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Osteomyelitis of Maxilla and Mandible: A Rare Case Report

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ABSTRACT: Osteomyelitis is an inflammatory disease of bone usually associated with infectious origin. Since the development of antibiotics osteomyelitis of facial bones have reduced significantly . Maxillaryosteomyelitis has decreased incidences compared to mandibular osteomyelitis as the maxilla have extensive blood supply & possess more porous bone making it less prone to chronic infection. A 58 year old female presented to us with pus discharge from left mandibular body region following dental extractions 2 years back. Examination revealed a necrotic mandible on the left side with a sinus opening . A CBCT scan confirmed Osteomyelitis of left Mandible and bilaterally involved maxilla. Patient underwent sequestrectomy Satisfactory results were obtained with appropriate antibiotics and sequestrectomy.

Keywords: CBCT, maxilla, osteomyelitis, sequestrum

I. INTRODUCTION

The words, “osseus” in Latin means bony, and “osteon”in Greek means bone, and “myelos” means marrow;and “itis” in Greek means inflammation.By meaning **OML is an inflammation of medullaryportion of bone or bone marrow or cancellous bone.**However, the process is rarely confined to medulla. Itinvolves cortical bone and periosteum as well. Therefore**,OML may be defined as an inflammatorycondition of bone, that begins as an infection ofmedullary cavity and haversian systems of the cortexand extends to involve the periosteum of the affectedarea.**

The inflammation may be acute, subacute or chronic.It may be localized; or may involve a larger portion of bone.It may be suppurative or non suppurative.

The highly vascular maxilla with thinner cortex is rarely affected. Commonly associated mandibular sites are the body, the symphysis, angle, ascending ramus and condyle. An obvious odontogenic infectious aetiology with pathogenic microbial entry to the bone marrow or cortex, assigns Secondary chronic OM . Paediatric and immunocompromised population have a higher chance of OM of the jaw.

Radiographically, the bone surrounding sequestrumappears less densely mineralized than sequestrumitself, since vascularity of vital bone creates relativedemineralization. Ischaemia causes increase in CO2level, which attracts calcium due to change in pH. Thecalcium deposition leads to increase in mineralizationof the sequestrum.

II. CASE REPORT

A 58 year old female reported to the out-patient ofDepartment of Oral and Maxillofacial Surgery, RajarajeswariDental College and Hospital, Bengaluru witha chief complain of pain and pus discharge from lower left back region since 2 months with the history of tooth removal a year back. Patient noticed pain and swelling in her lower left back tooth region since 2 months associated with paraesthesia of mandible on left side. The pain wasmild to moderate in nature which aggravated on itsown and did not subside. On examination all the tooth in 1st quadrant were found to have grade 3 mobility. An draining intra oral sinus in 34 35 region was seen. On extra-oralexamination gross asymmetry was present and anextra oral lesion measuring 3cm by 2cm in the left body region of mandible. General examination revealed she wasconscious, cooperative, responsive, well oriented totime, place and person, afebrile, poorly-nourishedwith vital signs in the normal range. On palpation, there was mild tendernessover the left mandibular region.Local examination revealed an area of denudationof the mucosa with exposed cortical bone in left lower alveolar ridge in relation to 34, 35, extending till the buccal vestibule. On palpation, it was tender withrough surface texture and copious pus dischargewith offensive odour was also noted.Other intra-oral findings included multiple missingteeth,and chronic generalized periodontitis. A diagnosisof chronic suppurative osteomyelitis was given. Following all the examination a OPG and a CBCT was done and the scans revealed extensive bone loss, presenceof sequestra and the lesion involving left half ofmandiblewith the lower border intact.

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The scans also revealed presence of sequestra in both the quadrants of maxilla. Blood investigations were done and patient was found to be anaemic. Surgical intervention was doneof left side of mandible with curettage of thesequestrum and for the maxilla sequestrectomy with curettage along with the extraction of tooth on right side was done and the excised specimen was sent forhistopathological investigations. Primary closure with silk was done An in dwelling catheter was placed with inlet and outlet infant feeding tube. The catheter was removed on post operative day 5. Post operativelyshe was put on inj. Augementin 1.2 g i.v.12 hourly and metronidazole 400mg 8hourly infusionsfor 5 days followed by tablet Augementin625 mg 12 hourly and tablet metronidazole 400mg 8hourlyfor 14 days. The histopathological studies confirmedosteomyelitis with acute on chronic osteomyelitis of maxilla and mandible. 2 month follow up revealed satisfactory healing and large maxillary defect on right side was seen with oro antral communication. An obturator was fabricated for the maxillary defect.

