



Correspondence

Revascularization and apexification of contralateral mandibular second premolars of the same patient: A case report

Dens evaginatus predominantly occurs in the permanent mandibular premolars in people of Asian descent. Attrition or fracture of the central cusp of immature premolars can cause pulp infection, which can interrupt root formation and result in an open apex. Revascularization and apexification are considered in the absence of an apical constriction. The revascularization technique allows continued development of the root length and dentin wall thickness of the infected tooth. A tooth with thin root dentin and a large canal lumen is prone to fracture.¹ Apexification provides the best results for the closure of the root apex, but continued development of the root length or thickness cannot be expected.

A 9-year-old girl presented with a periapical abscess on the buccal aspect of the mandibular right second premolar (tooth 45) (Fig. 1A). Tooth 45 was fractured at the central cusp without caries. The results of the electric pulp test

(EPT) and thermal test (cold) were negative. A periapical radiograph revealed an incomplete apex and periapical radiolucency. Owing to the short root length and thin root dentin wall, revascularization was considered. The pulpal diagnosis was pulp necrosis, with a periapical diagnosis of acute apical abscess. There was profuse bleeding from the root canal when opening access cavity. The canal was flushed with 2.6% sodium hypochlorite (NaOCl) and calcium hydroxide paste (ApexCal, Ivoclar Vivadent AG, Schaan, Liechtenstein) was placed into the canal. Fourteen days later, canal exudation had disappeared, and a #20 K-file (Dentsply Maillefer, Ballaigues, Switzerland) was used to irritate the tissue to create bleeding into the canal. Under microscope, mineral trioxide aggregate (MTA; ProRoot MTA, Dentsply Tulsa Dental Specialties, Johnson City, TN, USA) was placed over the blood clot (Fig. 1B). Tooth 45 was asymptomatic, and the radiograph showed continuing

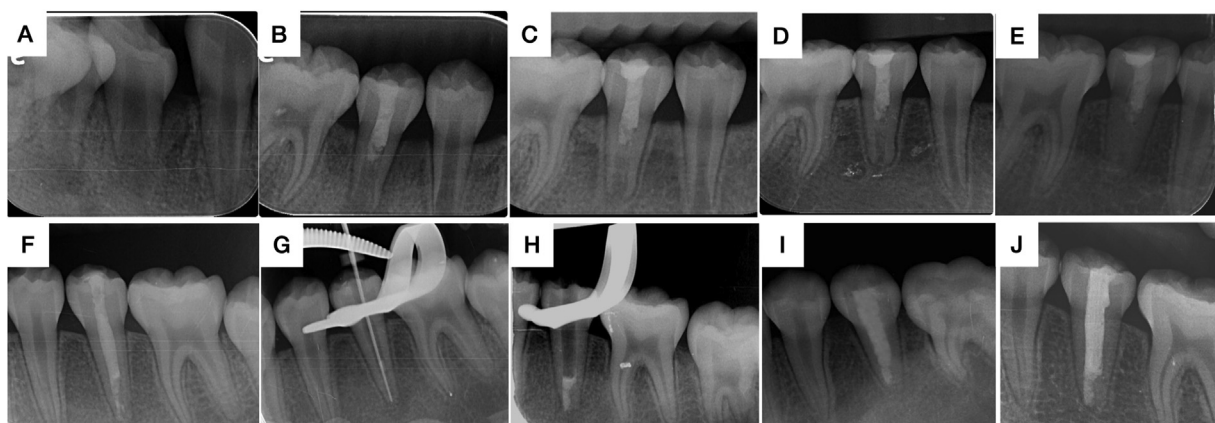


Figure 1 (A) Preoperative radiograph of the mandibular right posterior teeth; (B) Mineral trioxide aggregate (MTA) placement (tooth 45); (C) Six-month follow-up (tooth 45); (D) One-year follow-up (tooth 45); (E) Two-year follow-up (tooth 45); (F) Preoperative radiograph of the mandibular left posterior teeth; (G) Working length determination (tooth 35); (H) MTA obturation at apical third of canal (tooth 35); (I) Six-month follow-up (tooth 35); (J) One-year follow-up (tooth 35).

<https://doi.org/10.1016/j.jds.2021.08.009>

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growth of root length and dentin wall thickness at the six-month and one and two-year follow-ups (Fig. 1C–E).

Two years later, the patient was referred to treat tooth 35. The chamber was opened with periapical abscess on buccal gingiva, but the tooth was not carious. A periapical radiograph revealed an incomplete apex and radiopaque intracanal filling material. The tooth 35 was a previous endodontically-treated tooth, with a periapical diagnosis of chronic apical abscess. The root length and dentin thickness of tooth 35 was similar to that of the adjacent mature first premolar (tooth 34) (Fig. 1F). The intracanal material in tooth 35 was removed by NaOCl flushing. Seven days later, the canal appeared clean, and there was no inflammatory exudate. The master apical file was #70, as measured using an electronic apex locator on a periapical radiograph (Fig. 1G). After cleaning and shaping of the canal, ProRoot MTA (Dentsply) was placed into the apex with a 4-mm thickness² (Fig. 1H). One week later, the fiber post (Cytec Blanco, Hahnenkraat, Germany) was placed over the Pro-Root MTA (Dentsply) to reinforce the root structure. At the six-month and one-year follow-ups, the patient was asymptomatic and lamina dura was intact (Fig. 1I–J).

Apexification and revascularization are evidence-based treatment options for immature teeth with underdeveloped roots. Revascularization is the first choice to treat diseased teeth of teenagers (6–18 years) when the width of the apical foramen is > 1 mm with a thin dentin wall and short root length,³ while apexification allows predictable immediate apical barrier formation without continued root development.⁴

Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

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Received 10 July 2021
Final revision received 18 August 2021
Available online 30 September 2021