

# Garre's Osteomyelitis from Long Standing Periapical Infection of 36 in a 10yr old Female- A Case Report.

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## ABSTRACT

**Introduction:** Garre's osteomyelitis is mainly caused due to long standing periapical infection, recent infection of soft tissue, unhealed infected extraction areas etc. It mainly affects the mandible than the maxilla and is seen rarely in children.

**Case presentation:** 10 year old patient with a long standing untreated dental infection of lower left molar is treated with root canal treatment. Inconsistent visit of the patient lead to the progression of the pathology to Garre's osteomyelitis.

**Management and prognosis:** Extraction of the offending tooth followed by targeted antibiotic therapy after a culture and sensitivity test. Lesion completely healed at the end of 2 months and skin changes started to appear.

**Conclusion:** Management of osteomyelitis in children are crucial as they are in the growing phase. Timely management is necessary to reduce the deleterious effects caused by it in the bone.

**Key words:** Garre's osteomyelitis, Periapical radiolucency, Periapical infection.

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## INTRODUCTION

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. There is no sex predilection. Ossifying periostitis, proliferative periostitis and non-suppurative ossifying periostitis are the other terms used to describe Garre's osteomyelitis.<sup>1</sup>

Garre's osteomyelitis is named after Carl Garre, who first described it in 1893. He observed a huge focal thickening of the periosteum of long bones, with peripheral reactive bone as a result of irritation or attenuated infection. The mandible is the most usually affected part in the oral and maxillo-facial region.<sup>2</sup> First case of Garre's osteomyelitis of mandible was reported by Pell et al in 1955.<sup>3</sup> Garre's osteomyelitis in the oral and maxillofacial region can be caused by dental caries, periodontal defects, moderate periodontitis, a recent tooth extraction, or an infection of the underlying soft tissue that later would spread to the deeper periosteum. Garre's osteomyelitis is likely to be caused by a low-level irritation and infection that stimulates the active periosteum to lay down new bone.<sup>2</sup>

## CASE REPORT

A 10-year-old female patient presented to the Department of Pediatric Dentistry with the chief complaint of tooth remnants of a lower right molar tooth. The patient had a history of pain or discomfort long back. It was the patient's first dental visit, and there was no relevant past medical history. On intraoral examination, all the primary teeth except 53 were replaced by

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permanent teeth. All the permanent molars except wisdom teeth had erupted. Root stumps of 46, grossly decayed 36 and pit and fissure caries in relation to 17, 27, 37, and 47 were identified. IOPA radiograph, showed coronal radiolucency including enamel, dentin and pulp and periapical radiolucency in relation to 36 with deep dentinal caries and 46 root stumps.

## Management And Prognosis

The treatment approach was to perform extraction of 46 due to poor prognosis, root canal treatment in relation to 36 and provide preventive resin restoration in relation to 17, 27, 37, and 47. It was decided to do the endodontic management of 36 and a restoration first, since 46 (RS) was asymptomatic.

Access opening was done with large round bur, working

length was determined, biomechanical preparation was done and canals were enlarged upto size 40 K-file in the second appointment. Triple antibiotic paste dressing was given, and the patient was instructed to revisit in two weeks. Patient missed the appointment and reported back after a month with an extraoral swelling in relation to 36. Extraoral swelling involved the lower border of the mandible. Restoration was removed, canals were irrigated, open dressing was given and medication Cap.Mox 500mg TID, Tab. Metrogyl 400mg BD, Tab. Meftal forte TID were prescribed for five days.

Patient was recalled after one week. Extraoral swelling had not subsided at the end of first week. Radiovisiography (RVG) showed increase in size of the periapical lesion (Fig.1). Lesion sterilization was done using triple antibiotic paste. Patient was asked to report back after 1 week.

Patient missed the appointment, and reported after a month with pain and extraoral swelling. RVG showed poor prognosis with periapical radiolucency involving all roots and widening of PDL upto furcation. 36 and 46 were extracted (RS) followed by placement of a removable functional space maintainer until a permanent functional prosthesis could be provided. Cap.Mox 500mg TID, Tab. Metrogyl 400mg BD, Tab. Meftal forte TID were prescribed for five days. Patient was asked to report back after a week.

Patient missed the appointment again and reported after a month with a hard swelling in buccal cortex of extracted 36. Patient was referred to the department of oral medicine and radiology and to the department of oral and maxillofacial surgery for further evaluation. A provisional diagnosis of inflammatory cyst was made.

Curettage was done under LA, no cystic lining was found, sutures were placed. Patient was advised to take medication Cap. Mox 500mg TID, Tab. Metrogyl 400mg BD, Tab. Meftal forte TID for five days. After a week sutures were removed. Patient was recalled after a week for review.

Patient missed the appointment once more and reported back after three weeks. On examination, the swelling had not subsided (Fig. 2). Patient was advised to take a CBCT. A tunnel-like defect was identified in the cortical bone in the vestibular surface of the inflamed bone, starting from the apical region of 36. Bone deposition at the radiolucent area in the center was observed at the lower edge of the mandible as well as the vestibular surface in this region (Fig 3). Correlating these findings, a differential diagnosis of Garre's osteomyelitis was made that may have developed due to the long standing periapical infection of 36 though no cardinal signs of inflammation were present.

