

Pre-Eruptive Intra-Coronal Resorption (PIER) Lesion Shown in Impacted Second Premolar (Case Report)

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Abstract

Case Report

Pre-eruptive intra-coronal resorption (PIER) is a defect found in the dentin of an unerupted tooth, located just beneath the dentin-enamel junction. It has an estimated prevalence of PIER 0.5-2% of teeth. The severity of the lesion can vary from small to large in size, which may extend to the pulp. Historically, these defects were mistaken for caries and referred to as "hidden caries or pre-eruptive caries", which are described as intra-follicular decay. PIER is typically discovered incidentally during routine examinations by dental X ray radiographs. Previous studies have reported that in the pre-eruptive phase, these lesions contain soft tissue and inflammatory cells. This report presents a clinical case of PIER in a mandibular second impacted permanent molar.

Keywords: Pre-eruptive intracoronal resorption Unerupted tooth Tooth resorption.

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INTRODUCTION

Pre-eruptive intra-coronal resorption (PEIR) is defined as a defect of unerupted tooth located in the dentin, typically just beneath the dentin-enamel junction. This defect is most commonly found in the central or mesial portions of the crown, with variable lesion depth that rarely involves the pulp. PEIR can be diagnosed through routine radiographic examination, although the lesion may sometimes be overlooked due to suboptimal views of the molars. Historically, these defects were mistaken for caries and referred to as "pre-eruptive caries," but this theory lacks histopathological support, and the term "pre-eruptive intra-coronal radiolucency/resorption" (PEIR) is now preferred. PEIR is typically detected incidentally on radiographs, with a reported prevalence of 3-6% of patients and 0.5-2% of examined teeth [1-4]. Several studies have focused on the prevalence of PEIR, with (Seow *et al.*, 1999) [5] reporting a prevalence of 3-6% in Australian patients and 0.5-2% in examined teeth. No significant differences in prevalence have been observed between genders or ethnicities [6, 7].

Although a single tooth is most commonly affected, there are instances where multiple teeth are involved. Molars and premolars are the teeth most

frequently affected, with only one case reported in the primary dentition [2].

A correlation has been noted between ectopically positioned teeth and the occurrence of PEIR [1]. The pathogenesis of PEIR was unclear for many years, but clinical and histological evidence now supports the notion that these lesions contain soft tissue in the pre-eruptive stage [8].

Histological findings typically reveal signs of resorption, such as scalloped lesion margins, the presence of multinucleated giant cells, osteoclasts, and chronic inflammatory cells [1].

PEIR was described as intra-follicular decay, and later it was redefined due to the understanding that dental caries cannot affect unerupted teeth [5]. The lesion is now recognized as a radiolucency in the dentin of the crown of an unerupted tooth, located just below the enamel-dentin junction [2]. The lesions of PEIR exact cause remains unclear, but the most widely accepted theory suggests that resorption cells enter the tooth through the reduced enamel epithelium [10]. Predisposing factors, such as the ectopic positioning of teeth, may create local pressure that stimulates the resorption process [9]. Histological studies have

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documented the resorptive process, with evidence of scalloped lesion margins, multinucleated osteoclastic cells, and giant cells [2,11]. These findings suggest that the resorption process can progress if left untreated [12]. However, the presence of spongy bone was noted where areas was remodeled into lamellar bone [10]. Diagnosis of PEIR is typically incidental, made through routine radiographs, as clinical signs are usually absent [13]. However, some cases have reported associated pain [14,15].

CASE REPORT

An asymptomatic healthy 43 years old female was appointed to the dental clinic of the Zagazig University Hospitals for oral and dental checkup. While examining an orthopantomogram radiograph image the dentist disclosed accidentally an intra-coronal radiolucency in right deeply impacted second mandibular permanent premolar (tooth no. 45). The lesion was located in the middle portion of the dentin. The other permanent premolars have erupted normally. As the radiolucency in the dentin was extensive, possibly of resorptive nature and in proximity to the pulp. Root development was completed, and no pathology was seen at the apices. (Fig 1)



Fig 1: PEIR lesion shown in impacted second premolar

DISCUSSION

Pre-eruptive intracoronal resorption is considered as a big argue in dentistry, especially when the early diagnosis and timing of intervention are difficult to establish [16]. Indeed, the unexpected lesion or even unnoticed lesion in intact crown creates the major challenge. When a PEIR is diagnosed it is important to consider whether to treat the tooth promptly or to leave the patient for a follow up and wait until the tooth erupts [17]. Panoramic radiographs provide a broad view of mostly unerupted teeth, making them essential for managing these lesions. Intervention can be deferred until after the affected tooth eruption, as treatment may not require surgery at that stage [18]. It is important to distinguish between a progressive lesion and a static one. The decision whether to treat it or not depends on the progression of the lesion and its proximity to the pulp [19]. Particular attention should be given to unerupted teeth demonstrating transverse or inverted-angulated orientation and the absence of pericoronal space,

especially in molars, as these characteristics heighten the suspicion of PEIR [20]. In the present case a PEIR was discovered an impacted mandibular second permanent premolar while taking panoramic X-rays to evaluate any abnormality. The radiolucency was close to the pulp, on the other side, the patient was asymptomatic and clinically free during intra and extra oral examination. Therefore, management of our case as astatic case, a conservative approach with careful clinical and radiographic monitoring is recommended for non-progressive lesions.

