

Secondary Chronic Osteomyelitis of the Mandible and Concomitant Mature Florid Cemento-Osseous Dysplasia: A Case Report

© Serhat Efeoğlu¹, © Eray Aktay², © Elif Polat Balkan¹

¹Department of Periodontology, Ankara University Faculty of Dentistry, Ankara, Türkiye

²Department of Dentomaxillofacial Radiology, Ankara University Faculty of Dentistry, Ankara, Türkiye

Abstract

Florid osseous dysplasia and osteomyelitis are distinct disease entities that exhibit similar clinical and radiographic manifestations. The avascular nature of florid cemento-osseous dysplasia (FCOD) may predispose individuals to osteomyelitis. This case study aimed to present a patient with mature FCOD in the mandible accompanied by secondary chronic osteomyelitis. A 72-year-old East African woman was admitted to the Oral and maxillofacial radiology clinic with chronic diffuse pain in the left mandible. A panoramic image from a previous dental center shows a sequestrum and multiple sclerotic radiopaque masses in the left mandibular molar region. Intraoral examination revealed necrotic bone exposed to the oral cavity in the same region. Subsequent surgical intervention was conducted under local anesthesia with appropriate antibiotic prophylaxis to expose necrotic, irregular, and pitted bone trabeculae on histopathological examination. Cemento-osseous dysplasias, including FCOD, can attain considerable sizes and may become exposed along the alveolar mucosa. In the present case, secondary osteomyelitis developed in association with exposed bone. The diagnosis of FCOD relies on a combination of radiological and clinical findings. Following diagnosis, regular monitoring and consistent follow-up are imperative for disease management.

Keywords: Florid cemento-osseous dysplasia, osteomyelitis, sequestration

INTRODUCTION

The term “osteomyelitis” originates from the ancient Greek words “osteon” (bone) and “muelinos” (marrow), signifying inflammation of bone marrow.¹ Today, it is recognized that the disease process extends beyond the medullary portion of the bone, encompassing the cortical and cancellous bone, as well as the periosteum.² According to the Zurich classification system, osteomyelitis of the jaws can be categorized into three groups based on clinical appearance, disease progression, and radiological features: (1) acute osteomyelitis, (2) secondary chronic osteomyelitis, and notably less frequently diagnosed, (3) primary chronic osteomyelitis.³

The introduction of a large inoculum of pyogenic organisms (bacteria, fungi, and mycobacteria) into deeper tissue planes through hematogenous dissemination from a distant source or direct inoculation of bone through trauma or surgery leads to an infectious process.⁴ The establishment of this infectious process is influenced by factors such as the number and virulence of the pathogens, host immunity, and tissue perfusion. Systemic and local conditions that alter bone physiology and vascularization predispose individuals to osteomyelitis. Host factors that facilitate the development of acute and secondary chronic osteomyelitis of the jawbone due to compromised local blood supply include smoking, diabetes mellitus, Paget’s disease, osteopetrosis (Albers-Schonberg disease), osteoporosis, bisphosphonate-induced

To cite this article: Efeoğlu S, Aktay E, Polat Balkan E. Secondary chronic osteomyelitis of the mandible and concomitant mature florid cemento-osseous dysplasia: a case report. *Cyprus J Med Sci.* 2025;10(1):79-82

ORCID IDs of the authors: S.E. 0000-0001-8578-1528; E.A. 0000-0003-2445-6275; E.P.B 0000-0001-9952-0548.



Corresponding author: Elif Polat Balkan
E-mail: dtelifpolat@gmail.com
ORCID ID: orcid.org/0000-0001-9952-0548

Received: 01.06.2024
Accepted: 02.12.2024
Publication Date: 14.03.2025



Copyright © 2025 The Author. Published by Galenos Publishing House on behalf of Cyprus Turkish Medical Association.
This is an open access article under the Creative Commons Attribution-NonCommercial 4.0 International (CC BY-NC 4.0) License.

osteochemonecrosis, tobacco use, radiation therapy, osteoradionecrosis, and bone malignancy. Fibro-osseous lesions represent one of the pathological conditions contributing to the increased incidence of osteomyelitis in the jaws.¹

Benign fibro-osseous lesions (BFOL) are characterized by the replacement of normal bone with varying degrees of fibrous tissue and some bone/cementum-like tissue.⁵ These lesions constitute a heterogeneous group of pathologies in the head and neck region, manifesting through reactive, dysplastic, and neoplastic mechanisms.⁶ Cemento-osseous dysplasia (COD) stands out as the most prevalent BFOL in the alveolar regions of the gnathic bones. CODs are categorized into three subtypes based on their location: periapical COD, associated with the apical areas of mandibular anterior teeth; focal COD, linked to a single tooth; and florid COD [florid cemento-osseous dysplasia (FCOD)], displaying multi-quadrant involvement.⁷

