

## Osteomyelitis of the palate: A case report of a rare case

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### Abstract:

Osteomyelitis is an inflammatory process of both cortical and medullary bone. It can be seen more commonly in mandible as compared to the maxilla. There are several causes of osteomyelitis of the palate. But in this age of advanced antibiotics, it is usually curbed in the initial stages itself. Rarely does it progress to the stage where surgery is required. Especially in maxilla where there is sufficient collateral supply. Mistreatment and neglect are the main reasons for this disease to advance. BIPP (Bismuth iodide paraffin paste) has proven its mettle in various types of healing scenarios and also in our case.

**Keywords:** osteomyelitis; palatal fracture; maxillary osteomyelitis; BIPP

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### I. INTRODUCTION

Osteomyelitis, although is a disappearing disease in developed countries, it is still commonly encountered in areas of poor socioeconomic conditions and is a major medical problem in the developing countries. The general lack of awareness of the prevalence of the disease and its features often leads to a misdiagnosis and delay in treatment.

Osteomyelitis can be defined as an inflammatory condition of the bone, which begins as an infection of the medullary cavity, rapidly involves the haversian systems, and extends to involve the periosteum of the affected area.<sup>1</sup>

Infection occurs as a result of a bacteremia, an inoculation during aseptic or bone surgery or a contiguous infectious focus.

Conditions which alter the vascularity of the bone predispose to osteomyelitis, such as

1. Radiation,
2. Malignancy,
3. Osteoporosis,
4. Osteopetrosis, and
5. Paget's disease

Systemic diseases that cause concomitant alteration in host defenses also profoundly influence the course of osteomyelitis like

1. Diabetes,
2. Anemia and
3. Malnutrition.<sup>2</sup>

The consequences of this infection range from the minor nuisance of a draining tract, to a pathologic fracture at the infected site, to the possible malignant transformation to carcinoma.<sup>3</sup>

The bones reported to be involved by osteomyelitis in the head and neck are the

1. Mandible,
2. Frontal bone,
3. Cervical spine,
4. Maxilla,
5. Nasal bone,
6. Temporal bone and
7. Skull base bones.

The diagnosis is mainly made by clinical presentations like

1. Discharging sinus,
2. Periosteal thickening and tenderness, confirmed by the
3. Presence of sequestrum or bony destruction with or without pathological fractures on radiography.

4. Imaging with radionuclide scans, computed tomography (CT), and magnetic resonance imaging (MRI) are used for early detection, when the diagnosis of osteomyelitis is equivocal or to help gauge the extent of bone and soft tissue infection.

Surgical treatment involves

1. Debridement of necrotic bone and tissue,
2. Obtaining appropriate cultures,
3. Managing dead space, and when necessary,
4. Obtaining bone stability.

Acute cases respond very well to a medical line of treatment. Others require surgical intervention with long-term broad-spectrum antibiotic therapy for 4-6 weeks.

## II. CASE REPORT

A 65 year old male patient visited our OPD with the complaint of nasal regurgitation of food and fluids along with nasal intonation of voice. On enquiry, patient gave a history of RTA 10 years back during which he suffered an injury to the face. The mandible was only treated at that time with IMF. No other treatment was rendered to the patient. There would be occasional bouts of pain in the upper jaw, for which he consulted a local dentist. Not being able to locate the cause of pain, his remaining maxillary teeth were extracted. About 2 years back he started to notice something hard jutting out from the middle of his hard palate and also started to feel bouts of pain in the maxilla. He consulted a local dentist where all of his maxillary teeth were extracted to find the cause of pain, which remained unresolved. A year back the nasal regurgitation and nasal intonation started.

On general examination, patient was conscious, cooperative and well oriented to time, place and person. Patient was afebrile with pulse rate- 76beats/min, respiratory rate- 18 breaths/min and blood pressure- 130/80mm of Hg. No signs of pallor, icterus, cyanosis, edema, anemia and clubbing.

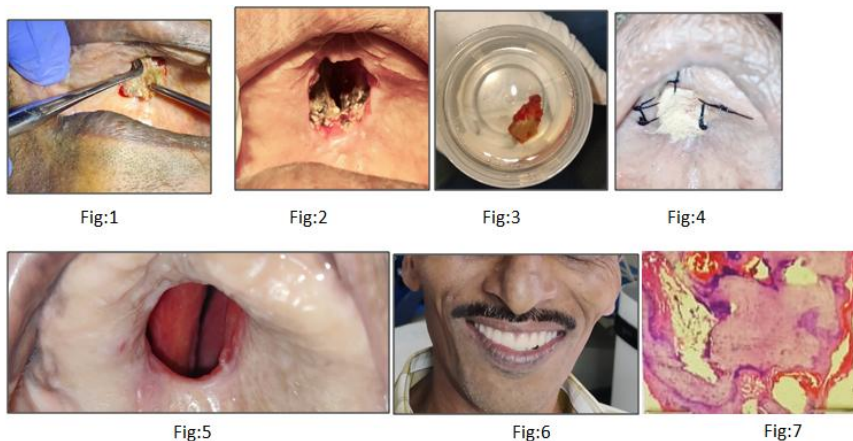
On extraoral examination, no gross facial asymmetry was present. Bilateral synchronous condylar movements with no evidence of crepitus, clicking or tenderness on both sides on temporomandibular joint examination. Maximum mouth opening was 45mm interincisally with no chin deviation. Regional lymph nodes were not palpable. No abnormality was detected in eyes, skin, ear, salivary glands and muscles.

