

**A LARGE LESION OF RARE GARRE'S OSTEOMYELITIS A CASE REPORT WITH  
BRIEF REVIEW OF LITERATURE**

<sup>1</sup>Dr. Angshuman Sarma, <sup>2</sup>Dr. Rajendragouda Patil, <sup>3</sup>Dr. Deveshi Nigam, <sup>\*4</sup>Dr. Dipen Majumder, <sup>5</sup>Dr. Mohd Shakir Khan, <sup>6</sup>Dr. Ashutosh Gupta

<sup>1</sup>Post Graduate student, Department of Oral Medicine and Radiology, Kothiwal Dental College & Research Centre.

<sup>2</sup>Professor & Head, Department of Oral Medicine and Radiology, Kothiwal Dental College & Research Centre.

<sup>3</sup>Senior Lecturer, Department of Pediatric and Preventive Dentistry, Inderprastha Dental College & Hospital.

<sup>4</sup>Senior Lecturer, Department of Oral Pathology & Microbiology, Shree Bankey Bihari Dental College & Research Centre.

<sup>5</sup>Senior Lecturer, Department of Oral Pathology & Microbiology, Shree Bankey Bihari Dental College & Research Centre.

<sup>6</sup>Post Graduate student, Department of Oral Pathology & Microbiology, D J College of Dental Sciences & Research.



**\*Corresponding Author: Dr. Dipen Majumder**

Senior Lecturer, Department of Oral Pathology & Microbiology, Shree Bankey Bihari Dental College & Research Centre.

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**ABSTRACT**

Garre's sclerosing osteomyelitis is a type of chronic osteomyelitis, children and young adults are mostly affected by this disease. It has been briefly described in various dental literatures, and most common associated factor is odontogenic infections due to dental caries. This present case shows a 10 year female patient was suffering from swelling and pain on her right lower posterior tooth region since 3 months. Patient also gives history of tooth extraction from the same region 3 month back which was grossly carious. Radiographic examination shows periosteal bone formation at the lesional site. Provisional diagnosis of Garre's osteomyelitis was made. Surgery was performed under general anesthesia and there was no post operative complication. Histological examination was suggestive of Garre's osteomyelitis. After 2 years of follow-up there was no sign of recurrence.

**KEYWORDS:** Garre's osteomyelitis, Odontogenic infection, General anesthesia, Periosteal bone.

**INTRODUCTION**

Osteomyelitis is an inflammatory process of bone and bone marrow caused by an infectious organism which results in local bone destruction, apposition of new bone and necrosis.<sup>[1]</sup> The word "osteomyelitis" originates from the ancient Greek words osteon (bone) and muelinos (marrow) and means infection of medullary portion of the bone.<sup>[2]</sup> Osteomyelitis can be either acute or chronic.<sup>[1]</sup> Garre's sclerosing osteomyelitis is a kind of chronic osteomyelitis that affects mostly children and teenagers with the annual incidence of approximately 13 per 100,000 individuals.<sup>[3]</sup> Ossifying periostitis, Proliferative periostitis and Non-suppurative ossifying periostitis are the other terms used to describe Garre's osteomyelitis.<sup>[4]</sup> This disease entity was first described by Carl Garre in 1893 as irritation induced focal thickening of periosteum and cortical bone of tibia.<sup>[5]</sup> It is commonly associated with odontogenic infections in children and young adults.<sup>[6]</sup> The mandible is more frequently involved than the maxilla, and symptoms typically arise in the area of the mandibular first molar. Garre's osteomyelitis is a condition that produces facial

asymmetry and on examination, it consists of a firm swelling in the jaw often noticed as an indolent or asymptomatic lesion.<sup>[7]</sup> Radiographically, there is a "onion skin" appearance of new subperiosteal bone formation that covers the cortex.<sup>[8]</sup> This present case shows a 10 year old female patient diagnosed with Garre's osteomyelitis on right lower posterior tooth region.