A swab was taken from the socket and culture and sensitivity was done. Patient was started on Tab. Clindamycin 150mg TID for 7 days, Tab. Metrogyl 200mg TID for 5 days and was asked to use chlorhexidine mouth wash after every meal. The culture and sensitivity report showed the presence of Streptococcus viridans, Pseudomonas putida, Branhamella catarrhalis and Acinetobacter species and were sensitive to clindamycin and metronidazole. So the patient was asked to continue and complete the same medication and report back every 2 weeks for review. A surgical correction was advised if the condition worsened or persisted.

At the end of 2 weeks, swelling which was present in the region of 36 reduced to the size of a nodule and darkening of the skin above the affected area was seen. At the end of the first month, the swelling had almost subsided and there was satisfactory intraoral healing (Fig. 4). At the end of four months swelling had completely subsided and intraoral healing was complete, but some skin discoloration persisted. At the end of six months, the skin had also become normal in color.

Not much space loss had happened at the extraction spaces of 36 and 46. So a removable functional space maintainer was given to maintain the extracted spaces of 36 and 46 till a fixed replacement can be given.

## DISCUSSION

In the dental literature, Garre's osteomyelitis is a well-described pathologic condition. Because of the similar radiographic characteristics of 'onion skin,' osteogenic sarcoma, infantile



**Fig. 1:** Radiovisiography shows periapical lesion in relation to 36.



**Fig. 2:** Extraoral swelling on the left lower face.



**Fig. 3:** Cone Beam Computed Tomography showing tunnel-like defect. The cortical bone in the vestibular surface of the inflamed bone, starting from the apical region of 36. Bone deposition at the radiolucent area in the center was observed at the lower edge of the mandible as well as the vestibular surface in this region.

**Fig. 4:** Satisfactory intraoral healing during 1 month follow up.

cortical hyperostosis, fibrous dysplasia, and Ewing's sarcoma could all be regarded as differential diagnosis.<sup>4</sup> Endodontic therapy, tooth extraction, and bone recontouring are all alternatives for treatment, ranging from conservative to surgical procedures. In the past, antibiotics and removal of the offending tooth followed by curettage of its socket were commonly used to treat Garre's osteomyelitis. Endodontic therapy, on the other hand, has been reported as a successful method of treating odontogenic causes of Garre's osteomyelitis.<sup>5-7</sup>

Endodontic therapy was considered initially in our situation due to the patient's age and the importance of the first molar, however the tooth was unrestorable. The occurrence of Garre's osteomyelitis is rare in young children because of the presence of hyperactive periosteum which is capable of producing aggressive osteoblastic activity. Young periodontium is also capable of maintaining a balance between the host immunity and the virulent organism.<sup>8,9,10</sup> The patient in this report falls in this age range. This is a stage in which the symptoms of osteomyelitis can have an impact on facial development.

Radiographs are valuable in both diagnosing and monitoring this disease.<sup>9,10</sup> A huge periapical lesion was healed in this case, and the follow-up radiograph reveals the healed lesion as well. In the present case, the radiographic findings were characteristic of Garre's osteomyelitis, with successive layers of bone deposition resembling the layers of an onion.<sup>3</sup> Such a pattern can be seen on both occlusal radiographs<sup>11</sup> and tomograms.<sup>12</sup>

The mandibular position and facial asymmetry caused by an increase in bone volume in the present case are often documented features in the literature. Garre's osteomyelitis typically manifests as swelling and stiffening in the afflicted area, with trismus and the absence of suppuration.<sup>12</sup> The disease is normally asymptomatic, but discomfort, fever, and lymphadenopathy in the region may be observed in certain cases, all of which are likely associated to the inflammatory process.<sup>13</sup>

The molar region is the most usually afflicted, which corresponds to the current instance, in which the left permanent mandibular first molar (tooth 36) was the forerunner of Garre's osteomyelitis.<sup>[14]</sup> Although uncommon, the differential diagnosis of osteomyelitis' radiological image includes tumours, which can also mimic the CBCT and scintigraphic findings, other bone destructive diseases, fibrous dysplasia, metastases (particularly from the prostate) and Paget's disease. The distinction from osteosarcoma must be kept in mind, especially in patients with considerable periosteal reaction. However, if treated early with judicious use of antibiotics and surgical intervention, the disease is totally curable and can result in the reversal of all damaging bone changes, underscoring the fact that a well-executed, timely treatment plan does have a high healing rate.

## CONCLUSION

It is imperative that the management of periapical infections be done on time without any lag. Otherwise such severe consequences can result. Garre's osteomyelitis though rare, is a possible consequence when patient misses the appointment multiple times. In such cases it is better to extract the tooth rather than trying to save it, though in a young patient, extraction should be the last option.

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