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Canal transportation and centering ability of single file systems using cone beam computed tomography

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Aims: The main aim of the study is to evaluate and compare transportation and centering ability of Reciproc, Wave One and Edge File rotary systems using cone-beam computed tomography (CBCT).

Methods: Ninety mesiobuccal mandibular uncalcified canals with at least 19 mm length, canal curvature of 15-30 degree (Schneider method), and mature apex were selected. Canals were randomly divided into three groups of 30 teeth and canal preparation with Reciproc, Wave One and Edge File was performed according to the manufacturer's instructions. CBCT images were taken before and after instrumentation in the same position. Apical transportation was calculated in the distances of 2, 3 and 4 mm from the apex. Kruskal-Wallis and Mann-Whitney U test were used to statistically analyze the data. The significance level was set at P=0/05.

Results: Mean canal transportation was significantly lower with Edge file (P<0.001) followed by Wave One rotary system. Moreover, centering ability of Edge File system was higher than Wave One and Reciproc systems.

Conclusion: Edge File rotary system showed the lowest transportation in both mesiodistal and buccolingual directions and the highest centering ability. Reciproc system showed the highest transportation and lowest centering ability.

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