

Case Report

## Multiple Idiopathic Apical Root Resorption: a Case Report

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### Abstract:

The aim of this case report was to present a case of multiple idiopathic apical root resorption which is a rare condition in a 17-year-old adult male. External root resorption of the permanent teeth is a multifactorial process. Well-recognized causes of apical root resorption in permanent teeth include orthodontic therapy, trauma, periapical or periodontal inflammation, tumors, cysts, occlusal stress, impacted teeth, systemic conditions, endocrine imbalances and dietary habits. When none of these causes are present, it is termed idiopathic root resorption which may be either cervical or apical. Multiple idiopathic apical root resorption is a rare condition which is usually detected as an incidental radiographic finding. However, it may cause pain and mobility in severe cases.

**Key Words:** Multiple Apical Root Resorption, Idiopathic, Dental Radiography

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### INTRODUCTION

Idiopathic external root resorption is a rarely reported condition which has been observed in single or multiple teeth. Pathological root resorption is related to several local and systemic factors. Orthodontic therapy, trauma, periapical or periodontal inflammation, tumors, cysts, occlusal stress, impacted and supernumerary teeth, transplantation and reimplantation are among the local causes that could lead to pathological root resorption [1]. 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 [2].

By definition, if an etiological factor cannot be identified for root resorption, the term "idiopathic" is applied. It should be differentiated from the pathologic type and merits to be recognized by a clinician.

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 [1].



Fig 1: Panoramic radiograph of the patient with Multiple Idiopathic Apical Root Resorption

Patients with idiopathic root resorption are commonly asymptomatic clinically with an occasional complaint of tooth mobility, so the condition is usually found in routine radiographic examination [3]. According to literature review of Cholia et al, the idiopathic apical root resorptions were slightly more common in the upper jaw and molar region than in the lower jaw and single root teeth; however, these differences were not statistically significant. Resorption also were more frequent in males aged between 14-39 years[4].

Minimal apical external root resorption may be present in all permanent teeth [5] and has been attributed to a variety of causes. However, up to now only numerated cases of idiopathic apical root resorption have been reported in the literature. This article describes a case of idiopathic apical root resorption in which no cause could be identified or any reason determined for its occurrence. This article describes a case of idiopathic apical root resorption in which no cause could be identified or any reason determined for its occurrence.

### CASE REPORT

The 17-year-old healthy and normally developed Iranian male student was referred to

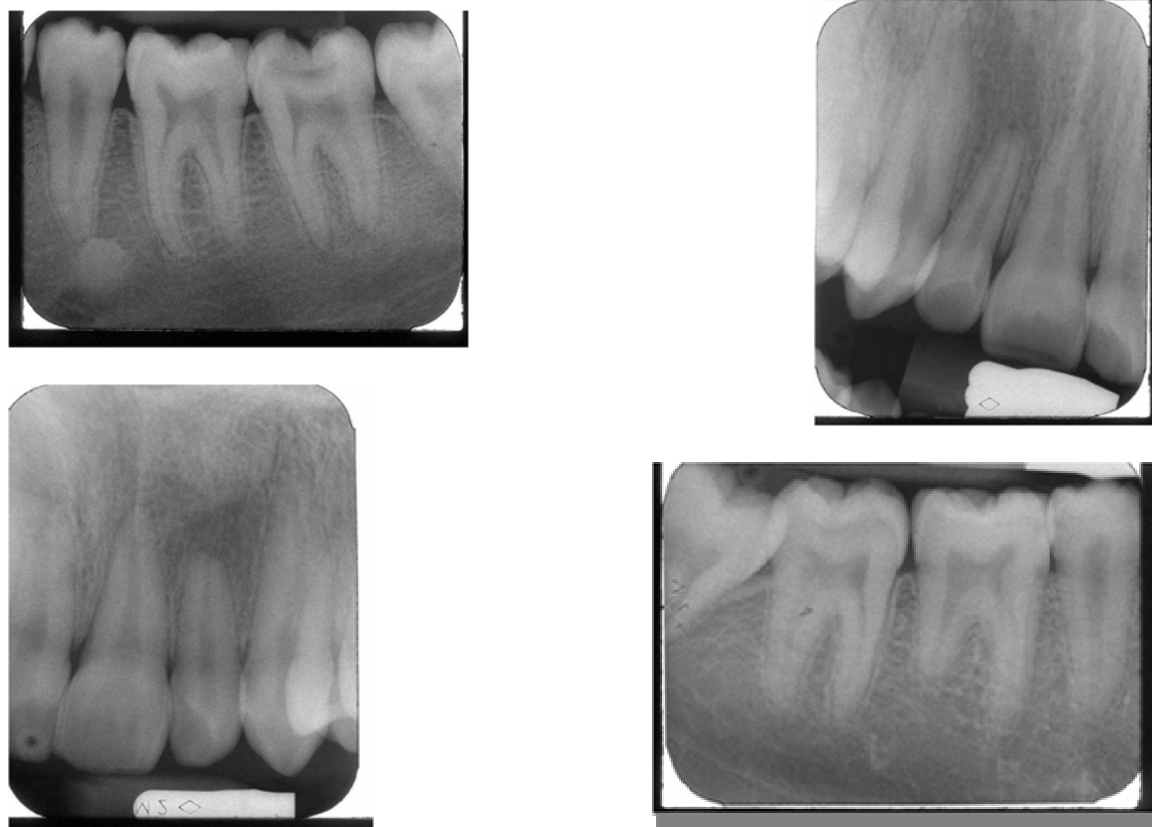
oral radiology clinic for routine radiographic examination.

