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Removal of Mandibular Condyle through Sinus Tract: A New Surgical Approach in the Treatment of Chronic Suppurative Osteomyelitis of Mandible

Dental Science

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ABSTRACT

Osteomyelitis of the maxillofacial region may develop as a result of odontogenic infection as well as in a variety of other situations. The disease may be acute, subacute, or chronic and presents a different clinical course, depending upon its nature.We report a case of chronic suppurative osteomyelitis of mandible in 29 years old female, which was treated by sequestrectomy, saucerization and removal of affected condyle . The beauty of the treatment was removal of codyle through a minimal incision (extension of sinus tract) .

KEYWORDS:

Osteomyelitis, Chronic, Condyle, Sequestrectomy, Saucerization, Debride .

INTRODUCTION:

Osteomyelitis is an inflammation of bone and bone marrow that develops in the bones usually after a chronic infection[1]. It may be classified as acute, sub acute or chronic, depending on the clinical presentation. There is decline in the incidence of chronic Osteomyelitis of jaw bones over the years. This decline can be attributed to the increased availability of antibiotics and the progressively higher standards of oral and dental health. Despite these advances, there remain selected groups of patients who have an increased risk of developing Osteomyelitis, specifically those: with poor oro-dental hygiene, those who have undergone radiotherapy affecting the mandible (which may result in a specific form of Osteomyelitis termed osteoradionecrosis), and the immunocompromised,[2-4] including uncontrolled diabetes, and patients on immunosuppressive therapy, such as high dose corticosteroids, needed for transplant recipients and the treatment of auto-immune disorders[6].

CASE REPORT

A 29 year young female reported to the Department of Oral and Maxillofacial Surgery, C. S. M. Medical University, Lucknow, with chief complaints of pain in the jaw, reduced mouth opening, swelling and discharge of pus from the left side of lower face for about 3 months. Two months back she was managed by antibiotics and extraction of multiple teeth by her dental practitioner. There was temporary relief for some time but after 1 month above symptoms reappeared.

Extra oral examination showed facial asymmetry with swelling, a draining sinus at left angle of mandible and surrounding reddish skin. Swelling was about 6x4 cm in size, tender, ill defined and non fluctuant. A step defect was present over left body of mandible.
Intra-oral examination revealed reduced mouth opening of about 1.5 cm, deranged occlusion, poor oral hygiene, missing # 34, 35, 36 and 37 teeth, tenderness in left mandibular vestibule and posterior to retro molar area. Mandible was mobile distal to # 33.

Orthopantomogram (OPG) showed poorly healed socket of # 34, 35, 36 and 37 teeth and a localized mottled area of mixed radiolucency and radioopacity: from right parasymphysis to left angle of mandible. Osteolytic defect was seen in left side of body of mandible extending up to the symphysis menti with a pathological fracture extending up to the outer cortex (Fig.1).

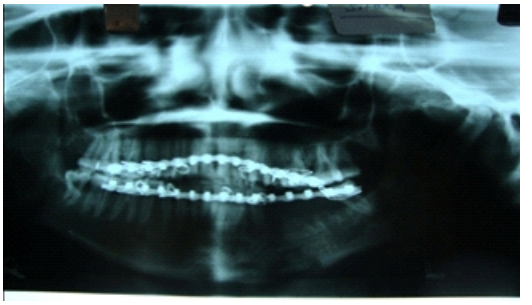

Figure1- Pre operative radiograph of the patient showing pathological fracture of mandible.

After clinical and radiological examinations, pus culture and sensitivity test, the provisional diagnosis of chronic suppurative Osteomyelitis (CSO) was made. Debridment of affected area and resection of cutanious sinus was done followed by rigid fixation with reconstruction plate (Fig.2). Following this procedure an appropriate antibiotic coverage was given for one week. This led to relief in symptoms for 1 month.

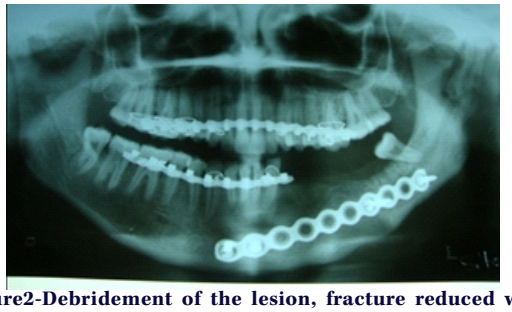

Figure2-Debridement of the lesion, fracture reduced with reconstruction plate.

Histopathological examination of condyle showed lamellar bone showing focal necrosis with a diffuse mixed inflammatory infiltrate comprising of plasma cells, lymphocytes, neutrophils and histiocytes. No specific granuloma or neoplastic pathology was evident.

There after sinus reappeared over the same site with overlying tenderness. There was pain in the left ear associated with tenderness in the left pre-auricular region. After 2 months, patient again underwent surgical debridment of affected area with removal of pathologically fractured condyle through extra oral sinus by extended incision (Fig.3,4&5). The reconstruction plate was removed by intra oral approach followed by broad spectrum antibiotic coverage. Patient was kept on regular follow up and she is asymptomatic 3 months following the removal of condyle till date.

Figure3- Extra oral sinus with extended incision.

Figure 4 -fractured fragment hold with kocker's forcep.

