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Chronic Suppurative Osteomyelitis of the Mandible: A Case Report

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Abstract
Background: Chronic suppurative osteomyelitis (CSO) is a persistent inflammatory disease of the jawbone characterized by pus discharge and sequestrum formation. It commonly follows dental infections or trauma, especially in patients with systemic comorbidities.
Case Report: A 52-year-old male with a history of diabetes and chronic tobacco use presented with pain, swelling, and pus discharge in the right mandibular posterior region after a tooth extraction. Clinical, radiographic (IOPA, OPG, CBCT), and cytological findings confirmed CSO involving 43–47. Management included surgical debridement and antibiotic therapy.
Conclusion: Early diagnosis, risk factor control, and an integrated surgical-medical approach are essential for managing CSO. Adjunctive therapies such as hyperbaric oxygen can improve outcomes in high-risk patients.
Keywords: *Chronic suppurative osteomyelitis, Mandible, Diabetes mellitus, Sequestrum.*

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I. Introduction

Osteomyelitis is a progressive inflammatory condition of the bone that involves the medullary cavity, cortex, periosteum, and surrounding soft tissues (1). It is commonly categorized into acute, subacute, and chronic forms based on duration and clinical features (2). Chronic suppurative osteomyelitis (CSO) is a long-standing, low-grade infection of the jawbone characterized by necrotic bone sequestration, pus discharge, and intermittent swelling (3). Among facial bones, the mandible is most commonly involved due to its relatively poor blood supply and dense cortical structure (4,5). The most frequent cause is odontogenic infection, often exacerbated by systemic conditions such as diabetes mellitus, immunosuppression, or poor oral hygiene (6,7). Risk factors such as dental extractions, trauma, or tobacco chewing can further predispose to the development of CSO by impairing vascularization and wound healing. Prompt diagnosis is crucial to prevent the progression to bone destruction and systemic spread. Imaging such as intraoral radiographs, orthopantomogram (OPG), and cone-beam computed tomography (CBCT) play essential roles in early detection and evaluating cortical integrity (8,9). Treatment typically includes surgical debridement, systemic antibiotics, and in select cases, hyperbaric oxygen therapy, or segmental resection and reconstruction (10–12).

This case report describes a 52-year-old male with a history of diabetes and chronic tobacco use who developed chronic suppurative osteomyelitis of the mandible following a tooth extraction.

II. Case Report

A 52-year-old male reported with the chief complaint of pain in the lower right back region of the jaw for 6 months and swelling with pus discharge in the same region for 4 months. History revealed sudden, continuous, dull aching pain in the mandibular right posterior region due to localized periodontitis (mobility with 44), aggravated by mastication and relieved by medication. Eight days later, he visited a local dentist and had tooth 44 extracted. The patient did not follow post-extraction instructions, and after 15 days, pain recurred, followed by intraoral and extraoral swelling which gradually increased in size, with intraoral pus discharge. He also reported night pain, fever, and foul odour, with no history of weight loss or trauma. Medical history revealed diabetes for 1 year under medication, and a habit of tobacco chewing for 30 years (3–4 times/day).

Clinical Examination:
Extraoral Examination: Solitary oval swelling (~2×1 cm) 3 cm behind the symphysis above the inferior border of mandible on the right lower one third of face.
Intraoral Examination (Figure 1)
Diffuse swelling (~5×2 cm) buccally from mesial aspect of edentulous area of 44 to distally up to 46, from marginal gingiva to attached gingiva. Exposed yellowish denuded bone (~0.1 cm) with well-defined borders distal to 46 suggestive of sequestrum. Surrounding mucosa appeared normal with no active sinus or discharge. On palpation, swelling was soft, tender; sequestrum was hard, non-tender. Bleeding and pus discharge on provocation. Grade I mobility with 43 and 45.
Fine needle aspiration cytology showed pus with blood indicating an inflammatory vascular bony lesion.
Provisional Diagnosis of Chronic suppurative osteomyelitis with respect to 44–46 was made.

III. Radiographic Findings:

IOPA (Figure 2) and OPG (Figure 3) revealed ill-defined radiolucency (~5×3 cm) from mesial aspect of 43 to mesial aspect of 47, extending from alveolar crest to 1 cm below roots. Internal structure showed moth-eaten appearance with altered trabeculae and discrete radiopacities near mesial and furcation area of 46 (suggestive of sequestrum), extraction socket at 44, loss of lamina dura with 43, 45, 46, 47, and external root resorption of 46. CBCT (Figure 4 & 5) confirmed thinning and perforation of buccal cortical plate.
Final Diagnosis of Chronic suppurative osteomyelitis with respect to 43–47 was made. Treatment of Surgical debridement along with conservative therapy was planned.

