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Case Report
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A Focal Cemento-Ossifying Dysplasia in a Child Patient

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Abstract

A subtype of benign fibro osseous lesions known as focal cemento osseous dysplasia (FCOD) usually affects only one region in the jaws most common being the tooth-bearing regions. It is usually asymptomatic, and unintentionally discovered during routine radiological examinations. Treatment for these lesions is usually not needed. The patient in this case was a 14-year-old female patient, who had a mixed radiolucent-radiopaque lesion in the posterior region of her jaw. Cemento ossifying fibroma was the initial differential diagnosis determined by radiographic investigation. Following the surgical excision of the lesion, a histopathologic analysis was conducted, and FCOD was identified as the final diagnosis. No complications were noted after a few months of surgery, and complete healing of the bone was noted.

Keywords: Cemento-Osseous Dysplasia, Fibro-Osseous Lesions, Benign Jaw lesion

Introduction

Cemento osseous dysplasia (COD) is a benign fibro-osseous lesion occurring in tooth-bearing areas of the jaws wherein the mandible is more commonly affected than the maxilla. Although the exact cause is uncertain, the periodontal ligament is proposed as a likely source of origin [1]. WHO categorised it into three classes based on clinical and radiological characteristics, namely focal, periapical, and florid [2].

The posterior aspect of mandible is the most prevalent location for focal cemento osseous dysplasia (FCOD) whereas periapical and florid types are commonly found in anterior and posterior regions of the mandibular jaw respectively in the age group of 30-50 years with a female predilection towards the disease [3-5]. The lesion is usually asymptomatic with vital neighboring teeth, as a result, it is often noticed during a routine radiographic check or as an accidental finding [1, 4].

Patient Information

A 14-year-old female reported to the Out-Patient Department with a chief complaint of swelling on the right side of the chin. The patient was apparently alright a year back after which she noticed a pea-sized swelling that gradually increased in size over a period of time and was not associated with any kind of pain.

Clinical findings

On examination, the swelling was well defined, localised to the right parasymphysis region measuring approximately 4x3 cm in size (Fig. 1A). There were no signs of inflammation. On palpation, the swelling was hard in consistency, tender, non-fluctuant and appeared to be fixed to the underlying bone. Hypoesthesia was noted in the right parasymphysis region extending up to the body of the mandible. Intraorally a dome-shaped swelling was seen in the vestibule in relation to 42-45 teeth with tenderness on percussion with 44 (Fig. 1B).

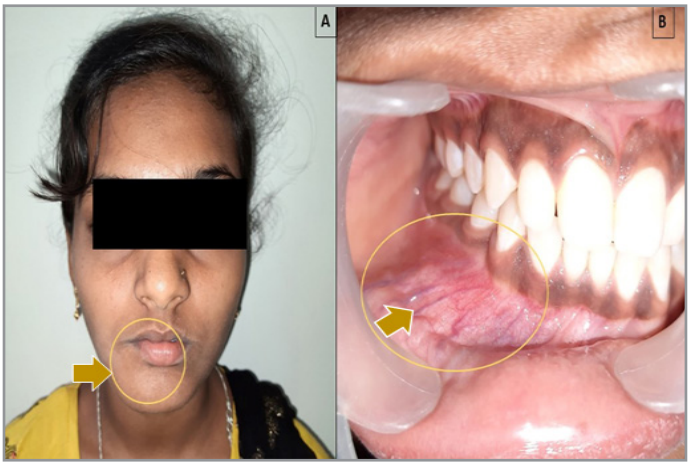

Figure 1A: Extraoral view showing a well-defined swelling. **1B:** Intraoral view showing obliteration of the buccal vestibule.

Investigations

The patient was advised for an intraoral periapical (IOPA) radiograph, mandibular true occlusal and orthopantomography (OPG). The radiographic picture, IOPA revealed an oval-shaped, approximately 2 cm in diameter well-defined lesion with a radi-

opaque central mass surrounded by a thin radiolucent rim and sclerotic border. The lesion involved the middle third of the root of 44 and was in close proximity to the mandibular nerve canal. There was no evidence of root resorption (Fig. 2A).

