

CONGRESS PROCEEDING

Clinic and Radiographic Evaluation of Cemento-osseous Dysplasia: Case Series

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Abstract

Purpose: This paper aimed to present the clinical and radiographic findings of six cemento-osseous dysplasia (COD) cases.

Case Report: Six female patients with a mean age of 38 who applied to our clinic were evaluated. The patients did not have any systemic disorders or medication usage, in their medical anamnesis. There were no extraoral or intraoral findings. All the cases were detected in the mandible during routine radiological examinations and were asymptomatic. Cone-beam computed tomography examination revealed local thinning and resorption of the buccal and lingual cortical bone in the relevant region. Based on clinical, radiographic, and histopathological examinations, two (33.3%) of the lesions were diagnosed as periapical COD, one (16.6%) were diagnosed as focal COD, and three (50%) were diagnosed as florid COD.

Conclusion: The findings of this case series showed that all lesions examined were clinically asymptomatic. Dentists should be follow the COD periodically.

Key words: Cemento-osseous dysplasia; Mixed lesion; Radiographic examination

Introduction

Cemento-osseous dysplasia (COD) is the most common and benign fibro-osseous lesions in which histologically healthy bone is replaced by fibrous tissue with mineralizing substance consisting of osteoid, bone, and cementum-like material.^{1,2} The lesions are mostly diagnosed in the third and fourth decade of life and African Americans also Asian descent females.³ The etiology of COD are not exactly understood.⁴ However, in some literature, parafunctional activities, such as bruxism and hormonal changes are accepted as etiological factors.^{5,6} The terminology 'cemento-osseous dysplasia' was adopted instead of 'osseous dysplasia' because it accurately reflects the relationship of lesions with teeth and its origin from the periodontal tissues by the World Health Organization in the fourth edition of Head and Neck Tumors, in 2017.⁷ COD lesions are usually asymptomatic and discovered on routine dental radiographic examination, and the teeth related to lesion are vital.⁸ COD lesions are classified into three clinic-radiologic patterns: periapical COD, focal COD, and florid COD.⁷ Generally, periapical COD presents in periapical region of the anterior mandibular teeth, focal COD occurs in the posterior jaws, and florid COD affects bilaterally the mandible but all four quadrants may be affected.² On radiographic image, COD lesions appear three different features according to its maturation stage. In the first or osteolytic stage, the lesion is shown circular or elliptical radiolucent areas. In the second or mixed stage,

the lesion presents radiolucent-radiopaque appearance. The final or mature stage, the lesion is radiopaque and diffuse sclerosis.^{7,9} When COD lesions secondarily infected by contacting with oral flora, the lesions can cause clinical symptoms.⁴ Sclerotic lesions are more vulnerable to infection than radiolucent and mixed lesions. Treatment do not require for asymptomatic COD lesions, because these lesions have self-limited growth potential. But periodical follow-up is very important.⁸ The aim of this presentation is to evaluate the clinical and radiographic findings of six COD cases that were detected incidentally during radiographic examination.

Case Reports

Six female patients with a mean age of 38 (minimum: 24, maximum: 60) who four (66.6 %) of them with prosthetic restoration complaints (Case 1, Case 2, Case 3, and Case 4) and two (33.3 %) of them for routine control examination of the previously diagnosed COD lesions (Case 5 and Case 6) applied to Department of Maxillofacial Radiology, Faculty of Dentistry, Gazi University Table 1. It was learned that the patients did not have any systemic disorders in their medical anamnesis. There is no finding on extraoral examination. In intraoral examination, teeth associated with COD lesions were vital as a result of the electric pulp test, and there is no other finding, such as pain, stiffness, or mucosal change related to the lesion.

