Abstract

Evaluation of gutta-percha adaptation in curved canals prepared with M3, Neoniti files by CBCT

Introduction: Despite the common use of M3 and neoniti rotary files by dentists, there has been no study on the adaptation of gutta-percha in curved canals prepared with M3 and Neoniti files by CBCT. Therefore, the present study was designed and compiled with the aim of investigating the adaptation of gutta-percha in curved canals prepared with M3 and Neoniti files by CBCT.

Materials and methods: This randomized controlled laboratory study was conducted ex vivo on 30 human mandibular first molar teeth.The teeth were randomly divided into two groups and each group was prepared with the desired rotary file (the first group with M3 and the second group with neoniti), After finding and fixing the proper path of the canal with the examined rotary files, all groups were reamed using the Single Cone method using suitable gutta-percha (Gutai 25 with 4% tip) and suitable sealer (AH26 sealer).Obturation of all samples was evaluated by direct digital radiography. After gutta-percha adaptation was assessed using clinical criteria (visual and radiographic), the specimens were evaluated under CBCT. All the images obtained from CBCT were entered into AutoCAD software, and the void between the canal walls and gutta was measured in each canal, and the obtained data were analyzed using the Yeoman-Whitney test.

Results: The research results showed that the average and standard deviation of gap in M3 files (0.181 ± 0.089) was higher than Neoniti file (0.173 ± 0.033). However, no significant difference was observed in gutta-percha adaptation in curved canals prepared with M3 and Neoniti files (P>0.05).

Conclusion: Considering the acceptable adaptation of gutta-percha in canals prepared with M3 and Neoniti files, it is suggested to use suitable single gutta in canals prepared with these files. Also, in the coronal part, due to the increase of the void, the use of warm vertical compression method is also suggested.

Keywords: Obturation, Adaptation, Nickel-titanium Rotary Files, Cone Beam Computed Tomography, Curved Canals.