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CASE STUDY

CEMENTO-OSSIFYING FIBROMA: A CASE REPORT

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ABSTRACT

Cemento-ossifying fibromas are rare fibro-osseous benign neoplasms that are seen in the jaws. They are included in the group of mesodermal odontogenic tumors and commonly present as a progressively growing lesion that might attain great size with resultant deformity, if not treated. Cemento-OF (COF) is a benign neoplasm that arises from the periodontal membrane which contains multipotential cells that are capable of forming cementum, lamellar bone and fibrous tissue. These tumors occur in the third and fourth decades of life, with predilection for women, predominantly occurring in the premolar/molar region of the mandible. A case of cemento-ossifying fibroma involving the right side of mandible is described in a 38 year-old male patient, with description of clinical, radiographic, and histologic features.

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INTRODUCTION

Cemento-ossifying fibroma (COF) is a distinct form of a benign fibro-osseous tumor, affecting predominantly the craniofacial region As early as 1872, Menzelgave the first description of a variant ossifying fibroma, calling it a Cemento Ossifying Fibroma, in a 35-year-old woman with long-standing large tumor of the mandible.According to the 1992 World Health Organization (WHO) classification of fi bro-osseous lesions, Cemento-ossifying fibroma (cementifying fibroma, ossifying fibroma) is considered to be an osteogenic neoplasm, with a significant growth potential (Shruti Sinha, 2014). It is usually associated with irritant agents such as calculus or bacterial plaque on teeth, orthodontic appliances, ill-adapted crowns, and irregular restorations. It accounts for 3.1% of all oral tumors and 9.6% of all gingival lesions. These benign fibro-osseous lesions can arise from any part of the facial skeleton and skull with over 70 per cent of cases arising in the head and neck region. These cases involve mainly the mandible and maxilla but occasionally, they are reported in the orbitofrontal bone, nasopharynx, Para nasal sinuses and skull base. However, they do not arise in the long bones, and occur mostly in the tooth-bearing areas of the jaws. Tissue Fibroosseouslesions are characterized by three radiographic stages: initial or early (radiolucent), mixed (radiolucent and radiopaque) and mature (radiopaque).

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The radiographic pattern may vary from a diffuse, ground glass appearance to a more well-defined cyst like lesion that may appear radiolucent or contain varying amounts of radiopaque material. Histologically, these tumors are composed of well vascularized fibro cellular tissue with the capacity to form immature bone trabeculae and cementoid formations, though these findings are not specific of the lesion and can also be seen in fibrous dysplasias (Jelena Sopata, 2001). A definitive diagnosis therefore requires correlation of the clinical, radiological and histological findings Treatment comprises surgical resection of the lesion with enucleation and curettage of the bone bed

Case Report

A male patient aged 38, was referred to our department with a complaint of painless bony mass intra orally on the right side in the posterior region of mandible. The mass was slowly enlarging over the past two years, attaining the present size. On clinical examination there was an obvious enlargement of the alveolar process on the body of right side of mandible in the first molar region. It was a bicortical expansion, hard in consistency. There was no parsthesia of mental nerve was evident. There were no lyphnodes palpable. Mucosa over the mass was sound with root stump like fragments over the mass. Aspiration of the lesion was found to be negative. There was no mobility of the adjacent tooth. Radiographic evaluation with OPG and CBCT revealed a well-defined, expansile, mixed radiopaque, radiolucent, mass in the right body of mandible, in the first molar region.