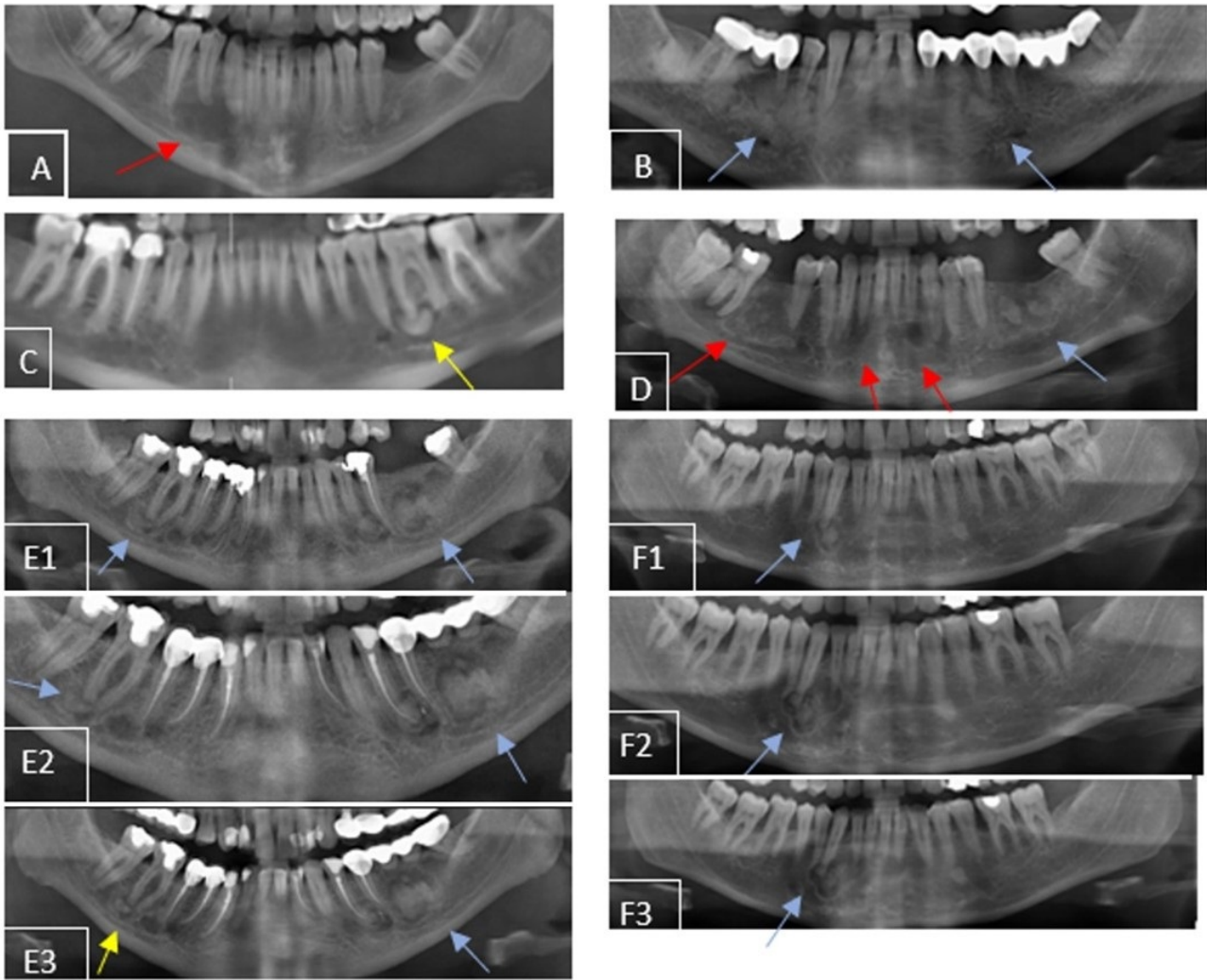


Figure 1. Panoramic radiographic images of the cases with COD lesions (A: Case 1, B: Case 2, C: Case 3, D: Case 4, E1: Case 5-2015, E2: Case 5-2017, E3: Case 5-2019, F1: Case 6-2014, F2: Case 6-2019, F3: Case 6-2020; red arrow: radiolucent lesion, blue arrow: mixed lesion, yellow arrow: radiopaque lesion)

