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[Image PDF (536K)] [References]

Effect of Preparation Design on the Fracture Resistance of Zirconia Crown Copings

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Abstract:
The aim of this *in vitro* study was to evaluate the effects of different preparation designs on the fracture resistance of single-crown zirconia frameworks. To this end, maxillary molar dies of CrCo alloy were fabricated with five different preparation designs: shoulderless, slight and pronounced deep chamfer, beveled and non-beveled shoulder. Ten zirconia copings with a wall thickness of 0.4 mm were fabricated for each type of preparation. After cementation by glass ionomer cement, they were loaded until fracture.
There were significant differences in the breaking load of the experimental groups (ANOVA, $p<0.01$). The shoulder preparation had a mean breaking load of 2286 N, the shoulderless preparation 2041 N, the beveled shoulder 1722 N, the pronounced deep chamfer 1752 N, and the slight chamfer 1624 N.
Based on the results of this study, a shoulder preparation is highly recommended whenever possible. Moreover, for endodontically treated teeth that are structurally compromised or which have anatomically limited areas, the slight chamfer preparation is an optimal recommendation.

Key words:
Preparation, Zirconia, CAD/CAM

[Image PDF (536K)] [References]

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