CONCLUSION

Early diagnosis of PEIR defects enables timely intervention. Regarding a clear consensus on the treatment of PEIR lesions. We recommend long-term, prospective clinical studies and further research to clarify the etiology of PEIR lesions and their impact on adjacent teeth.

REFERENCES

- Seow, W. K. (2000). Pre-eruptive intracoronal resorption as an entity of occult caries. *Pediatric dentistry*, 22(5), 370-376.
- Counihan, K. P., & O'Connell, A. C. (2012). Case report: pre-eruptive intra-coronal radiolucencies revisited. *European archives of paediatric dentistry*, 13, 221-226.
- Seow, W. K., Lu, P. C., & McAllan, L. (1999). Prevalence of pre-eruptive intracoronal dentin defects from panoramic radiographs. *Pediatric dentistry*, 21, 332-339.
- Özden, B., & Acikgoz, A. (2009). Prevalence and characteristics of intracoronal resorption in unerupted teeth in the permanent dentition: a retrospective study. *Oral Radiology*, 25, 6-13.
- Seow, W. K., Wan, A., & McAllan, L. H. (1999). The prevalence of pre-eruptive dentin radiolucencies in the permanent dentition. *Pediatric dentistry*, 21(1), 26-33.
- Al-Batayneh, O. B., AlJamal, G. A., & AlTawashi, E. K. (2014). Pre-eruptive intracoronal dentine radiolucencies in the permanent dentition of Jordanian children. *European Archives of Paediatric Dentistry*, 15, 229-236.
- Manmontri, C., Chompu-inwai, P., Mahasantipiya, P. M., & Prapayasadok, S. (2018). Prevalence of pre-eruptive intracoronal radiolucencies in Thai children and adolescents: A retrospective study. *Journal of investigative and clinical dentistry*, 9(2), e12303.
- Kronfeld R. Resorptive processes associated with embedded teeth. In Kronfeld R, ed. *Histopathology of the teeth and their surrounding structures*. 4th edition. Philadelphia : Lea Febiger, 1955: 283-4.
- Seow, W. K., Lu, P. C., & McAllan, L. (1999). Prevalence of pre-eruptive intracoronal dentin defects from panoramic radiographs. *Pediatric dentistry*, 21, 332-339.
- McNamara, C. M., Foley, T., O'Sullivan, V. R., Crowley, N., & McConnell, R. J. (1997). External resorption presenting as an intracoronal radiolucent lesion in a pre-eruptive tooth. *Oral diseases*, 3(3), 199-201.
- Wong, L., & Khan, S. (2014). Occult caries or pre-eruptive intracoronal resorption? A chance finding on a radiograph. *Pediatric dentistry*, 36(5), 429-432.
- Yamada, M. K. M., Taguchi, Y., Watanabe, J., & Noda, T. (2001). Preeruptive intracoronal radiolucency caused by resorption: report of a case. *Eur J Pediatr Dent*, 2, 79-82.
- Ilha, M. C., Kramer, P. F., Ferreira, S. H., & Ruschel, H. C. (2018). Pre-emptive intracoronal radiolucency in first permanent molar. *International journal of clinical pediatric dentistry*, 11(2), 151.
- Brunet-Llobet, L. L., Lahor-Soler, E., & Miranda-Rius, J. (2014). Oral pain due to severe pre-eruptive intracoronal resorption in permanent tooth. *Eur J Paediatr Dent*, 15(3), 332-4.
- Yang, S., Kim, J., Choi, N., & Kim, S. (2017). Management of infected immature permanent tooth with pre-eruptive intracoronal resorption: two case reports. *Journal of the Korean Academy of Pediatric Dentistry*, 44(2), 220-227.
- Ghedira, A., Masmoudi, F., Baaziz, A., Fethi, M., & Ghedira, H. (2020). Treatment of pre-eruptive intracoronal resorption: A scoping review. *Eur J of Paediatr Dent*, 21, 227. DOI: 10.23804/ejpd.2020.21.03.13. PMID: 32893657.
- Davidovich, E., Kreiner, B., & Peretz, B. (2005). Treatment of severe pre-eruptive intracoronal resorption of a permanent second molar. *Pediatric dentistry*, 27(1), 74-77.
- Omar, S., Choi, J., Nelson, B., Shin, M., & Chen, J. W. (2015). Pre-eruptive intracoronal resorption (PEIR): literature review and case report. *Journal of the California Dental Association*, 43(5), 255-260. doi: 10.1080/19424396.2015.12222845
- Spierer Weil, A., & Fuks, A. B. (2014). Pre-eruptive intra-coronal resorption: controversies and treatment options. *Journal of Clinical Pediatric Dentistry*, 38(4), 326-328. doi:10.17796/jcpd.38.4.dm7652634h12705v. PMID: 25571683.
- Ngamsom, S., Arayapisit, T., Asavanamuang, P., Anurakwongsri, R., Sonthinane, K., & Kretapirom, K. (2024). Pre-eruptive intramural resorption in unerupted teeth: a cone-beam computed tomography evaluation of prevalence and related factors. *Clinical Oral Investigations*, 28(5), 1-9. doi: 10.1007/s00784-024-05677-4. PMID: 38671170; PMCID: PMC11052776.