Original article

Evaluation of 20 degree Shifted Radiographs in Endodontic Treatment

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Abstract

The aim of this study was to evaluate the frequency of root canal separation on radiographs of mandibular molars taken for determining endodontic treatment working length using a 20° mesial (M) or distal (D) shift jig compared with a perpendicular (0°) angle. Radiographs of 42 human mandibular molars were taken at a horizontal angle of 0°, 20° M shift, or 20° D shift to the tooth. The radiographs were evaluated by two examiners. Seventy-one percent and 73 % of the 20° M shift radiographs were deemed acceptable (separated roots) by the first and second examiner, respectively. In contrast, 54 % and 64 % of the 20° D shift radiographs were acceptable to the first and second examiner, respectively. The strength of agreement from both examiners was at a high level of 0.804-0.904. The percentage of acceptable M and D shift radiographs for each examiner were similar ($P>0.05$) and significantly higher compared with the 0° x-ray beam angle ($P<0.05$). Radiographs taken using either the 20° M or D shift jigs are more likely to have distinct mandibular molar root canal separation when determining the working length for root canal treatment compared with 0° images. The advantage of these jigs is the precise determination of the shifted radiograph angle.

Keywords: Endodontic treatment, Radiograph, Twenty-degree angulation

Received Date: Nov 21,2017 **Accepted Date:** Mar 6,2018

doi: 10.14456/jdat.2018.30

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Introduction

Radiographs are important diagnostic tools for root canal treatment. They are regularly used for determining the appropriate working length to prevent the extrusion of instruments or necrotic tissue from the root canal apex. If this extrusion occurs, the patient may experience pain or swelling after treatment. The correct