On examination, a piece of palatal bone was jutting out of the palatal vault and was infected. This also caused a communication between the oral cavity and the nasal cavity. There was nasal regurgitation and nasal intonation present. The area was tender and also prone to bleeding. The maxillary arch was completely edentulous with a partially edentulous mandibular arch. No abnormality was detected in labial, buccal and vestibular mucosa, floor of mouth and tongue.

A non-contrast CT scan was done which revealed a fractured palatal process of the maxillae. Apparently during the accident 10 years back, the palatal bone was also fractured but had remained undiagnosed. The undiagnosed fracture became secondarily infected and had not healed. The fractured segment got sequestered over the years and perforated the palatal mucosa to emerge in the oral cavity.

## III. SURGICAL TECHNIQUE

After a comprehensive pre-anaesthetic check up, the patient was taken into the OT for surgery. Surgical debridement of infected bone (Sequestromy) and soft tissue was done under GA. (Fig:1) The bone was debrided using a vulcanite bur till healthy bone was reached. (Fig:2) The sequestered bone was sent for histopathological analysis. (Fig:3) The surgical site was packed with cotton gauze smeared with **BIPP (Bismuth iodide paraffin paste)**. (Fig:4)



The pack was changed every 15 days for the next 4 months. After 4 months the exposed bone was completely covered with healthy pink mucosa. (Fig:5) A maxillary complete denture cum obturator was fabricated along with a mandibular removable partial denture. (Fig:6)

Histopathology report revealed “superficial stratified squamous epithelium with underlying collagenous tissue, areas of tissue necrosis, multiple pieces of sequestrum in fibrous connective tissue stroma. There are matured, bony trabeculae of varying sizes and shapes in scanty connective tissue stroma. At places the trabeculae of bones are thin along with osteoids. The stromal tissue shows moderate infiltration of chronic inflammatory cells. The histopathological features are suggestive of chronic suppurative osteomyelitis.” (Fig:7)

#### IV. DISCUSSION

Osteomyelitis is an inflammatory disease of bone which affects bone marrow - frequently the cortical bone and periosteum. The very first report on osteomyelitis was written in 1832 by British physician Sir Benjamin Brodie. The first time he described a type of abscess known as the Brodie abscess which is a chronic feature of osteomyelitis.<sup>5</sup> Trauma, surgical procedures and infections such as endodontic and periapical infections, if left untreated may lead to osteomyelitis.<sup>1</sup>

In our case, the primary cause was untreated trauma which led to secondary infection resulting in osteomyelitis. Gram negative anaerobic rods and facultative anaerobic cocci of staphylococcus and enterococcus, present in the oral microflora, are primarily responsible for causing osteomyelitis.

Paraffin Paste (BIPP) dressing is prepared by impregnating sterile gauze with a paste containing

- one part bismuth sub-nitrate,
- two parts iodoform,
- one part sterile liquid paraffin by weight.

James Morrison Rutherford (Professor of Surgery, Durham) was the first to use BIPP for world war soldier's wounds. BIPP controls infection and subsequent scarring by acting as an astringent and antiseptic agent at the wound site.<sup>6,7</sup> BIPP pack has been in use for long especially for packing the maxillary defect and for antral and nasal packing. The raw surface gets covered with slough and is later replaced by granulation tissue and the defect gets mucosalised subsequently.<sup>8</sup> In our case we also achieved the same results in 4 weeks. Bismuth sub-nitrate iodoform paraffin paste has the adequate features required for its use as an intraoral wound dressing material. It is of paramount importance that we understand that BIPP does not initiate or promote wound healing. It provides an adequate environment for the healing to take place. There is no donor site morbidity, its easily adaptable to any raw wound surface and patient tolerance is also high, making it one of the favoured wound dressing material for intraoral defect sites.

#### V. CONCLUSION

With the advent of antibiotics, imaging techniques and better social conditions, incidence of osteomyelitis has declined over the years. However, increase in immunocompromised conditions like diabetes mellitus, HIV infection and other predisposing factors has facilitated the disease process. Infection of the maxilla can cause serious complications as it may spread to the nasal cavity, antrum or skull base. Maxillary osteomyelitis should be treated swiftly and aggressively to stem the infection at the source.

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