



Case Report

A case of early onset periodontitis with concurrent multiple idiopathic external apical root resorption

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Abstract

Multiple Idiopathic External Apical Root Resorption (MIERR) is a rare, aggressive dental condition of unknown origin that occurs spontaneously in otherwise healthy individuals without any identifiable systemic or local causes. It is characterized by progressive resorption of the apical portions of multiple tooth roots, often detected incidentally on radiographs. Clinically, affected teeth usually remain asymptomatic and vital until advanced stages, when significant root loss may compromise tooth stability. The etiology remains unclear, with proposed mechanisms involving genetic predisposition, immune dysregulation, or unrecognized local factors. Diagnosis is primarily radiographic, requiring careful exclusion of known causes of root resorption such as trauma, orthodontic treatment, or periapical pathology. Management focuses on regular monitoring, conservative intervention, and maintaining oral function for as long as possible, though severe cases may necessitate tooth extraction. Further research is needed to elucidate the pathogenesis and develop effective preventive or therapeutic strategies for MIERR.

Keywords: Multiple idiopathic root resorption, Apical resorption, Cervical resorption, Tooth mobility, Radiographic diagnosis, Vital teeth

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1. Introduction

There is a dearth of research on numerous idiopathic external root resorption; the first report was released in 1930¹ By definition, "the term idiopathic is applied if an etiological factor for root resorption cannot be identified." There have been documented cases with one or more teeth, and they have been divided into cervical and apical types (Lydiatt et al., 1989; Yusof & Ghazali, 1989)^{1,2} The apical region of several teeth in young people is affected in the majority of reported instances. The research has only discovered a certain number of numerous idiopathic apical root resorption.^{1,4,5}

2. Case report

A 29-year-old female presented to MNR Dental College & Hospital, Department of Oral Medicine and Radiology, with a chief complaint of for the past six months, I have been looking for a replacement for my loose teeth in the lower front and rear areas. In addition to sporadic pain and mild

discomfort, the patient reported a gradual start of movement that recently deteriorated, making it difficult to speak and chew.

2.1. On clinical examination

Mobility is checked accordingly with one finger and metal probing instrument. The degree and ease of tooth movement are used to grade it. The mobility is evaluated based on Glickman's classification, clinical examination revealed Grade III mobility in teeth 21, 31, 41, 42, 36, and 37, and Grade II mobility in teeth 11, 12, 21, 22, 26, 16, and 17. Root stumps were noted in relation to tooth 46, while teeth 47 and 24 were missing. Based on the clinical findings and case history, a tentative diagnosis of Aggressive Periodontitis was made. It is evident from the history that the teeth moved quickly. One of the hallmarks of aggressive or juvenile periodontitis is the involvement of first molars and incisors.(Figure 1, Figure 2)

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Figure 1: Mandibular arch



Figure 2: Maxillary arch

2.2. Differential diagnosis

Orthodontic therapy-related resorption was ruled out, as the patient had not undergone any orthodontic treatment. Clinical examination revealed no signs of periodontal inflammation, including the absence of periodontal pockets, gingival recession, or furcation involvement. Endocrine disorders such as hyperparathyroidism, hypophosphatemia, Gaucher's disease, and Paget's disease of bone were also considered; however, biomedical screening showed no abnormalities, and hematological findings were within normal limits. Additionally, syndromic conditions such as Goltz syndrome, Papillon-Lefèvre syndrome, anachoresis, and Turner's syndrome were evaluated and excluded. Since no detailed family history was available, there was no evidence to suggest any familial or genetic inheritance of the condition.



