

Effectiveness of protaper next, protaper universal and waveone systems in reducing intracanal bacterial load

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Bacteria and their by-products play an essential role in the development of pulp and periapical diseases and are factors which affect the results of root canal therapy. Therefore, we evaluated the bacterial reduction achieved by ProTaper Next (PTN), ProTaper universal (PTU) and WaveOne (WO) systems in root canals contaminated with *Enterococcus faecalis*. A hundred human mandibular premolars were selected and 95 were contaminated with *E. faecalis* for 4 weeks. Then the teeth were randomly divided into six groups (n = 15): PTN + 2.5% NaOCl; PTU + 2.5% NaOCl; WO + 2.5% NaOCl; PTN + saline solution; PTU + saline solution; and WO + saline solution. Positive and negative control groups were created with five specimens each. Samples taken before (S1) and after (S2) chemomechanical procedures were cultured and the colony-forming units (CFUs) were counted. The paired t-test was used for

intragroup analysis, and one-way ANOVA for intergroup analysis. When significant differences were found amongst the groups, the Tukey test was used. The significance levels were set at 5% ($P < 0.05$). After root canal instrumentation, there was a significant reduction in bacterial load in all groups ($P < 0.01$). The WO + saline solution group showed a lower level of bacterial reduction when compared with the other tested groups ($P < 0.01$). Groups irrigated with NaOCl showed a higher level of bacterial reduction when compared with saline solution irrigation ($P < 0.01$), with no statistical differences amongst the systems used ($P > 0.05$). The PTN system was as effective as PTU and WO in the removal of bacteria during root canal treatment.

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