FCOD is often incidentally discovered through radiographic findings, and routine clinical diagnosis is challenging unless there is secondary infection.⁸ Approximately half of FCOD lesions are asymptomatic radiographic findings, with symptoms such as dull pain, drainage, focal expansion, and facial deformities appearing when infection occurs.⁹ It is important to note that FCOD and chronic osteomyelitis are independent conditions, and distinguishing between infected fibro-osseous lesions and true osteomyelitis poses challenges due to insufficient criteria.¹⁰

Although panoramic radiography is generally sufficient for initial diagnosis, advanced imaging techniques, such as computed tomography, are valuable for comprehensive diagnosis and treatment planning.¹¹ Nevertheless, the definitive diagnosis of fibro-osseous lesions relies on a combination of clinical, radiological, and histological findings.⁶

In this particular case, the objective was to present a mature FCOD of the mandible along with a case of secondary chronic osteomyelitis.

CASE PRESENTATION

The methods and reporting of this study adhere to the Surgical Case REport guidelines¹², ensuring comprehensive and transparent documentation of the surgical case presented in this report.

Ethics Statement

According to our institutional guidelines, case reports or case series that do not involve experimental interventions or research on human subjects do not require formal ethics approval. Therefore, no specific ethics committee or IRB approval was obtained for this report. Informed consent was obtained from all participants.

A 72-year-old East African woman with no systemic disease presented to the oral and maxillofacial radiology clinic with a chief complaint of chronic diffuse pain in the left mandible that had been ongoing for 1 year. A sequestrum on a radiolucent background in the left mandibular molar region and multiple sclerotic radiopaque masses were observed in the panoramic image of the patient, which was taken at another dental treatment center. It was reported by the patient that the residual roots of teeth #32, #34, #43 and teeth #44, #42, #41, and #31 observed in the panoramic image were removed approximately 1.5 months ago. Intraoral examination revealed a necrotic bone exposed to oral cavity in the left mandibular molar region. A new panoramic image of the patient was obtained at our clinic. The panoramic image of the patient

reveals the untreated large bone sequestrum (Figure 1). A cone beam computed tomography was prescribed for further three-dimensional examination of bone sequestrum in the left mandible and radiopaque lesions associated with the roots of teeth #17, #24, and #46 (Figures 2-4). Under local anesthesia with proper antibiotic prophylaxis, bone sequestrum was surgically inserted (Figure 5). Histopathological examination revealed necrotic, irregular bone trabeculae particles without nuclei (Figure 6). FCOD and chronic diffuse osteomyelitis of the mandible were diagnosed based on the clinical, radiographic, and histopathological features.

DISCUSSION

Fibro-osseous lesions are a group of bone disorders characterized by the replacement of normal bone with abnormal bone or fibrous connective tissue containing cementum. FCOD, also referred to as florid osseous dysplasia, is a rare non-neoplastic condition affecting the teeth and spongy part of the jaw. It presents as a cellular fibrotic structure with unencapsulated calcified formations that can be radiolucent and/or radiopaque. Contrary to the typical occurrence in middle-aged black women, the present case featured FCOD in women of advanced age.¹³ However, this may be attributable to the delayed diagnosis of the case.

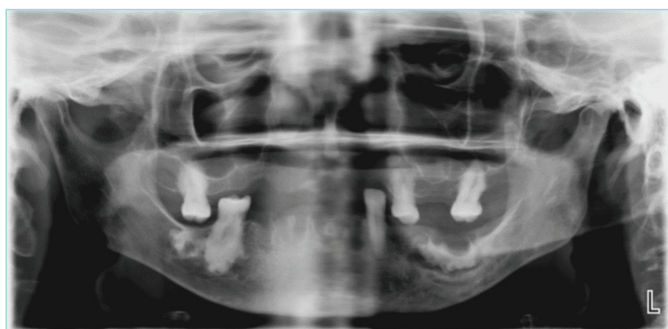


Figure 1. Panoramic view.