Multiple apical root resorptions was found accidentally on the panoramic view in teeth 11, 12, 14, 22, 36, 37, 45 and 46 (Fig 1) and diagnosis was confirmed taking periapical radiographs (Fig 2). The pattern of resorption was almost blunt. Regarding the periodontal status, no bone loss was detected. 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. 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



**Fig 2:** Intraoral radiographs reveal root resorption.

subgingival calculi or abnormal pocketing. Oral hygiene was relatively acceptable.

There was no restoration and the only carious lesion was in tooth 37, the mandibular left second molar while clinical and radiographic examinations failed to reveal dental caries or unusual pulp chamber configurations in the involved teeth.

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.

## DISCUSSION

Few cases of multiple idiopathic apical root resorption (MIARR) exist in the literature. The first well documented report was in 1930 [6] and since then more cases were presented [1,2,3,]. 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 etiological 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, [2], in this report only eight teeth were involved. It may be related to the age of the patient compared with other reported cases. The average reported age was 23.2 years. [2]. The present case was among a few cases who were under 21 years old at the time of detection. The condition has been reported to have a predilection for young females [7] and 14 cases of MIARR have been were presented in females till now [8].

In contrast to the higher clinical incidence of pathological root resorption in females, some published papers reported a predilection of idiopathic root resorption for men [1,2].

In attempt to rule out the possible role of genetic as an etiologic factor, panoramic radiographs were prepared for the patient's parents and siblings which were inconclusive. Laboratory test results indicated no abnormality. Differentiated blood count, Calcium, phosphorus and alkaline phosphatase were within normal range. Due to the mild degree of resorption, limited number of involved teeth and lack of clinical discomfort, no treatment was advised.

Thus, there was no chance for histological and bacteriologic analysis in this case.

Schatzle et al reported a case of progressive generalized apical root resorption in a 17-year- old female. Two panoramic radiographs were taken to follow progression of root resorption. As they had to extract three involved teeth, the possibility of histologic examination was provided.

Histologic examination showed thickening of cementum layer and accelerated deposition of cellular cementum which normally covered the apical half of the root and furcation. So they diagnosed it as early generalized hypercementosis. [1].

However this theory should be postulated by

further investigation.

McMullin reported three cases of idiopathic generalized apical root resorption[9].

Reported cases had class II or III malocclusion and one had Down syndrome. As mentioned above, occlusal stress is one of the contributing factors responsible for resorption which can result in dystrophic changes in periodontal ligament, alveolar bone, cementum and pulp [10,11]. Moreover, significant reduction in root and crown length and stunted, short, small crowns and roots have been reported in association with Down syndrome

[12,13]. This criticizes applying the term "idiopathic" to this case.

Sogur reported an excessive production of bone surrounding absorbed roots as a compensatory response to osteoclastic activity which had not been seen in previous cases. Furthermore, the lamina dura of the affected teeth could not be followed.

They also reported a tapering pattern of resorption [14].

The MIARR does not seem to be mediated by pulp space.

Although the minimal apical root resorption was found in tooth 37, due to the presence of the carious lesion we did not consider it as an idiopathic process.

However, resorption seems to be more severe in asymptomatic teeth.

A number of treatment methods have been reported useful in animal studies to be useful to arrest this type of resorption; none have of which been shown effective clinically in the human. [15].

Treatment usually consists of observation and finally extraction of teeth in advance lesions.

## CONCLUSION

Multiple idiopathic apical root resorption involve a wide age range with unknown etiology. Further investigations are needed to disclose its molecular mechanism.

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