Pre-eruptive Intracoronal Radiolucency in First Permanent Molar

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ABSTRACT

Pre-eruptive intracoronal radiolucency (PECR) is characterized by the existence of a radiographic radiolucent area inside the coronal dentin prior to dental eruption. It is a rare clinical entity of unknown etiology, usually asymptomatic and diagnosed through routine radiographs. The aim of this article is to report the treatment of a PECR in an 8-year-old girl. Surgical procedure to expose the crown was conducted; upon tooth eruption, the radiolucent lesion was accessed and the tooth was restored. The case has an 18-month follow-up and emphasis on aspects linked to diagnosis and clinical approach was discussed.

Keywords: Dentin, Dentition permanent, Tooth crown, Tooth resorption.

CASE REPORT

The patient, an 8-year-old girl, came to the Lutheran University of Brazil for a routine dental consultation. Upon clinical examination, it was observed that the patient presented chronology (dentition development) and sequence of eruption compatible with her age; however, the left mandibular first permanent molar was absent. No color, texture, or volume changes on the mucosa were observed; the patient did not experience pain. The panoramic radiograph (Fig. 1) showed an alteration on the nonerupted first permanent molar, represented by a radiolucent dentin area at the occlusal surface, more like mesial. Based on both clinical and radiographic aspects, the lesion was diagnosed as PECR.

Lesions are usually located at the central or mesial portion of the coronary dentin, close to the amelodentinal junction; depending on their evolution, lesions may reach the pulp tissue. The diagnosis is made through routine radiographs or radiographs taken for orthodontic purposes. Early diagnosis is extremely important due to the risk of pulp damage on the affected dental element. Thus, restorative intervention is necessary.

The aim of this article is to report a case of PECR in the left mandibular first permanent molar of a young female patient, with emphasis on aspects linked to diagnosis and clinical approach.

INTRODUCTION

Pre-eruptive intracoronal radiolucency is a dental anomaly characterized by the existence of a radiographic radiolucent area inside the coronal dentin of a dental element prior to its eruption. Other terms used to describe the clinical condition are pre-eruptive dentin radiolucency, pre-eruptive coronal resorption, pre-eruptive intracoronal resorption, and pre-eruptive caries.

The etiology of this anomaly remains unknown. It is similar to the process of occult caries, but differs from the latter because the tooth has no communication with the oral cavity, such that cariogenic bacteria are unlikely to reach the enamel. The PECR is a rare condition, mainly associated with mandibular permanent molars and premolars.

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Fig. 1: Panoramic radiograph showing a radiolucent area on the coronal portion of the left mandibular first permanent molar of the patient
The treatment was conducted in two parts; first, the crown was surgically exposed by removing the gingival mucosa that covered the unerupted tooth. This procedure allowed access to the occlusal surface of the tooth, which was sound.

After 6 months, during the second phase of the treatment, the first molar was partially erupted (Fig. 2). Clinically, there were no structural or color changes on the crown. After local anesthesia, the site corresponding to the radiolucent area was reached; enamel and dentin that covered the lesion were removed using rotating instruments, until the affected area was reached, where an “empty space” could be felt (Fig. 3A). Restoration was made with glass ionomer cement (Vitremer-3M/ESPE) (Fig. 3B).

After a period of 6 months, the restoration was made with resin-based composite; the glass ionomer cement was kept as a lining for the restoration. After a follow-up period of 18 months, there were no reports of pain symptomatology and evolution of the rhizogenesis was also observed (Figs 4 and 5).

The project of this clinical case was submitted for evaluation to the Human Research Ethics Committee and approved under number 1.002.654.

DISCUSSION
The etiology of PECR is unknown. Their pathogenesis is not clear, since cariogenic microorganisms cannot infect the developing teeth in its own bony crypt, which is the case with carious dental lesions. Hence, the term “pre-eruptive caries” is not accepted. The hypotheses mostly discussed are based on dental development defects that may occur as a result of loss of continuity of the reduced enamel epithelium.

Aspects relating to position seem to play an important role in the etiology of tissue changes. Ectopic position of affected teeth or local pressure of adjacent teeth could trigger a resorption case; in the process, cells responsible for resorption would invade the dentin through “fissures” on the enamel or via amelocemental junction. Seow et al found a significant association between the ectopic position of teeth and PECR. A loss of integrity in...
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On the reported case, it was decided to remove the gingival mucosa in order to accelerate the eruption of the tooth affected by PECR. Despite the extensiveness of the radiolucent lesion, the decision was taken not to restore the tooth trans-surgically due to difficulty in controlling humidity and bleeding. Clinical and radiographic aspects of the tooth were observed for 6 months, when clinical intervention of the lesion was performed. In the literature, restorative material varies from silver amalgam to resin-based composite.

Although the recommended treatment is surgical intervention to prevent the progression of the lesion to the pulp, it was suggested that shallower lesions could be monitored until eruption to be treated thereafter. It is essential to emphasize the importance of an early diagnosis for PECR, especially the impacted teeth or teeth experiencing delayed eruption. In such cases, panoramic and interproximal radiographs should be included in routine consultations.

REFERENCES