



Case Report

Focal Cemento-Osseous Dysplasia - A Case Report

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Abstract

Cemento- osseous dysplasia is a reactive benign fibro-osseous lesion with the most commonly occurring type being Focal cemento-osseous dysplasia (FCOD). It is categorized by the replacement of normal bone with fibrous tissue along with calcification resembling cementum like structures. Most of the lesions were asymptomatic and no treatment was required. When the lesion is infected with any secondary local or systemic agent, it becomes symptomatic and intervention is required. Here, we report a case of asymptomatic FCOD of the mandible in a 29-year-old female patient. Histopathological evaluation of the biopsy specimen by decalcified sections aided in the final diagnosis of the case

Keywords: Cementum, decalcification, dysplasia, fibro-osseous lesion

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INTRODUCTION

Fibro-osseous lesions are a rarely defined group of lesions affecting the jaws and craniofacial bones[1]. Main diagnostic clue in fibro-osseous lesions was replacement of bone with cellular fibrous tissue along with foci of mineralization of variable size and shapes[2]. Classification and, therefore, diagnosis of these lesions is problematic, partly because of a lack of agreement about terminology, but also because of a significant overlap in histological features[3]. Despite the advances in our understanding of these conditions, fibro-osseous lesions continue to present problems in classification, diagnosis, and management. In 1985, Waldron delineated the fibro-osseous lesion into three subtypes such as fibrous dysplasia, reactive lesion and neoplasm.[4] According to Waldron, under the category of reactive lesions, the major and most prevalent fibro-osseous lesion is cemento-osseous dysplasia(COD)[3,4]. COD occurs as an asymptomatic, mixed radiolucent / radiopaque lesion mainly in the tooth bearing areas of the jawbone[5]. Because close proximities of pathological features of COD with other fibro-osseous lesions will make diagnosis very difficult and problematic, the management might also become critical[5]. The World Health Organization in 2005, described the three distinct forms of COD based on the clinic-radiographic appearances, namely focal COD, periapical COD and florid COD[6]. Periapical COD consists of solitary or multiple lesions found in the apical region of vital mandibular anterior teeth[7]. Focal COD includes the asymptomatic lesions occurring involving the posterior mandibular molar region. Florid COD encompasses more extensive and multifocal forms involving both maxilla and mandible or occurring bilaterally in the mandible[8].The varying radiographic findings in COD from early stage to mature stage lesion will mimic other fibro-osseous lesion, thereby making it difficult to clinch the diagnosis[5]. In such a scenario, histopathological diagnosis is the only mainstay for definitive diagnosis and appropriate treatment of the patient[9].Histological features of COD include a cellular connective tissue stroma interspersed by the islands of woven or lamellar bone along with basophilic concentric cementum-like calcifications[10]. Here, we present the case of mandibular focal COD arising in the mandibular right canine- premolar region in a 29-year-old female patient.

CASE REPORT

A 29-year old female patient reported with swelling in the lingual surface of the lower anterior region. On examination, Intra oral swelling is seen on the lingual aspect of the right side of mandible from 41 to 46 region. The swelling was diffuse, painless and did not cross the midline [Figure-1]. Patient was diagnosed with cemento-osseous dysplasia 4 years prior and she was operated for the same. Patient was advised to undergo OPG for further confirmatory diagnosis.

Radiographic findings reveal mixed radiopacity and radiolucency extending from the region of 41 to 45 on the right side of mandible [Figure-2]. There was no evidence of root resorption. Based on the radiographic findings, provisional diagnosis was given as COD, cementoblastoma, complex odontoma, fibrous dysplasia and ossifying fibroma.



Figure-1: Intraoral photograph showing diffuse swelling in the lingual aspect right side of mandible on 41-45 region



Figure-2: Orthopantomogram showing multiple areas of radiopacities seen in relation to 41-45 with displacement of tooth. Radiopacity surrounded by radiolucency seen in Periapical region of 47 region

Incisional biopsy specimens of bone on the mandibular region in relation to 42-43 region were submitted to the oral pathology department for further diagnosis. On grossing, two specimens of both hard and soft tissue were received in formalin. Soft tissue was brownish in color, firm in consistency and measured about 0.8 x 0.5 x 0.3 cm. Hard tissue is white in color, hard in consistency and measures about 0.6 x 0.5 x 0.2. Soft tissue specimens were kept for processing. Hard tissue bits were kept for processing after decalcification with 10% formic acid.

On microscopic examination; soft tissue specimen shows dense fibro- cellular connective tissue stroma with numerous bony spicules along with basophilic lines. There is also evidence of moderate vascularity and areas of hemorrhage. H&E stained decalcified sections show dense bony trabeculae with lack of osteocytes within the osteocytic lacunae along with basophilic lines and irregular ragged edges along with marrow spaces. An area shows eosinophilic calcified matrix with cross sections of dentinal tubules and cemento enamel junction suggestive of dentin. Bone trabeculae with numerous basophilic cemental reversal lines are evident adjacent to dentin [Figure-3], [Figure-4]. Based on clinical, radiographic and microscopic findings, the final histopathological diagnosis was given as Benign fibro-osseous lesion- Focal Cemento-Osseous Dysplasia. The patient was kept under follow-up.

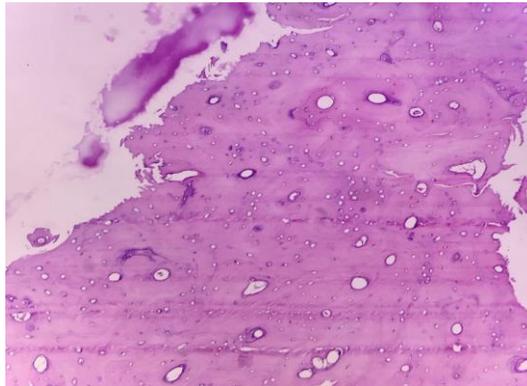


Figure-3: Photomicrograph of H&E stained decalcified section shows dense bony trabeculae with lack of osteocytes within the lacunae along with basophilic lines and irregular ragged edges.