**CASE REPORT**

A 10 year old female patient reported to the department of Oral Medicine and Radiology with a chief complaint of pain and swelling on her right back tooth region since 3 months. Swelling gradually increased in size and reached the present size. The patient underwent extraction 3 months back on the same region due to deep dental caries. Past medical history, natal/neonatal history was non significant.

Extra oral findings showed facial asymmetry was present with swelling in lower right facial region extending from gonion to pogonion antero-posteriorly and ala-tragus line

to lower border of mandible supero-inferiorly, measuring about 4x3 cm respectively, swelling was tender on palpation and hard in consistency. [Figure-1] Lymph nodes were non tender and non palpable. Intraoral findings shows tenderness present with respect to right lower buccal vestibule, expansion of buccal cortex from premolar to 2<sup>nd</sup> molar region. Overlying mucosa was normal in colour and architecture. [Figure-2] Radiographic image of Ortho pantomo graph showed mixed radiolucency at the apical region of permanent lower first and second premolar, mesial root of first molar and lower border of mandible, occlusal view showed bone formation at the lower border of mandible with onion skin appearance. [Figure- 3,4] On the basis of clinical and radiographic findings a differential diagnosis of Garre's Osteomyelitis was made. A written informed consent was taken from the patient for excisional biopsy, all pre operative findings were within normal range. Surgery was performed under general anesthesia by intra oral approach. [Figure- 5] Multiple tissue specimens were sent for histopathologic examination, measures about length x breadth x height as follows A1- 11mm x 8mm x 5mm, A2- 11mm x 5mm x 5mm, A3- 8mm x 4mm x 3mm. [Figure- 6] Cortical bone and Medullary bone tissue specimens were sent in different container. The microscopic view of Haematoxylin & Eosin stained decalcified hard tissue sections of cortical bone showed subperiosteal cortical response having perpendicular orientation of new trabeculae to redundant cortical bone and these new bony trabeculae are arranged parallel to each other. At the center of the lesion bony trabeculae contains empty osteocytic lacunae without osteoblastic rimming. The inter trabecular connective tissue stroma consists of collagen fibers in association with fibroblasts and mild chronic inflammatory cells infiltrate consisting of lymphocytes. The microscopic view of Haematoxylin & Eosin stained decalcified hard tissue sections of Medullary bone showed bony trabeculae with empty osteocytic lacunae without osteoblastic rimming and at focal areas, osteocytes are also seen in osteocytic lacunae. The inter trabecular medullary connective tissue stroma consists of collagen fibers in association with fibroblasts and mild chronic inflammatory cells infiltrate consisting of lymphocytes. Histopathological diagnosis of Garre's Osteomyelitis was made. [Figure-7, 8] There was no post operative complication and after 3 years of follow-up there was no sign of recurrence.

## DISCUSSION

Garre's osteomyelitis involves localized periosteal thickening, beginning in the spongy layer of the jaw, extending into the periosteum and ultimately stimulating the formation of bone.<sup>[9]</sup> It usually affects the mandible and results in a hard swelling over the jaw, producing facial asymmetry with little or no pain.<sup>[10]</sup> Pain can be intermittent, with latent periods and progressive swelling may be an only symptom.<sup>[11]</sup> The lesion is usually asymptomatic with no accompanying general and local signs of inflammation, although the clinical picture may vary widely. Garre's osteomyelitis presents a characteristic radiographic feature, especially in occlusal radiograph showing new periosteal proliferation located in successive layers to the condensed cortical bone. This is the typical radiographic feature of Garre's osteomyelitis and is well known as "onion skin" appearance.<sup>[12]</sup> Histologically, Garre's osteomyelitis exhibits a benign fibro-osseous pattern with peripheral osteoblastic activity resulting from reactive new bone deposition in a fibrous stroma. The trabeculae are parallel to each other and oriented perpendicularly to the bone cortex, rarely displaying an irregular pattern or retiform meshwork. Osteoblasts and osteoclasts are prominent centrally and lymphocytes and plasma cells are present in the marrow spaces.<sup>[11,13]</sup>

