

***The effect of different acidic
environments on the apical
microleakage of different obturation
techniques
(An in vitro study)***

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[Abstract]

Pulpal and apical inflammation or infection decreases tissue pH in the region surrounding the involved tooth. Microleakage of different obturation systems might be affected by this change in the apical environment. The aim of this study is to evaluate the apical microleakage of three obturation techniques (lateral condensation of Gutta-percha/AH 26, Soft-Core gutta-percha/AH 26 and lateral condensation of Resilon/Real Seal SE), when exposed to different pH values (7.2, 6.5, 6.0 and 5.5).

One hundred and thirty two freshly extracted upper and lower first molar teeth with mature apices and straight or semi straight roots were selected. External soft tissue and debris were removed and the teeth were decoronated. Working length was established and the roots were positioned in an assembly that composed of acrylic cylinder performing as a socket and light body impression material simulating the periodontal ligament. Roots were instrumented using a crown down technique with ProTaper rotary files (SX-F3). The specimens were divided into three groups of 44 samples each. Group A: 40 roots obturated using lateral condensation of gutta percha and AH 26. Group B: 40 roots obturated using soft-core and AH 26. Group C: 40 roots using lateral condensation of Resilon and Real Seal SE. Each group had two positive and two negative control samples. Each group was further subdivided into four subgroups, 10 samples each, which were exposed to pH values of 7.2, 6.5, 6.0 and 5.5 respectively. Indian ink was used as the leakage indicator followed by longitudinal sectioning, and then the specimens were examined under stereomicroscope to evaluate the liner dye penetration.

Within the circumstances of this in vitro study there was a non significant statistical difference within each group regarding the different pH media. Both Soft-Core and Resilon showed less apical microleakage than lateral condensation of gutta percha with a highly significant difference in all of the tested acidic media.