

Focal Cemento-Osseous Dysplasia: A Case Report with Special Reference to its Differential Diagnosis

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ABSTRACT

Focal Cemento-Osseous Dysplasia (FCOD) is a fibro-osseous lesion that is a non-neoplastic reactive lesion. It is an asymptomatic lesion that needs no treatment. Follow up is essential as it can progress to a condition called Florid Cemento Osseous Dysplasia (FCOD). In the present case report, a case of FCOD of the mandible in a 27-year-old female has been discussed. An attempt has been made to discuss the clinical and histopathologic features along with the differential diagnosis of Focal Cemento Osseous Dysplasia (FCOD).

Keywords: Focal Cemento-Osseous Dysplasia, fibro-osseous lesion, Florid Cemento Osseous Dysplasia.

INTRODUCTION

The term, Fibro-Osseous Lesions (FCOD), refers to a group of the diverse process where the normal bone architecture is replaced by fibrous tissue and collagen fibers containing variable amounts of mineralized material. It is usually accepted that benign fibro-osseous lesions in the oral and maxillofacial region can be classified into three categories including fibrous dysplasia, benign fibro-osseous neoplasms, and reactive (dysplastic) lesions.¹



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Waldron was the first to observe the localized nature of FCOD and reported it as "localized fibro-osseous-cemental lesion".² The term Focal Cemento-Osseous Dysplasia was coined by Summerlin and Tomich.³ FCOD does not require a biopsy and treatment unless it is infected and symptomatic.⁴ Mostly FCOD is asymptomatic and is discovered only on radiographic examination. When FCOD is present in close approximation or attached to the tooth root, the diagnosis can be bewildering with periapical pathology or other lesions thus necessitating a histological examination.⁵

CASE REPORT

A twenty-seven years old female patient reported to I.T.S. Dental College & Hospital, Greater Noida with a chief complaint of swelling on left upper front tooth region since three years. The patient was apparently asymptomatic three years back when she first noticed the swelling on left upper front tooth region, which was intermittently increasing in size and had reached upto the present size. The patient had no relevant medical history. On examination two smooth surface swellings, oval in shape were present in the region of 23, 24 and 25. First swelling measuring 0.4 x 0.2 cm extending from the mesial surface of 23 to distal surface of 24, and second swelling measuring 0.6 x 0.4 cm extending from the mesial surface of 24 to distal surface of 25, superiorly extending to the vestibule and inferiorly till free gingiva (Fig. 1). Radiographic examination revealed no significant radiological involvement (Fig. 2). Based on the clinical and radiographic findings a provisional diagnosis of Cemento-Ossifying Fibroma and Cemento-Osseous Dysplasia with made.

An excisional biopsy was performed under local anesthesia. Gross examination of excised tissue revealed multiple pieces of hard tissue with attached soft tissue which were irregular in shape, brownish black in color and firm to hard in consistency. Tissues which were firm to hard in consistency measured approximately 0.2 to 1.2 cm (Fig. 3). Microscopic evaluation exhibits several fragments

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Figure 1: Intra-oral view showing two swelling in left upper front tooth region in relation to 23, 24, and 25.

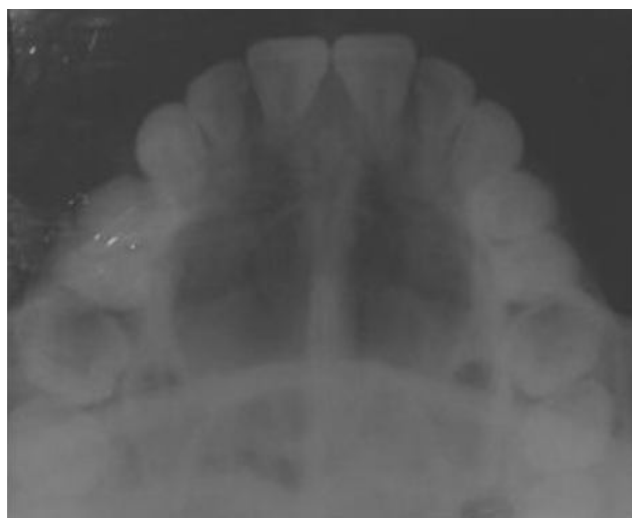


Figure 2: Occlusal view reveals no significant radiological involvement.

of cellular mesenchymal tissue consisting of spindle-shaped fibroblastic cells interspersed by bundles of collagen fibers and areas of small blood vessels. Intermixed within these cellular areas were numerous irregular formative areas of bone and cementum-like material (Fig. 4). Osteoblastic

rimming noted in formative bone areas along with plump hyperchromatic osteocytes within the lacunae (Fig. 5). Few multinucleated giant cells were observed (Fig. 6). Areas

Table 1: Differences between Periapical, Focal, Florid Cemento Osseous Dysplasia.