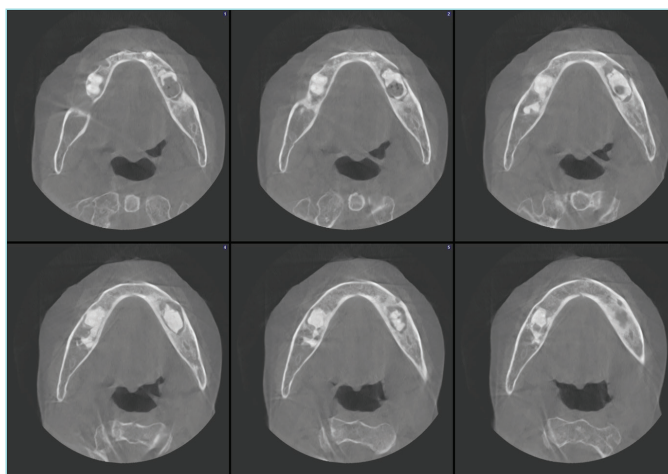


Figure 2. Axial view of the case in the CBCT: The imaging shows well-defined lesions in the right and left mandibular posterior regions, causing resorption and lytic areas in the mandibular bone, with well-defined radiopaque areas within.

CBCT: Cone beam computed tomography.

Delayed diagnosis may be attributed to the asymptomatic nature of the growth of FCOD.

COD can reach very large sizes over time and can be exposed along the alveolar mucosa. FCOD is prone to decreased vascularization; thus, exposed bone is susceptible to infection. Chronic osteomyelitis may develop from this bone base, which is susceptible to infection.^{9,14} In the present case, secondary osteomyelitis with exposed bone was observed.

COD, including FCOD, can attain considerable sizes and may become exposed along the alveolar mucosa. The susceptibility to infection arises from decreased vascularization in FCOD, leading to the potential development of chronic osteomyelitis.^{9,14} In the present case, secondary osteomyelitis developed in association with exposed bone.

Because of the avascular nature of FCOD lesions and the potential risk of infection or jaw fractures, biopsy is generally not recommended. Management primarily involves clinical-radiographic follow-up, with regular examinations for prophylaxis and reinforcement of good oral

hygiene practices to control periodontal disease and prevent tooth loss. Antibiotics may have limited efficacy in treating FCOD lesions because of poor tissue diffusion.^{15,16}

In the management of FCOD, it is imperative to differentiate it from other bone lesions to tailor the treatment approach. Tooth extraction in the presence of FCOD should be approached cautiously because it can potentially increase susceptibility to infection and the subsequent development of secondary osteomyelitis due to existing vascularization weakness.

Asymptomatic patients diagnosed with FCOD typically do not require active treatment. After diagnosis, further intervention is generally unnecessary. However, regular examinations during follow-up and recall appointments are crucial for prophylaxis, emphasizing the reinforcement of good home hygiene practices to control periodontal disease and prevent tooth loss.

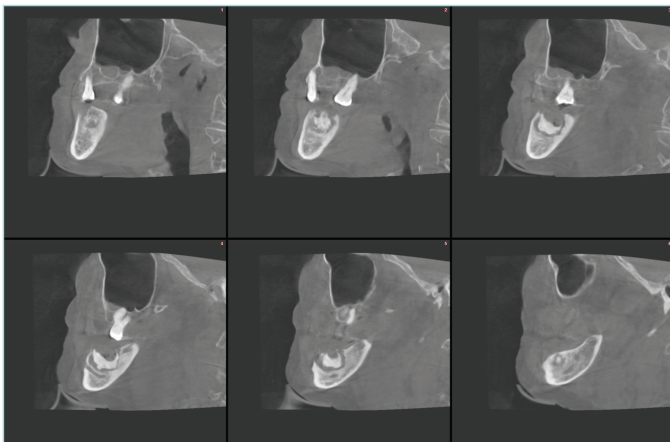


Figure 3. Sagittal view of the case in CBCT.
CBCT: Cone beam computed tomography.

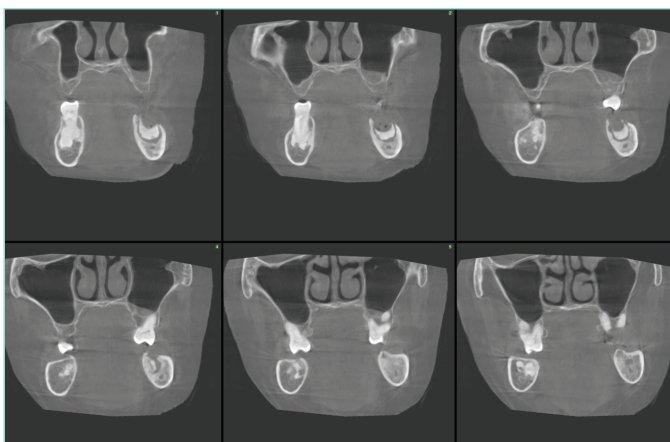


Figure 4. The coronal view of the patient in the CBCT. In this image, the relationship between the radiopaque lesions and the mandibular bone and teeth is clearly visible.
CBCT: Cone beam computed tomography.