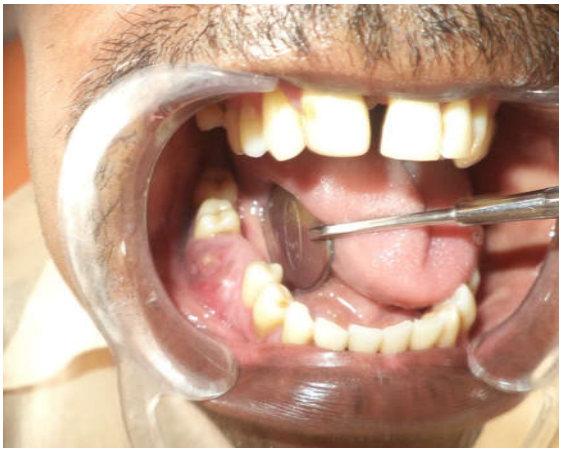

Fig. 1. Pre operative

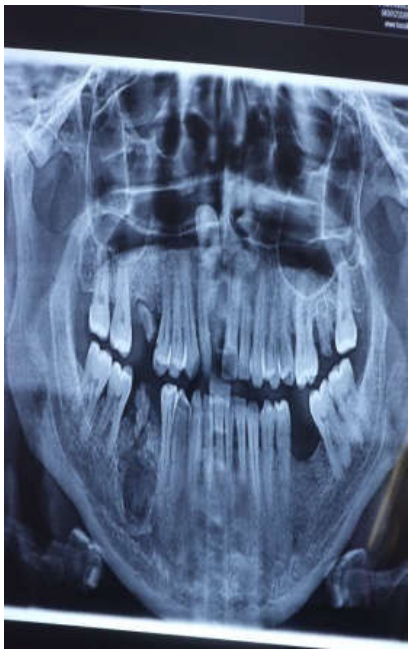

Fig. 2. OPG

Fig. 3. CBCT Picture

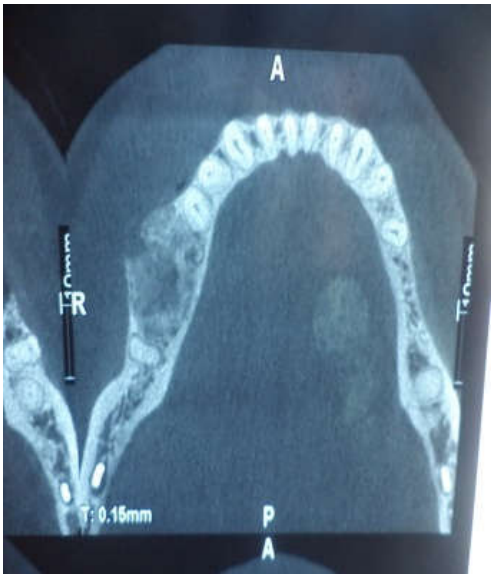

Fig. 4. CBCT of the patient

Fig. 5. Intra operative

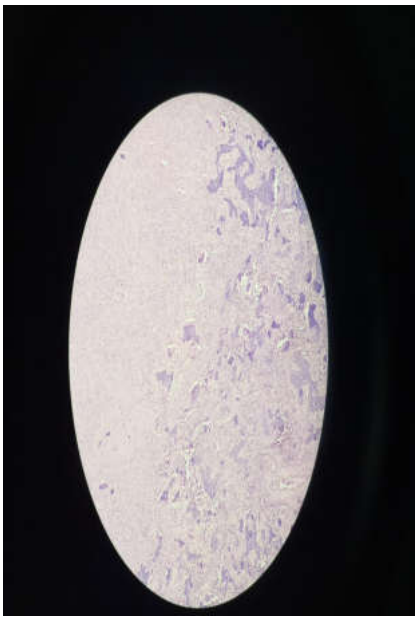

Fig. 6. Histopathology

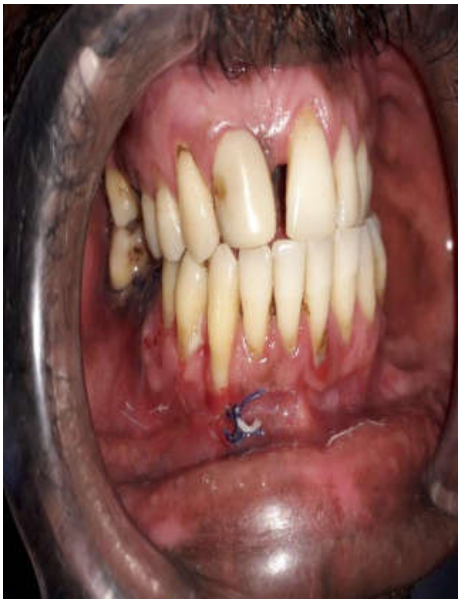

Fig. 7. Post operative

The borders are smooth and well defined. The adjacent tooth shows no root resorption or displacement. A CBCT was taken, which revealed large oval expansile radiolucent and radiopaque mass measuring anteroposteriorly 16.2 mm and 19.2 buccolingually. The inferior border of the lesion was lying over the superior border of IANB. After all essential lab investigations a provisional diagnosis of Cemento ossifying fibroma was reached and the patient was posted for surgical enucleation under G A. Under all aseptic conditions nasotracheal intubation was done and G A administered. Throat packs was given and envelop incision placed with release at the second molar and canine region. Buccal cortical bone was removed with the periosteal elevator and the lesion was separated gently from the bone by blunt dissection..Total excision of the lesion was done. The lower border of the lesion has breached on to the superior aspect of the inferior alveolar canal, exposing the nerve. Boney curettage was done with care taken not to injure.. Copious saline and betadine irrigation was done. Hemostasisachieved and the flap was closed with 3-0 vicryl. the specimen was sent for histopathological examination. Healing was uneventful, however the patient complained of parsthesia of the lower lip, which was improved in two months. Histopathological examination confirmed the provisional diagnosis of Cemento ossifying fibroma, with the specimen showing fibro cellular connective tissue containing extensive calcifications.

