

# Chronic Osteomyelitis of Jaw

## A Retrospective Study

Dr. Dhawal Goyal, <sup>1</sup> Dr. Nilima Malik, <sup>2</sup> Dr. Neha Gupta, <sup>3</sup> Dr. Manoj Agarwal, <sup>4</sup> Dr. Rajani Kalla, <sup>5</sup>  
Dr. Sanyam Agarwal <sup>6</sup>

**1. Dr. Dhawal Goyal,**

Professor Department of Oral & Maxillofacial Surgery, NIIMS Dental College, Jaipur, Rajasthan, India

**2. Dr. Nilima Malik,**

Ex Dean, Department of Oral and Maxillofacial Surgery, Nair Hospital Dental College, Mumbai, Maharashtra, India

**3. Dr. Neha Gupta,**

Associate Professor, Department of Prosthodontics crown & bridge, RUHS College of Dental Sciences, Jaipur, Rajasthan, India

**4. Dr. Manoj Agarwal,**

Associate Professor, Dept. of Conservative Dentistry & Endodontics, RUHS College of Dental Sciences, Jaipur, Rajasthan, India

**5. Dr. Rajani Kalla,**

Associate Professor, Department of Prosthodontics crown & bridge, RUHS College of Dental Sciences, Jaipur, Rajasthan, India

**6. Dr. Ankita Agarwal,**

Senior Demonstrator, Department of Conservative dentistry and Endodontics, RUHS College of Dental Sciences, Jaipur

### **Abstract**

**Introduction:** Osteomyelitis of jaw is still prevalent in our society and requires a thorough understanding for diagnose and treatment.

**Aims & Objectives:** Aim is to study the various etiological factors, role of systemic conditions, various treatment modalities available for chronic osteomyelitis of jaws.

**Methods and Material:** A total 40 patients were examined, diagnosed and treated for osteomyelitis of jaws as per the treatment required. The details were collected and recorded in a prepared Proforma.

**Results:** osteomyelitis is more common in mandible due to odontogenic infection as compared to maxilla, whereas fungal osteomyelitis was more common in maxilla (which confirms its route of transmission ie. Inhalation) as compared to mandible. Tuberculous osteomyelitis was seen only in mandible.

The most common pattern on CT scan seen was mixed pattern followed by lytic pattern and sclerosis and sequestrum pattern. patients whose CT scan showed sclerosis pattern, they underwent decortication and patients with mixed pattern CT scan underwent curettage.

**Conclusion:** The clinician should take patient's immune compromised status in to consideration and treat that well and any condition that alter the vascularity of bone and predispose the patient to the onset of osteomyelitis of jaws, concomitantly with the orofacial infection.

## INTRODUCTDION

The prevalence of osteomyelitis of jaws in third world country is still at a higher rate despite newer and powerful antibiotics and advances in dental care. This may be due to low socio-economical status, unavailability of primary health care services, and poor nutritional status in the rural areas.

Osteomyelitis may be defined as an inflammatory condition of the bone that usually begins as an infection of the medullary cavity, rapidly involves the Haversian system and quickly extends to periosteum of the affected area. Osteomyelitis of jaws develops after a chronic odontogenic infection or a variety of other reasons like tuberculosis or fungal infection. Osteomyelitis has been noted in patients with diabetes, autoimmune disease, agranulocytosis, leukemia, severe anemia, malnutrition, syphilis, cancer chemotherapy, steroid drug use, sickle cell disease, acquired immunodeficiency syndrome<sup>1</sup> and with the habit of tobacco and alcohol consumption.<sup>2</sup>

Cultures, bone biopsy, conventional radiography, scintigraphy, CT scan are used to diagnose chronic osteomyelitis of jaws. Computed Tomograph helps in determination of cortex and medullary involvement of diseased bone better as compared to conventional radiograph.

Therapy for osteomyelitis of jaws requires a multidisciplinary approach. A precise microbiologic diagnosis and adequate debridement of necrotic tissue are essential. Acute hematogenous osteomyelitis usually responds to antimicrobial therapy.

