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Recycling effects on ceramic brackets: a dimensional, weight and shear bond strength analysis

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The present study investigated the effects of recycling technique on orthodontic ceramic brackets by means of a scanning electron microscope analysis. The weight and dimension changes of brackets recycled one, five and ten times compared with new ones were evaluated. The results suggest that changes in weight (+4.27 mg), in buccal and base slot widths (-0.0013 inches), in slot depth (+0.0014 inches) and in the total bracket base area (+1.46 mm²) are of little clinical relevance. The shear bond strengths of recycled versus new ceramic brackets were then evaluated and compared.

The mean values for new ceramic brackets and brackets recycled one, five and ten times were 15.52, 11.25, 10.10 and 10.04 MPa, respectively, indicating that recycled ceramic brackets provide shear bond strengths adequate for clinical use. Moreover they exhibit bond failures mostly at the bracket/adhesive interface, without causing enamel damage.

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