Effect of maleic acid, ethylendiaminetetraacetic acid, MTAD on smear layer removal and dentin microhardness

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Abstrak

ABSTRAK
Objective: In this study, we aimed to compare efficacy of various irrigating solutions for smear layer removal and dentin microhardness. Methods: Based on the four final irrigants used plus saline control, 50 single rooted teeth were divided into five groups. Using a step back technique with K files, chemomechanical preparation was performed.
Canals were apically enlarged up to ISO size 40 and stepped back up to ISO size 60. During preparation, irrigation was performed with 2.5% NaOCl solution and the roots were sectioned into two halves. In the coronal, middle, and apical thirds, the smear layer was evaluated by scanning electron microscopy in one half, whereas the dentin
microhardness was evaluated in the other half. Results: For all irrigants in the coronal and middle third regions, the efficacy of smear layer removal was comparable. Doxycycline, citric acid, Tween 80 (MTAD) and 10% maleic acid were the most effective for the apical third region, followed by 7% maleic acid and 17% ethylenediaminetetraacetic acid (EDTA). Dentin microhardness was most affected by MTAD and 10% maleic acid, followed by 17% EDTA and 7% maleic acid. Conclusion: For removal of smear layer and the least effect on dentin microhardness, 7% maleic acid was effective.