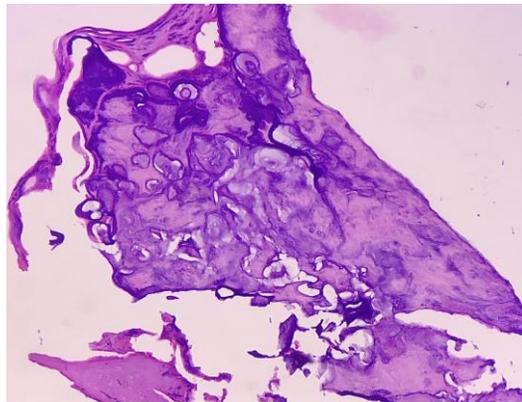


Figure-4: Photomicrograph of H&E stained decalcified section shows numerous basophilic cemental reversal lines are evident adjacent to dentin

DISCUSSION:

Fibro-osseous lesions are a benign phenomenon that has the characteristic of replacing the normal bone with the connective tissue matrix that transforms into cemento-osseous tissue[7]. According to Waldron in 1985, fibro- osseous lesions were classified as reactive, neoplastic and dysplastic processes [4]. The most common and prevalent reactive lesion of fibro-osseous lesions was cemento- osseous dysplasia. Based on clinical and radiographic findings, COD was classified further as periapical COD, focal COD and florid COD. Among which most common was Focal osseous dysplasia, also known as FCOD[11]. Waldron, observing its localized nature, first reported it as the “localized fibro-osseous-cemental lesion,” whereas Summerlin and Tomich renamed it as “focal cemento-osseous dysplasia.” [12]

FCOD commonly seen in female patients with age incidence of third to fifth decade, especially the Africans-Americans[13]. It is usually asymptomatic, self-limiting lesion related to vital tooth and reaching an average size of 1.5 cm[14]. Most frequent site of occurrence was mandible (86%) and it occurs commonly in the extractions site. About one- third of the patients were reported with localized jaw expansion and mild pain[15]. However, in the previous studies, cases were reported with pain and swelling in 25% and 28% respectively[16]. Another study done by Su *et al.* have reported that some swelling and slight discomfort can

be seen[17]. Some studies reported cases with no complaint of swelling[9]. In the present case, the patient had swelling in the lingual aspect of the mandible on the right side which was in accordance with the previous literature.

Etiology and pathogenesis of FCOD remains unclear. It was considered to be a reactive or dysplastic lesion. Trauma, periodontal disease, caries and even infection or systemic diseases may be contributing factors but literature has not been clarified[14]. Origin of FCOD is thought to be of periodontal ligament origin or due to defect in extraligamentary bone remodeling influenced by local and systemic factors[18].

Radiographically, cemento-osseous dysplasia has three stages of development, the early or osteolytic stage shows a well-defined radiolucent area with loss of periodontal ligament and lamina dura. Intermediate stage shows small opacities which appear within the radiolucent area due to the deposition of cementum-like droplets in the fibrous tissue. The late stage shows mature and osteosclerotic with poorly defined borders of sclerotic radiopacity is typically seen. When the lesion matures, mineralization decreases along with thick curvilinear structures of bony trabeculae are evident. In the final radiopaque stage, individual trabeculae fuse and form lobular masses composed of sheets or fused globules of relatively acellular and disorganized cemento-osseous material are evident[19,20]. In the present case, the lesion was detected radiographically in the lingual aspect of the mandibular 42-45 region with swelling as a presenting feature. The lesion was mixed radiopaque and radiolucent suggestive of mature fibro-osseous lesions.

The differential diagnosis may include chronic focal sclerosing osteomyelitis, ossifying/cementifying fibroma, odontoma and osteoblastoma should be considered. Histopathology of FCOD comprises highly cellular fibrovascular connective tissue interspersed with numerous islands of bone and globular calcifications. Early lesions show more connective tissue stroma and mature lesions reveal large curvilinear bony trabeculae or lobular masses of cementum[13].The histopathology of the present case was that of a mature lesion with numerous bony trabeculae and globules of cementum.

Based on histopathological findings, Ossifying fibroma is ruled out because, microscopically Ossifying fibroma has delicate bony trabeculae with prominent osteoblastic rimming and usually occurs with delineation, which tends to separate clearly on surgical excision which is not in accordance with our present case[21].Even cementoblastoma is also ruled out because it occur mainly in the apex of the tooth but in our present case, the lesion was diffuse with mixed radiopacity and radiolucency[16]. Another radiographic differential diagnosis was complex odontoma as it is most commonly seen in the mandibular posterior region as an amorphous hyperdense mass. Based on histopathological evaluation, it has been ruled out because the present case could not resemble the organized pattern of tooth structures[13]. Based on clinical, radiographic and histopathological evaluation, the final diagnosis is given as Benign fibro- osseous lesion- Focal cemento-osseous dysplasia

CONCLUSION

Most commonly encountered cemento-osseous dysplasia is Focal cemento-osseous dysplasia compared with other variants. Thorough knowledge of clinical and radiographic features compared along with histopathology evaluation will help in more confirmatory diagnosis. Usually, the lesion is asymptomatic but treatment is required if pain and swelling is worse and prognosis will be better compared with other fibro-osseous lesions.

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Conflicts of interest

There are no conflicts of interest

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