

Spontaneous Avulsion of Sequestra from Both Sides of the Mandible in the Same Patient: A Rare Case Report.

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ABSTRACT

Background: The goal of therapy is sequestrectomy of necrotic bone in chronic osteomyelitis; spontaneous avulsion of a sequestrum is rare. In its clinical evolution, this devitalized bone, which the sequestrum is, becomes separated from the remaining bone. However, spontaneous avulsion is rare.

Objective: To present two incidents of spontaneous avulsion of sequestra in a patient with advanced periodontitis complicated with suspected chronic osteomyelitis.

Case presentation: Two incidents of spontaneous avulsion of sequestra from the bilateral body of the mandible in a female patient at 75 and 78 years old. A history of progressive tooth mobility and subsequent loss of teeth was elicited from this patient; additionally, tooth loss resulted in problematic healing sockets.

Conclusion: The complications from bone infection, such as chronic osteomyelitis caused by long-standing periodontitis, could account for the detachment and subsequent avulsion of sequestra in a poorly healing extraction socket seen in this patients

Keywords: detachment, avulsion, sequestrum, periodontitis.

Received: 3-April, 2025

Revision: 13 June, 2025

Accepted: 17 June, 2025

Citation: Osaghae IP. Spontaneous Avulsion of Sequestra from Both Sides of the Mandible in the Same Patient: A Rare Case Report. *Nig J Dent Res* 2025; 10(2):50-54. <https://dx.doi.org/10.4314/njdr.v10i2.6>

INTRODUCTION

Sequestrum formation is essentially diagnostic of chronic osteomyelitis in the presence of chronic infection.^{1,2} This usually results from progressive bone destruction.² Sequestrum, a piece of devascularized bone becomes separated from the remaining bone and acts as a nidus for ongoing infection.¹ This pathological feature of chronic osteomyelitis, a result of osteonecrosis, is caused by disruption of intraosseous and periosteal blood supply during the acute stage of the disease; bacteria within the de-vascularized sequestrum are protected from antibiotics and the endogenous immune response, thus forming a nidus for this chronic infection which may persist for years.³ Osteomyelitis of the jaws is a polymicrobial infection;⁴ causative factors for this inflammatory condition may result from infection either from a root canal, periodontal ligament, fracture site, soft tissue wound or surgical site such as an extraction socket.⁵ The suppurative type of osteomyelitis is primarily caused by odontogenic infections, and it is characterized by fistulae and sequestrum formation.⁶

Osteomyelitis can be localized, focal and diffuse based on the anatomical location on the jaws - in localized osteomyelitis, the pathological process occurs within the periodontium of two or three teeth; in focal osteomyelitis, the bone of the alveolar process and body or ramus of the mandible is involved; and in diffuse osteomyelitis, there is total damage of the entire jaw or half of it.⁷

Clinically, differential diagnosis of sequestrum formation found in chronic osteomyelitis may be seen in other entities such as eosinophilic granuloma⁸ and bisphosphonate-related osteonecrosis of the jaw.⁹ The goals of treatment include removal of dead bone; elimination or at least reduction of the proliferating pathological microorganism through a combination of surgery and antibiotics as well as supportive care.^{3,10} Treatment of chronic osteomyelitis with antibiotics and hyperbaric oxygen therapy does not result in resolution due to the presence of dead pockets containing dead bone cells and organisms covered with fibrous tissue.³

An unusual case of avulsion of sequestra from the bilateral body of the mandible in a surgical intervention-hesitant patient is presented.

CASE PRESENTATION:

1st presentation: A 75-year-old woman presented in the clinic with an object she claimed had detached

from her jaw some time ago, and complained of delayed wound healing on her right lower jaw. History of presentation revealed toothache, loose and eventual tooth loss of all teeth, excluding the 48 from all quadrants at intervals; and the accompanying wound healing on the upper jaw and anterior of the lower jaw has been uneventful.

She noticed a whitish substance sticking out of the wound on the sides of her lower jaw where her mobile teeth fell into her mouth after persistent and prolonged disturbance with her tongue, some months before presentation. Persuaded by relatives, she brought the detached tissue to the clinic.

The patient could not afford any investigation, but she complained of a similar lesion on the right side of her lower jaw.

She has managed the associated mild pain with over-the-counter pain medication and Ampiclox.^(R)

This was her first dental visit.

Past medical history was not contributory, and she has never smoked nor taken alcohol.

Examination of the detached object revealed a necrotic, desiccated, yellowish bone tissue of about 3.5cm by 0.5 to 1.3cm in diameter, pitted with oval depressions like extraction sockets (figure 1).¹¹

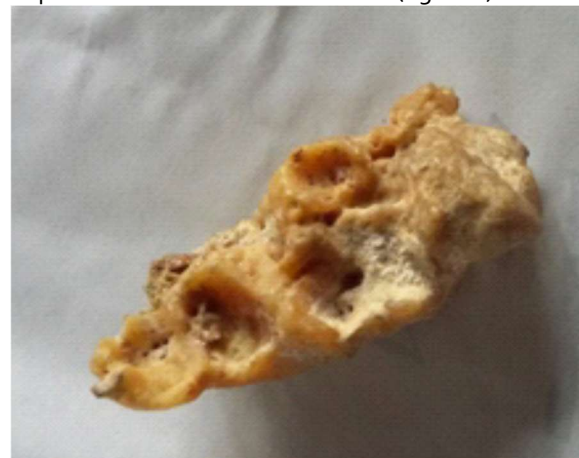


Figure 1: Hand-held presented sequestrum

On extra-oral examination, no fistula formation or lymphadenopathy. The lower border of the mandible was palpable. No limitation of mouth opening. There was an extruding yellowish-grey non-vital bone of the right body of mandible from 43 to 46, with a standing mobile 48. The left side of the mandible was completely edentulous (Figure 2).

