Impact of Er,Cr:YSGG Laser Therapy on the Cleanliness of the Root Canal Walls of Primary Teeth

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Abstract

Root canal therapy might be required for primary teeth displaying signs of pulpal inflammation or necrosis. Cleaning and shaping followed by obturation of the canal space with a resorbable paste have been widely performed with remarkable clinical success. However, lengthy endodontic procedures might be contraindicated when treating certain pediatric patients. The aim of this study was to compare the cleanliness of the root canal walls of primary teeth and the time required for the completion of the cleaning and shaping procedures performed by the Er,Cr:YSGG laser, manual or rotary instrumentation techniques. Thirty-five extracted, single-rooted, primary teeth were divided into 4 groups: I, canals were instrumented with Profile .04 rotary instruments to a master apical file size #35; II, the laser was used (parameters: 1.50 W, 20 pps, 30% water and 50% air) with a Z3 laser tip (0.32-mm diameter); III, canals were instrumented with stainless steel K-files; and IV, no instrumentation was performed (control). The teeth were split in 2 halves and prepared for scanning electron microscopy analysis. Images from the coronal, middle, and apical thirds of the roots were analyzed independently by 2 calibrated, blinded evaluators. Statistical analysis revealed significant differences among the groups (Kruskal-Wallis, $P = .0001$). The techniques were not capable of providing completely clean canals. Treatment with Er,Cr:YSGG laser provided similar cleanliness when compared with rotary instrumentation technique and was superior to manual instrumentation. The laser technique required less time for completion of the cleaning and shaping procedures when compared with both rotary or hand instrumentation. (J Endod 2008;34:474–477)

Key Words

Cleaning and shaping, lasers, primary teeth, root canal therapy

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