Impact of Three Radiographic Methods in the Outcome of Nonsurgical Endodontic Treatment: A Five-Year Follow-up

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Abstract

Introduction
The periapical radiographic (FFR) and digital periapical radiograph (DPR) techniques have some limitations in the visualization of small periapical lesions (PLs) when compared with cone-beam computed tomography (CBCT). However, the evidence supporting their effectiveness is very limited. This retrospective (longitudinal) cohort study evaluated the outcome of endodontic treatments measured/monitored by FFR, DPR, and CBCT during a 5-year follow-up and also determined the prognostic factors that influenced treatment success.

Methods
A total of 132 teeth (208 roots) with vital pulps received endodontic treatment. The periapical indexes with scores ≥2 for FFR and DPR and ≥1 for CBCT indicated the presence of PLs. Prognostic factors were determined by bivariate and multivariate analyses. Statistical significance was defined at a P (level) <.05.

Results
CBCT detected a higher number of PLs (18.7%, n = 39 roots), followed by DPR (7.7%, n = 16 roots) and FFR (6.7%, n = 12 roots). Likewise, CBCT was more sensitive than FFR and DPR in detecting deficiencies in extension and density of the root canal filling (P <.001). Of the 17 prognostic factors evaluated, 4 were significantly associated with poor outcome to the treatment (P <.05): root canal curvature, disinfection of gutta-percha, presence of missed canals, and the quality of definitive coronal restoration.

Conclusions
The success outcome of endodontic treatment after 5 years in teeth with vital pulps varied with each radiographic method: 94.3%/FFR, 92.3%/DPR, and 81.3%/CBCT.

Key Words:
Cone-beam computed tomography, outcome of nonsurgical endodontic treatment, periapical radiography, retrospective study

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