

CASE REPORT

OSTEOMYELITIS OF THE MAXILLA: A CASE REPORT

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INTRODUCTION: Osteomyelitis of skull bones is an uncommon condition. Among the facial bones, it frequently involves the mandible and, in fewer cases, the maxilla. It is more common in developing countries, where secondary osteomyelitis is associated with trauma, surgical procedures and dentogenic infections. The incidence of osteomyelitis of the jaw has dramatically decreased since the introduction of antibiotics and preventive and restorative dentistry. Osteomyelitis of the maxilla is much less frequent than that of the mandible. The main source of infection is the polymicrobial oral flora. The complete resolution of infection depends on the sequestrectomy, surgical debridement of the wound, and removal of the bone cortex along with the systemic antibiotic therapy.

CASE DESCRIPTION: A 67 year old male patient, a known case of Type 2 Diabetes Mellitus on regular treatment, presented to our department with pain and swelling over the left cheek and loosening of his upper left teeth. He gave a history of extraction of left upper premolar tooth 2 months back. On examination, all the teeth in the upper left quadrant were mobile, with associated swelling and tenderness of gums. The left maxillary segment was also mobile. There was drainage of pus from the left upper premolar socket with incomplete healing. A diagnostic nasal endoscopy was done which showed a deviated septum to the left with a spur. The lateral wall of the left nasal cavity was edematous and pushed medially. There was also polypoidal tissue seen in the left middle meatus. There was no discharge. Other clinical examination was normal. The polypoidal tissue from the middle meatus was sent for biopsy which revealed chronic inflammatory changes. Blood reports were unremarkable except for an elevated ESR. The pus from the infected dental socket was sent for culture and sensitivity and it showed a heavy growth of *Klebsiella pneumoniae* and *Streptococcus pneumoniae*. A CT scan of the maxilla with contrast was taken. It revealed extensive bony erosion with moth eaten pattern of destruction involving the alveolar process of the maxilla on the left side with extension to involve the hard palate, vomer, left maxillary sinus wall and left pterygoid plates. There was also complete opacification of the left maxillary sinus. A preliminary diagnosis of Chronic Maxillary Osteomyelitis secondary to dentogenic infection was made. The patient was started on intravenous antibiotics based on culture and sensitivity reports and was scheduled to undergo left partial maxillectomy with a post-operative palatal obturator under general anaesthesia. He was started on Human Actrapid to control his glycemic status. Surgical exploration revealed bony necrosis involving the alveolar process of the left maxilla and hard palate crossing the midline. Total extraction of the maxillary teeth on the left side was done followed by an extended partial maxillectomy. The postoperative period was uneventful. The excision biopsy report confirmed the lesion to be chronic suppurative Osteomyelitis of the Maxilla. Six weeks later, once the cavity healed, prosthetic rehabilitation was

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done with removable, maxillary obturator prosthesis. The patient is under regular follow-up for the past one year and 8 months with no evidence of recurrence till date.

DISCUSSION: Osteomyelitis is an inflammation of the medullary portion of the jaw bone which extends to involve the periosteum of the affected area. The infection becomes established in the calcified portion of bone when pus in the medullary cavity or beneath the periosteum obstructs the blood supply. The infected bone becomes necrotic once ischemia sets in. An underlying alteration of host defences is present in the majority of patients with osteomyelitis of the jaw.¹

The bony-based architecture of the face and associated aesthetic concerns with regards to cranio-facial skeletal disruption, makes craniofacial infections more challenging to treat. Hence, osteomyelitis of the craniofacial skeleton must be managed differently than osteomyelitis of other bones of the body.¹

The incidence, clinical course, and management of osteomyelitis of the jawbones have changed profoundly over the past 50 years. This is mainly due to the introduction of antibiotic therapy. Further factors, such as sophistication in medical and dental sciences and widespread availability of adequate treatment, have additionally led to improvement in the management of this disease.¹

