Primary Tooth Radicular Resorption as a Consequence of Self-Corrected Ectopic Eruption: 2 Unusual Cases

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ABSTRACT

Resorption of the distal root of primary second molars is a common consequence of ectopically erupting permanent first molars. Here, we report 2 unusual cases of primary molar root resorption caused by reversible (self-correcting) ectopic eruption of premolar and canine teeth. In both cases, severe pathological resorption of the mesial roots of primary molars was detected on routine dental radiographs, and the affected molars remained asymptomatic until exfoliation. The purpose of this paper was, using 2 case studies, to highlight the possibility of primary root resorption as a sequel of self-corrected ectopic eruption in locations not frequently diagnosed or reported.

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Root resorption of the primary dentition is a normal physiological process that is a precursor to the eruption of the permanent dentition. This process might be altered by a number of factors that comprise genetic, cellular, or tissue causes and disorders related to dental eruption.[1] Regarding the latter factor, ectopic eruption can lead to a path of eruption that results in resorption of part or all of the root of the adjacent primary tooth.[2,3] This condition most often occurs with the permanent maxillary first molars and canines, followed by permanent maxillary lateral incisors.[3-6]

In relation to the roots of primary second molars, the ectopic eruption of permanent first molars can manifest in 2 distinct patterns. In reversible ectopic eruption, the permanent molar spontaneously self-corrects its trajectory by "jumping" the distal edge of the primary molar or by moving distally to erupt into the correct position.[3,6] In the irreversible type, the permanent molar remains blocked against the primary molar crown and no longer erupts.[3,6,7]

In both cases, moderate-to-severe root resorption of the adjacent primary molar is a frequent permanent sequel,[7] which may remain painless unless a communication develops between the oral cavity and the pulp of the primary tooth to cause an abscess.[3] Another common occurrence of ectopic eruption is associated with the maxillary canines, which frequently leads to root resorption of adjacent permanent incisors.[8,9] It has been suggested that the ectopic first molar could be an early warning of an increased risk of ectopic canine eruption, leading to root resorption of the maxillary permanent incisors.[10]

Compared with the maxilla, ectopic eruption may be less frequently seen in the mandibular arch. Most often, permanent mandibular lateral incisors may present with this condition, leading to resorption of all or part of the primary mandibular canine.[3] As with ectopic maxillary first molars, no pain is associated with the

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condition, and the diagnosis is generally signaled by premature canine exfoliation or impeded eruption of the lateral incisor, unless otherwise detected on routine radiographs.[3]

To date, only 2 reports have shown that ectopic eruption may lead to root resorption in other regions of the dental arch.[11,12] In both reports, maxillary premolar root resorption was demonstrated as a sequel of ectopic canines.[11,12]

The purpose of this paper was, using 2 case studies, to describe the unusual occurrence of severe mesial root resorption of primary molars caused by the reversible ectopic eruption of permanent mandibular canines and the permanent maxillary first premolar.

CASE DESCRIPTION

CASE 1

A healthy, 10-year-old girl was referred to the Department of Pediatric Dentistry at Hacettepe University, Ankara, Turkey, by her general dental practitioner for the management of protruding maxillary central incisors. Routine radiographs of the patient revealed complete pathologic resorption of the mesial roots of noncarious primary mandibular first molars (Figure 1). The patient and parents did not report a previous history of pain or sensitivity associated with the affected molars.

The teeth showed no sign of mobility and responded normally to thermal tests, as compared with neighboring primary molars. The root resorption on both teeth was highly suggestive of self-corrected ectopic eruption of the permanent mandibular canine teeth. Apparently, the canines had already freed themselves by the time the patient was referred to the clinic. Following consultation with the orthodontics department, the patient was scheduled for bimonthly recalls without any intervention.

After 13 months, the primary mandibular right first molar exfoliated uneventfully (Figure 2), followed by exfoliation of the contralateral molar 2 months later. In accordance with the recommendation of the orthodontics department, the mesial aspect of both primary second molars were reduced approximately 0.5 to 1.0 mm to facilitate sufficient space for eruption of the premolars, which both showed a slightly distal pattern of eruption, as evidenced radiographically. Complete eruption of the premolars was observed 3 months later (Figure 2). The patient has been attending regular control visits for the commencement of orthodontic therapy.

CASE 2

An 11-year-old boy was referred to the Department of Pediatric Dentistry at Hacettepe University, Ankara, Turkey, with a chief complaint of carious teeth. Routine diagnostic radiographs showed complete pathologic resorption of the mesiobuccal root of the primary maxillary right second molar, indicating the low likelihood that the resorption was produced by the underlying premolars. (Figure 3).

As with case 1, the noncarious primary molar showed absence of mobility, sensitivity, and pain and responded favorably to a thermal test. Presence of the pathologic primary root resorption of the primary molar was regarded as a consequence of self-corrected ectopic eruption of the recently-erupted neighboring first premolar, which could also be interpreted as a variation of normal resorption. Owing to the absence of symptoms, the patient was scheduled for regular control visits. The primary second molar exfoliated after 6 months, and eruption of the second premolar was evident 2 months later (Figure 4).