In other cases where chronic abscess, trauma or prolonged deep dental caries is not correlated to the disease bone biopsies are recommended for rule out Infantile Cortical Hyperostosis or Caffey's disease, Ewing's sarcoma, Osteogenic sarcoma, Cherubism, Histiocytosis X. Most of these pathologies usually present within the same age group as Garre's syndrome, which is a hard bony swelling on the posterior external aspect of the mandible. They have an especially particular clinical and radiological character that allows differentiation in diagnosis.<sup>[14,15]</sup>

The main goal of treatment for Garre's osteomyelitis is to control the etiology, often achieved through the extraction of the etiologic tooth. While the use of endodontic treatment has been debatable in the management of Garre's osteomyelitis, Batchelder and colleagues described a case in which endodontic therapy was effective in this condition.<sup>[16,17]</sup> There are also a brief review of Garre's osteomyelitis in table 1.<sup>[1,3,5,10,18,22]</sup>

**Table 1: Brief review of Garre's Osteomyelitis.**<sup>[1,3,5,10,18,22]</sup>

S. No.	Author's name and year	Place	Age and gender	Clinical presentation	Clinical Diagnosis / Final Diagnosis	Treatment and follow-up
1.	Stephane Schwartz <i>et al.</i> (1981) <sup>[10]</sup>	Canada	10 Years / F	Non tender hard mass with pain on lower right side of mandible, caries w.r.t. 46 involving pulp chamber.	Garre's osteomyelitis /	Extraction of the carious teeth / 5 years of follow-up shows no recurrence.
2.	Evaristo Belli <i>et al.</i> (2002) <sup>[18]</sup>	Italy	17 Years / F	Painful swelling on right posterior aspect of mandible, history of extraction w.r.t 48 (impaction), deep dental caries	Osteomyelitis of Garre / chronic osteomyelitis in sclerotic phase	Oral antibiotic therapy, oxygen therapy / NA

				w.r.t. 47.		
3.	Suma R <i>et al.</i> (2007) <sup>[5]</sup>	India	10 Years / M	Pain in lower left back tooth region, extensive carious lesion w.r.t. 36 & 46, chronic periapical abscess w.r.t. 36 & 46.	Garre's osteomyelitis / NA	Root canal Treatment of carious teeth / 3 months of follow-up shows no recurrence.
4.	Kaushal Mahendra Shah <i>et al.</i> (2013) <sup>[19]</sup>	India	5 Years / NA	Pain on right lower posterior tooth region, grossly carious w.r.t. 85.	Chronic alveolar abscess / Osteomyelitis with proliferative periostitis (Garre's osteomyelitis)	Extraction of deciduous 2nd molar / NA
5.	Parvind Gumber <i>et al.</i> (2016) <sup>[20]</sup>	India	7 Years / F	Hard mass on left mandibular posterior region, buccal enlargement of the bone, periodontal pocket w.r.t. 36.	Garre's osteomyelitis / Garre's osteomyelitis	Flap surgery / 3 months of follow-up shows no sign of recurrence.
6.	Hayati Murat Akgul <i>et al.</i> (2018) <sup>[21]</sup>	Turkey	8 Years / F	Facial asymmetry, severe swelling right Mandibular molar region, deep dental caries and periapical lesion w.r.t. 46.	Garre's osteomyelitis / NA	Endodontic treatment / 4 months of follow-up shows no sign of recurrence.
			16 Years / F	Severe swelling with facial asymmetry in left Mandibular premolar region, deep dental caries w.r.t. 35, inflammation in the apical region of this tooth.	Garre's osteomyelitis / NA	Extraction of the tooth / NA
7.	Himanshu Aeran <i>et al.</i> (2018) <sup>[2]</sup>	India	10 Years / M	Swelling on lower right side of mandible, history of dental caries (treated), apical periodontitis w.r.t. 46.	Proliferative periostitis / NA	Root canal treatment was done / 3 months follow-up shows no sign recurrence
8.	Ali Mohammed Makrami <i>et al.</i> (2021) <sup>[11]</sup>	Saudi Arabia	13 Year / M	Painless swelling on left posterior side of mandible, badly decayed w.r.t. 36 with intraoral radiolucency w.r.t. 36.	Garre's osteomyelitis / NA	Extraction of the teeth with curettage / 2 months of follow-up shows no sign of recurrence.
			16 Years / M	Painless swelling on lower right posterior Mandibular region, badly decayed w.r.t. 46, periapical radiolucency w.r.t. 46.	Garre's osteomyelitis / Garre's osteomyelitis	Extraction of the teeth with curettage / 2 months of follow-up shows no sign of recurrence.
9.	Rohini K <i>et al.</i> (2022) <sup>[3]</sup>	India	10 Years / F	Pain and discomfort on lower right Mandibular region, root stump w.r.t. 46, grossly decay w.r.t. 36.	Garre's osteomyelitis / NA	Extraction w.r.t. 36, 46. / 6 months of follow-up shows no sign of recurrence.
10.	S. Shanmuga Jayanthan <i>et al.</i> (2022) <sup>[22]</sup>	India	20 Years / F	Facial symmetry with reduced mouth opening on right side of mandible, carious w.r.t. 47, swollen and edematous right masseter and pterygoid muscles, periosteal thickening at the condilar process.	Garré's sclerosing osteomyelitis / NA	Incision and drainage was done / NA



