

Abstract:

Title: Comparing the Accuracy of three types of apex locators Raypex 5, Novapex , Dentaport ZX in determining the length of mesiobuccal roots of first mandibular molar inferior jaw.(in vitro)

Introduction: Determining the canal length is an essential step in root canal treatment of both permanent and primary teeth. Usually, a radiograph is taken to measure the canal length, However, it requires the patient's cooperation and also it is associated with the adverse effects of radiation therapy. Apex locators can be considered as an efficient alternative for this purpose, therefore, this study was performed to compare three types of apex locators Raypex5 , Novapex , Dentaport ZX with radiography in measuring the length of the mandibular permanent molar's mesiobuccal canal.

Materials and Methods: In this in vitro experimental study, 72 mesiobuccal root canals of mandibular molars with root canal curvatures of about 20-30 degrees were selected.

After disinfecting teeth with 10% formalin solution, the teeth were kept in %0.5 chloramine T solution until the study. Access cavity was prepared, and the pulp tissue was removed by barbed broach.

The actual length of the root canal was determined by measuring the distance from the stopper to the tip of a number 15 file using an Endometer, after reducing 0.5 mm. Then root canal length obtained by apex locators Raypex5, Novapex, Dentaport ZX on different days was compared with radiographs and the data were analyzed using one-way analysis of variance test (ANOVA) and paired t-test at an error level of less than 0.05 in SPSS 24.

Results: No significant differences were found between the working lengths measured by three apex locators and the actual working lengths. There were significant differences between the working lengths measured by three apex locators and periapical radiography.

Conclusion: There were no statistically significant differences between the working lengths obtained by three apex locators and the actual working lengths.

Keywords: Apical Constriction, Working length, Electronic apex locator