Abstract

PURPOSE: Using extended, standardized MOD preparations, it was the aim of this in vitro study to examine the performance of CAD/CAM ceramic inlays in comparison to composite inlays after mechanical and thermal fatigue loading in terms of marginal quality and stabilization of the remaining tooth structure.

MATERIALS AND METHODS: Standardized cavities with different wall thicknesses were prepared in 90 extracted premolars; 10 additional premolars remained untreated. Composite inlays (Tetric) and CAD/CAM restorations (Cerec II; Vita Mark II) were adhesively placed in the cavities. After loading in a chewing simulator, quantitative and qualitative marginal gap examinations were conducted and fracture resistance determined.

RESULTS: The results show that ceramic inlays provide significantly greater stabilization and better marginal quality than do composite inlays.

CONCLUSION: Chairside-fabricated ceramic inlays inserted using adhesive technology are able to stabilize weakened cusps. In the case of very thin remaining walls (about 1.3 mm), however, the marginal quality and the cusp-stabilizing effect are also reduced.

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