

**In Vitro Evaluation of the Light speed and Profile Rotary Systems in the Preparation of Curved Root Canals**

Successful root canal treatment depends on removal of pulp tissue, bacteria and necrotic debris from the root canal system, with adequate canal shaping that facilitates obturation. Recently a variety of engine drive rotatory systems have been introduced to the market in an attempt to simplify canal preparation especially the curved canals and reduce operator fatigue. The aim of this work was to evaluate the Profile and the light speed rotary systems together with their recommended obturation techniques which are the Thermafil and the Simplfill respectively, versus the conventional hand instrumentation with Ni-Ti K-files using step-back technique and lateral condensation obturation technique, regarding three parameters, cleanness of instrumented canals, canal deviation and leakage of obturated canals. 90 Freshly extracted human mandibular molars were used in this study. Teeth were divided into three main groups according to the method of canal preparation. Each group was evaluated by histological examination, digital radiography assessment and apical dye Leakage. The Profile and the lightspeed rotary systems, and also the hand instrumentation by the Nitiflex files were able to remove the major contents of the instrumented canals at #35 apical preparations. But none of them totally debrided the entire root canal system. The Lightspeed rotary instruments were superior to the hand instrumentation with the Nitiflex files in maintaining the original canal curvature