

Osteomyelitis in Maxilla: A Case Report

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Abstract

Background: The word “osteomyelitis” originates from the ancient Greek words osteon (bone) and muelinos (marrow) and means infection of medullary portion of the bone. Common medical literature extends the definition to an inflammation process of the entire bone including the cortex and the periosteum, recognizing that the pathological process is rarely confined to the endosteum.

Keywords: Inflammation, Maxilla, Osteomyelitis.

INTRODUCTION

Osteomyelitis of the maxilla is rare because of the extensive blood supply from the internal maxillary artery whose branches form anastomosing loops which prevent extensive involvement.^[1] According to Mac Beth, maxillary osteomyelitis is classified as traumatic (following surgery or injury with primary site of infection being antrum, teeth, or lacrimal sac), rhinogenic (spontaneous spread of infection from antrum, and post-operative rhinogenic cases), and odontogenic (root sepsis).^[2] Although osteomyelitis involving alveolar process of maxilla is commonly due to dental causes, osteomyelitis involving the entire maxilla is rare.^[2]

CASE REPORT

A 65-year-old male patient came to Karnavati School of Dentistry, Gandhinagar, with the chief complaint of pain in upper front and back teeth for the past 2 months. He also complained of pus discharge from upper front teeth for 1 month. He was diabetic and hypertensive for the past 15 years and was on medication for the same. He had history of tuberculosis before 2 years. He had gone to somewhere else for same and so he underwent extraction of 14, 15, and 24 under L.A.

On intraoral examination, significant destruction of gingiva and alveolar mucosa was seen in maxillary right and left anterior teeth region. (Figure 1a and b). Edema (non-tender swelling) partly obliterated the maxillary right and left vestibule. The corresponding palatal mucosa was also edematous and tender. Segmental mobility was palpable on pre-maxillary region (11, 12, 21, 22, and 23) and 26, 27, and 28 and on premolar area

on left side. Multiple sinus openings were seen in maxillary anterior front and posterior teeth region.

Extraoral examination revealed slight facial asymmetry, caused by elevation of the right wing of the nose and edema in the midface. The overlying skin color was normal. Sub mandibular lymph nodes were non-palpable.

Radiographic assessment (panoramic and occlusal radiographs) revealed diffuse bone destruction (“moth-eaten” appearance and vertical bone loss) in the maxilla (Figure 1c).

A computed tomography scan confirmed the bony lesion, surrounded by a radiolucent halo, causing partial destruction of the anterior wall of the maxillary sinus.

Surgical procedure

The patient was prepared for surgery under general anesthesia under strict sterilization protocol. Written consent was taken. After that, in localized area, local anesthetic solution of 2% lignocaine with adrenaline was given. Then, crevicular incision was placed in tooth-bearing area, and crestal incision was given in edentulous area (Figure 2a). Full-thickness mucoperiosteal flap was reflected (Figure 2b). Extraction of 11, 12, 13, 16, 17, 18, and 21, 22, 23, 26, 27, 28 was done (Figure 2c). All necrotic bones were removed. Curettage of

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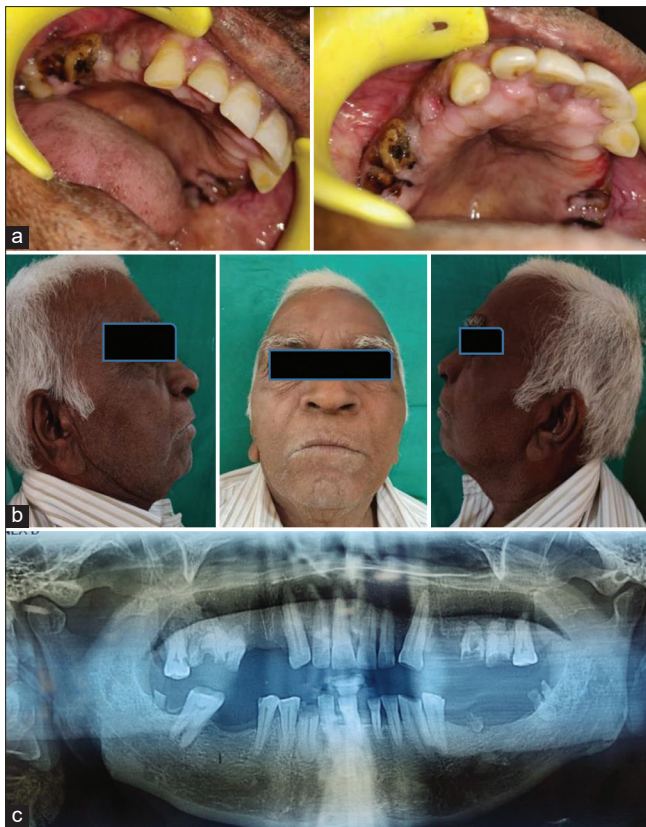


Figure 1: (a) Intraoral pre-operative photographs. (b) Extraoral pre-operative photographs. (c) Pre-operative radiograph



Figure 2: (a) Incision, (b) flap elevation, (c) extraction of involving teeth, (d) specimen and necrotic bone, (e) specimen and necrotic bone, (f) suturing

buccal and palatal flap was done thoroughly. Flap was trimmed. Bone margins were smoothened. Suturing was done with



Figure 3: Post-operative follow-up after 1 month

the help of 3-0 Vicryl suture in continuous locking manner (Figure 2f). And after that, impression was taken. The surgical specimen, including the extracted teeth, was submitted for routine histopathological examination (hematoxylin and eosin stain) (Figure 2d and e). In post-operative period, because the patient was diabetic, fasting blood sugar was checked regularly. At the first post-operative visit (7 days), the surgical site exhibited partial healing and sutures were removed. The Patient was recalled for follow-up after 1 month (Figure 3). At the 6-month post-operative visit, the surgical site had completely healed and there was no sign of recurrence.

DISCUSSION

Osteomyelitis is an inflammatory disease of bone which affects bone marrow, and subsequently, the cortical bone and periosteum. Osteomyelitis is considered to be one of the most difficult cases to treat due to its heterogeneous nature in terms of pathophysiology, clinical presentation, and management. Progressive bony destruction and formation of sequestrum are characteristic features of the disease. The maxilla is composed almost entirely of spongy bone with a very thin cortex.^[3] The maxillary blood supply is more extensive than in the mandible. Osteomyelitis of the maxilla is much less frequent than that of the mandible because the maxillary blood supply is more extensive.

The condition was originally described by Singh *et al* in 1947.^[4] It is an inflammatory reaction of bone to infection which originates from either a tooth, fracture site, soft-tissue wound, or surgical site. The dental infection may be from a root canal, a periodontal ligament, or an extraction site. Suppurative osteomyelitis can involve all three components of bone: Periosteum, cortex, and marrow.

A thorough review of the literature showed that an incidence ratio of maxillary to mandibular osteomyelitis of 1.07:1 was noted by Topazian *et al.*,^[2] whereas incidences of 1:6.5 and 1:6 were noted by Koobusch *et al.* and Rangne and Ruud,^[5] respectively. Among patients with uncontrolled diabetes mellitus in a rural Indian population, an incidence of maxillary osteomyelitis of 45.1% has been reported by Koobusch *et al.*^[5] The collateral blood supply, porous nature of bone, and thin cortices of the maxilla reduce the chance of osteomyelitis in the maxilla compared with the mandible.^[2] Maxillary involvement was seen in 56% of cases with a male predominance associated with diabetes mellitus.

The present case demonstrates intraoral draining sinus, bony destruction, and sequestrae, which are consistent with the

diagnosis of chronic osteomyelitis. Chronic osteomyelitis in adults is more refractory to therapy and generally treated with antibiotics and surgical debridement.^[5]

Depending on the type of chronic osteomyelitis, patients may be treated with parenteral antibiotics for 2–6 weeks. However, without adequate debridement, chronic osteomyelitis does not respond to most antibiotic regimens, no matter what the duration of therapy is.^[3] Surgical debridement in patients with chronic osteomyelitis can be technically demanding. The quality of the debridement is the most critical factor in successful management.^[6]

Cohen *et al.*^[7] successfully used the combination of antibiotic therapy and surgery when treating a patient with chronic jaw osteomyelitis. Yousef *et al.*^[8] suggested that hyperbaric oxygen therapy (HBOT) offers valuable advantages, either alone or as an adjunct treatment, for patients with infectious diseases. It has been demonstrated that HBOT considerably stimulates the levels of O₂ concentration in blood, which is typically very low at normal atmospheric condition but is enough to provide the primary need for normal tissue.^[9]

CONCLUSION

Adult osteomyelitis remains difficult to treat, with considerable morbidity and costs to the health-care system. Osteomyelitis is now a rare that when presented, the maxillofacial surgeon should consider the possibility underlying pathology and investigate appropriately. Osteomyelitis of the jaws is predominantly odontogenic (dental infection related) or traumatic (fracture related) in nature.

The goal of treatment is to arrest osteomyelitis, rather than achieve cure and so the patient is being followed up till date with no signs of recurrence. Conservative therapy such as curettage, removal of involving teeth, and antibiotic prophylaxis gives better result than total removal of maxilla or more radical procedures.

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