

The impact of post space preparation with Gates-Glidden drills on residual dentin thickness in distal roots of mandibular molars

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Kuttler S, McLean A, Dorn S, Fischzang A. Department of Endodontics, Nova Southeastern University, Fort Lauderdale, FL, USA.

BACKGROUND

Posts frequently are used to retain buildups. The authors examined the effects of post space preparation with Gates-Glidden drills on residual dentin thickness in distal roots of mandibular molars.

METHODS

The authors embedded 26 root-treated mandibular molars in endodontic cubes and sectioned them perpendicularly to their long axis at 1.8-millimeter intervals. They placed Gates-Glidden drills nos. 3, 4, 5 and 6 sequentially to 5 mm short of working length in the distal canals. After using each drill size, the authors measured the dentin thickness from light microscopic images of the tooth slices. **RESULTS:** The authors analyzed data to detect changes resulting from canal instrumentation. They performed statistical analysis by partitioning the variability in a nested analysis of variance. Strip perforations occurred with a no. 4 Gates-Glidden drill 7.3 percent of the time and more frequently with larger drills. After endodontic treatment alone, the canal wall on the furcal side was less than 1 mm thick 82 percent of the time and less than 0.5 mm thick 17.5 percent of the time. **CONCLUSIONS:** Dentin thickness correlates inversely to post space diameter. A no. 4 Gates-Glidden drill caused strip perforations in 7.3 percent of the canals studied, and therefore the authors recommend that Gates-Glidden drills larger than a no. 3 not be used in these roots. After endodontic treatment, the furcation-side dentin thickness was less than 1 mm in 82 percent of the teeth. **CLINICAL IMPLICATIONS:** Post space preparation in mandibular molars carries significant risk of perforation. Post space in such teeth should be limited to the endodontically prepared canal.

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