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Bilateral Idiopathic Root Resorption: An Unusual Case Report

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WORDS	AB
resorntion	-

Root resorption, Apical root resorption, Idiopathic root resorption.

KEY

ABSTRACT:

External root resorption in permanent teeth can occur as a result of a multitude of local and systemic factors. Root resorption that is idiopathic or occurring without any identifiable underlying cause is an unusual phenomenon. The aim of this case report is to present a case of a patient with multiple idiopathic external apical root resorptions. This case is unusual in that extensive resorption is found bilaterally only in the distal roots of mandibular first molars. The pattern of severe resorption appears to be unique. No significant systemic, dental, or familial findings could be identified as a possible cause.

1. INTRODUCTION

External radicular resorption is a pathological process that generates the loss of cementum, dentin and bone, almost irreversibly, involving vital and pulpless teeth. It can occur as a result of a multitude of local and systemic factors. Belanger and Coke described the term idiopathic root resorption as being appropriate in cases where an etiologic factor cannot be found. ¹ Idiopathic resorption was first reported in 1930 by Mueller and Rony.² Two types of idiopathic root resorption have been observed; namely, apical and cervical. Cervical root resorption starts in the cervical area of the teeth and progresses toward the pulp. In the apical type the resorption starts apically and progresses coronally causing a gradual shortening and rounding of the remaining root.³ Patients with idiopathic root resorption are commonly asymptomatic clinically with an occasional complaint of tooth mobility, thus the condition is usually found in routine radiographic examination.⁴ This article describes a case of idiopathic apical root resorption in which no significant systemic, local or familial findings could be identified as a plausible cause for the root resorption.

CASE REPORT

The 36-year-old healthy and normally developed male was referred to Dept of Prosthodontics for replacement of missing mandibular teeth (31,32,35,41,42,45). Multiple apical root resorption was found accidentally on the panoramic view in teeth 36 & 46 (Fig 1) and diagnosis was confirmed taking periapical radiographs (Fig 2, 3). The pattern of resorption was almost blunt. The distal root of both 36 & 46 were resorbed till the cervical third and replaced with normal-appearing trabeculated bone. The teeth were not ankylosed. Regarding the periodontal status, no pockets or bone loss was detected in any of the teeth. There was no history of trauma, hospitalization or medical endocrine and systemic disease.

Haematological investigations including complete blood count as well as calcium, phosphorus and alkaline phosphatase were within the normal range, so endocrine diseases such as Hyperparathyroidism, hypoparathyroidism, hypophosphatemia, hyperphosphatemia and Paget's disease was ruled out. Since abdominal Ultrasonography was unfruitful, possibility of Gaucher's disease was eliminated. In Papillon-Lefevre syndrome, the history of premature tooth loss associated with hyperkeratosis is remarkable, of which none of them were recognized in the patient.

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Furthermore, Turner's syndrome is restricted exclusive to females. The patient recalled no history of early tooth loss in parents, grandparents, or siblings. Clinical and (Dental) examination revealed normal soft tissues without any supra or subgingival calculi or abnormal pocketing.

Oral hygiene was relatively acceptable. There were no carious lesions or restorations. There was no history of orthodontic therapy and occlusion demonstrated class I

molar and canine relationship with normal overjet and overbite. No occlusal interferences or detectable tooth mobility was found. Involved teeth responded normally to both electrical and heat pulp tester. Percussion and palpation were unremarkable. Based on history, Clinical examination and radiographic findings, a diagnosis of multiple idiopathic apical root resorption was made. The patient was asked to follow proper oral hygiene instructions and periodic follow up was suggested.



2. DISCUSSION

Pathological root resorption is related to several local and systemic factors. Minimal apical external root resorption may be present in all permanent teeth. ⁵

Aetiology: -

- Local Causes: Orthodontic therapy, trauma, periapical or periodontal inflammation, tumors, cysts, occlusal stress, impacted and supernumerary teeth, transplantation and reimplantation.³
- Systemic causes: Hyperparathyroidism, hypoparathyroidism, hypophosphatemia, hyperphosphatemia, Gaucher's disease, Paget's disease of the bone, Goltz syndrome, Papillon-Lefevre syndrome, anachoresis, Turner syndrome as well as dietary habits have been reported as related endocrine disturbances and systemic causes.⁶
- Probable genetic component responsible for the initiation of the resorptive process.⁷

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• Proinflammatory cytokines (Interleukin 1β and tumor necrosis factor alpha (TNF α).

Pathophysiology: -

Radicular resorption appears because of cementoclastic, dentinoclastic or/and osteoclastic activity. The damage of cementum and the infection of the endodontic system may stimulate the osteoclastic activity in periapical tissue and the external root resorption can be initiated. The process of resorption is also associated with a damage of the periodontal ligament as a result of injury and necrosis. Macrophages are the first cells that are detected, followed by multinucleated cells, odontoclasts, which affect cementum and dentin. The denuded mineral tissue is colonized by multinucleated cells and resorption process is initiated.

The pathogenesis of localised idiopathic apical root resorption (LIAR) is undetermined. Possible mechanisms to investigate include occlusal trauma, genetic factors, and inflammatory cytokines. Interleukin-1 β polymorphism and RANK/RANKL/OPG (nuclear factor- κ B receptor and ligand and osteoproterin) pathways have been recently implicated as potential molecular models of root resorption.⁸⁻¹¹

Periapical replacement resorption (PARR) is the characteristic radiologic feature of localized idiopathic apical root resorption (LIAR). ¹² The apical portion of the root is resorbed and replaced by normal-appearing trabeculated bone. The apical root canal space is patent

and there is no ankylosis. No treatment is recommended due to the self-limiting nature of LIAR. The localized, self-limiting features of this condition, together with the rarity of the disorder, may contribute to the lack of reports in the dental literature.

LIAR presentation showed a predilection for male patients in the age group 15 to 48 years. ^{3,6,13,14} It typically involves one to three posterior teeth primarily distal roots of mandibular first permanent molars or mandibular premolars, sometimes bilaterally in a symmetric pattern.^{4,12,15} In most of the cases reported, the maxillary teeth were more involved than the mandibular teeth ie maxillary premolars & the mandibular incisors and molars exhibit the least resorption. ¹

With no absolute etiological factor identified we considered this case as multiple idiopathic apical root resorption. All teeth had vital pulps and there was no periodontal or periapical inflammation. Resorption was found incidentally in the panoramic view and the patient was totally asymptomatic. No local etiologic factor was detected and clinical appearance of the teeth and periodontium were normal.

Regarding the number of affected teeth in literature review which were about eighteen on average, in this report only two teeth were involved.

A differential diagnosis would be limited for this entity due to the benign nature and radiologic features of this condition. Possible diagnoses are listed in Table 1

Table: 1 Differential Diagnosis of LIAR Orthodontic related PARR Trauma related PARR Occlusal trauma-related apical resorption Idiopathic osteosclerosis Condensing osteitis Focal cemento-osseous dysplasia Metabolic & systemic disorders Cementoblastoma/Osteoblastoma

• Short-root anomaly

 Table 1:- Differential Diagnosis of Localised Idiopathic Root Resorption (LIAR)

3. CONCLUSION

LIAR is a rare clinicopathologic entity of unknown etiology. It occurs in wide range of individuals with males affected more as compared to females. The molars & premolars show a higher predilection as compared to other teeth. The characteristic radiologic feature is PARR without ankylosis. The disorder may be symptomatic or asymptomatic and is sometimes discovered on routine radiographs. Clinicians should refrain from treating this disorder once diagnosed due to its self-limiting nature.

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