

## GUTTAFLOW BIOSEAL AS MONOCONE OBTURATION TECHNIQUE IN CURVED ROOT CANALS. A SCANNING ELECTRON MICROSCOPY STUDY

**Musliana Mustaffa**<sup>1\*</sup>, Hajar Ar Rahmah Nasri<sup>2</sup>, Insyirah Kamarulzaman<sup>2</sup>, Mohamad Shafiq Mohd Ibrahim<sup>3</sup>

<sup>1</sup>Department of Restorative Dentistry, Kulliyah of Dentistry, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, Bandar Indera Mahkota, 25200 Kuantan, Pahang, Malaysia.

<sup>2</sup>Undergraduate dental students, Kulliyah of Dentistry, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang, Malaysia.

<sup>3</sup>Department of Dental Public Health, Kulliyah of Dentistry, International Islamic University Malaysia, Jalan Sultan Ahmad Shah, 25200 Kuantan, Pahang, Malaysia.

Corresponding author email: [muslianamustaffa@iium.edu.my](mailto:muslianamustaffa@iium.edu.my)

### ABSTRACT

The obturation with GuttaFlow Bioseal (GFB) in curved root canals is not clearly investigated due to the new generation of root filling material. This study compared the obturated surface area, extrusion of root filling material beyond the apical foramen and duration of obturation procedure in curved root canals using monocone obturation technique. Access cavity was prepared on twenty human mandibular molars. The root canal curvature of more than 10° determined according to Schneider's method was included. Samples were prepared using Hyflex CM rotary files and divided into two groups (n=10). Group 1 [gutta-percha (GP) cone and GFB] and Group 2 [GP cone and RoekoSeal Automix root canal sealer]. The duration of obturation procedure was recorded and the obturation radiograph was taken. Samples were bisected and the mesial roots were sectioned horizontally to obtain 3 root segments; apical, middle and coronal. All resected roots were mounted on brass stubs, sputter-coated with thin platinum coating and observed under scanning electron microscope (SEM) at 70x magnification. The SEM images were transferred to the SketchAndCalc Area Calculator software. There were no statistically significant differences on the obturated surface area and extrusion of root filling material between Group 1 and 2 irrespective of the status of root canal curvature. The duration of obturation procedure in severe root canal curvature between Group 1 and 2 exhibited statistically significant difference. The obturated surface area and extrusion of root filling material were not affected by the status of root canal curvature. The duration of obturation procedure with GFB in severe root canal curvature was slightly longer. Neither root filling material was able to seal the curved root canal of mandibular molars completely. Both root filling materials in the present study can be opted depending on the clinical cases, material availability and clinician preference.

**Keywords:** Curved Root Canal, Mandibular molars, GuttaFlow Bioseal, Monocone Obturation Technique, Scanning Electron Microscopy.

**Acknowledgement:** This research was supported by Research Initiative Grant Scheme 2017 from International Islamic University Malaysia (RIGS 2017-063-0638).