Fig 1

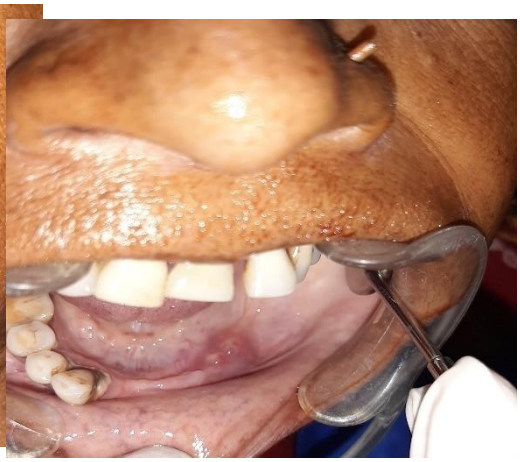

Fig 2

Pre operative photos

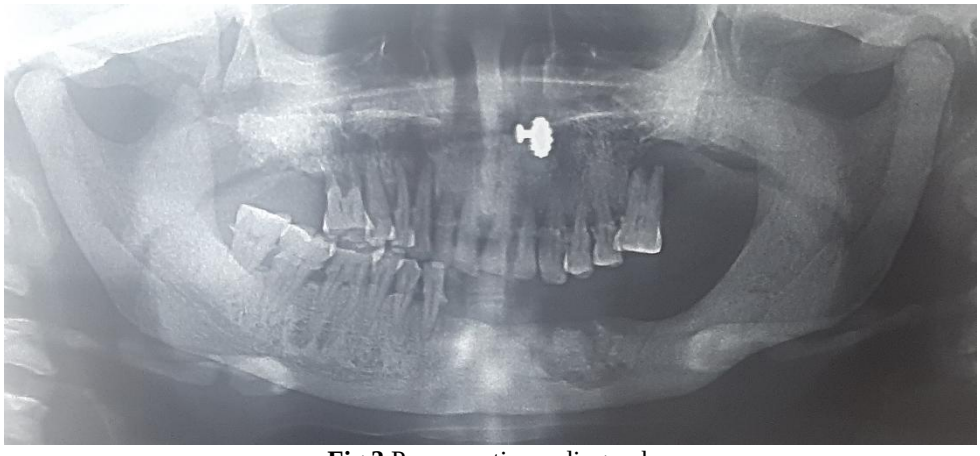

Fig 3 Pre operative radiograph

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Fig 4 Intra operative

Fig 5 sequestrum and tooth

Fig 6

Fig 7

2 weeks follow up

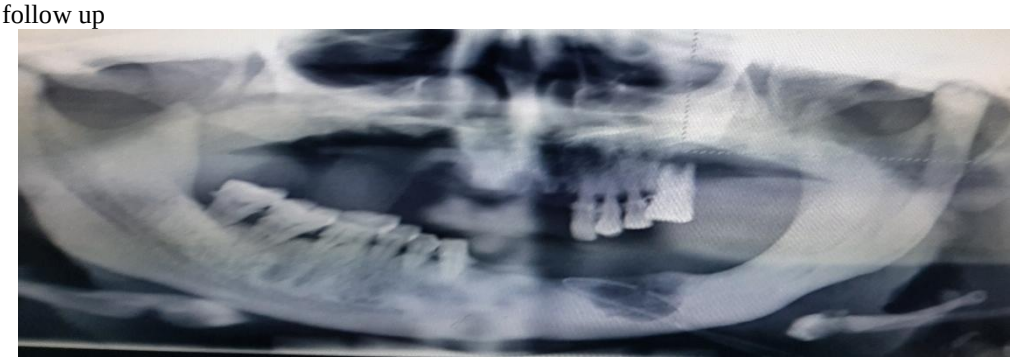

Fig 8 Post operative radiograph

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III. DISCUSSION

Osteomyelitis is an inflammatory disease of bonewhich affects bone marrow - frequently the corticalbone and periosteum. Osteomyelitis is consideredto be one of the most difficult cases to treat due toits heterogeneous nature in terms ofpathophysiology, clinical presentation andmanagement. Progressive bone destruction and formation of sequestrum are characteristic featuresof the disease. The maxilla is composed almostentirely of spongy bone with a very thin cortex.The maxillary blood supply is more extensive thanin the mandible. Any infectious process of thisbone can either remain localized or spread into thesoft tissues and result in a cellulitis, fistula orsinusitis. Because of its structure osteomyelitis ofthe maxilla is rare. In the mandible, the commoner site of osteomyelitis of the jaws, any area ofinfection is surrounded by a plate of compact bonewhich varies considerably in thickness from regionto region. In most instances the alveolar processwhich contains the teeth is covered by a rather thinexternal layer of compact bone.Although osteomyelitis involving alveolar processof maxilla is commonly due to dental causes,osteomyelitis involving the entire maxilla is veryrare. The pathogenesis of these diseases may belinked to hematogenous dissemination ofexogenous or commensal microorganisms living onthe skin or in the digestive tract, but generally themain source of microorganisms involved in theosteomyelitis of the maxilla and mandible is thedental biofilm and oral infections, particularly endodontic infections (Brady et al., 2006), periimplantitis,periodontitis and gingivitis (O'Sullivanet al., 2006; Coviello& Stevens, 2007). It mayalso arise as a complication of dental extractionsand surgery, maxillofacial trauma and subsequentinadequate treatment of a fracture and/or irradiationto the mandible.The chronic osteomyelitis usually transforms fromprevious acute osteomyelitis due to inadequatetreatment and local or systemic contributing factor.Clinical features may include local pain, fever,swelling, purulent discharge, intra-oral and skinfistula, unhealed soft tissue in the oral cavity,parasthesia in the involved area, pathologicalfracture and trismus.Diagnosis is based on