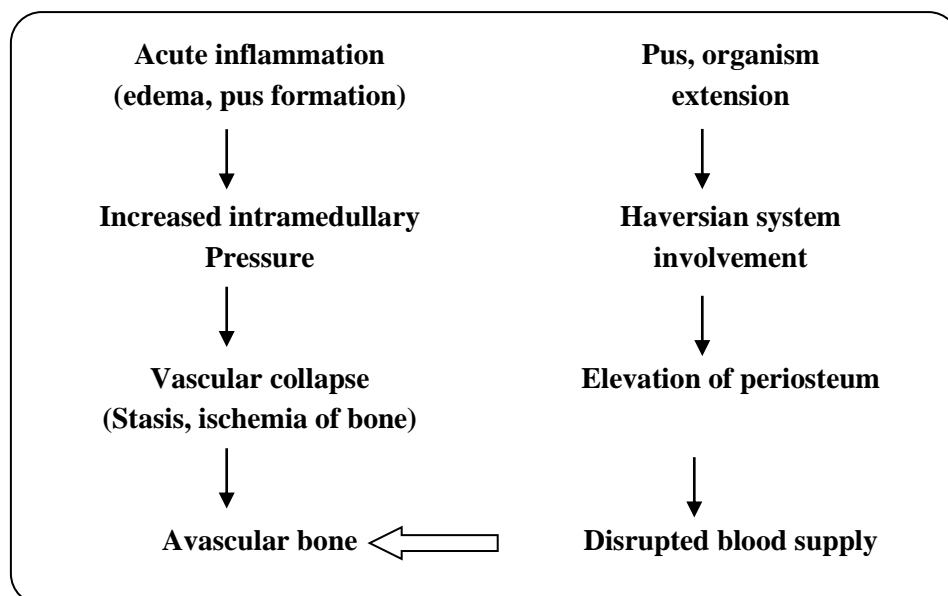
However, chronic osteomyelitis of jaws usually requires surgical debridement. Surgical exploration and sequestrectomy & saucerization are most frequently used to treat these cases. Radical surgery such as decorticotomy or resection is effective in the treatment of extensive cases of chronic osteomyelitis of the jaws. Hyperbaric oxygen is often recommended as an adjuvant in treatment of chronic osteomyelitis of jaws.

In present study, we have analyzed the etiological factors, age and sex prediction, site of occurrence, role of CT scan and various treatment modalities followed in our institute over a period of 3 yrs.

### Aims And Objectives

1. To study the various etiological factors of chronic osteomyelitis.
2. To study the role of systemic conditions as a predisposing factor in chronic osteomyelitis of jaw.
3. To discuss various treatment modalities (surgical & nonsurgical) for management of chronic osteomyelitis of jaws.

## PATHOGENESIS OF OSTEOMYELITIS



## MANAGEMENT

Management of osteomyelitis of jaws depends on-

- Etiology of the disease
- Predisposing factors like altered immune status of host, vascularity of bone etc.
- Site and extent of the lesion.

Osteomyelitis of jaws usually requires medical and surgical treatment, although occasionally antibiotic therapy alone is successful.

Chronic osteomyelitis of jaw bones can be managed by

1. Medical management
2. Surgical management

### MEDICAL MANAGEMENT: It includes-

- Adequate fluid and dietary intake
- Evaluation and correction of host immune system deficiencies
- Systemic Antibiotic therapy
- Anti tubercular therapy-Whenever required
- Antifungal therapy- Whenever required
- Hyperbaric oxygen therapy

### SURGICAL MANAGEMENT: It includes

- Local antibiotic therapy- Closed wound irrigation-suction & Antibiotic impregnated beads
- Sequestrectomy and Saucerization
- Decortication
- Resection and Reconstruction

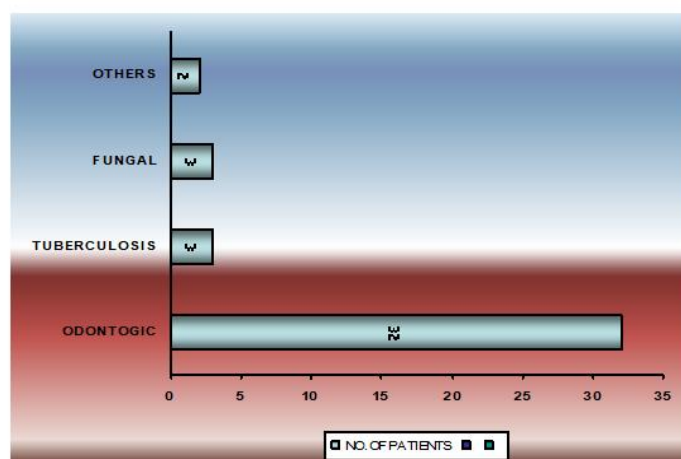
## METHODS AND MATERIAL

The study was conducted in the department of Oral and Maxillofacial surgery, Nair Hospital Dental College, Mumbai. The material consisted of 40 patients who were admitted in ward during last 3 years. Patients were examined, diagnosed and treated for osteomyelitis of jaws as per the treatment required. The details were collected and recorded in a prepared Proforma.