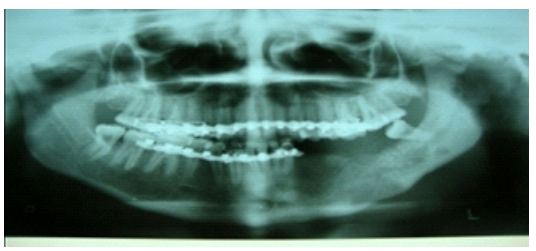

Figure 5 - Post operative radiograph of the patient.

Procedure

Local anesthetic solution comprising of lignocaine hydrochloride with adrenalin (1:200,000) was infiltrated around the extra oral sinus opening and sinus tract. Granulation tissue along with the sinus was removed by a sharp curette. A horizontal incision was given to extend the sinus opening for adequate exposure of the operating site. Skin and superficial fascia were dissected up to sub platysmal plane. Subperiosteal dissection was done along the sinus tract, to expose the lateral surface of ramus of the mandible. Anterior and posterior borders of the ramus were exposed to avoid the injury to the facial vessels, present at the anteroinferior border of masseter muscle. Blunt dissection was done to reach the infected, pathological fracture site. Attachment of capsule and lateral and medial pterigoid muscles were removed from the condyle head to make it free. The condyle was delivered through the sinus tract by holding it with **kocker's forecep** and by gentle rocking movement through the sinus tract. The entire procedure was not assisted by per operative image guidance. The infected bone was curetted out. Margins of sinus opening were made fresh followed by layer wise closure with 4- 0 vicryle and nylon.

DISCUSSION:

The primary **cause** of chronic Osteomyelitis of the jaws is infection by odontogenic microorganisms[4.] It may also arise as a complication of dental extractions and surgery, maxillofacial trauma and the subsequent inadequate treatment of a fracture, and/or irradiation to the mandible[3,5.]

The typical **age** of presentation of chronic Osteomyelitis of the jaws is in the fifties and sixties, with males more likely to be affected. The commonest site is the posterior body of the mandible. The incidence, outside of those who have received head and neck radiotherapy and the immunocompromised, is increased in patients who have poor oral hygiene and are abusers of alcohol or tobacco[3.]

The **incidence** of Osteomyelitis is much higher in the mandible due to the poorly vascularized dense cortical plates and the blood supply primarily from the inferior alveolar neurovascular bundle. It is much less common in the maxilla due to the excellent blood supply from multiple nutrient feeder vessels[7.]

Patients with secondary chronic suppurative Osteomyelitis present with pus formation, extra- or intra-oral fistulae, or sequestrations, whereas patients with primary chronic Osteomyelitis present with recurrent episodes of pain, swelling and trismus. There is absence of pus formation, extra-oral or intra-oral fistulae, or sequestrations in primary chronic Osteomyelitis[8.]

The OPG is indispensable in the initial evaluation of Osteomyelitis of mandible. One must bear in mind that radiographic image lag behind the clinical presentation since cortical involvement is required for any change to be evident. Therefore, it may take several weeks before the bony changes appear radiographically. Hence it is possible to see a patient with acute Osteomyelitis that has a normal appearing OPG. However, "moth-eaten" bone appearance or sequestrum of bone is the classic appearance of osteomyelitis[7.] Computerized Tomogram (CT) provides three dimensional imaging not available on an OPG. CT scan gives detailed image of early cortical erosion of bone in Osteomyelitis. Extent of lesion and bony sequestra with pathological fractures can also be seen on CT scan. Magnetic Resonance Imaging (MRI) is generally considered more valuable in the evaluation of the soft tissue lesions. MRI can assist in the early diagnosis of Osteomyelitis by loss of the marrow signal before cortical erosion or sequestrum of bone appears[7]. Technetium 99 (TCM99) has been the workhorse of nuclear medicine imaging. The TCM 99 bone scan is very sensitive in highlighting areas of increased bone turnover.

Histopathological feature shows medullary spaces filled with inflammatory exudates which may or may not have progressed to the actual formation of pus. The inflammatory cells are chiefly lymphocytes and plasma cells. The osteoblasts bordering the bony trabaculae are generally destroyed, and depending upon the duration of the process, the trabeculae may loose their viability and begin to undergo slow resorption[9.]

Treatment modalities include sequestrectomy, saucerization, and decortication. Sequestrectomy involves removing avascular infected pieces of bones. Saucerization involves the removal of adjacent bony

cortices and open packing. Decortication involves removal of the dense chronically infected and poorly vascularized bony cortex and placement of vascular periosteum adjacent to medullary bone to allow increased blood flow and healing in the affected area. Adjunctive treatment may include antibiotic impregnated beads, or wound irrigation system[10-12]. Hyperbaric oxygen (HBO) has been advocated for the treatment of refractory osteomyelitis. The widespread use of HBO treatment of osteomyelitis still remains controversial. Resection of jaw bone has been reserved as a last-ditch effort after previous therapy has been unsuccessful or to remove areas involved with pathological fracture[7].

In the case under reporting, there was pus discharge with pathological fracture at body and sub condyle region. Therefore, initially we debrided the infected area followed by immediate rigid fixation by reconstruction plate. Subsequently discharging sinus reappeared. Finally it was decided to remove the condyle.

Instead of giving a fresh incision on the healthy skin overlying the diseased bone to be removed, we decided to take out the mandibular condyle through the sinus tract. This gave us an opportunity, not only to remove the condyle through the sinus tract obviating the need to give a fresh incision, but also the whole sinus tract could be debrided and cleaned during the procedure. It may have helped in the subsequent healing of the discharging sinus as well. As adequate drainage of pus is the key to healing of any suppurative lesion.

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