

Comparative Analysis of Canal Centering Ratio, Apical Transportation, and Remaining Dentin Thickness between Single File System Using Cone Beam Computed Tomography: An in vitro Study

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Abstract : Aim: To compare the canal transportation, centering ability and remaining dentin thickness of OneShape and WaveOne system using CBCT. Objective: To identify rotary system which respects original canal anatomy. Materials and Methods: Forty extracted human single-rooted premolars were used in the present study. Pre-instrumentation scans of all teeth were taken, canal curvatures were calculated, and the samples were randomly divided into two groups with twenty samples in each group, where Group 1 included WaveOne system and Group 2 Protaper rotary system. Post-instrumentation scans were performed, and the two scans were compared to determine canal transportation, centering ability and remaining dentin thickness at 1, 3, and 5 mm from the root apex. Results: Using Student's unpaired t test results were as follows; for canal transportation Group 1 showed statistical significant difference at 3mm, 6mm and non-significant difference was obtained at 9mm but for Group 2 non-statistical significant difference was obtained at 3mm, 6mm, and 9mm. For centering ability and remaining dentin thickness Group 1 showed non-statistical significant difference at 3mm and 9mm, while statistical significant difference at 6mm was obtained. When comparison of remaining dentin thickness was done at three levels using two groups WaveOne and ProTaper. There was non-statistical significant difference between two groups. Conclusion: WaveOne single reciprocation file respects original canal anatomy better than ProTaper. WaveOne depicted the best centering ability.

Keywords : ShapeOne, WaveOne, transportation, centering ability, dentin thickness, CBCT (Cone Beam Computed Tomography)

Conference Title : ICD 2017 : International Conference on Dentistry

Conference Location : Bangkok, Thailand

Conference Dates : December 18-19, 2017