

Bacterial adhesion of *Streptococcus mutans* to provisional fixed prosthodontic material.

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STATEMENT OF PROBLEM: Bacterial adhesion and formation of dental plaque on provisional fixed prosthodontic materials results in gingival inflammation and secondary caries. **PURPOSE:** The purpose of this in vitro study was to compare 10 commonly used provisional fixed prosthodontic materials (2 acrylic polymethyl methacrylates, 2 improved methacrylates, and 6 bisacrylate composite resins), based on their susceptibility to adhere to *Streptococcus mutans*, and examine the influence of surface roughness and hydrophobicity. **MATERIAL AND METHODS:** Surface roughness was assessed by perthometer and hydrophobicity by contact angle measurements. *Streptococcus mutans* suspension was incubated with 15 disk-shaped specimens for each material (10 x 2 mm) and examined with the fluorescence dye, Alamar Blue/resazurin, and an automated multidetection reader. Glass and the veneering composite resin, Sinfony, served as controls. Statistical analysis was performed using the Mann-Whitney U-test in combination with the Bonferroni adjustment. Additionally, scanning electron micrographs were made. **RESULTS:** Median surface roughness values ranged between 0.04 microm and 0.08 microm, and median contact angles between 46.5 and 71 degrees. High relative fluorescence intensities (>10,000) were found for Snap, UniFast LC, and CronMix K plus, moderate values (5000-10,000) for Trim, Temphase, Structur Premium, and PreVISION CB, and lowest fluorescence intensities (<5000) were found for Cronsin, Protemp 3 Garant, and Luxatemp. Scanning electron micrographs displayed streptococcal monolayers on all investigated surfaces, indicating initial bacterial adhesion. **CONCLUSIONS:** The quantity of bacterial adhesion differed significantly among the assessed provisional materials. A correlation between bacterial adhesion and surface roughness or hydrophobicity was not confirmed. Bisacrylate composite resins and acrylic polymethyl methacrylates had significantly lower adhesion potentials than improved methacrylates.

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