## RESULTS

In the study carried out at our institute results were found as following-  
32 patients out of 40 were suffering from osteomyelitis due to odontogenic cause. Three patients had etiologic factor as fungal infection, whereas 3 patients had tuberculous osteomyelitis of jaw. One patient had primary chronic osteomyelitis of mandible and etiology was unknown.

## ETIOLOGICAL DISTRIBUTION

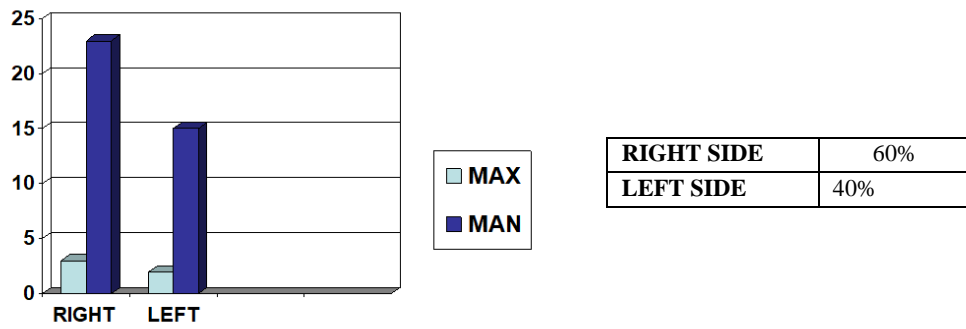


ODONTOGENIC	80%
TUBERCULOSIS	7.5%
FUNGAL	7.5%
OTHERS	5%

In our study mandible was more commonly affected as compared to maxilla. Both bones had predilection for right side more as compared to left

side.37 patients had osteomyelitis of mandible as compared to only 3 patients had osteomyelitis of maxilla.

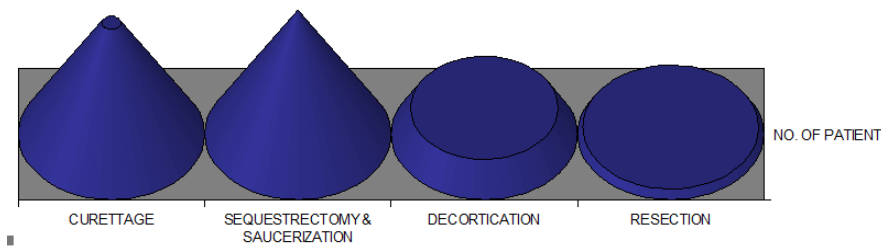
### SITE AND SIDE PREDICTION



In our study the surgical method used primarily for osteomyelitis was sequestrectomy and saucerization. It was carried out in 19 patients and curettage was carried out in only 17 patients.

Decortication was carried out in 4 patients and one patient underwent resection followed by reconstruction using stainless steel reconstruction plate.

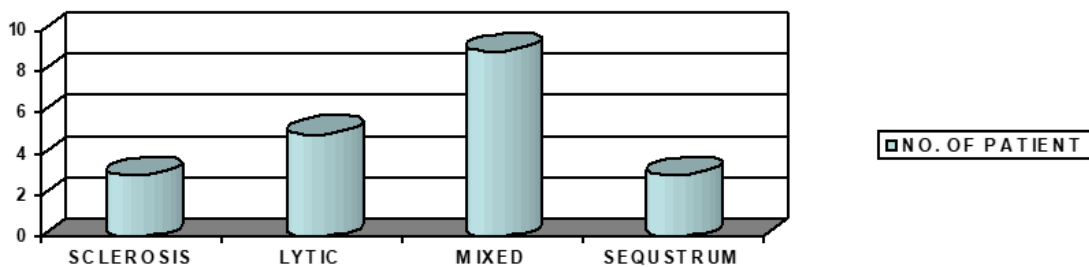
### TYPE OF SURGICAL INTERVENTION



In our study CT scans of 20 patients were evaluated. The CT scan pattern showed was classified into 4 categories; sclerotic, lytic, mixed and sequestrum. The most common pattern seen was mixed pattern. 9 patients had mixed CT scan pattern and 5 patients had lytic pattern and 3

patients each showed sclerosis and sequestrum pattern. It was found that CT scan showed significantly superior detectability of cortical plate disruption to conventional radiography.