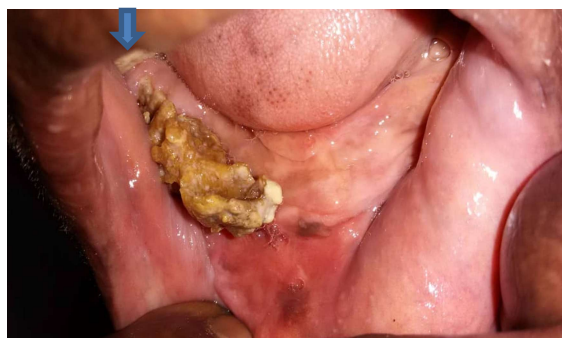


Figure 2: extruded necrotic bone.

Arrow pointing to standing 48

Tissue was not sent for histopathology due to a lack of consent.

A working diagnosis of chronic osteomyelitis was based on history and clinical findings.^{1,2,3,5} The nature of this condition was explained to the patient. Imaging, extraction of loose mobile 48 with sequestrectomy of non-vital bone in the mouth from 43 to 46 were put forward to her; patient declined further investigation and opted to take the sample, even when informed she would not be billed for it. She however consented to a photograph of her mouth and the avulsed tissue.

The patient was discharged for follow-up after one week, then one month and then 3-monthly. She came thrice and stopped.

2nd presentation: Three years after presenting with a hand-held sequestrum, the patient presented to the clinic with the complaint that the “dead bone” on the other side fell off. She threw it away because she knew it was a dead bone. On examination, an avulsion wound with exposed bone fragments from 43 to 46 was observed, and the presence of the standing but markedly mobile 48 was noted (Figure 3). Exploration of the “surgical site” and extraction of the standing tooth was suggested to the patient, but she declined.



Figure 3: 2nd avulsion presentation after avulsion of sequestrum; 48 present.

The patient was advised on warm saline mouth baths, which she was instructed to carry out before and after meals, plus first thing on waking up and last thing bed should be done daily, for two weeks. A two-week and monthly follow-up appointment was planned. She visited twice (Figure 4; this was the second visit on the sixth week after presentation of the second avulsion).



Figure 4: Healing avulsion wound; 48 standing.

DISCUSSION

The presentation by this patient with detached necrotic bone twice within an interval of three years lends credence to the slow pace in the clinical evolution of chronic osteomyelitis.^{1,2,3}

The different times of presentation by this patient at 75 and 78 years are consistent with other research that the compromised immunity of the elderly can predispose them to chronic osteomyelitis due to comorbidities; malnutrition, a significant comorbidity,⁶ may have played a role as her edentulous state would have limited dietary choices. A higher prevalence of chronic osteomyelitis has been reported in the mandible,⁶ as seen in this patient who presented with involvement of her bilateral mandible. In focal osteomyelitis of the mandible, the alveolar process and body, or ramus of the mandible, are involved.⁷

Patient's history of presentation of loosening with eventual tooth loss strongly suggested that the condition of advanced periodontitis¹² led to this case of chronic osteomyelitis as evidenced by the hand-held sequestrum and intra-oral necrotic bone. Supporting this, a study⁵ detected several fastidious strictly anaerobic bacteria commonly present in the dental biofilm, suggesting the source of infecting pathogens in osteomyelitis of the jaws to be either gingivitis, chronic periodontitis, previous dental extractions or endodontic treatments. The higher

prevalence of chronic periodontitis in the older age group reflects it as a disease of lifetime accumulation¹³ as extrapolated from the patient's dental history.

Chronic osteomyelitis arising from periodontitis has been reported in the long bones¹⁴ and in certain systemic diseases.¹⁵

In addition to long-standing periodontitis, the other causative factor for this inflammatory condition in this patient would have been from the soft tissue wound or surgical site arising from the problematic healing extraction wound,^{5,11} created by tooth loss.

Detachment and eventual avulsion of sequestra in this report aligns with pathophysiological evolution whereby, the sequestrum as a piece of devascularized bone becomes separated from the remaining bone.¹ As observed in figure 2, the sequestrum was peripheral, protruding above the alveolus. Persistent worrying by the patient's tongue as reported, eventually led to detachment from underlying tissues and subsequent avulsion through the problematic healing extraction socket.¹¹ The exposed wound acted as an exit for the avulsion of the sequestra.

Palpation of the lower border of the bilateral mandible suggests that detachment of sequestra occurred from above the level of the inferior alveolar canal, confirming the anatomical location as the bone of the alveolar process in focal osteomyelitis.⁷ Osteomyelitis, osteoradionecrosis and bisphosphonate-related osteonecrosis can present with similar clinical signs.⁹ Bisphosphonates are used in neoplasia-related conditions such as malignant hypercalcemia, bony metastasis, and lytic lesions of multiple myelomas.¹⁶ A comprehensive medical history is needed to arrive at a proper diagnosis.

Conclusion: The complications from bone infection, such as chronic osteomyelitis caused by long-standing periodontitis, could account for the detachment and subsequent avulsion of sequestra in a poorly healing extraction socket seen in this patients

Source of support

Nil

Conflict of interest

None declared

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