Evaluation of Single Ni-Ti Rotary File on Canal Shaping

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Abstract

Purpose: WaveOne and Reciproc nickel-titanium (Ni-Ti) systems are designed specifically for preparing the root canal to an adequate size and for tapering with only one file under reciprocating motion. This study evaluated the shaping ability of WaveOne and Reciproc in comparison with ProTaper, with regard to the working time and post-preparation canal in simulated curved canals.

Methods: Sixty simulated resin block canals with angle of curvature of 30° were divided according to the Ni-Ti rotary system used for canal preparation into 4 groups of 15 samples each: WaveOne Small, WaveOne Primary, Reciproc R25, and ProTaper group. The preparation working time was recorded, and all canals were scanned by using an Olympus SZX16 and digital camera DP71 system before and after instrumentation to evaluate canal transportation at 1, 2, 3, and 5 mm from the apex. The significance level was set at p<0.05.

Results: The working time taken for WaveOne and Reciproc were significantly shorter than that for ProTaper. WaveOne Small exhibited a significantly lower mean of inside canal transportation than outside canal transportation. There was no significant difference between all experimental groups in outside canal transportation (p>0.05).

Conclusions: The WaveOne and Reciproc Ni-Ti systems can be safely and quickly used to the full working length, resulting in satisfactory preservation of the original canal shape.

Key words: Ni-Ti rotary file, Canal transportation, Reciprocating motion, WaveOne, Reciproc