

**Republic of Iraq
Ministry of Higher Education
And Scientific Research
University of Baghdad
College of Dentistry**



**Comparative evaluation of the centering
ability and canal transportation of simulated
S-shaped canals instrumented with different
Nickel –Titanium rotary systems**

A thesis

**Submitted to the council of the College of Dentistry at the
University of Baghdad, in partial fulfillment of the requirements
for the degree of Master of Science in Conservative Dentistry**

By

Sura Abdulameer Jaber

B.D.S

Supervised by

Assist.Prof Dr. Zainab M. Abdulameer

B.D.S., M.Sc.

Baghdad –Iraq

2015 / March

1436 / Jumada-II

Abstract

During the last few years many attempts were done to overcome canal preparation errors such as technological advancements in instruments have led to new design concepts and easier and faster techniques that preserve the original canal shape.

The aim of this study was to evaluate and compare the centering ability and canal transportation of different reciprocating and continuous rotary NiTi file systems in simulated S-shaped canals in clear resin blocks at different levels.

Forty simulated S-shaped canals in resin blocks were divided into four groups of ten each and were instrumented to an apical size 25 by different instrumentation technique using ProTaperUniversal files (group A), ProTaperNext (group B), Reciproc (group C) and WaveOne (group D). Centering ability and canal transportation was measured at (11) measuring points from D0 to D10 by superimposition of the pre- and post-operative images obtained by using digital camera in standardized manner. An assessment of the canals shape was determined using Photoshop CS2 and AutoCAD software. The data were analyzed statistically using ANOVA and LSD test.

In terms of centering ratio values, there was no statistically significant difference among the four groups at the coronal portion of the canals, with ProTaper system showing the least centering ability at all levels except at apical foramen. At the apical curvature, the Reciproc and WaveOne groups showed better centering ability than ProTaperNext and the difference was statistically highly significant among them at these points, while at the coronal curvature the ProTaperNext showed better centering ability than Reciproc and WaveOne. Canal transportation was seen in all groups but the ProTaper systems showed more transportation values at almost levels when compared with the other groups with the least values by ProTaperNext at the coronal curvature and the least values by Reciproc and WaveOne at the apical curvature.

Under the conditions of this study, ProtaperNext ,WaveOne and Reciproc instruments maintained the original curvature significantly better than ProTaperUniversal at almost levels. ProtaperNext showed a better shaping ability than Reciproc and WaveOne at the coronal curved section while at apical curved section Reciproc and WaveOne showed a better shaping ability than ProtaperNext.