DISCUSSION

Cemento-ossifying fibroma is a benign osteogenic tumor with membranous ossification[3]. It therefore involves exclusively the maxillofacial bones. It comprises fibrous tissue containing a variable quantity of mineralized material resembling bone and/or cement, hence the term ‘‘Cemento-ossifying’. COF is a disorder of unknown etiology. These lesions are slow-growing and are most often seen in women between the third and fourth decades of life and more common in mandible than maxilla, typically inferior to the premolars and molars. Bernier hypothesized that COF in the bone might be caused by an irritant stimulus (such as tooth extraction) which may activate the production of new tissue from the remaining periodontal membranes (Jelena Sopata, 2011).

The periodontal membrane contains multipotential cells that are capable of forming cementum, lamellar bone and fibrous tissue. The current theories regarding their origin include traumatic and developmental causes COF manifests as slow growing, asymptomatic, intraos-seous mass, more common in women than in men, with female: male ratio of 2:1. While one half of all cases are asymptomatic, the growth of the tumor over time may lead to facial asymmetry; the lesion causing cortical expansion. It has been shown that in Asian populations, ossifying fibromas presented with considerably greater swelling (Tapas *et al*., 2017). Radiographically, they present typically as well-defined, solitary radiolucencies with scattered radiopaque foci. They vary in radiopacity depending on the amount of cementum and bone that have been deposited. In the early stages, COF may appear as unilocular or multilocular radiolucent lesion and as the lesion matures, they may transform into a radiopaque one, resulting in a lesion with mixed density (Tapas *et al*., 2017). Microscopically the specimen showed fibro cellular connective tissue containing extensive calcifications. The connective tissue is moderately collagenous and cellular exhibiting plump fibroblasts. The calcifications appear as trabeculae of bone, osteoid and basophilic cementum like spherules. The variable calcifications represent various stages of deposition of bone and cementum. It is difficult to differentiate histologically between osteoid and cementum. When most of the calcified fragments comprise immature cementum with basophilic coloration on hematoxylin and eosin-stained sections, they are named central COF. On the other hand, when the calcified fragments comprise osteoid with typical eosinophilic coloration on hematoxylin and eosin-stained sections, they are named as central ossifying fibromas[4]. Focal areas of chronic inflammatory cell infiltrate, predominantly lymphocytes are noted.

The site of occurrence is the interdental papilla of the maxillary incisor — canine region,[5] whereas, in the present case, the lesion was observed in the right mandibular second premolar — first molar alveolar ridge region, which is a less common site. However, similar cases with lesions in the mandibular region have been reported by Yadav *et al*. (2011) and Passos *et al*. (2007) and those in edentulous regions have been reported by Kumar *et al*. (2006) and Yokoyama *et al*[7]. When presented clinically with a gingival lesion, it is important to establish a differential diagnosis, which in this case can be irritation fibroma, pyogenic granuloma or peripheral giant cell granuloma. Asthe clinical appearance of these various lesions can be remarkably similar, classification is based on their distinct histological differences (Verma, 2013). The PCOF must be differentiated from the peripheral odontogenic fibroma (PODF) described by the WHO (Verma, 2013; Gardner, 1982; Buchner, 1987). Histologically, the PODF has been defined as a fibroblastic neoplasm containing an odontogenic epithelium (Verma, 2013; Gardner, 1982). Despite a preponderance of literature supporting the differentiation, some authors continue to argue that the PCOF is the peripheral counterpart of the central Cemento-ossifying fibroma (Verma, 2013). The recommended treatment is enucleation of smaller ossifying fibromas, curettage of lesions where no clear radiolucency is present around the lesion and mono-bloc resection with bone reconstruction for larger tumors in close proximity to the inferior border of the mandible (Kenney, 1989). Due to its radio-resistance, radiotherapy is complicated. Prognosis of this lesion is fair; however, relapse of COF is higher in case of maxillary COF

compared to the mandibular ones due to the greater difficulty of their surgical removal and their larger size at the time of presentation. Complete surgical removal of the lesion at the earliest possible stage has been advised by numerous investigators. The average recurrence rate of Ossifying fibromas in general is reported as 10.1%, with an average follow-up of 25-months (Shruti Sinha, 2014). In our case, it was managed by surgical excision of the lesion enemas.

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