Figure 3: Panoramic radiograph

3. Radiographic Examination

In (**Figure 3**) Radiographic examination revealed a normal trabecular bone pattern and normal height of the alveolar process. However, extensive root resorption was observed across multiple teeth. The maxillary and mandibular anterior teeth exhibited approximately two-thirds root resorption, while the premolars showed one-third root resorption. Both maxillary and mandibular molars demonstrated complete root resorption, with the maxillary first molars being significantly affected. The resorption pattern appeared bilaterally symmetrical, with a greater severity noted in the posterior teeth compared to the anterior regions. With the exception of mandibular second molars, all teeth with resorbed roots are crucial, according to electric pulp testing. Because endocrine problems such as hypophosphatemia, hyperparathyroidism, and hypothyroidism may contribute to multiple idiopathic resorption, the patient was recommended to have hematological and biochemical screening. The patient had a typical medical history and family. Biomedical and hematological test results were within normal limits. Multiple Idiopathic External Apical Root Resorption is the ultimate diagnosis following evaluation of the findings from the biomedical, hematological, and radiographic screenings.

4. Discussion

Root resorption of the permanent dentition is a rare condition that can damage one or more teeth. The word "idiopathic" might be used when there is no logical explanation for the resorption. Only a few case reports are found when searching the literature for multiple idiopathic root resorption.^{4,5}

4.1. Types of idiopathic root resorption

1. **Apical Root Resorption:** This process causes the root to gradually shorten and round out as it begins apically and moves coronally.
2. **Cervical Root Resorption:** This process begins in the cervical regions and moves on to the pulp.³

The following are typical signs of multiple idiopathic root resorption:⁶

Clinically, the teeth and periodontal tissues appeared normal, with no signs of periapical or periodontal inflammation and with normal alveolar bone levels. Root resorption was observed in both endodontically treated and vital teeth. There were no identifiable regional causative factors contributing to the condition. Multiple Idiopathic Root Resorption (MIRR) typically affects several teeth without any clear underlying cause. Patients usually remain asymptomatic until the later stages of the disease, when increased tooth mobility may become evident. The resorption pattern is often bilaterally symmetrical and is most frequently detected incidentally during routine radiographic examinations.⁷

Young adults, mostly men, are commonly affected, with maxillary teeth being more commonly affected. Younger females are also more likely to experience multiple idiopathic root resorption.

Any excised soft tissue or bone examined histologically shows persistent, nonspecific inflammation, and the findings of other laboratory tests show no notable anomalies.⁸

4.2. Multiple studies around etiology of root resorption

Stafne and Slocumb⁹ No clear correlations with systemic disease were found in a study of root resorption cases. Gunraj¹⁰ The resorption of teeth and bone is significantly influenced by the activation of interleukin (IL)-1B. Al-Qawasmi et al.,¹¹ indicated that root resorption etiology is influenced by IL-1 gene variants.

Urban et al.,¹² shown that the development of pathological root resorption is substantially more likely to occur in individuals with IL-1 gene polymorphism. Linares et al.,¹³ further proposed that a predisposition to external apical root resorption is determined by changes in both the IL-1 receptor antagonist gene (rs419598) and the IL-1B gene.

5. Treatment

The degree and severity of root resorption, along with the symptoms that are present, are important factors in the treatment of multiple idiopathic root resorption because there are no known absolute etiological determinants. Since there isn't an established preventive or treatment strategy at this time, monitoring and periodontal maintenance are indicated.

The standard course of treatment involves extracting the tooth with a poor prognosis and employing radiography, periodontal measurements, and sensibility tests to assess the remaining dentition throughout time. Osseo-integrated implants, complete dentures, or fixed partial dentures can all be used to repair edentulous saddles.¹⁵

A well-established more intrusive method is endodontic treatment of the afflicted teeth, in which the preferred medication is a calcium hydroxide dressing. It might be proposed that ledermix is essential for teeth even after root resorption.¹⁴

For repeated idiopathic root resorption, endodontic therapy is not recommended in the absence of pulpal complaints.

6. Conclusion

Based on the results of the biochemical screening, the hematological examinations, and the lack of periodontal or periapical infection, this case was classified as multiple idiopathic root resorption. A panoramic image coincidentally showed numerous idiopathic resorption while the patient was asymptomatic.

It is envisaged that the identification of the cellular and molecular mechanism of root resorption may result in new treatment approaches because the etiology of numerous idiopathic root resorption is unknown.

7. Conflict of Interest

None

8. Source of Funding

None.

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