

## Type-A Periostitis Ossificans: A Rare Case of Disrupted Radiological Onion Skin Appearance

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**Abstract:** Periostitis ossificans of the mandible is an unusual pathological condition. It is usually observed in children where a mandibular first molar commonly presented with extended caries. We describe a case where a boy 12 years old suffered from type-A periostitis ossificans with the typical radiological signs such as “onion skin” appearance. The management plan is discussed with great emphasis on the decision making.

**Key words:** Periostitis ossificans, radiology, panoramic tomography, disrupted, pathological

### INTRODUCTION

Periostitis Ossificans or Garre’s osteomyelitis or Chronic Sclerosing Osteomyelitis is a chronic non suppurative bone marrow infection that may be associated with new bone formation over the cortical margin. Type-A periostitis ossificans is characterized by onion skin appearance of the newly formed bone caused by decayed tooth (Kannan *et al.*, 2006). Extraction of the involved tooth with or without prescribed medications has been suggested for the management of this condition (Tong *et al.*, 2006).

We present a case of chronic type-A periostitis ossificans in a child of 12 years old with a great emphasis on the discussion of the radiological findings.

### CASE REPORT

A child, 12 years old presented to the clinic with buccal swelling of the left mandible (Fig. 1). According to the history, at the time of clinical examination, the symptoms presented firstly three weeks ago. The patient was otherwise fit and well. The lower left first molar had an extended decay causing irreversible damage of the pulp contents. This feature measured using various tests of tooth vitality such as heated gutta-percha, electric pulp tester and ethylene oxide contact showing no feeling response. The patient was afebrile with mild pain on the buccal aspect of the infected tooth.

The panoramic tomography revealed the presence of carious lower left first molar (Fig. 2). On the margins of the mandibular body an onion skin appearance of progressive



Fig. 1: Buccal expansion of the associated mandibular area without observed suppuration



Fig. 2: Panoramic tomography showing the carious lower left first permanent molar and the associated type-A periostitis ossificans on the cortical margin

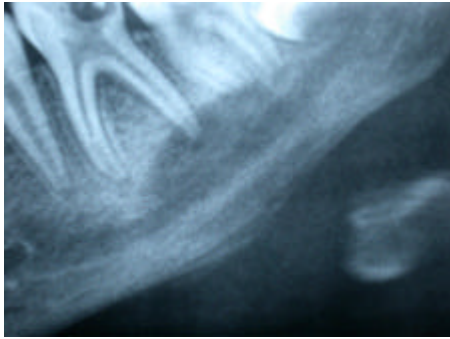


Fig. 3: Digital computer magnification of the Fig. 2 focused on the onion skin appearance of the mandible characteristic for type-A periostitis ossificans

osseof ormation was found with central disruption or incomplete homogeneity (Fig. 3). Furthermore, the involved area presented with some osteoporotic signs on panoramic tomography.

Extraction of the decayed tooth in conjunction with systemic antibiotic load resolved the symptoms. Two months after the initial assessment the child was painless without signs of inflammation. The reason why this tooth extracted and not endodontically treated is discussed.

## DISCUSSION

Periostitis ossificans is a chronic non suppurative bone marrow inflammation. The pathological mechanism of periostitis ossificans is not currently well understood. The most valid mechanism for the type-A may be the existence of extended caries on the lower first molar, which would create in a chronic base a low grade, spread infection apically (Kannan *et al.*, 2006). In general, low virulence microorganisms in a sound host defence mechanism may progress slowly without evident sharp symptoms. Therefore, periostitis ossificans as a chronic inflammatory status may be presented without suppuration, with new bone proliferation inferiorly to periosteum. The trigger signals inducing new bone formation very likely derived from periosteal layers.

Osteomyelitis according to the definition is an inflammatory condition of the bone marrow. Therefore, we considered type-A periostitis ossificans in the presence of decayed tooth as a chronic contiguous pattern of low grade infection causing buccal bone expansion and infra-periosteal bone deposition which appeared radiologically like onion skin (Kawai *et al.*, 1998). This appearance may be continuous or disrupted. In our case, we describe the latter pattern which may be probably caused due to

chronic microbial invasion in the environment of a sound host defense mechanism.

A lot of debate existed for the treatment plan. We suggest from the findings of this case report that extraction would be an excellent choice if combined with systemic antibiotics. The systemic antibiotics may be given primarily prophylactically and therapeutically in secondary infection or microbial flare ups with suppuration. We prescribed broad spectrum antibiotics to cover staphylococcus aureus species. If tingling sensation or paraesthesia of the ipsilateral side of the lower lip presented this may indicate the microbial invasion of the lower alveolar nerve which requires a course of antimicrobials. The other option of endodontic treatment according to the evidence may be found treatable in resolving the symptoms of type-A periostitis ossificans but a computer tomography is required for better evaluation which means radiation exposure (Ebihara *et al.*, 2005). Considering that the cause of periostitis ossificans on that case is the chronic irritation of the subperiosteal tissues from various microorganisms proliferated in necrotic pulp, the extraction is probably the option with the higher sensitivity if compared to endodontic treatment. In our case, we discussed with the parents of the patient and the decision in cooperation with the patient was to extract the problematic molar.

It is worth noting that radiological signs in acute osteomyelitis are not observed for the first week or two of the disease course (Sutton, 1998). This case described a subchronic type of periostitis ossificans if we consider that the existence of three weeks of symptoms is time compatible with this form. Bone marrow infection should be preferably detected in early or acute stages to prevent excessive collapse of the normal biological and biochemical bone function (Kafas *et al.*, 2007).

## CONCLUSION

Concluding, it is ethical for the patient to be informed about the treatment options and the sensitivity or specificity of each technique in the field of evidence based dentistry. The decision should be based on the full cooperation of the dentist and patient.

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