

# Evaluation of Obturation by Image Analyses and Macrogol and Propylene Glycol Penetration

Nunéz P. Phides D.D.S., Ph.D. and Etsuro Hoshino, D.D.S., Ph.D.

Oral Ecology in Health and Infection, Niigata University Graduate School of Medical and Dental Sciences, Niigata, Japan

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## Abstract

**Objectives:** This study aimed to evaluate obturations using radiographs and micro-computed tomography (MCT) and to determine if macrogol and propylene glycol could penetrate obturations until the apex.

**Method:** 30 extracted single-canal incisors were obturated with gutta-percha plus root canal sealer. Obturation was evaluated with radiographs and MCT using a scoring system (1-4) where a lower score means a better obturation. Dye mixed with macrogol and propylene glycol was applied to see whether it could penetrate through the obturation to the apex.

**Results:** MCT images often demonstrated voids not shown in the radiographs. 26 out of 30 samples had higher MCT scores (mean= 3.1; SD= ± 0.8) than radiographic scores (mean: 1.8; SD: ± 0.8). The dye-macrogol-propylene glycol mixture penetrated the obturation and exited through the apical foramen in all samples.

**Conclusion:** Obturation defects that were not shown by radiographs were often revealed by MCT. The dye-macrogol-propylene glycol mixture may have passed through those defects to the apex.

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## Key words:

Image analysis, micro-computed tomography (MCT), root canal obturation

## Correspondent:

Professor HOSHINO Etsuro

Oral Ecology in Health and Infection,

Niigata University Graduate School of Medical and Dental Sciences

Gakkocho-dori 2, Niigata 951-8514 Japan

Fax: +81 (0)25-227-0806; Tel: +81 (0)25-227-2838; e-mail: hoshino@dent.niigata-u.ac.jp

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