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 LAYER

SUWIT WIMONCHIT: COMPARISON OF ENTRAPPED AIR
 REMOVAL BY VACUUM AND FLUID FILTRATION USING CORONAL
 LEAKAGE MODEL IN THE PRESENCE AND ABSENCE OF SMEAR LAYER.
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The objective of this study was to determine whether the removal of smear layer had any effect on coronal dye penetration by comparison of three leakage tests. One hundred and sixty five extracted human anterior teeth were decoronated and randomly divided into 2 subgroups; one hundred and fifty roots for experimental study and fifteen roots for SEM examination.

In SEM examination, the roots were equally assigned to study the morphology of root canal wall in three conditions; uninstrumented canal, instrumented canal and instrumented canal with 17% EDTA irrigation. The remaining roots were instrumented chemomechanically using hand files, with the step back technique. Copious irrigation was carried out with 5.25% NaOCl. Following instrumentation, sixty roots were chosen and rinsed with 17% EDTA and 5.25% NaOCl while the remaining were flushed with 5.25% NaOCl alone. The roots of both groups were obturated with gutta-percha in conjunction with AH Plus in lateral condensation technique. Fifteen roots serving as positive controls were instrumented but obturated without sealer, while another set of fifteen were sealed coronally and apically to serve as negative controls. The roots were stored for 5 days and the extent of coronal leakage was determined for each technique of leakage test used.

The roots were randomly allocated in order to test the coronal seal by the extent of India ink penetration using three different techniques of leakage testing; vacuum dye penetration, fluid filtration dye penetration and passive dye penetration. The teeth were demineralized dehydrated and immersed in methyl salicylate, which rendered them transparent. Linear measurement of maximum dye penetration was recorded.

The mean \pm SD(mm) of leakage for the groups in which the smear layer was intact was 2.53 \pm 1.02 for passive dye penetration, 6.68 \pm 2.80 for vacuum dye penetration and 3.02 \pm 1.13 for fluid filtration dye penetration. When the smear layer was removed, the mean depth of leakage for passive dye penetration was 3.28 \pm 2.09, 5.82 \pm 2.76 for vacuum dye penetration and 3.38 \pm 2.08 for fluid filtration dye penetration. There was no significant difference in coronal leakage between with or without smear layer in different leakage testing techniques ($p>0.05$). The vacuum dye penetration group had significantly more ink penetration than the other groups ($p<0.05$).