Clinical Type	Periapical COD	Focal COD	Florid COD
Clinical Features	<ul style="list-style-type: none"> In periapical region of mand. anterior teeth with non-inflamed pulps. Size always less than 1cm Asymptomatic 	<ul style="list-style-type: none"> Associated with vital teeth or edentulous areas Size less than 1.5 cm. Asymptomatic 	<ul style="list-style-type: none"> Occurs in bilateral fashion Cortical expansion can be there Size more than 1.5 cm Asymptomatic
Site	<ul style="list-style-type: none"> Mandibular anterior teeth 	<ul style="list-style-type: none"> In posterior mandible 	<ul style="list-style-type: none"> Mandible>Maxilla May involve all 4 quadrants
Sexual Predilection	<ul style="list-style-type: none"> Middle aged black women 	<ul style="list-style-type: none"> 4th – 5th decade, White women 	<ul style="list-style-type: none"> Adult black women
Associated pathologies	-	<ul style="list-style-type: none"> Idiopathic bone cavity 	<ul style="list-style-type: none"> Idiopathic bone cavity Osteomyelitis
Differential Diagnosis	<ul style="list-style-type: none"> Pulpal /periapical pathologies 	<ul style="list-style-type: none"> OF (Easily comes out in big pieces) 	<ul style="list-style-type: none"> Osteomyelitis Paget’s Dis.
Treatment	<ul style="list-style-type: none"> No, only follow up 	<ul style="list-style-type: none"> Biopsy and follow up 	<ul style="list-style-type: none"> Required if Osteomyelitis develops.

Table 2: Between Fibrous Dysplasia, Cemento Osseous Dysplasia and Central Ossifying Fibroma

Features	Fibrous Dysplasia	COD	COF
Clinical Features	<ul style="list-style-type: none"> Either bone, may be involved. Painless 	<ul style="list-style-type: none"> Involves the tooth bearing area. Painless 	<ul style="list-style-type: none"> Either bone, may be involved. Symptomatic
Epidemiology	<ul style="list-style-type: none"> Most Common Females=Males 2nd Decade 	<ul style="list-style-type: none"> Most Common Females>Males 3rd – 6th Decade 	<ul style="list-style-type: none"> Rare Females>Males 3rd – 4th decade
Gross features	<ul style="list-style-type: none"> Large fragments. 	<ul style="list-style-type: none"> Multiple small fragments without true capsule. 	<ul style="list-style-type: none"> Large fragments, sometimes with capsules.
Radiographic Features	<ul style="list-style-type: none"> Ground- glass appearance 	<ul style="list-style-type: none"> Vary from completely radiolucent to densely radiopaque 	<ul style="list-style-type: none"> Radiolucent and well-defined margin
Histopathologic Features	<ul style="list-style-type: none"> Monotonous pattern of chinese letter like trabeculae of woven bone. Cementoid particles regular in shape. Stroma- loose cellular and fibrous . 	<ul style="list-style-type: none"> haphazard mixture of irregular, thin trabeculae of woven bone, lamellar bone and spheroid particles. Cementoid particle- irregular in shape with reaction from stroma . Neumorous blood vessels , free of hemorrhage with sphenoidal vascularity 	<ul style="list-style-type: none"> Delicate, reticular pattern trabeculae of woven bone with osteoblastic rimming. Cementoid particle- oval & associate with stroma by brush like borders. Stroma predominantly fibrous, rich cellular & scanty to dense calcification.

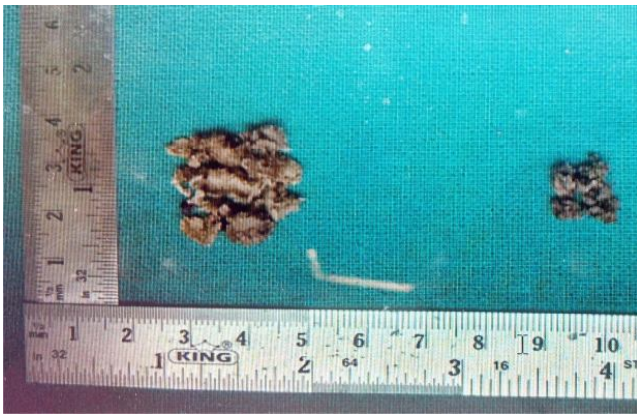


Figure 3: Gross examination of the tissue.

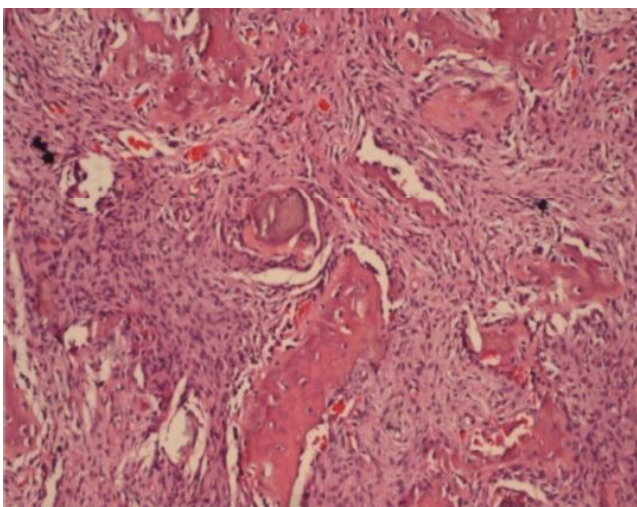


Figure 4: Photomicrograph showing dense fibrous connective tissue stroma with plump fibroblast admixed with globular acellular basophilic material resembling cementum.

of hemorrhage noted at the periphery. A final diagnosis of Focal Cemento Osseous Dysplasia (FCOD) was given.