Mandibular true occlusal radiograph (Fig. 2B) discovered a mixed lesion predominantly radiopaque interspersed with radiolucent areas along the premolar region extending from the distal aspect of 43 to the mesial aspect of 46. Radiopaque areas revealed a dense granular appearance. Bucco cortical thinning with buccal expansion was noted whereas the lingual cortex was intact. Based on the patient history, clinical examination and radiographic investigations a differential diagnosis of Cemento-blastoma, ossifying fibroma and focal Cemento-Ossifying dysplasia were formulated.

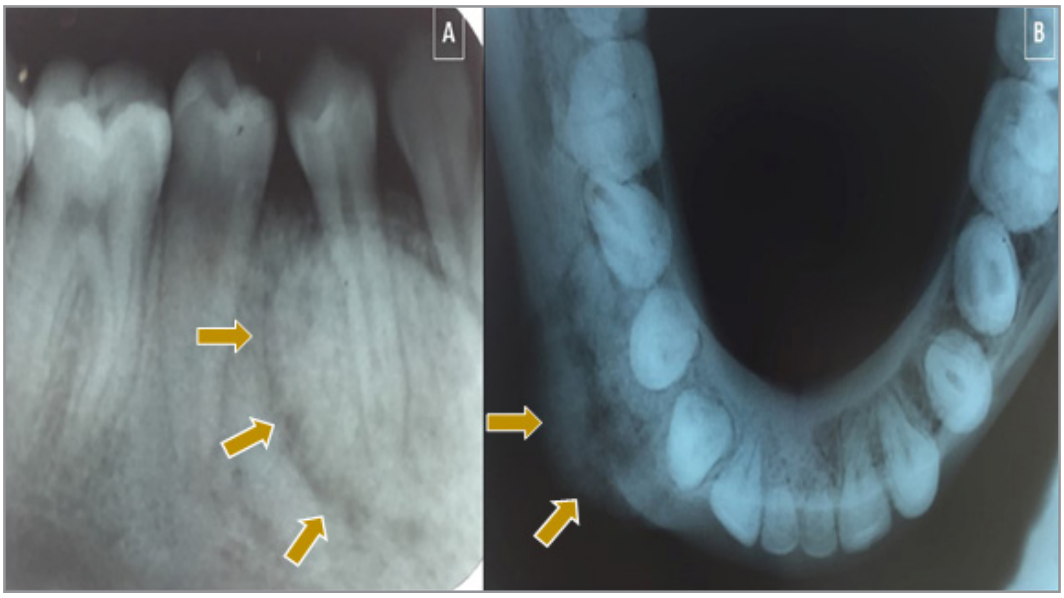

Figure 2A: IOPA radiograph showing well-defined lesion with radiopaque central mass surrounded by a thin radiolucent rim and sclerotic border.
2B: Mandibular true occlusal radiograph showing a mixed lesion predominantly radiopaque interspersed with the radiolucent lesion.

Therapeutic Intervention

Complete surgical excision of the lesion was achieved under general anaesthesia and the specimen was sent for histopathological evaluation. The microscopic examination of hematoxylin and eosin-stained tissue sections revealed (Fig. 3A, 3B) areas of irregular bony trabeculae with enlarged osteocytic lacunae spaces and a mosaic bone appearance of resting and reversal lines. Plump active osteoblasts and multinucleated giant cells suggestive of osteoclasts were also noted. Areas of cementum-like calcifications and psammoma bodies were noted along with peripheral cortical bone rimming, the features of which were suggestive of focal Cemento-ossifying dysplasia.

