

CHRONIC SUPPURATIVE OSTEOMYELITIS OF MANDIBLE COMPLICATING MOLAR EXTRACTION: A CASE REPORT.

KAO Ayekinam, Chbicheb Saliha, El Wady Wafaa.

Department of oral surgery, Dental Center of Treatment and Diagnosis, Ibn Sina Hospital, Rabat, Morocco
Dentistry Medical School, Mohammed Vth University Rabat, Morocco.

ABSTRACT

Osteomyelitis of the jaw was a frequently encountered infection in dental practice. Advances in the fields of anesthesia, antibiotic therapy, preventive and restorative dentistry, as well as the availability of competent medical and dental care, have reduced the incidence of the disease dramatically. We report a case of a chronic suppurative osteomyelitis of mandible in a 65-year-old lady, a complication following molar extraction which was successfully treated by Surgical debridement and a prolonged course of antibiotic therapy.

Osteomyelitis of the jaw is uncommon . it can be a complication following dental extractions or exposure of teeth , generally in patients who are immunosuppressed. the diagnosis is often difficult and surgical debridement associated to an antibiotherapy can be a definitive method of treating chronic suppurative osteomyelitis of the mandible.

Keywords: Chronic osteomyelitis, Complication, Tooth extraction.

Corresponding Author:

Dr KAO Ayekinam, MD.

Address: Imaging Department, Ibn Sina University Hospital, Rabat, Morocco

E- mail : kabibine@yahoo.fr,

Tel: 00212699112715

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INTRODUCTION

Osteomyelitis can be considered as an inflammatory condition of the bone, beginning in the medullar cavity and haviarian systems and extending to involve the periosteum of the affected area [1].It was first described, in 1893,by Karl Garre , as an acute osteomyelitis in the tibia. In 1955, Pell et al have described a similar case in the mandible [2]. The oldest known case of mandibular osteomyelitis dates back to the Pleistocene epoch about 1.6 million years ago and fossil findings in the jaw of a 12-year-old Homo erectus skeleton found in Kenya [3]. It occur more commonly in the mandible than in the maxilla as the maxilla has a significant collateral blood flow, thin cortical bones, and bone marrow with struts which make it less prone to infection[4].Osteomyelitis, generally occurs in immuno-compromised patients and is caused by inoculation of microorganisms into the jawbones following trauma, surgical procedure, dental infection, radiation therapy, inappropriate

choice of antibiotics, or chemotherapeutic drug use [5,6]. It can be classified as acute, subacute, or chronic, depending on the clinical presentation [1,3]. The purpose of this paper is to present a case of chronic suppurative osteomyelitis which was successfully treated by Surgical debridement.

CASE REPORT

A 65-year-old lady referred to our oral surgery department complaining of pain and recurrent swelling following the extraction of a lower left first molar under local anesthesia by her general dentist 4 month earlier. After multiple visits to her dentist and despite the antibiotherapy (amoxicillin 1g , two times a day for 10 days), there was no improvement obtained. Medical history revealed no significant findings but she looked pale and weak. Intraoral examination revealed a small swelling, and a few purulent drainage in the area of the lower left first molar (**Figure 1**).

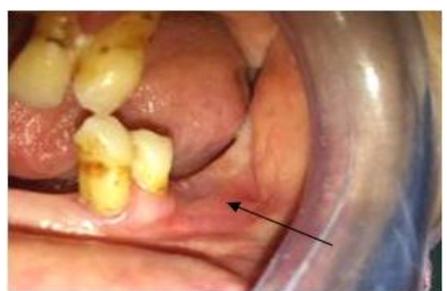


Figure 1: Intraoral view showing a small swelling in the area of the lower left first molar

In radiograph, the lesion presents as a radio-opaque mass surrounded by a radiolucent halo in the area of the lower left first molar (**figure 2**). Based on the history, clinical and radiological findings, the provisional diagnosis of chronic osteomyelitis, fibrous dysplasia, osseous dysplasia, osteosarcoma were evocated and the patient was scheduled for surgery.

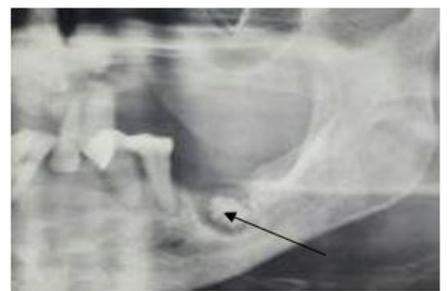


Figure 2: Radio-opaque mass surrounded by a radiolucent halo.

