



## CASE REPORT

# Conservative treatment of immature teeth with apical periodontitis using triple antibiotic paste disinfection



Hsin-Ju Wang<sup>a</sup>, Yea-Huey Melody Chen<sup>b</sup>, Kuan-Liang Chen<sup>b\*</sup>

<sup>a</sup> Department of Endodontics, Chang Gung Memorial Hospital—Kaohsiung Medical Center, Kaohsiung, Taiwan, ROC

<sup>b</sup> Department of Endodontics, Chi Mei Medical Center, Tainan, Taiwan, ROC

Received 25 January 2011; Final revision received 1 March 2011

Available online 9 April 2013

### KEYWORDS

apexogenesis;  
immature teeth;  
mineral trioxide  
aggregate;  
sodium hypochlorite;  
triple antibiotic paste

**Abstract** The purpose of this report is to present conservative treatment for two immature premolars with apical periodontitis. A triple antibiotic paste was used to disinfect the root canal systems for revascularization. In both cases, residual vital pulp tissue was noted in the root canal system after the opening of each premolar. The canals in both cases were irrigated with copious sodium hypochlorite solution and medicated with a paste consisting of ciprofloxacin, metronidazole, and minocycline. The teeth were sealed with mineral trioxide aggregate and restored with composite resin. There were satisfactory outcomes after 18 months. The patients were asymptomatic, with radiographic evidence of complete resolution of radiolucency, continual thickening of dentinal walls, apical closure, and increased root length.

Copyright © 2013, Association for Dental Sciences of the Republic of China. Published by Elsevier Taiwan LLC. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## Introduction

Treatment of immature teeth with apical periodontitis poses numerous challenges to dentists. Traditional

apexification uses long-term calcium hydroxide dressing to promote the formation of a calcified barrier.<sup>1</sup> This technique requires multiple appointments over a period of months. A study by Andreasen et al showed that long-term use of calcium hydroxide can weaken dentin.<sup>2</sup> Recently, mineral trioxide aggregate (MTA) has been used in apexification procedures to create an artificial apical barrier.<sup>3</sup> The MTA apexification technique is not only more predictable with a high success rate, but also reduces the number of appointments necessary. Although an open apex may be

\* Corresponding author. Department of Endodontics, Chi Mei Medical Center, 901 Chung Hwa Road, Yong Kang City, Tainan 710, Taiwan, ROC.

E-mail address: [k2050562@ms33.hinet.net](mailto:k2050562@ms33.hinet.net) (K.-L. Chen).

closed by traditional apexification or artificial apical barriers, the apexification technique does not promote thickening of the root wall or continual development of the root length.

Recent case presentations have shown that immature teeth clinically diagnosed as nonvital pulp with periradicular periodontitis or abscess can undergo continual maturation of the root and apex.<sup>4–6</sup> In 2001, Iwaya et al.<sup>4</sup> first described a new treatment procedure for the management of the open apex called revascularization, which disinfected the root canal with sodium hypochlorite (NaOCl) irrigation and two antimicrobial agents (metronidazole and ciprofloxacin). The revascularization technique assumed that the formation of a blood clot within a disinfected root canal space provides a matrix that traps cells capable of initiating new tissue formation. In 2004, Banchs and Trope<sup>5</sup> published a case presentation where disinfection of the canal was carried out by using NaOCl irrigation followed by a combination of three antibiotics (ciprofloxacin, metronidazole, and minocycline), as described by Hoshino et al.<sup>7</sup> In 2006, Chueh and Huang<sup>6</sup> reported four cases of immature teeth with apical periodontitis or abscess that were treated with a conservative approach, without instrumentation and with just copious NaOCl irrigation and calcium hydroxide intra-canal medication. All these four teeth showed continual root development and formation of the root apex.

The aim of this presentation is to report the clinical outcome of two cases of conservative treatment of immature teeth with apical periodontitis. The possible mechanism underlying this clinical observation is also discussed.

