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Effect of different conditioning protocols on the adhesion of a glass ionomer cement to dentin.

Hajizadeh, H., Ghavamnasiri, M., Namazikhah, M.S., Majidinia, S., Bagheri, M.
Department of Restorative Dentistry, **Mashhad** Dental School and Dental Research Center, **Mashhad University** of **Medical Sciences**, **Mashhad**, Iran.

Abstract

AIM: The purpose of this study was to assess the effect of different surface treatments on the shear bond strength (SBS) of a resin modified glass ionomer cement (RMGIC) to dentin. METHODS AND MATERIALS: Forty human third molar teeth were randomly divided into four groups (n=١٠). The occlusal enamel was removed to obtain a flat surface of dentin. Each group was treated as follows: Group ١: ١٠٪ polyacrylic acid (positive control); Group ٢: ٣٧٪ phosphoric acid followed by ٥٪ sodium hypochlorite (NaOCl); Group ٣: ١,١٪ APF gel; and Group ٤: no conditioning (negative control). Fuji II LC glass ionomer was bonded to dentin using a cylindrical mold. Samples were thermocycled and debonded using a shear force with a crosshead speed of ٠,٥ mm/min. Data were analyzed using one-way analysis of variance (ANOVA) and Tukey tests (a = ٠,٠٥). RESULTS: The mean SBS in Groups ١ through ٤ were ١١,٥٦٢+/-٣,١٤٨, ٨,٠٦٠+/-١,٧٨١, ٨,٨٣٠+/-١,٥٥٤, and ٣,٠٧٤+/-٠,٧٨٤ (MPa), respectively. There were significant differences in the SBS between Group ١ with other groups (P<٠,٠٥). There were no statistically significant differences between Groups ٢ and ٣, but the SBS of both of them were significantly higher than that of Group ٤ (P<٠,٠٥). CONCLUSION: Although the dentin SBS of Fuji II LC after conditioning with APF and phosphoric acid followed by NaOCl was greater than the unconditioned group (Group ٤), polyacrylic acid yielded the best result. CLINICAL SIGNIFICANCE: Proper conditioning of dentin is effective in promoting close adaptation of RMGIC to dentin.

Reaxys Database Information

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Indexed Keywords

EMTREE drug terms: acrylic acid resin; biomedical and dental materials; carbopol ٩٤٠; dentin bonding agent; Fuji II LC cement; glass ionomer; hypochlorite sodium; phosphoric acid; resin

EMTREE medical terms: analysis of variance; article; chemistry; comparative study; dental acid etching; dental bonding; dental care; dental surgery; human; materials testing; methodology; molar tooth; nonparametric test; shear strength; surface property

MeSH: Acid Etching, Dental; Acrylic Resins; Analysis of Variance; Dental Bonding; Dental Materials; Dental Stress Analysis; Dentin-Bonding Agents; Glass Ionomer Cements; Humans; Materials Testing; Molar, Third; Phosphoric Acids; Resins, Synthetic; Shear Strength; Smear Layer; Sodium Hypochlorite; Statistics, Nonparametric; Surface Properties
Medline is the source for the MeSH terms of this document.

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