After local anesthesia, a flap was reflected and sequestrum was removed (**Figures 3 and 4**). Fresh bleeding was induced in the affected zone, and the tissue was sutured back. The necrotic bone (**Figure 5**) was sent for histopathological examination which confirmed the diagnosis of chronic suppurative osteomyelitis (**Figure 6**). However, the culture from the bone lesion showed negative results and no specific microorganism had been identified, this might be due to contamination during the surgical process or false negatives as a result of improper biopsy specimen handling.

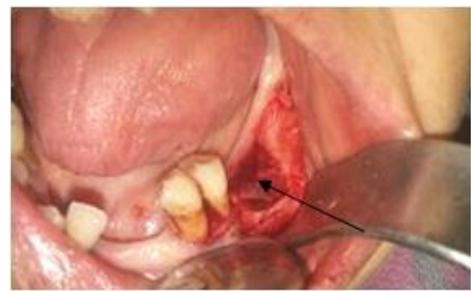


Figure 3: intraoral view showing the necrotic bone after the elevation of the flap.



Figure 4: intraoral view after removing the sequestrum bone .

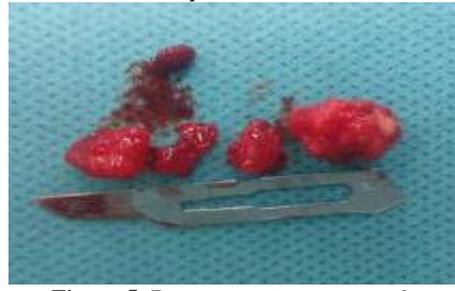


Figure 5: Bone sequestrum removed.

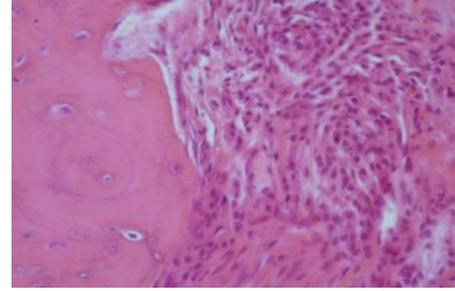


Figure 6: Chronic osteomyelitis histopathology (H&E x 400): presence of irregular fragment of devitalized bone. This is surrounded by dense fibrous tissue which is infiltrated heavily by lymphocytes, plasmacells and a few granulocytes.

The patient was treated with a prolonged course of amoxicillin and clavulanic acid 1g ,two times a day for 2 weeks. Analgesics and chlorhexidine 0,12% mouth wash were prescribed. Postoperatively, the patient was followed up for 1 month and the affected area showed complete clinical healing. The patient had been symptom-free since the surgical treatment and antibiotic administration, but unfortunately did not return for her follow-up.

DISCUSSION

According to the literature , osteomyelitis is an inflammation of the bone due to infection caused by pathogenic microorganisms [1,5-8]. In osteomyelitis disease of maxillofacial skeleton, the medullary and cortical of the jaws, are both involved [3,6]. It occurs more commonly in the mandible than in the maxilla because of its poor vascularization dependent on the sole blood supply from the neurovascular bundle of inferior alveolar

system and also because the dense mandibular cortical bone [5,6,9]. The most common sites in the mandible are the body as in our case, followed by the symphysis, angle, ascending ramus and condyle [5]. Osteomyelitis may affect all ages and both sexes [1,9]. The studies by Baltensperger [2003] and Koorbush et al. [1992] showed a male predominance [1]. An equal gender distribution was noted by Daramola et al. [1982] in a larger African patient population [1].

Chronic osteomyelitis cases are more frequent after the second decade of life peaking, and this may correlate better with changes of the immune and vascular health of the adult and aging patient [3].

The etiology is more commonly associated with the number of pathogens and its virulence, local and systemic host immunity, and local tissue perfusion [1,9]. In our case the possible cause of disease was the extraction of lower left first molar. Conditions such as radiation, malignancy, osteoporosis, osteopetrosis, and Paget's disease predispose to osteomyelitis by altering the vascularity of the bone [9,10].

The pathophysiology involves the accumulation of an inflammatory exudate in the bony medullary cavity and beneath the periosteum, causing compression of the central and peripheral blood supply to the bone. So there is a reduced supply of nutrients and oxygen because of the osseous blood supply is compromised. Following ischemia, the infected bone becomes necrotic and leads to sequester formation, which is considered a classical sign of osteomyelitis [1,9].

According to the literature, classification of osteomyelitis is not always simple. It seems to be roughly classified into acute and chronic. Acute osteomyelitis is the early phase of the disease, which is usually a suppurative condition. It is characterized by intense pain, swelling, purulent drainage, trismus, fever, paresthesia or anesthesia of the inferior alveolar nerve, and a clearly identifiable cause [1,3,8].