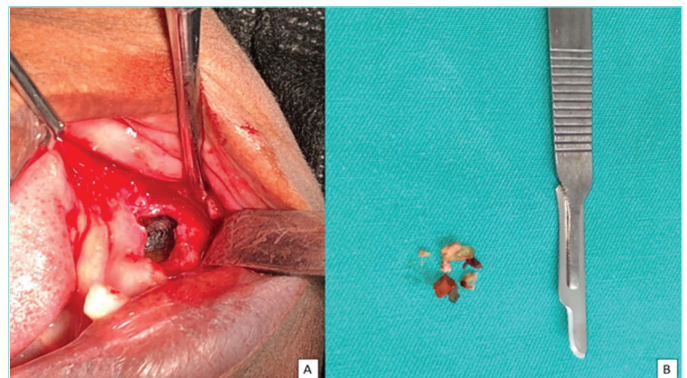


Figure 5. Intraoperative (A) intraoral view and (B) biopsy material.

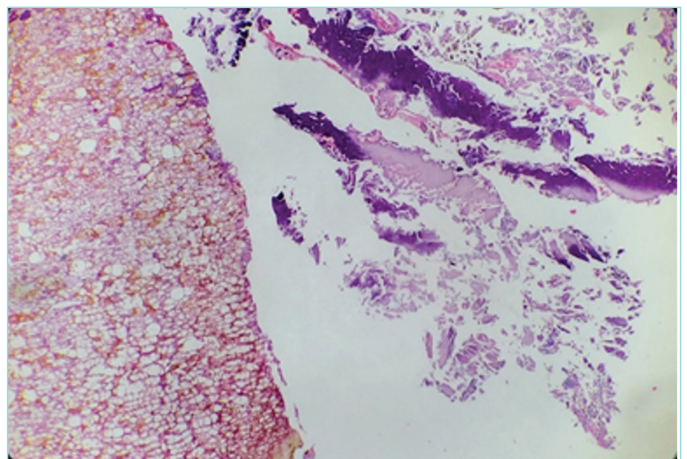


Figure 6. In the histopathology image, the left side of the sample shows an area containing remnants of vegetable matter, likely indicating foreign material or food debris. The right side reveals partially necrotic bone trabeculae that are irregularly shaped and lack distinct nuclei. These findings suggest a combination of chronic inflammation and necrosis. The bone trabeculae show signs of degradation, and no osteocyte nuclei are present within the lacunae, further supporting necrotic changes. The sample was stained with hematoxylin and eosin (H&E) at a magnification of 40x, providing clear contrast to visualize both soft tissue and bone structure abnormalities.

Antibiotics are generally ineffective in treating FCOD due to poor tissue diffusion. Despite these limitations, regular follow-up is mandatory due to the susceptibility of FCOD to infection and the potential risk of jaw fractures. To mitigate the risk of secondary infection, a biopsy was performed under antibiotic coverage, and the infected area was surgically debrided. The patient is currently under follow-up.

Re-evaluation using panoramic radiographs should be conducted asymptotically every 2 or 3 years as part of the ongoing monitoring for individuals with FCOD. The management of symptomatic patients becomes more challenging due to the development of chronic inflammation and infection within the dense mineralized tissue. Antibiotics are indicated for symptomatic patients, and surgical interventions such as debridement and enucleation may be necessary. However, it is important to note that these interventions may not always yield a positive response to antibiotics, primarily because of the avascular nature of the lesion.^{11,13-16}

Bone diseases carry significant diagnostic implications and have the potential for devastating consequences if not identified early. Therefore, accurate and early diagnosis is crucial for informed decisions regarding the most appropriate treatment. This involves a thorough analysis of the risks and benefits associated with each potential intervention. Regular re-evaluation, especially for asymptomatic patients, plays a key role in ensuring the ongoing health and well-being of patients with FCOD.

In the typical diagnosis of jaw lesions, histological assessments, clinical examinations, and radiographic analyses collectively inform the diagnostic process. However, FCOD, characterized by its avascular nature and increased vulnerability to infection, deviates from this norm. Diagnosis relies exclusively on meticulous examination of radiological manifestations and clinical presentations, eschewing biopsy procedures. Following the diagnostic stage, diligent follow-up and routine controls are imperative for effective disease management, ensuring comprehensive oversight and control of the condition.

