Effect of cavity preparation on the flexural strengths of acrylic resin repairs

Type: Article

Abstract:

Objective: To investigate the effect of cavity preparation on the flexural strength of head-curing denture resin when repaired with an auto-curing resin. Material and methods: Ninety-six rectangular specimens (64x10x2.5 mm) prepared from heat-curing denture base resin (Meliodent) were randomly divided into four groups before repair. One group was left intact as control. Each repair specimen was sectioned into two; one group was repaired using the conventional repair method (Group 1). Two groups had an additional transverse cavity (2x3.5x21.5 mm) prepared prior to the repair; one repaired with (Group 2) and one without glass-fiber reinforcement (Group 3). A three-point flexural bending test according to the ISO 1567:1999 specification(8) for denture base polymers was carried out on all groups after 1, 7 and 30 days of water immersion. Statistical analysis was carried out using two-way ANOVA, Kruskal Wallis and post-hoc Mann Whitney tests. Results: The highest flexural strength was observed in the control group. Control and conventional repairs group (Group 1) showed reduction in the flexural strength 30 days after water immersion. No significant change in the strength was observed for Groups 2 and 3 where the repair joints were similarly prepared with additional transverse cavity. Conclusion: Repaired specimens showed lower flexural strength values than intact heat-curing resin. Cavity preparation had no significant effect on the flexural strength of repair with water immersion.

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