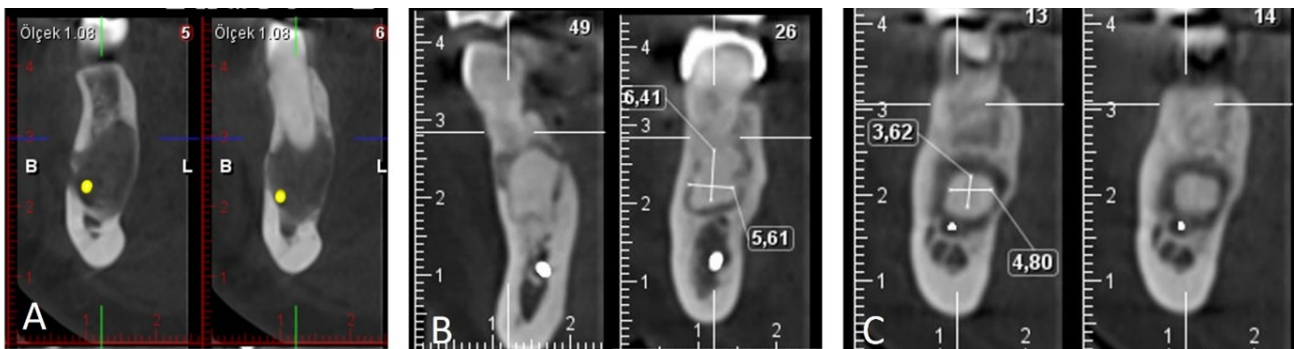


Figure 2. Cone-beam computed tomography images of the Case 1 (A), Case 2 (B), and Case 3 (C)

Panoramic radiographs (Sirona-Orthophos XG; Sirona; 60–90 kVp; 8 mA; 14 second) and cone-beam computed tomography (CBCT) (Planmeca Promax 3D Mid (Planmeca, Helsinki, Finland) were taken for the radiological examination. A different sizes radiolucent, mixed, and radiopaque lesions were detected in the mandible on control panoramic radiography images Figure 1. Uncertain border a radiolucent lesion was revealed in the right premolar region, in Case 1. Mostly dense mixed lesions were observed in bilateral posterior mandible, in Case 2. A radiopaque lesion which delimited by a radiolucent halo was seen in the left posterior mandible, in

Case 3. Mixed and radiolucent lesions were revealed in bilateral posterior and anterior mandible, in Case 4. Radiolucent, mixed, and radiopaque lesions were observed in bilateral posterior mandible, in Case 5. In the right posterior mandible, while the lesion was mixed in 2015, the lesion was radiopaque in 2019. A mixed lesion was seen in anterior mandible, in Case 6. An enlargement of lesion size was detected within six years (2014–2020). In 2014, the lesion was only associated with the apex of the right canine, whereas in 2020 it was associated with the apex of both canine and lateral tooth roots. After, the lesions were examined in more detail with CBCT.

Table 1. Clinical and radiographical features of cases with cemento-osseous dysplasia lesions