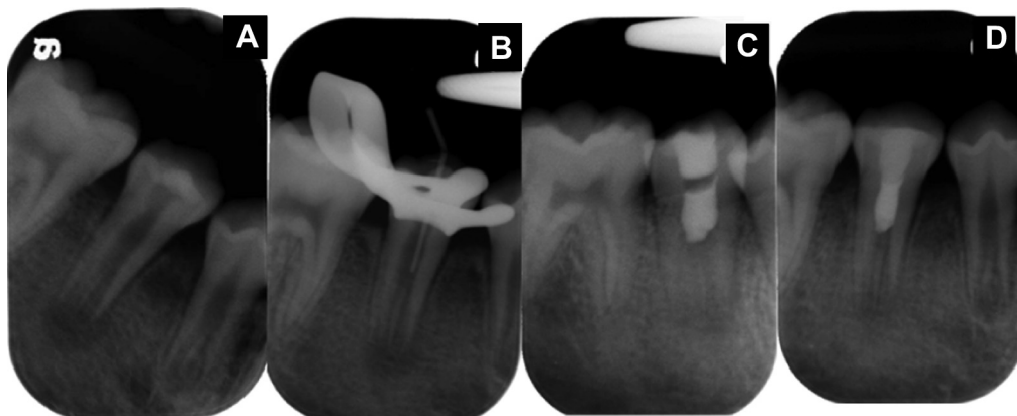
## Case reports

### Case 1

An 11-year-old boy was referred by his general dentist for root canal treatment of the mandibular right second premolar. His general health history was noncontributory. The intra-oral examination revealed swelling on the buccal vestibule of tooth 29 with palpation and percussion

sensitivity. Tooth 29 had been opened and sealed with temporary cement by the patient's general dentist 3 days prior to this examination. The adjacent teeth were caries free and asymptomatic. The periodontal examination presented normal probing depths and physiological mobility. Radiographic film showed an immature open apex with a periradicular rarefaction approximately  $5 \times 5 \text{ mm}^2$  in size (Fig. 1A). The diagnosis of tooth 29 was previously initiated therapy leading to acute apical abscess. After the rubber dam isolation and upon accessing the tooth without anesthesia, hemorrhage from the canal was observed. A number 30 gutta-percha cone (Meta Biomed Co., Chungcheongbuk, Korea) was gently inserted into the canal and the patient reported sensitivity, potentially indicating the survival of residual vital pulp tissue (Fig. 1B). The pulp chamber was irrigated with 10 mL of 3% NaOCl, without instrumentation. The canal was dried with paper points. A mixture of ciprofloxacin, metronidazole, and minocycline paste, as described by Hoshino et al.,<sup>7</sup> was mixed to a creamy consistency. The paste was then placed into the canal with an endodontic plugger to a depth of 10 mm. The access cavity was sealed with 4-mm thickness of intermediate restorative materials (IRM; Dentsply Caulk, Milford, DE, USA).

The patient returned 21 days after the last treatment without clinical symptoms. The tooth was then re-opened and the canal irrigated with 10 mL of 3% NaOCl. The canal appeared clean and was without signs of inflammatory exudates. An endodontic explorer was introduced into the canal until apical tissue was detected. The explorer was then used to irritate the tissue gently to create some bleeding into the canal. The bleeding was stopped at a level of 3 mm apical to the cemento-enamel junction (CEJ) and left for 10 minutes. After the blood clotted at that level, the 3 mm thickness of MTA (White Pro-Root MTA, Dentsply Maillefer, Ballaigues, Switzerland) was carefully placed over the blood clot, followed by a wet cotton pellet and IRM (Fig. 1C). The patient returned and was asymptomatic 3 days later. The IRM and cotton pellet were removed and replaced with bonded composite resin restoration (Filtek Z250, 3M ESPE, St Paul, MN, USA) (Fig. 1D). Crown discoloration of tooth 29 was noted (Fig. 2).



**Figure 1** (A) Radiograph showing a radiolucent lesion at the periapical area of tooth 29 with a wide open apex. (B) Radiograph demonstrating a gutta-percha cone being introduced into the canal without local anesthesia, which stopped when the patient felt sensitivity. (C) Radiograph presenting the mineral trioxide aggregate placement. (D) Radiograph presenting composite resin restoration.

Download English Version:

<https://daneshyari.com/en/article/3145449>

Download Persian Version:

<https://daneshyari.com/article/3145449>

[Daneshyari.com](https://daneshyari.com)