

CASE REPORT

Effectiveness of single- versus multiple-visit endodontic treatment of two mandibular central incisors from the same patient

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Abstract

The aim of this report is to describe the treatment of two mandibular incisors of the same patient with apical periodontitis following dental trauma. Tooth 31 was treated by single-visit endodontic therapy while tooth 41 was treated by multiple-visit endodontic therapy. A 16-month postoperative radiograph was taken and showed repair.

Introduction

Apical periodontitis is caused by bacteria within root canals (1,2). Logically, the treatment of apical periodontitis should be bacterial eradication from the root canal. Thus, conventional root canal treatment aims primarily at the elimination of these bacteria (3).

There are essentially two techniques and treatment philosophies: single-visit endodontic therapy and multiple-visit endodontic therapy (dressing the canal for several weeks with calcium hydroxide).

In this report, we describe the treatment of two mandibular central incisors of the same patient with apical periodontitis following dental trauma: (i) tooth 31 was treated by single-visit endodontic therapy, and (ii) tooth 41 was treated by multiple-visit endodontic therapy.

Case report

An 18-year-old male patient with a non-contributory medical history was referred to our office complaining of discomfort associated with his mandibular central incisors. He reported trauma to the area 2 years previously.

Clinical examination revealed intact surrounding soft tissue but that the teeth were very sensitive to percussion

and were unresponsive to applied Endo Ice (Hygienic, Corp., Akron, OH, USA).

A radiograph showed normal canal anatomy. Periradicular radiolucencies were associated with teeth 31 and 41 (Fig. 1A).

A diagnosis of infected necrotic pulp with acute exacerbation of a chronic periradicular periodontitis was made.

Tooth 41 was anaesthetised and isolated with a rubber dam. The canal was accessed. After cleaning, the length of the root canal was established using an electronic apex locator (Root ZX; J. Morita Inc. Kyoto, Japan). The root canal was prepared in a crown-down method. Sodium hypochlorite (2.5%) and EDTA (17%) solutions were used alternately as irrigants. When the preparation was completed, the canal was dried with paper points and a calcium hydroxide dressing was placed (Ultra canal, Optident, Skipton, UK). Two weeks later, the dressing was removed and the root canal system was filled by the wave-of-condensation technique. Tagger's technique was used for the backfilling using gutta-percha points and a root canal sealer (Endofill, Dentsply, Petropolis, Rio de Janeiro, Brazil) (Fig. 1B). On the same day, tooth 31 was anaesthetised and isolated with a rubber dam; the coronal access was prepared. The canal was instrumented similarly

