p-2 The efficiency of the Ni-Ti Rotary files in curved canals shaped by novice operators

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Ⅰ. Objectives

The objective of this study was to evaluate the efficiency of the Ni-Ti engine-driven rotary files in curved canals shaped by novice operators and to know which technique is suitable for novice operators.

Ⅱ. Materials and Methods

Seventy-two resin simulated root canal blocks were divided into 2 groups (novice operators and endodontists). Each group was categorized with 3 subgroups : ProFile, ProTaper, and Hybrid technique (ProTaper + ProFile). Simulated root canal blocks were shaped as recommended by the manufacturer. The images of Pre-instrumentation and Post-instrumentation were acquired using digital camera and superimposed in the computer. Then the Post-instrumentation canal diameter, movement of canal center and the centering ratio at the pre-determined level from the apex (1, 2, 3, 4, 5, 6 and 7mm) were measured. Apical transportation and the time taken for each technique were also noted. Results were statistically analyzed by Mann-Whitney U test at a significance level of 0.05.

Ⅲ. Results

1. Post-instrumentation canal diameters in novice operators were greater than those of endodontists at 1, 2, 5, 6, 7mm level in ProFile, 6mm level in ProTaper and 3mm level in Hybrid ($p<0.05$).
2. In all groups, canal center moved towards the inner portion of curvature at 4, 5, 6, 7mm level and moved towards the outer portion of curvature at 1, 2, 3mm level. However, at 3mm level in novice operators with ProTaper and at 3mm level in endodontists with Hybrid, canal center moved towards the inner portion of curvature ($p<0.05$).
3. Mean centering ratios in novice operators were greater than those of endodontists at 3mm level in all groups and 5mm level in ProFile ($p<0.05$).
4. Apical Transportations in novice operators with ProTaper were greater than those of endodontists ($p<0.05$).
5. In all groups, novice operators spent more time in canal shaping than endodontists did ($p<0.05$).

Ⅳ. Conclusion

Among the three techniques, Hybrid use of ProFile and ProTaper is recommended to novice operators. This study suggest that novice operators are able to shape curved root canals with Ni-Ti engine-driven rotary files, if they are sufficiently instructed.