

# Comparison of percentage of gutta-percha filled areas among the three obturation techniques

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## ABSTRACT

**Aim:** The purpose of this laboratory study was to evaluate the ability of different obturation techniques, cold lateral compaction, warm lateral compaction, and continuous wave compaction technique by means of the percentage of gutta-percha filled areas in oval canals.

**Materials and Methods:** Sixty extracted human mandibular premolars were instrumented with the K3XF rotatory file system using crown down technique until size 30/.04 taper instrument. After biomechanical root canal preparation was performed, samples were randomly divided into three groups according to obturation techniques (Cold lateral compaction technique, warm lateral compaction technique and continuous wave compaction technique, n=20 each). Thereafter, the obturated root canals were sectioned horizontally with a 0.1mm-low-speed saw (IsoMet 4000 BUEHLER) under water-cooling at 3, 6 and 9 mm from the apical foramen. The sections were photographed at 40×magnification with a digital microscope. On the digital images of each segment, the total area of each canal segment and the areas of gutta-percha were measured in a metric system using the Image J soft-ware (National Institute of Health, public domain).

**Results;** No statistically significant difference was observed among the three obturation techniques at each level ( $P > 0.05$ ). However, there was a significant difference in the percentage of gutta-percha filled areas between 3 mm and 9 mm of cold lateral compaction technique ( $P < 0.05$ ).

**Conclusion:** Within the limitations of this laboratory study, there was no statistically significant different among the three obturation techniques. All the obturation techniques can provide an acceptable standard of obturation quality. However, no obturation techniques can provide voids free obturation.