

Trial suggests no difference between single-visit and two-visit root canal treatment

Abstracted from

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Question: In teeth with apical periodontitis does a one or two visit root canal treatment provide a better outcome?

Design Randomised controlled trial.

Intervention Patients over the age of 16 with radiographic evidence of apical periodontitis and a diagnosis of pulpal necrosis confirmed by negative response to hot and cold tests were randomised to receive either a one or two visit root canal treatment (RoCT).

Outcome measure Clinical and radiographic evaluation was undertaken at two years by masked examiners.

Results Two hundred and eighty-seven patients (300 teeth) were randomised. One hundred and fifty-five teeth were allocated to the single visit group and 145 to two-visit treatment. Eighteen teeth were lost to follow up, nine from each group. At two years there were no significant differences between the groups, with 96.57% (141 of 146 teeth) in the single-visit group being classified as healed compared with 88.97% (121 of 136 teeth) in the two-visit group.

Conclusions This study provided evidence that a meticulously instrumented single-visit root canal treatment can be as successful as a two-visit treatment. There was no significant difference in radiographic evidence of periapical healing between single-visit and two-visit root canal treatment.

Commentary

Root canal treatment is a commonly performed dental procedure. This usually follows irreversible pulpitis or necrosis of the dental pulp caused as a result of caries or other aetiologies causing ingress of bacteria into the pulp space. The aim of this study was to evaluate the outcome of single- versus two-visit root canal treatment of teeth diagnosed with pulp necrosis and apical periodontitis after a 2-year follow-up period.

While the traditional approach for treating teeth presenting with the above mentioned criteria has always entailed two visits,¹ the introduction of rotary NiTi files in the last 20 years has made it possible to achieve the mechanical objectives of the treatment in a much shorter time and thus made the single visit possible. But the quest for effective biological evidence to justify the one-visit procedure has been questioned² and been approached from principally two points: (1) the exclusion of an antibacterial intra canal dress-

ing which is basically CaOH dressing and (2) the increased flare ups rate thought to be associated with single visits treatment.³ Though the results of the current trial did not look into the latter, the use of the former by itself has been questioned by several investigations raising up issues on its disadvantages.⁴ Hence, it is important to search for one-visit treatment regimens that would be as biologically effective as a CaOH-based two-visit procedure. It is noteworthy to mention the systematic review reported by Sathorn *et al.*⁵ that showed no statistically significant difference in the healing rate to the two-visit alternative. However, conclusions must be made with care because the studies are few and the sample size is small (only 146 cases all together).

While this study adds another piece of evidence for future meta-analysis investigations, there are two main points to consider: first; one group of patients were treated in one visit and thus CaOH was not used, while it was used in the other group. Therefore, there are two variables between the two groups: the number of visits and the use of CaOH. So it will remain impossible to deduce if the higher healing rate, though insignificant, was due to the single visit approach or to the use of CaOH. Second; the use of the light speed system. The geometric shape prepared by this system is characterised by non-tapered preparation with a larger apical diameter. Such a geometric shape will be insufficient for syringe irrigation and thus was the need for a passive irrigation system like EndoVac. It is important to mention in this regards the ongoing controversy regarding the effect of the degree of taper and apical diameter on efficacy of microbial eradication and the quality of apical seal.⁶

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1. Sjögren U, Figdor D, Spångberg L, Sundqvist G. The antimicrobial effect of calcium hydroxide as a short-term intracanal dressing. *Int Endod J.* 1991; **24**: 119–125.
2. Trope M, Delano EO, Orstavik D. Endodontic treatment of teeth with apical periodontitis: single vs. multivisit treatment. *J Endod.* 1999; **25**: 345–350.
3. Yoldas O, Topuz A, Isçi AS, Öztunc H. Postoperative pain after endodontic retreatment: single- versus two-visit treatment. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod.* 2004; **98**: 483–487.
4. Balto KA. Calcium hydroxide has limited effectiveness in eliminating bacteria from human root canal. *Evid Based Dent.* 2007; **8**: 15–16.
5. Sathorn C, Parashos P, Messer HH. Effectiveness of single- versus multiple-visit endodontic treatment of teeth with apical periodontitis: a systematic review and meta-analysis. *Int Endod J.* 2005; **38**: 347–355.
6. Paqué F, Ganahl D, Peters OA. Effects of root canal preparation on apical geometry assessed by micro-computed tomography. *J Endod.* 2009; **35**: 1056–1059.

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