Prevalence Of Pre-Eruptive Intracoronal Resorption: A Systematic Review

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Introduction

- Pre-eruptive intracoronal resorption (PEIR) is a dental condition characterized by the resorption of tooth structure within the coronal portion of a developing tooth before its eruption into the oral cavity.
- This phenomenon is typically asymptomatic and may be detected incidentally during radiographic examinations.
- Understanding the prevalence of PEIR helps in assessing the significance of this condition in various populations, which can guide clinicians in diagnosing and managing potential cases.
- Despite its clinical importance, there is a notable variability in reported prevalence rates across different studies and populations, highlighting the need for a comprehensive review to consolidate existing data.

Objectives

- The aim of this study was to conduct a systematic review to evaluate the PEIR in the primary and/or permanent dentitions across existing literature to provide insight into its occurrence and distribution.

Methods

- A literature search of indexed databases (PubMed, Cochrane, Web of Science) was conducted without language or age restrictions up to and including January 1, 2025.
- Cross-referencing was used to further identify articles.
- The eligibility criteria were observational studies with original data that evaluated the prevalence of PIER in the primary and/or permanent dentitions.

Results

- Literature search generated 174 records and 20 articles were reviewed
- 14 articles were evaluated and included in the study
- Prevalence of PEIR on panoramic radiographs ranged from 1-27% (mean 5%) per individual and 0-2.% (mean 1%) per tooth.
- The prevalence of PEIR from CBCT was 10-15% (mean 12%) per individual and 2-4% (mean 3%) per tooth.

Conclusion

- The available evidence indicates that PEIR is not uncommon and CBCT is better at diagnosing PEIR compared to panoramic radiograph.
- It is important that all unerupted teeth be examined for PEIR.
- Being aware of PEIR may improve diagnosis and allow for early treatment if necessary.

