

Oral Presentation III

Comparative study on the shaping ability of ProFile and ProTaper, K-Flexofile in simulated canals with different angles of curvature

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I. Objectives

This study was done to evaluate the shaping ability of ProFile and ProTaper, K-Flexofile during instrumentation in simulated resin canals with different angles of curvature.

II. Materials and Methods

Ninety simulated root canals with a curvature of 15, 30 and 45 degree (following Schneider's method) were made of epoxy resin (EPOXICURE™, BUEHLER, USA) for this study. The canal length of simulated root canals was adjusted to 18 mm. The beginning point of curvature was positioned at 10 mm from the canal orifice. Three types of instruments were used : ProFile (Dentsply Maillefer, Ballagiues, Switzerland), ProTaper (Dentsply Maillefer, Ballagiues, Switzerland), K-Flexofile (Dentsply Maillefer, Ballagiues, Switzerland). Simulated root canals in resin block were prepared by ProFile, ProTaper with 250 rpm using a crown-down preparation technique, and by K-Flexofile using a step-back technique. All simulated canals were prepared up to size 30 file at end-point of preparation. Pre- and post- instrumentation images were recorded with digital camera. Assessment of canal shape was completed with Image Analysis program. Instrumentation time, changes of canal dimension and curvature, canal aberration, instrumentation deformation was evaluated. The analysis of variance test was used for the statistical analysis of data obtained.

III. Results

1. Instrumentation time was inclined with the increase of angle of curvature ($p < 0.05$).
But there is no statistically difference between ProFile and ProTaper.
2. In comparison with K-Flexofile, ProFile and ProTaper achieved better canal geometry and showed significantly less canal transportation, and created fewer canal aberrations.
3. All instruments maintained a good working distance.

IV. Conclusions

This result suggests that ProFile and ProTaper can be able to maintain an original canal shape regardless of the increase of angle of curvature.