Abstract

Evaluation of gutta-percha adaptation in direct canals prepared with M3, Neoniti and Protaper next files by CBCT

Introduction: The lack of adaptation of gutta-percha to the canal wall causes the entry of microorganisms and toxins from the root canal system into the peri-apical tissue. Due to the fact that no study has been done on the adaptation of gutta-percha in direct canals prepared with M3, neoniti and protaper next files. Therefore, the present study was conducted with the aim of investigating the adaptation of gutta-percha in direct canals prepared with M3, neoniti and protaper next files by CBCT.

Materials and methods: This laboratory study was carried out ex vivo on 45 human teeth with direct canals in three groups: M3, neoniti and protaper next. Obturation was performed in all groups with gutta-percha(Gutai25 with 6%tip) and suitable sealer (AH26). After that, the adaptation of the gutta was evaluated using clinical criteria (visual and radiographic). The samples were evaluated under CBCT. All images obtained from CBCT were converted to JPEG format and then entered into AutoCAD software, and the gap between canal walls and gutta-percha was measured in each canal. After collecting and controlling the data in SPSS version 22, the data were analyzed using the Kruskal-Wallis test.

Results: The results showed that the mean and standard deviation of the gap in protaper next files (0.401 ± 0.195) were higher than M3 files (0.267 ± 0.146) and neoniti files (0.239 ± 0.076), respectively. But this difference was not statistically significant ($P>0.05$).

Conclusion: Due to the acceptable adaptation of gutta-percha in the canals prepared with M3, Neoniti and protaper next files, it is recommended to use single gutta in the canals prepared with these files, also in the coronal part due to the increase of void, the use of Warm vertical compression method is also suggested.

Keywords: Adaptation, Obturation, Cone Beam Computed Tomography, Nickel Titanium Rotary Files.