteogenic neoplasm and non-neoplastic bone lesions; cementifying ossifying fibroma belonged to the former category.[6] However, the term 'cementifying ossifying fibroma' was reduced to OF in the new WHO classification in 2005. The hybrid name central cemento-ossifying fibroma is also used because there is a spectrum of fibro-osseous lesions that arise from the periodontal ligament, ranging from those with only deposition of cementum to those with only deposition of bone.[7]

Ossifying fibromas, unlike FD, are limited to the bones of craniofacial complex, although cases with similar histology have been described in long bones. Cemento-ossifying fibroma is more common in mandible than maxilla. There is a marked female predilection.[8] The growth rate is often slow and progressive yet may occasionally proceed at an alarming rate. These rapidly growing forms of OF have been termed as juvenile aggressive OF.[9]

The characteristic features of cemento-ossifying fibromas in radiographs are expansion and lesion margination, demarcation, or cortication. In the jaws, adjacent teeth may show root divergence or even resorption. In the earlier stages or in predominantly fibrous tumors, the image will be radiolucent and may or may not contain

floccular opacities. In more mineralized tumors, many radiopaque and confluent foci may be seen and are delineated from adjacent bone by a radiolucent halo.[10]

Ossifying fibromas exhibit many histologic variations. The typical appearance shows fibroblastic cellularity with irregular trabeculae rimmed by osteoblasts. Small ovoid calcifications referred to as cementicles, psammoma bodies or ossicles are present. Calcifications are basophilic round or ovoid structures with an outer eosinophilic halo.[11] Other patterns are dystrophic calcifications or predominantly acellular ovoid or spherical calcifications. These calcifications may gradually grow, fuse and ultimately form a dense mass. Most so-called cementifying fibromas show admixed spherical calcifications and bone trabeculae.[12] The nature of these calcifications is a debatable issue. Although anatomically distinct, considerable controversy exists in literature as to whether cementum is genetically distinct from alveolar bone. Both these tissues have common embryologic origin, pathway of cellular differentiation and extracellular protein matrices. Vascular component and pathway of formation using a cartilaginous precursor, the extracellular matrix of bone is considerably more complex than that of cementum.[13]

Differential diagnosis of cemento-ossifying fibroma includes lesions like FD, periapical cemental dysplasia, focal and florid cemento-osseous dysplasia, reactive periostitis, cherubism, early lesions of osteitis deformans, and focal sclerosing osteomyelitis. These diseases have unique clinical and imaging features. The FD and OF are well demarcated radiographically. The FD is a dysplastic or hyperplastic process with diffuse margins that blend into adjacent bone, whereas OF is a benign circumscribed or encapsulated neoplasm. Histologically, the bony trabeculae in FD are curvilinear forms (resembling Chinese script letters), immature, woven in type, and lack osteoblastic rimming.[14]

Surgical enucleation or excision from the surrounding bone is the treatment of choice for OF. Recurrence rate is 20 to 25% after curettage and, in the facial bones, those lesions with psammomatoid histology can be aggressive, warranting resection.[15]

## CONCLUSION

Further studies should concentrate on the molecular aspects to differentiate between various fibro-osseous diseases. There may be phenotypic differences in the osteoprogenitor cells that will account for histological differences between these lesions. Oncogene, tumor-suppressor gene and cell cycle functions need to be clarified as well.

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