

# Medicinal Chemistry & Computer Aided Drug Designing

November 02-04, 2015 Atlanta, USA

## Evaluation of internal adaptation of some adhesive dental restorative materials using microcomputed tomography (Micro-CT): In vitro randomized blind clinical study

Najlaa Al Amoudi, Eman El-Ashieri, Najat Farsi and Moaz Attar  
King Abdulaziz University, Saudi Arabia

**Introduction:** Protection of exposed dentine against bacteria and their toxins is one of the major objectives of tooth restoration. In order to obtain an optimal clinical performance, adaptation of the restorative material to cavity margins and internal cavity surfaces is of great importance. Methods have been attempted for evaluating the internal adaptation of several dental restorations. Micro-CT analysis has proven useful in a wide variety of applications in dental research.

**Aim:** Evaluation of the internal adaptation of some dental adhesive restorative materials (Biodentin/Nano composite resin, Biodentin/Nano glass ionomer, Nano composite resin and conventional composite resin) to the primary dentinal surface using Microcomputed Tomography (Micro-CT).

**Materials & Methods:** Fourth extracted primary molars, due to caries or orthodontic reasons, were collected. Standardized class V cavity preparations were prepared in the cervical third of each tooth on the buccal and/or the lingual surface. The dimensions of the cavity measured approximately 5 mm mesiodistal width, 3 mm occlusogingival height and 1.5 mm axial depth. The teeth were randomly selected and assigned to one of the four experimental groups (10 per group): Group I Biodentin/Nano composite resin, group II Biodentin/Nano glass ionomer, group III Nano composite resin, and group IV conventional composite resin. After thermocycling, a high-resolution desk top micro-CT (Model 1172, Skyscan, Belgium) was used to image the samples. After scanning and reconstruction, analysis of the data are carried out with Skyscan CT. Kruskal-Wallis Test show no significant difference, between the four groups. The Biodentin/Nano composite group displayed minimum gap volume followed by Biodentin/Nano glass ionomer group while the conventional composite was found to be maximum.

**Conclusion:** The best internal adaptation was obtained from Biodentin covered with nano composite. The study indicates that Micro-Ct is a nondestructive, high resolution, reliable and innovative tool for the evaluation of the quality of restorative dental materials in terms of internal adaptation.

[nalamoudi2011@gmail.com](mailto:nalamoudi2011@gmail.com)

Notes: