Effect of cyclic compressive loading on the bond strength of an adhesive system to dentin after collagen removal.

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Abstract

PURPOSE: The objective of this study was to verify the effect of cyclic compressive loading on the shear bond strength of an adhesive system following collagen removal.

MATERIALS AND METHODS: Sixty bovine teeth were divided into 4 groups based on the adhesive procedure used: groups 1 and 2–etching with 35% phosphoric acid and application of the Single Bond adhesive system; groups 3 and 4–after etching, a 10% sodium hypochlorite solution was applied for 1 min before the application of the adhesive. In all the specimens, a Z100 resin cylinder was built up over the bond area. Groups 2 and 4 were submitted to 500,000 cycles with a load of 100 N.

RESULTS: The mean values for the shear bond test (MPa) were: group 1: 7.37 +/- 1.15; group 2: 5.72 +/- 1.66; group 3: 5.95 +/- 1.21; group 4: 3.66 +/- 1.12. There was no difference between groups 1 and 2 (p > 0.01). Between groups 1 and 3, 2 and 4, and 3 and 4 there was a significant difference (p < 0.01). The majority of the specimens demonstrated an adhesive failure.

CONCLUSION: The application of sodium hypochlorite on dentin decreased the values of shear bond strength, as did the load cycling in the group treated with sodium hypochlorite.

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