Figure 1 Prevalence of PEIR defects reported in the literature

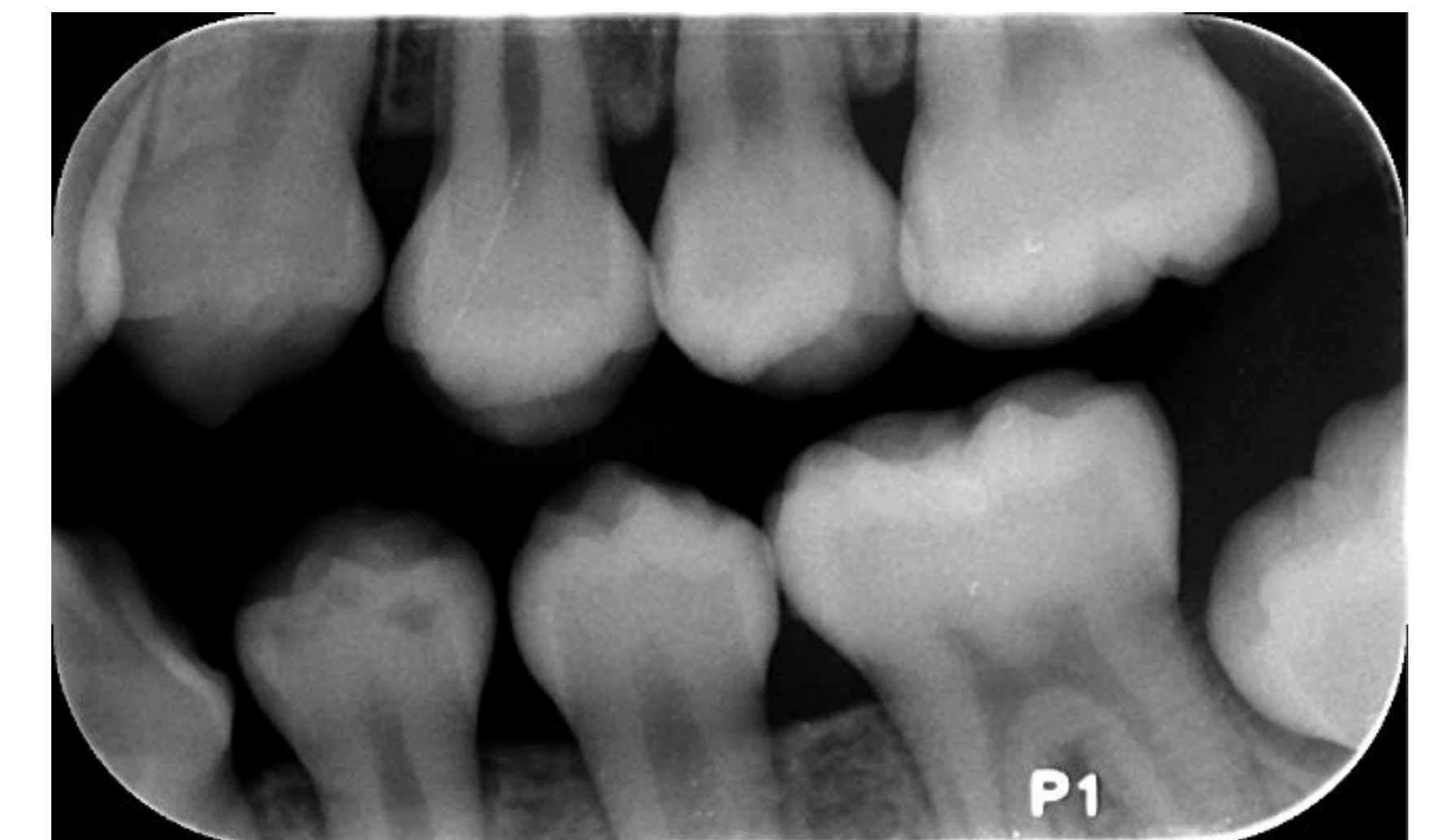| Author/Year (Country)	Type Of Radiograph	Prevalence Per Individual (%)	Prevalence Per Tooth (%)	Location: Central	Mesial	Distal
Al-Batayneh, 2014 (Jordan)	Panoramic	128/1571 (8.1%)	128/20788 (0.62%)	39.1%	49.2%	11.7%
Al-Tuwirqi & Seow, 2017 (Australia)	Panoramic	17/1307 (1.3%)	26/8357 (0.31%)	N/A	N/A	N/A
Asokan., 2021 (India)	Panoramic	161/5012 (3.2%)	173/47660 (0.4%)	17.9%	37%	45.1%
Demirtas., 2016 (Turkey)	CBCT	42/278 (15.1%)	48/1384 (3.5%)	N/A	N/A	N/A
Demirtas, 2016 (Turkey)	Panoramic and CBCT	70/733 (9.5%)	79/4096 (1.93%)	69.6%	8.9%	21.5%
Gurdán., 2023 (Hungary)	Panoramic	49/3143 (1.56%)	55/22144 (0.25%)	87.27%	3.63%	9.1%
Konde, 2018 (India)	Panoramic	136/1000 (13.6%)	136/11300 (1.20%)	10.2%	52.3%	37.5%
Manmontri, 2017 (Thailand)	Panoramic	26/1599 (1.63%)	29/9060 (0.32%)	68.97%	13.79%	17.24%
Nik & Rahman, 2003 (Malaysia)	Panoramic	275/1007 (27.3%)	309/14554 (2.1%)	23.0%	55.3%	21.7%
Özden & Acikgoz, 2009 (Turkey)	Panoramic	27/1741 (1.55%)	28/2922 (0.95%)	85.7%	10.7%	3.6%
Seow, 1999 (Australia)	Panoramic	42/1281 (3.3%)	57/11767 (0.5%)	49.0%	10.7%	16.0%
Umansky, 2016 (Israel)	Panoramic	13/355 (3.9%)	N/A	1.5%	1.8%	0.6%
Uzun, 2014 (Turkey)	Panoramic	40/5554 (0,7%)	N/A	75.0%	17.5%	7.5%
Wang, 2013 (China)	Panoramic	6/707 (0.85%)	6/8171 (0.07%)	16.7%	33.3%	50.0%

Image 1 PEIR defect present on tooth #21

Figure 2 Mean prevalence of PEIR defects per individual