

The Correlation between EAL and Radiograph in Resin Model

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Objectives: The objective of this study was to determine the accuracy of the working length determination by using electronic apex locators(EALs)in simulated resin jaw models by using conventional radiographs

Methods: Fifty-one human upper central incisors embedded in resin jaws were used in this experiment. The 3rd year dental students had to practice endodontics using rubber dam inside the phantom heads containing the resin jaws, in order to simulate a clinical environment. The jaw model was designed so that it could be used with an EAL in order to find the root length. The length could then be compared with that obtained from a radiograph. The acceptable root length obtained from the EAL should be within 0.5 mm of the root length obtained from the radiographic apex.

Results: The length of the file determined by EAL and radiograph of the same tooth were analyzed statistically. Intraclass correlation coefficient and the percentage of acceptable canal according to the criteria were performed with a p-value of $p=0.05$. The results revealed an intraclass correlation coefficient of 0.710 (95% CI = 0.538,0.825). There was good correlation between EALs and radiographs in determining the root length (64.71%).

Conclusions: The use of EAL with this resin jaw model is advantageous with regards to endodontic studies and highly useful in ensuring improved efficiency of students in future clinical practice. The knowledge students acquire in the laboratory will be applied to their clinical work and result in more effective clinical performances regarding working length determination. The more familiar students are with EAL in the laboratory, the more likely they will be in solving common problems in real patients.