Figure 1. Pathologic root resorption of primary first molars.

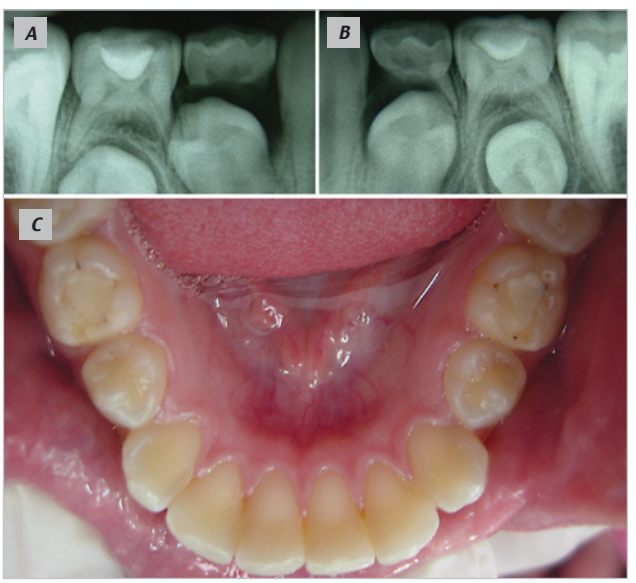

Figure 2. (A and B) Radiographic views of the primary first molars at 12 months. (C) Clinical view of the premolars after 16 months.

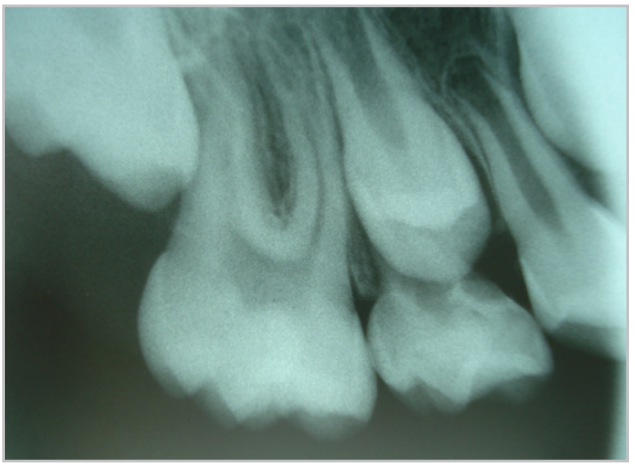

Figure 3. Pathologic resorption of the mesial root of a primary second molar.

Figure 4. Intraoral view of the erupted premolars.

DISCUSSION

According to Kennedy and Turley,[13] spontaneous self-correction of ectopic permanent first molars depends on the degree of root resorption and the amount of enamel ledge of the primary second molar entrapping the ectopic first permanent molar. Further data have shown, however, that self-correction may occur in cases of severe root resorption[7] and that the degree of root resorption is not the indictor for distinguishing between reversible and irreversible types of ectopic eruption.

The present cases confirm and extend this finding on different primary teeth. Furthermore, the uneventful exfoliation of the primary teeth presented herein is in line with the findings of Bjerklin,[14] who showed that in cases of reversible ectopic eruption, the atypically resorbed primary molars remained in the dental arch until the normal exfoliation time in 90 of 92 teeth. There can be no doubts that the finding is not applicable to all ectopic eruption cases.

Although pathologic root resorption of a permanent tooth may give rise to greater concern than that of a primary tooth,[10] the latter condition also presents a challenge to the pediatric dentist and is crucial to a healthy and stable occlusion.[15] Nontreatment can not only result in early loss of the affected primary tooth, but also to space loss and impaction of neighboring permanent teeth. Moreover, future corrective treatment may be more complicated and include the use of fixed or removable appliances and subsequent long-term space maintenance.[2,15] Owing to the occurrence of self-corrected ectopic eruption in case 1, a slight reduction of the mesial aspects of the primary second molars was the only intervention needed to facilitate proper eruption of the first premolars. In the second case, no intervention was necessary.

Despite many publications on the etiology, prevalence, and management of root resorption caused by ectopically erupting permanent maxillary molars and canines, no data exists regarding ectopic mandibular canines and maxillary premolars. A possible explanation could be that the root resorption caused by those teeth can become quite advanced before such unusual occurrences are identified. Furthermore, in the absence of clinical symptoms, the situation may be left undiagnosed—owing to the uneventful exfoliation of the affected primary teeth. Even during routine examination, the extent of root resorption may not be evident on a small film unless it is optimally positioned. For these reasons, these cases presented represent an unusual finding. For more complete knowledge of these cases, yearly or more frequent X-rays may assist in more fully explaining the development and etiology of the cases. Concerns for radiation hygiene, however, preclude such frequent exposures.

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