Figure 1: Extra oral clinical presentation shows facial asymmetry with swelling on right lower Mandibular region.



Figure 2: Intra oral view of Mandibular right posterior region with normal alveolar mucosa.



Figure 3: OPG shows periapical mixed radiolucency w.r.t 45.

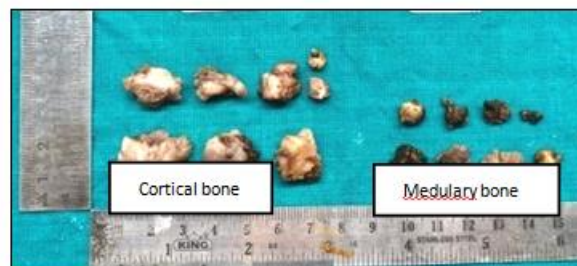


Figure 4: Occlusal radiograph shows periosteal bone formation (onion skin appearance) at Mandibular molar region.

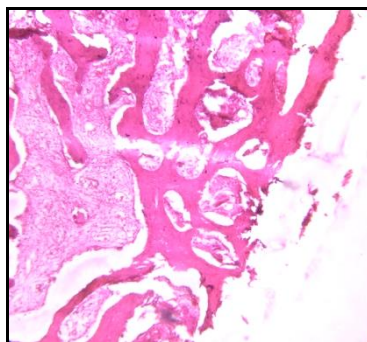




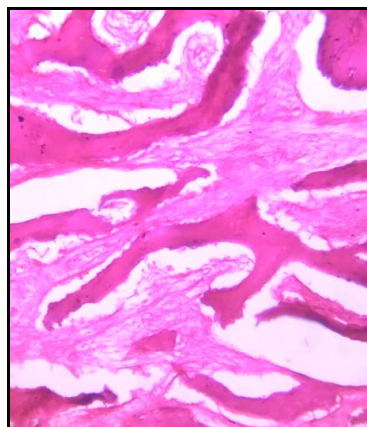
**Figure 5: Surgery was performed under general anesthesia.**



**Figure 6: Multiple hard tissue specimens were send for histopathological examination.**



**Figure 7: H & E stained decalcified hard tissue sections viewed under 4x magnification.**



**Figure 8: H & E stained decalcified hard tissue sections viewed under 10x magnification.**

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