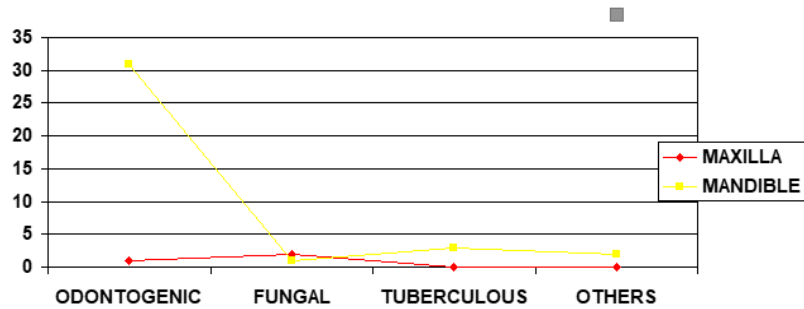
### PATTERN OF CT SCAN



It was found that osteomyelitis is more common in mandible due to odontogenic infection as compared to maxilla, whereas fungal osteomyelitis was more common in maxilla (which confirms its route of transmission ie. Inhalation) as compared to

mandible. Tuberculous osteomyelitis was seen only in mandible. One case of diffuse sclerosing osteomyelitis or primary chronic osteomyelitis was seen in the mandible.

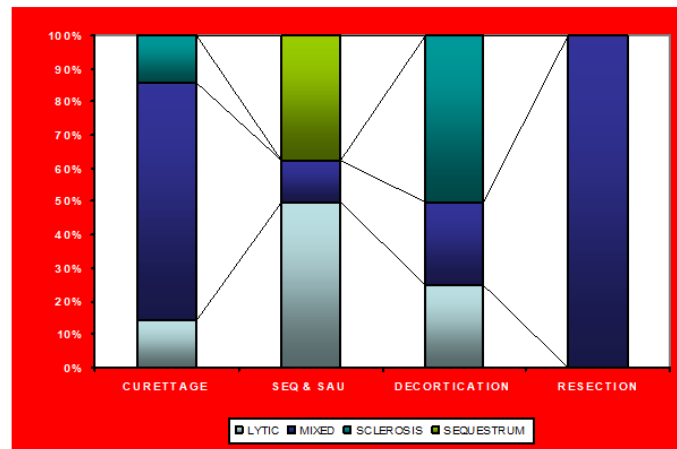
### INVOLVEMENT OF BONE ACCORDING TO ETIOLOGY



In our study retrospective correlation between CT scan finding and surgical intervention was carried out. It was suggestive that patients whose CT scan showed sclerosis pattern, they underwent

decortication and patients with mixed pattern CT scan underwent curettage. One resection was carried out in mixed pattern patient.

### SURGICAL INTERVENTION ACCORDING TO CT SCAN PATTERN



### CASE REPORT

A 55 years old female patient complains of discharge of pus from right infraorbital region and discharge of pus intraorally in the past 8 months. There was h/o extraction of upper molar tooth on right side. She was diabetic and was on insulin. CT scan showed the area of erosion and cortical discontinuity with destruction of antero-lateral and postero-lateral wall of right maxillary sinus. Necrosis of alveolar bone was seen

extending from right tuberosity crossing midline up to left side premolar.

Bone scintigraphy showed increased radiotracer <sup>99m</sup>Tc-MDP uptake in right and left maxilla. No similar lesion was found in other bones of body.

Pus for culture and antibiotic sensitivity test was repeatedly sent but there was no organism seen. Mantoux test and sputum for AFB were negative.

Finally, patient was posted for surgery under general anesthesia and large sequestrum of maxilla was removed via Weber-Fergusson approach.

Thorough curettage of the defect was done. Extra oral sinus tract present in infra- orbital region was removed with help of 11 no. blade. Granulation tissue and necrosed bone were sent for biopsy and culture and sensitivity test. Report of pus for culture and sensitivity test was suggestive of fungal infection. On KOH smear filamentous fungi were seen. Growth on Saburaund media was suggestive of *Aspergillus*. Inj.Amphotericin –B was started followed by oral fluconazole.

### CONCLUSION

The clinician should take patient's immune compromised status in to consideration and treat that well and any condition that alter the vascularity

of bone and predispose the patient to the onset of osteomyelitis of jaws, concomitantly with the orofacial infection. With the increased number of immunocompromised patients seeking health care services, one might as a direct consequence expect the incidence of osteomyelitis to increase.

Almost all the avenues and pathways have been explored, but still a lot has to be learnt. It is true that the dread of morbidity and mortality due to osteomyelitis has been conquered, but we still cannot boast of a positive and accurate approach to the multitude of problems presented by chronic osteomyelitis of jaws.

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