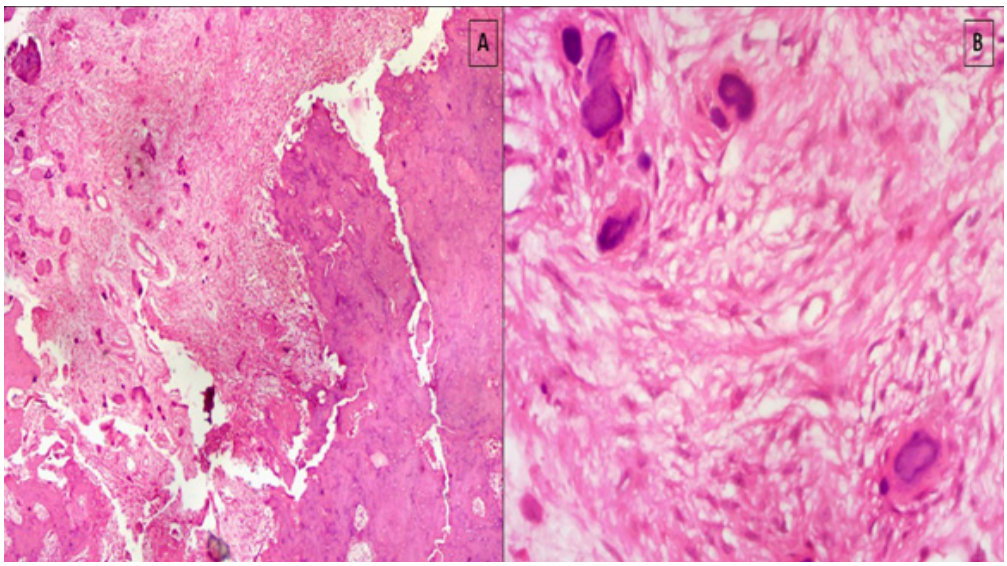

Figure 3: Photomicrograph of H & E stained slide of focal cemento-osseous dysplasia
A: 10X magnification
B: 40X magnification

Follow-Up and Outcome

The patient was followed-up postoperatively for 2 months and successful healing of the lesion was noted without any complications.

Discussion

Cemento-osseous dysplasia is an asymptomatic lesion that is frequently encountered during routine radiographic evaluation. The term FCOD is used if the lesion is limited to one region of the jaws, particularly in the mandibular molar region. There are three phases in the development of this disease at an average age of 41years [1, 2]. The clinical and radiological pattern of the lesion in this case of a 14-year-old adolescent was consistent with an early stage of cemento-osseous dysplasia.

FCOD primarily affects women, with a mean age of 30 years with somewhat greater prevalence (64%) among African Americans [6]. The majority (62%) of these lesions are subclinical and can grow up to a maximum size of 1.5 cm [7]. The mandible accounts for 86% of all occurrences [8].

It appears as a radiolucent region in the osteolytic stage, hence can be misdiagnosed as a peri-apical lesion. As the condition worsens, bone healing caused by the deficiency causes the radiographic pattern to become a mixed variant.

FCOD is thought to be a reactive or dysplastic condition in the periapical tissues, while its origin and pathophysiology are yet unclear [6]. Almost all FCODs develop superior to the mandibular canal and thus are restricted to the alveolar process. Cortical enlargement is rarely present [9].

This lesion has three radiologically distinguishable maturation stages: purely radiolucent, radiopaque/mixed radiolucent, and completely radiopaque [10]. The apices of the mandibular teeth typically exhibit a well-defined radiolucency in the early stages of FCOD. Neither tooth displacement nor root resorption is seen in dentate zones. A mixed radiolucent/opaque pattern with a distinct radiolucent ring surrounding the radiopacity is seen in the intermediate stage. These lesions develop widespread radiopacity over time, sometimes with ill-defined boundaries and a higher percentage of anastomosing, thick curvilinear, weakly cellular bone trabeculae ("ginger root" pattern") [11, 7].

FCODs are often diagnosed during regular radiographic examinations. Cone-beam computed tomography (CBCT) may be used to determine whether the lesion has extended into the cortical layers of the bone. Additionally, CBCT can be helpful in determining the lesion's radiodensity (measured in Hounsfield units), which is equal to the radiodensities of the cementum or cortical bone [9].

The histological findings similar to this case, include the presence of cementum-like material and bony trabeculae inside a vascular fibrous stroma. It is not mandatory to do a biopsy or other types of interventions in every case to identify COD [4]. When establishing the differential diagnosis, the lesion's developing stage should be considered.

Conclusion

FCOD develops in the apical region of the jaw bones and has different radiological characteristics depending on its maturation stage. The original lesion is frequently misinterpreted as a periapical inflammatory lesion, and the symptoms of FCOD are typically caused by subsequent infection of the lesion. Hence radiographs and clinical history are crucial in the diagnosis and management of FCOD patients.

Authorship

- Conception and Design of the Study: Dr. Jayraj Malik
- Acquisition of Data: Dr. Jayraj Malik
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- Drafting the Article: Dr. Jayraj Malik, Dr. Anabelle Fernandes
- Critical Revising: Dr. Sulem Ansari
- Final Approval: Dr. Sulem Ansari

Ethical Standards

No approval of institutional review board was required.

Informed Consent

Informed consent was obtained from the patient's parents

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Conflict of Interest

none

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