IV. Discussion

The current case describes a classical presentation of chronic suppurative osteomyelitis following extraction of tooth in a diabetic and tobacco-using patient. Systemic conditions like diabetes mellitus reduce healing capacity, impair immune response, and increase infection susceptibility (6). Tobacco chewing adds further insult by limiting local vasculature and affecting osteoblastic activity (7). Clinically, the patient presented with pain, extraoral swelling, intraoral exposure of necrotic bone, pus discharge, and mobile teeth—symptoms well documented in the literature as consistent with CSO (3,13). Radiographically, moth-eaten radiolucency, altered trabecular pattern, and sequestrum are hallmark findings (8). CBCT proved useful in identifying cortical plate perforation and the extent of bone loss, as supported by previous studies (9,14). Management involved surgical debridement and antibiotic therapy, which remains the cornerstone of treatment for CSO (10). Long-term culture-guided antibiotics are critical for addressing infection within poorly vascularized bone (11). In recent years, adjunctive treatment modalities have gained attention. Hyperbaric oxygen therapy (HBOT): Enhances oxygen delivery to ischemic bone, supports neovascularization, and augments host immunity. It is especially useful in diabetic and refractory cases (12,15). Segmental resection and reconstruction: Indicated in extensive or recurrent cases, with reconstruction often using vascularized bone grafts like the fibula or iliac crest (16,17). Emerging therapies such as platelet-rich fibrin (PRF), antimicrobial photodynamic therapy (aPDT), and negative pressure wound therapy (NPWT) are being explored for improved healing outcomes (18).

V. Conclusion

Chronic suppurative osteomyelitis of the mandible remains a challenging condition due to its insidious onset and potential for delayed diagnosis. Effective management relies on early clinical and radiographic identification, elimination of predisposing factors such as systemic diseases and local trauma, and the use of multimodal treatment approaches including surgical debridement, antimicrobial therapy, and adjunctive modalities like hyperbaric oxygen therapy. Comprehensive care and long-term follow-up are vital to achieving resolution and preventing recurrence.

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Figures

Figure 1. Intraoral Photograph

Figure 2. IOPA with respect to 44-46

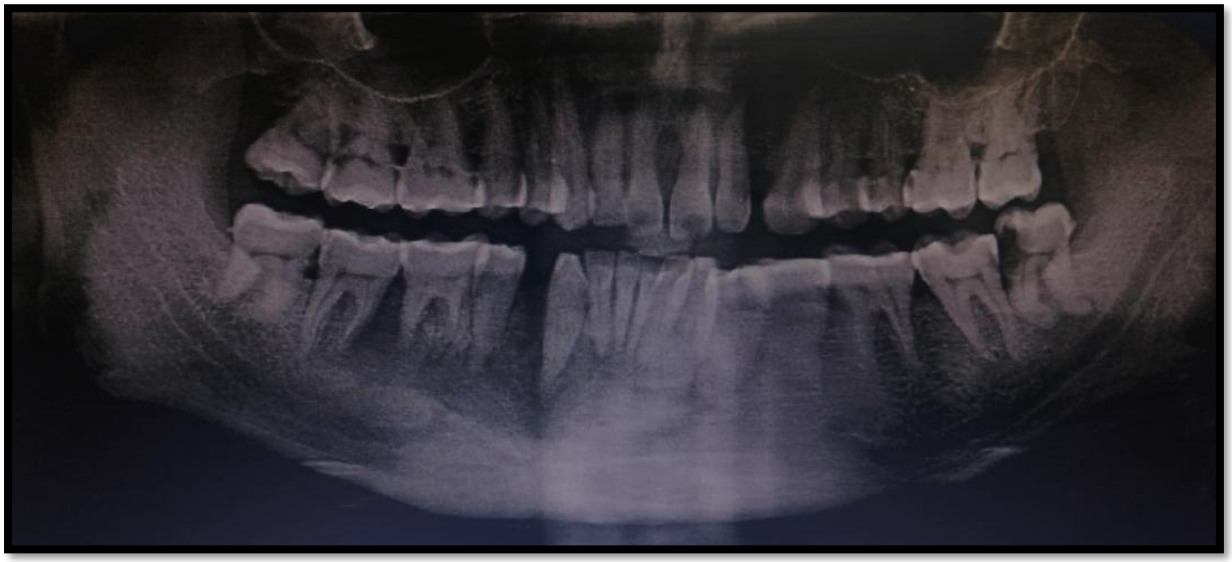

Figure 3. OPG showing the affected region with respect to 43- 47

Figure 4 & 5. CBCT Images showing thinning and perforation of buccal cortical plate of affected region