

Fracture resistance of PMMA and resin matrix composite-based interim FPD materials.

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PURPOSE: The aim of this study was to compare the fracture strength of several commercial interim fixed partial denture (FPD) materials in an artificial oral environment.

MATERIALS AND METHODS: Twenty identical three-unit FPDs of the PMMA materials Trim and Cronsin and the composite-based materials Protemp 3 Garant, Protemp Garant, Luxatemp, and Tempofit were cemented on Co-Cr alloy dies. Ten FPDs of each material were stored for 14 days in distilled water and artificially aged. Ten FPDs of each material were stored for 24 hours in distilled water as a control group. Fracture resistance was determined using a testing machine. **RESULTS:** The tested interim materials showed initial fracture values between 484 and 1,081 N. During artificial aging, the PMMA FPDs failed because of irreversible deflection. All Tempofit FPDs, four Luxatemp FPDs, two Protemp Garant FPDs, and one Protemp 3 Garant FPD failed because of fracture during artificial aging. The remaining FPDs showed fracture values of 759 N (Luxatemp), 772 N (Protemp Garant), and 956 N (Protemp 3 Garant).

CONCLUSION: The PMMA FPDs and the composite Tempofit FPDs showed poor stability during artificial aging, whereas the highest strength values in combination with low fracture rates were found for the Protemp 3 Garant composite FPDs.

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