ABSTRACT

AIM OF THE STUDY:

The aim of this in vitro study was to evaluate the effect of various final irrigation regimen on the wettability and push out bond strength of an epoxy resin root canal sealer AH plus.

METHODOLOGY:

To assess wettability, 20 premolars were cross-sectioned to prepare 40 dentin discs. Dentin discs were then divided randomly into 4 groups (n = 10) depending on the irrigation regimen: Group I: 5 ml of 3% NaOCl; Group II: 5 ml of 3% NaOCl + 5 ml of 17% EDTA; Group III: 5 ml of 3% NaOCl + 5 ml of 10% citric acid; Group IV: 5 ml of 3% NaOCl + 5 ml of Q mix. Irrigation regimens were performed for 1 min. Each specimen was placed inside a Dynamic Contact Angle Analyzer. A controlled-volume droplet of sealer was placed on each specimen and the static contact angle was analyzed.

To assess push out bond strength, eighty extracted premolars with single canal were collected and decoronated at cementoenamel junction (CEJ). Teeth were randomly divided into four groups based on irrigation regimen similar to grouping in wettability as mentioned above. Biomechanical preparation was performed with ProTaper Universal NiTi rotary instrument. Obturation was done with AH plus sealer and gutta-percha cones by cold lateral condensation. The dislocation resistance was assessed by using push-out bond strength test. The data was statistically analyzed.
RESULTS:

The contact angles of group 4 (3% NaOCl + Q mix) was significantly less compared to group 1 (3% NaOCl), group 2 (3% NaOCl + 17% EDTA) and group 3 (3% NaOCl + 10% Citric acid). The contact angles of group 2 (3% NaOCl + 17% EDTA) and group 3 (3% NaOCl + 10% Citric acid) were significantly larger than group 1 (3% NaOCl). However, there was no significant difference between the contact angles produced by group 2 (3% NaOCl + 17% EDTA) and group 3 (3% NaOCl + 10% Citric acid).

The push out bond strength of group 2 (3% NaOCl + 17% EDTA), group 3 (3% NaOCl + 10% Citric acid) and group 4 (3% NaOCl + Q mix) were significantly higher than that of group 1 (3% NaOCl). However, there was no significant difference between group 2 (3% NaOCl + 17% EDTA), group 3 (3% NaOCl + 10% Citric acid) and group 4 (3% NaOCl + Q mix).

CONCLUSION:

Within the limitations of this in vitro study, QMix enhanced the wettability of AH plus root canal sealer to dentin. Chelating agent enhanced the bond strength of the AH Plus to root dentin. However, there was no significant difference in bond strength of AH plus when root canal was irrigated with QMix compared to EDTA and Citric acid.