MAIN POINTS

- Bone diseases carry significant diagnostic implications and can have devastating consequences if not identified early.
- Regular re-evaluation, especially for asymptomatic patients, plays a key role in ensuring the ongoing health and well-being of patients with florid cemento-osseous dysplasia (FCOD).
- Tooth extraction in the presence of FCOD should be approached cautiously because it can potentially increase susceptibility to infection and the subsequent development of secondary osteomyelitis due to existing vascularization weakness.

ETHICS

Informed Consent: Informed consent was obtained from all participants.

Footnotes

Authorship Contributions

Surgical and Medical Practices: E.A., E.P.B., Concept: E.A., E.P.B., Design: E.A., E.P.B., Data Collection and/or Processing: E.A., E.P.B., Analysis and/or Interpretation: E.A., E.P.B., Literature Search: E.A., E.P.B., Writing: E.A., E.P.B.

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The author declared that this study has received no financial support.

REFERENCES

1. Baltensperger M, Eyrich G. Osteomyelitis of the jaws: definition and classification. In: Baltensperger, M., Eyrich, G. (eds). *Osteomyelitis of the jaws*. Springer, Berlin, Heidelberg; 2009. Available from: https://doi.org/10.1007/978-3-540-28766-7_2
2. Lam EWN. Inflammatory conditions of the jaws. In: Mallya SM, Lam EWN (eds). *White and pharoah's oral and radiology: principles and interpretation*. 8th edition. St. Louis: Elsevier; 2019. p. 364-86.
3. Baltensperger M, Grätz K, Bruder E, Lebeda R, Makek M, Eyrich G. Is primary chronic osteomyelitis a uniform disease? Proposal of a classification based on a retrospective analysis of patients treated in the past 30 years. *J Craniomaxillofac Surg*. 2004; 32(1): 43-50.
4. Momodu II, Savaliya V, Doerr C. Osteomyelitis (nursing). 2023 May 31. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2025.
5. Dube NC, Moshy JR, Vuhahula EA, Sohal KS. Benign fibro-osseous lesions of the jaws: a clinicopathologic study of 98 Tanzanian patients. *J Oral Med Oral Surg*. 2019; 25(4): 38.
6. Mainville GN, Turgeon DP, Kauzman A. Diagnosis and management of benign fibro-osseous lesions of the jaws: a current review for the dental clinician. *Oral Dis*. 2017; 23(4): 440-50.
7. El-Naggar AK, Chan JKC, Takata T, Grandis JR, Slootweg PJ. The fourth edition of the head and neck World Health Organization blue book: editors' perspectives. *Hum Pathol*. 2017; 66: 10-2.
8. Saikia J, Pachipulusu B, Govindaraju P. Florid cemento-osseous dysplasia associated with chronic suppurative osteomyelitis and multiple impacted tooth an incidental finding - a rare case report. *J Family Med Prim Care*. 2020; 9(3): 1757-61.
9. Aiuto R, Gucciardino F, Rapetti R, Siervo S, Bianchi AE. Management of symptomatic florid cemento-osseous dysplasia: literature review and a case report. *J Clin Exp Dent*. 2018; 10: e291-5.
10. Nasser AH, Surwillo E. Florid osseous dysplasia of the mandible: report of a case. *Compend Contin Educ Dent*. 1999; 20: 1017-30.
11. Arijji Y, Arijji E, Higuchi Y, Kubo S, Nakayma E, Kanda S. Florid cemento-osseous dysplasia. Radiographic study with special emphasis on computed tomography. *Oral Surg Oral Med Oral Pathol*. 1994; 78: 391-6.
12. Sohrabi C, Mathew G, Maria N, Kerwan A, Franchi T, Agha RA. The SCARE 2023 guideline: updating consensus Surgical CAse REport (SCARE) guidelines. *Int J Surg Lond Engl*. 2023; 109(5): 1136.
13. Sentürk FM, Kestane R, Yakar EN, Keskin A. Florid cementoosseous dysplasia: a rare case report. *Case Rep Dent*. 2013; 2013: 946583.
14. Toledano-Serrabona J, Núñez-Urrutia S, Vegas-Bustamante E, Sánchez-Torres A, Gay-Escoda C. Florid cemento-osseous dysplasia: report of 2 cases. *J Clin Exp Dent*. 2018; 10: e1145-8.
15. Chattopadhyay J, Ghanta S. Florid cemento-osseous dysplasia with multiple impacted supernumerary teeth in maxilla and mandible - a case report. *Int J Contemporary Med Res*. 2016; 3: 2198-200.
16. Carvalho CHP, Lima ENA, Pereira JS, Medeiros AMC, Silveira ÉJD. Florid cemento-osseous dysplasia and osteomyelitis: a case report of a simultaneous presentation. *Rev Odonto Cienc*. 2012; 27: 166-9.