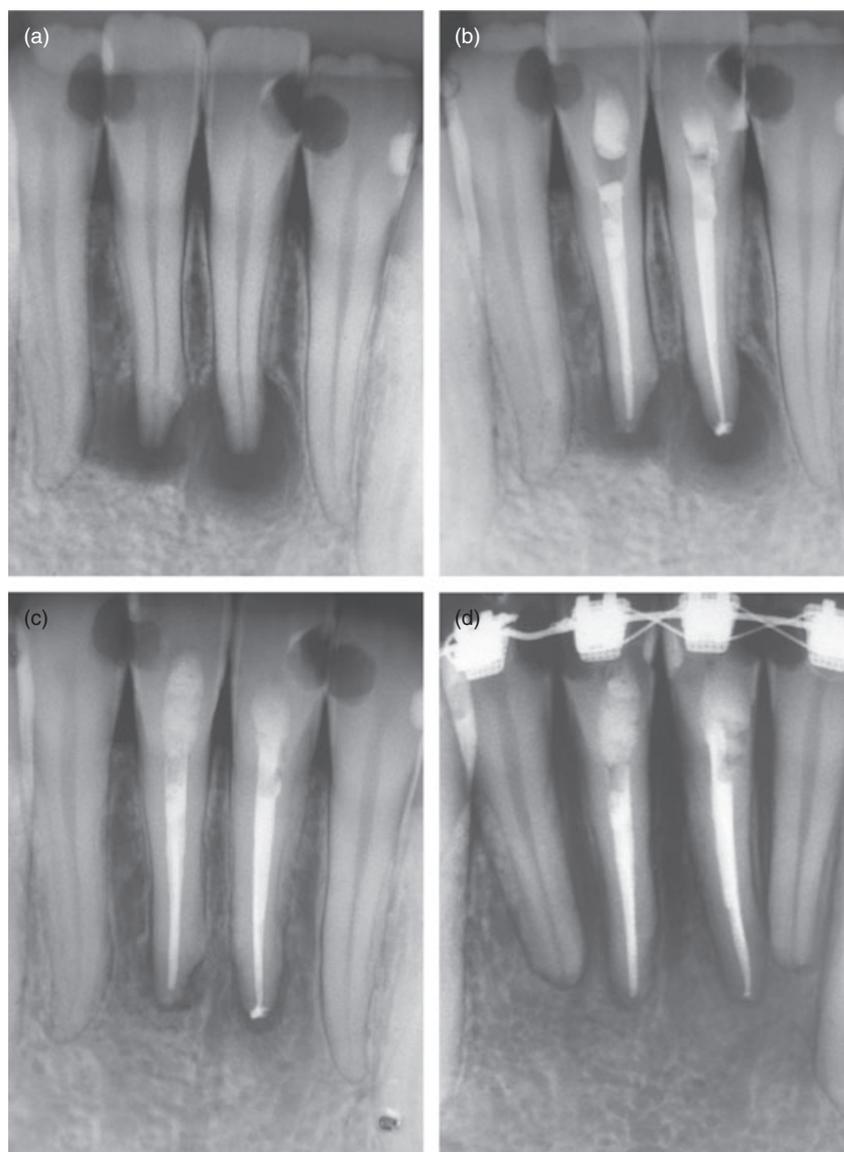


Figure 1 Clinical case: (a) pretreatment radiograph; (b) root-canals filled; (c) follow-up radiographic examination at 4 months; (d) follow-up radiographic examination at 16 months.

to the canal in tooth 41 and the canal was filled by the wave-of-condensation technique; Tagger's technique was used for the backfilling using gutta-percha points and a root canal sealer (Endofill) (Fig. 1B). Treatment of tooth 31 was thus completed in a single visit.

Follow-up radiographic examination at 4 months (Fig. 1C) postoperatively showed improvement of the periapical radiolucent area. The teeth were asymptomatic, with intact surrounding soft tissues. Clinical and radiographic findings indicated healing of the periapical lesions.

Follow-up radiographic examination at 16 months (Fig. 1D) postoperatively revealed total healing of the periapical lesions.

Discussion

In recent years, single-appointment endodontics has gained increased acceptance (4). Recent studies (5–7) have shown little or no difference in the quality of treatment or success rates between single- and multiple-visit root canal treatment.

However, Nair *et al.* (8) found that 14 of 16 (88%) mandibular molars that were treated in a single-visit endodontic treatment harboured intracanal microorganisms immediately after completion of the treatment. Other studies (9–11) have also recommended that endodontic treatment of non-vital teeth with infected root canals

should be completed in one session, without any intracanal microbicidal dressing. Intraradicular microbes surviving root canal treatment are argued to be entombed by obturation of the root canal and die off as a result of inadequate nutrients (10). 'These microbes may no longer interfere with the periapical healing process' (11). According to Sjögren *et al.* (12), the periapical healing of some teeth occurs even when microbes are present in the canals at the time of obturation. Although this may imply that the organism may survive post-treatment, it is possible that the microbes may be present in quantities and virulence that may be subcritical to sustaining the inflammation of the periapex, or that they remain in a location where they cannot communicate with the periapical tissues.

This article has presented a case report of two teeth, from the same patient, with the same diagnosis, that were treated differently. Tooth 41 was treated by multiple-visit endodontic therapy whereas tooth 31 was treated by single-visit endodontic therapy.

Conclusion

There was no significant clinical and radiographic difference between the endodontic treatment with single and multiple visits in these teeth over the 16-month observation period.

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