

ABSTRACT

AIM:

To compare the Accuracy of Root ZX mini (J.Morita Corp., Tokyo, Japan), and Raypex6(VDW, Munich, Germany) apex locators in detecting the apical constriction in human permanent maxillary anterior teeth in the presence of 0.9% saline; 5% sodium hypochlorite; 2% chlorhexidine digluconate, as various intracanal irrigants.

MATERIALS AND METHODS:

Sixty extracted, straight, single rooted permanent human maxillary anterior teeth were randomly divided into two main groups according to the apex locators tested such as Group1 (n=30,Root ZX mini) Group 2 (n=30,Raypex6). Then each group is further divided into 3 subgroups according to the irrigants used such as Group 1A(n=10,Root ZX mini,0.9% normal saline), Group 1B(n=10,Root ZX mini,5%NaOCl),Group 1C(n=10,Root ZX mini,2%chlorhexidine digluconate), Group2A(n=10,Raypex6,0.9% normal saline), Group2B(n=10,Raypex6, 5%sodium hypochlorite), Group2C (n=10,Raypex6, 2%chlorhexidine digluconate).The teeth were decoronated at the level of cementoenamel junction and the actual length (AL) of each specimen was determined by introducing a size 10 or 15 K file into the canal until its tip emerged through the major apical foramen at $\times 10$ magnification under a stereomicroscope. Each specimen was embedded in the gelatin model and the EALs were tested according to the manufacturer's instructions. The Electronically measured canal length was recorded by using size 10 or 15 K file(EL). Then the K-files were fixed at the WL determined electronically with GIC. The apical 4 mm of the root was longitudinally sectioned and examined under Stereomicroscope with 30x magnification.The distance from the file tip to the minor diameter is calculated from the Stereomicroscopic images. Independent sample t test and Pearson Chi-Square test was used to statistically analyse the significance of irrigants on the accuracy of apex locators and to compare the accuracy of both apex locators. Significance was set at $P < 0.05$.

RESULTS:

The overall accuracy of measurements within ± 0.5 mm of AL by Root ZX mini was 93.33% and Raypex 6 was 90% respectively.

CONCLUSION:

Within the limitations of this in vitro study the two electronic apex locators, the Root ZX mini and the Raypex6 were found to have similar accuracy and the use of 5% NaOCl, 0.9% normal saline, or 2% Chlorhexidine as irrigation solutions did not affect the accuracy of the two apex locators in detecting the apical constriction.

KEY WORDS:

Apical constriction, EAL, Root ZX mini , Raypex6, intracanal irrigant.