DISCUSSION

The etiology and precise pathogenesis of FCOD are not known. It is non-neoplastic in nature like the cementifying or ossifying fibroma. For this lesion hypothesis of a periodontal ligament, origin seems to be the most widely accepted though other etiological factors such as the role of caries, trauma, periodontal disease, infection or systemic diseases as triggering factors are still to be elucidated.⁴

FCOD has an age-peak incidence between the fourth and the fifth decades. It seems to have a predilection for black women. It may occur in people of all ages and all ethnic groups, but it is more common in middle-aged individuals of African or Asians descent, followed by those of white background.⁶

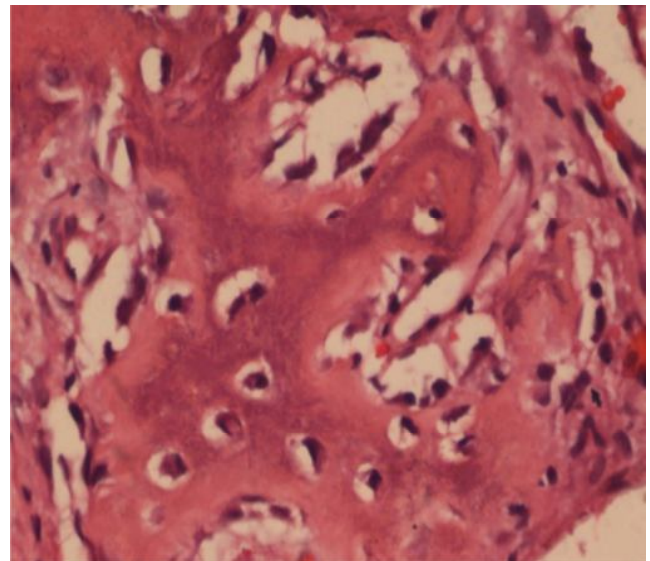


Figure 5: Photomicrograph showing areas of osteoid bone formation with osteoblastic rimming along with bone areas with hyperchromatic osteocytes.

Clinically lesions are presented with the swelling of the jaw, dull pain, sensitivity and drainage, which may be due to secondary infection caused by direct exposure of the calcified masses to the oral cavity. These symptoms might occur without any obvious dental cause. Few of the published reviews have described these lesions as non-expansile. However, in some other studies involving examination of occlusal radiographs, the slight expansion of one of the mandibular cortical plates has been reported.⁷ Current case presented clinically with a swelling on left upper front tooth region.

On radiological examination, most of these lesions display predominantly opacity, or a mixed radiolucency/opacity, with an ill-defined radiographic border. About one-third of the lesions show radiolucency with a demarcated outline.

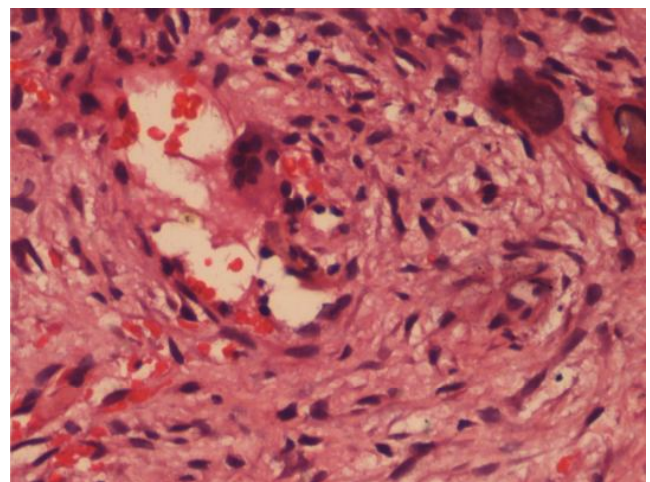


Figure 6: Photomicrograph exhibiting areas of few multinucleated giant cells.

These findings correlate well as the lesion progresses.⁸ In the early stage, radiograph shows a well-defined radiolucent area. In the intermediate stage, small opacities begin to appear within the radiolucent area, which displays a mixture of radiolucent and radiopaque architecture. The last mature and “inactive” stage is characterized by a definite radiopacity, present in the major part of the lesion.⁵ Based on clinical and radiographic findings; conditions having similar appearance were listed as shown in Table 1 and 2.^{9,10}

Diagnosis of this lesion which is showing unusual presentation is made considering the clinical, radiological and histopathological features. This makes it imperative to judiciously differentiate Focal Cemento Osseous Dysplasia (FCOD) from other lesions occurring in this region.

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