

GUTTAFLOW BIOSEAL VERSUS MONOCONE OBTURATION TECHNIQUE. A SCANNING ELECTRON MICROSCOPY STUDY.

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ABSTRACT

The understanding of how well GuttaFlow Bioseal (GFB) conforms to the root canal irregularities is unclear and requires further investigation. This study compared the obturated surface area, the extrusion of root filling material and the duration of the obturation procedure between GFB and monocone. The root canal of twenty single-rooted mandibular premolars were prepared using Hyflex CM rotary files (Coltene/Whaledent). The samples were equally divided into two groups; GFB and monocone. The duration of obturation procedure was evaluated using a digital timer, and a radiograph was taken to assess the presence of extrusion. The roots were sectioned perpendicularly to obtain three root segments; apical 1/3, middle 1/3 and coronal 1/3. All resected roots were mounted on brass stubs, sputter-coated with thin gold coating and observed under scanning electron microscope (Zeiss EVO50, Germany) at 20x magnification. The images were transferred to the SketchAndCalc Area Calculator software for evaluation of obturated surface area. The data were analysed with SPSS version 25.0. The median score of obturated surface area between GFB and monocone at the apical 1/3 was 86.51 and 83.00, at the middle 1/3 was 90.48 and 87.35 and at the coronal 1/3 was 93.00 and 83.39 respectively with statistically significant difference at the coronal 1/3. The extrusion of root filling material between GFB and monocone did not show statistically significant difference. The mean score of duration of obturation procedure between GFB and monocone was 149.50 and 137.60 respectively with statistically significant difference. The obturated surface area at the apical 1/3 and middle 1/3 between GFB and monocone was comparable, but at the coronal 1/3 the former showed 11.5% better. The extrusion of root filling material between GFB and monocone was equivalent. The obturation procedure with GuttaFlow Bioseal required 8.6% longer than the monocone obturation technique.

Keywords: Guttaflow Bioseal, Monocone, Root Canal Treatment, Scanning Electron Microscopy

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