

Evaluation of Dentinal Tubule Penetration after the Use of Dentin Bonding Agent as a Root Canal Sealer

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Abstract

Introduction: The purpose of this study was to compare the effectiveness of Excite DSC (Ivoclar Vivadent, Schaan, Liechtenstein), a dentin bonding agent, with AH-26 (Dentsply, Detrey, Germany) as a root canal sealer by evaluating the penetration depth into the dentinal tubules and the tag density of the two compounds. **Methods:** Forty-two extracted, single-rooted premolars were prepared and randomly obturated with either Excite DSC (n = 20) or AH-26 (n = 20). Two teeth were filled without sealer and used as controls. Randomly, one half of the specimens in each group (n = 10) was sectioned 7 days after obturation (short-term), and the other half (n = 10) was sectioned after 7 months (long-term). The specimens were sectioned perpendicular to the long axis in two regions and prepared for observation using scanning electron microscopy. **Results:** In the short-term evaluation, the mean penetration depth of AH-26 in the apical sections (0.20, 48 µmol/L) was significantly higher than that of Excite DSC (0.00 µmol/L). In the long-term evaluation, AH-26 exhibited a significantly greater depth of penetration in both the apical (0.97, 74 µmol/L) and middle sections (1.16, 11 µmol/L) than Excite DSC (0.21, 43 µmol/L and 0.77, 72 µmol/L, respectively). **Conclusion:** AH-26 showed more dentinal tubule penetration depth than Excite DSC in both evaluation periods.

Reaxys Database Information

Author keywords

AH-26; dentin bonding agent; scanning electron microscopy; sealer penetration

Indexed Keywords

EMTREE drug terms: ah 26 filling material; biomedical and dental materials; bismuth; dentin bonding agent; edetic acid; epoxy resin; Excite cement; gutta percha; hypochlorite sodium; methacrylic acid derivative; root canal filling material; silver; titanium

EMTREE medical terms: article; chemistry; clinical trial; comparative study; controlled clinical trial; controlled study; dental acid etching; dental bonding; dental surgery; dentin; drug combination; endodontics; human; instrumentation; materials testing; methodology; randomized controlled trial; scanning electron microscopy; surface property; time; tooth pulp; tooth root; ultrastructure

MeSH: Acid Etching, Dental; Bismuth; Dental Bonding; Dental Pulp Cavity; Dentin; Dentin-Bonding Agents; Drug Combinations; Edetic Acid; Epoxy Resins; Gutta-Percha; Humans; Materials Testing; Methacrylates; Microscopy, Electron, Scanning; Root Canal Filling Materials; Root Canal Irrigants; Root Canal Obturation; Root Canal Preparation; Silver; Smear Layer; Sodium Hypochlorite; Surface Properties; Time Factors; Titanium; Tooth Apex
Medline is the source for the MeSH terms of this document.

Chemicals and CAS Registry Numbers: ah 26 filling material, 00099-20-2; bismuth, 7440-76-9; edetic acid, 150-43-7, 70-00-4; gutta percha, 9000-32-2; hypochlorite sodium, 7681-02-9; silver, 7440-22-4; titanium, 7440-32-7; AH 26, 00099-20-2; Bismuth, 7440-76-9; Dentin-Bonding Agents; Drug Combinations; Edetic Acid, 70-00-4; Epoxy Resins; Excite cement; Gutta-Percha, 9000-32-2; Methacrylates; Root Canal Filling Materials; Root Canal Irrigants; Silver, 7440-22-4; Sodium Hypochlorite, 7681-02-9; Titanium, 7440-32-7

ISSN: 00992399 CODEN: JOENDS Source Type: Journal Original language: English