Majority of the cases of osteomyelitis of the jaws are of odontogenic origin.² Among the skullbones, chronic osteomyelitis is more frequently observed in the mandible and, in fewer cases, in the maxilla, but generally limited to one anatomic site.^{2,3} The maxilla is less frequently involved than the mandible because its blood supply is far more extensive.¹ It could also be attributed to the more plastic nature of the mandible which may allow microbial persistence, as well as the increased vulnerability of the mandible to trauma.²

The host factors which can predispose to osteomyelitis of the jaw include Diabetes Mellitus, Autoimmune disorders, AIDS, Anaemia, Malnutrition, alcohol and tobacco. It is important for the treating physician to consider host compromise and treat such contributory conditions, when feasible, concomitantly with the infection.³

Osteomyelitis of the jaw may be acute or chronic. Chronic maxillary osteomyelitis is classified into two groups: Primary chronic osteomyelitis and secondary chronic osteomyelitis. In primary chronic osteomyelitis, the disease always shows chronic symptoms whereas secondary chronic osteomyelitis is the result of a previous acute osteomyelitis or the local dissemination of chronic odontogenic infections. Acute osteomyelitis generally takes 4 weeks to become a chronic infection.⁶ Primary chronic osteomyelitis has an insidious onset. It can take weeks for clinical and radiological manifestations to become evident.¹

The clinical sequelae of osteomyelitis include periosteal thickening and tenderness, and bony destruction, with or without pathologic fractures and a draining sinus. The consequences of such an infection can range from something as minor as a draining sinus tract to a more serious malignant transformation at the infected site.²

Osteomyelitis of the jaws usually requires both medical and surgical treatment. Appropriate steps should be taken to identify and correct factors that may delay recovery. Whenever possible, specimens should be obtained for Gram staining, aerobic and anaerobic cultures and sensitivity testing. Conventional radiographs and if necessary, a bone scan should be

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obtained to determine the extent of the disease, to detect causative factors such as periapical abscesses or fractures, and the presence and location of sequestra. Extremely loose teeth and sequestra that are readily accessible should be removed early in the course of the disease. Once the acute phase of the disease has subsided with intravenous antibiotics and supportive measures, further treatment options should include sequestrectomy, debridement, decortication, resection of infected bone, with immediate or late bone graft reconstruction.¹

Resection options for non-viable or infected bone of the maxilla can range from a simple excision to a radical maxillectomy. The resultant maxillary defect can be managed with either prosthetic rehabilitation alone or reconstruction with subsequent dental and facial prosthesis.

Our patient suffered from secondary chronic osteomyelitis of the maxilla resulting from an inadequately treated odontogenic infection following a premolar tooth extraction. His Diabetes may have been a contributory factor to the disease process.

Infection of the maxilla can cause serious complications for the patient such as infection of cranial cavity and brain. Thus, it is essential that any maxillary osteomyelitis be treated aggressively by the surgeon to avoid subsequent dreaded consequences.

CONCLUSIONS: Secondary osteomyelitis of the jaw due to odontogenic infections is now decreasing in prevalence due to the broad spectrum antibiotic coverage during dental procedures. Despite this, it still remains a challenging clinical entity in developing countries and lower socioeconomic areas. Any underlying alteration in host factors should be investigated for and treated accordingly. The focus of infection should be identified and removed. Imaging is indicated to determine the extent of bone destruction and to plan the surgical strategy. Aggressive management incorporating surgical debridement and resection of non-viable, infected bone combined with culture directed systemic antibiotic therapy should be instituted as early as possible. Early diagnosis and prompt treatment will prevent complications and deformities due to destruction of the bones.

Fig. 1: CT scan of the maxilla showing extensive bony erosion with moth eaten pattern of destruction involving the alveolar process of the maxilla on the left side with extension to involve the hard palate, the vomer, left maxillary sinus wall. There is also complete opacification of the left maxillary sinus.



Fig. 1

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Fig. 2: Resected specimen of the Maxilla.



Fig. 2

Fig. 3: Healed cavity 4 months post op. He was fitted with a maxillary obturator prosthesis.



Fig. 3

Fig. 4: Maxillary obturator prosthesis in situ.



Fig. 4

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