The acute phase may lead to the chronic phase of the disease, which has been arbitrarily defined as osseous infection lasting at least 1 month. Chronic forms of osteomyelitis may be suppurative or non suppurative. It is usually attributable to long-standing odontogenic infection or inadequately treated facial fractures. Chronic osteomyelitis is often characterized by indurate swelling, locoregional pain, fever, swelling, discharge with purulent content, intra and extra-oral fistula, trismus, lymphadenopathy and pathological fracture. Exposure or exfoliation of infected bone fragments may be seen in the course of the disease [1,3,6,8]. Our patient was complaining of pain, recurrent swelling and purulent drainage.

According to Krakowiak et al. chronic non suppurative osteomyelitis does not exclude the presence of pathogens and is caused by certain bacteria like Actinomyces and Eikenellacorrodens but other authors report negative bacterial findings indicating a non-bacterial pathogenesis [6].

Other forms of osteomyelitis of the jawbones include osteo-radionecrosis, bisphosphonate related osteonecrosis of the jaws, Garre's osteomyelitis, chronic recurrent multifocal osteomyelitis of children, and chronic sclerosing osteomyelitis have been described in the literature [1,3,8].

Initially acute osteomyelitis has no radiographic evidence and, with time, diffuse radiolucency begins to appear [7]. In chronic suppurative osteomyelitis, plain radiographs demonstrate variably mixed mandibular lucency and sclerosis and bone enlargement related to cortical thickening by appositional periosteal new bone formation [8].

Biopsied bone specimens from acute osteomyelitis have histologic findings of marrow spaces lined with neutrophilic granulocytes, necrotic bone, and inflammatory exudates. In chronic forms of osteomyelitis, the inflammatory infiltrate is composed of plasma cells, lymphocytes, and macrophages. Reactive bone formation is evident with irregular reversal lines seen similar to those of Paget disease [8].

The differential diagnoses of the benign chronic osteomyelitis include: fibrous dysplasia, Paget's disease, cementoma, ossifying/non-ossifying fibroma, infection of the salivary glands, nonspecific chronic lymphadenitis, Ewing's sarcoma, osteosarcoma, chondrosarcoma, non-Hodgkin's lymphoma, and metastatic disease [2].

Bacteriologic and serologic studies have shown the bacteria associated with infected dentition, such as Staphylococcus aureus, Staphylococcus epidermidis, Actinomyces, Prevotella species and Eikenella as causative agents but cultures from the bone lesions often show negative results [2,9].

The management of osteomyelitis varies from a nonsurgical approach to radical treatment.

The nonsurgical approach includes: antibiotics, NSAIDs, hyperbaric oxygen therapy, bisphosphonate treatment and muscle relaxants [2,5,6,10].

Antibiotic administration should always be instituted after bacterial identification and sensitivity testing; however, delays in treatment should be avoided [5,6,8]. The administration of penicillin with metronidazole/ clavulanic acid or clindamycin initially can be possible until bacterial identification is available [3,6,8]. The antibiotic such as beta-lactams, penicillin derivative,

fluoroquinolones, rifampicin and glycopeptides are commonly used for treatment of osteomyelitis [5].

The standard surgical procedures in the literature are generally debridement of affected tissue, decortication with or without bone grafting, sequestrectomy, and saucerization. Their common goal is to control and delay disease progression in order to facilitate bone healing [6]. A combination of antibiotic treatment with surgical debridement of the chronic osteomyelitic are essential to the successful management of the infection [1-10] and authors recommend antibiotic administration for a duration of 2 to 6 weeks, beginning with intravenous antibiotics followed by a period of oral antibiotics in severe chronic cases. The study by Kim et al. (2001) showed 94,9% successful outcomes [6]. In our case, the patient was treated with a prolonged course of amoxicillin and clavulanic acid for 2 weeks after the surgery.

According to many authors, early management reduces the morbidity and extent of surgical therapy required [2, 3, 5, 6, 8]. At least a 2-year follow-up is important for acute osteomyelitis cases to ensure that no relapse is occurring. Reactivation of chronic osteomyelitis can occur even 10 years after primary therapy is concluded [3].

CONCLUSION

Osteomyelitis is always considered to be a serious bone marrow infection with momentous morbidity and higher rate of recurrences. The early diagnosis and management help reduce the morbidity and extent of surgery. Surgical intervention will then enable the surgeon to harvest material for histopathologic diagnosis and bacterial identification. Antibiotic sensitivity testing helps in the selection of the appropriate therapeutic agent, whereas serial imaging may be required to monitor the response of the patient to treatment and help determine its end point.

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