data collected from history,clinical and radiographic findings. The mostdistinguishing feature of chronic osteomyelitis issequestra and laminating new periosteal bone.Chronic suppurative osteomyelitis is best managedwith careful evaluation and establishment ofmicrobial etiology. Susceptibilities and treatmentincludes antimicrobial therapy and debridementwith management of resultant dead space and ifnecessary stabilization of bone.Topazian et al recommended treatment mainly withBeta lactam, Clindamycin, and Metronidazole.Many microorganisms responsible forosteomyelitis are penicillin resistant; such asPrevotella, Porphyromonas and Fusobacterium. Forthis reason, Metronidazoleshould be incorporated.Marx suggested that in osteomyelitis cases,minimum antibiotic treatment should be 2 weeks. Extensive necrosis of the maxillary boneindicates ischemic nature of the affected region.Hence, radical resection of the necrotic maxilla andmucosa is performed and complete diseaseclearance is obtained. Saucerization impliesfreeing the upper cortical section to exposemedullar cavity and debride necrotic tissue; whichis useful in chronic phases. Decortication impliesremoval of infected bone cortex. This promotesresolution since the procedure removes nonvasculartissues and surrounding microorganisms.Resection is useful for low degree or refractorystages.

IV. CONCLUSION

Osteomyelitis is epitomized as an inflammation of the mandibular basal and alveolar bone. The exceedingly vascular maxilla with thinner cortex is occasionally affected. The mandibular sites affected are the body, the symphysis, angle, ascending ramus and condyle. The therapy of OM of the jaw is intricate since the chronic patterns tend to reappear. The treatment varies in infective cases. Suppurative OM warrants adequate vascularization followed by infection control [1]. Surgical objectives are necrotic debridement and conserving viable bone. Intervention entails bone decortication with or without bone grafting, sequestromy, saucerisation etc. Non-steroidal anti-inflammatory drugs (NSAIDS) manage the cellular mediators e.g. neovascularisation, vascular homeostasis, febrile progression, inflammation and pain receptor regulation [1]. Steroids alleviate the symptoms. Hyperbaric oxygen augments the oxygen tension for immediate annihilation of anaerobes and facultative aerobes. Bisphosphonates are pyrophosphate analogues competently inhibiting osteoclastic bone resorption/ remodelling. Osteolytic modification relieves pain. Calcitonin organizes bone turnover, diminishes bone pain and improves restoration.

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