Case Number	1	2	3	4	5	6
Age	24 years old	60 years old	53 years old	41 years old	38 years old	34 years old
Sex	Female	Female	Female	Female	Female	Female
Complaint of the patients	Routine examination	Prosthetic restoration	Dental restoration	Prosthetic restoration	Control examination of the previously diagnosed COD	Control examination of the previously diagnosed COD
Medical anamnesis	Not finding	Not finding	Not finding	Not finding	Not finding	Not finding
Findings of extraoral examination	None	None	None	None	None	None
Findings of intraoral examination	Lesion-related teeth are vital	Lesion-related teeth are vital	Lesion-related teeth are vital	Lesion-related teeth are vital	Not finding	Lesion-related teeth are vital
Imaging techniques	Panoramic radiography and CBCT	Panoramic radiography and CBCT	Panoramic radiography and CBCT	Panoramic radiography	Panoramic radiography	Panoramic radiography
Location of the lesion	Right premolar area mandible	Bilateral posterior mandible	Left posterior mandible	Bilateral posterior and anterior mandible	Bilateral posterior mandible	Anterior mandible
Internal structure of the lesion	Osteolytic	Mixed	Mature	Osteolytic and Mixed	Mixed and mature	Mixed
Effects on surrounding structures of the lesion	Perforation of the buccal and lingual cortical bone, associated with the mandibular alveolar canal	Perforation and thinning of the buccal and lingual cortical bone	Thinning of the lingual cortical bone	No	No	No
Presence of concomitant lesion (cyst/ infection)	No	No	No	No	No	No
Definitive diagnosis	Periapical COD	Florid COD	Focal COD	Florid COD	Florid COD	Periapical COD

Perforation of the buccal and lingual cortical bone were observed in Case 1 and Case 2 Figure 2. Thinning of the lingual cortical bone was observed in Case 3 Figure 2. All evaluations were performed by a single dentomaxillofacial radiologists, with at least three years of experience. Based on clinical, radiographic, and histopathological examinations, Case 1, Case 6 were diagnosed as periapical COD (33.3 %), Case 3 was diagnosed as focal COD (16.6 %) and Case 2, Case 4, and Case 5 were evaluated as florid COD (50 %). All patients were followed up periodically for six months. Written and verbal consent was obtained from all patients that the data would be used in scientific studies.

Discussion

In this case series, six COD cases, two (50 %) of which were periapical, one (16.6%) of which was focal, and three (50 %) of which were florid were presented. The lesions were clinically asymptomatic. COD lesions are more common in female according to male. It is usually diagnosed between the third and / or forth decades of life.^{4,5} All patients were female, and their mean age was in the third decade of life. These findings were consistent with the previous published articles.^{4,5} Periapical COD is usually observed in the apical region of anterior mandibular teeth, while focal and florid COD are mostly observed in the posterior mandible.^{1,2} In the case series, all three cases of florid COD were in the posterior mandible and only one of the three cases of periapical COD was in the anterior mandible relatively accordance with previous studies.^{1,2} In early stage, the radiographic findings of COD lesions should differentiate from periapical inflammatory lesions. Because the radiographic features of these lesions are similar. This condition can result in unnecessary treatment of the related teeth.¹⁰ The pulp vitality test is crucial for the differential diagnosis of COD lesions.⁹ In the case series,

lesions-related teeth were vital according to electrical pulp test. Usually, COD lesions is clinically asymptomatic.⁹ If the lesion becomes secondarily infected, pain may develop.¹¹ Procedures such as endodontic treatment, tooth extraction, and biopsy may cause secondary infection of the lesion. In addition, pulp-related infection, periodontitis, and exposure of the lesion to oral cavity flora may cause several complications in the lesions.⁷ Due to insufficient vascular support of the bone, there is a risk of infection and osteomyelitis may occur in cases.¹² If any symptoms occur, treatment is required. Periodical control examination is preferred for control of periodontal disease and prevent tooth loss in treatment of asymptomatic COD lesions.¹¹ All patients in this case series were clinically asymptomatic. They were followed up periodically.

Conclusion

- The lesions were observed in middle-aged women.
 - All of the cases were clinically asymptomatic.
 - Lesions were radiographically observed as local or diffuse radiolucent, mixed, or radiopaque
 - In clinical practice, dentists should be aware the clinic and radiographic features of the lesions and patients should be followed-up periodically. The imaging evaluation and its correlation with clinical and demographic data is critical for their diagnosis.
- None

Author Contributions

N.B conceived the ideas, collected and analyzed the data of cases, scanned literature, and wrote the manuscript: I.P and O.U. conceived the ideas, made the necessary corrections, scanned literature, and final edits.

Conflict of Interest

Authors declare that they have no conflict of interest.

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