

## **Glass ionomer layer thickness and its influence on zirconia failure.**

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### **Source**

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### **Abstract**

#### ***OBJECTIVES:***

To investigate the influence of glass ionomer cement layers with various thickness and cement contamination on the fracture resistance of thin zirconia plates luted onto coplanar human molars.

#### ***MATERIALS AND METHODS:***

Zirconia plates measuring 0.7 mm in thickness were luted onto 70 coplanarly trimmed human molars with glass ionomer cement. Cement layers measuring 100, 250, 1000, and 2000  $\mu\text{m}$  in thickness were produced. Contamination of the tooth surface was achieved by applying hand-piece oil, contamination of the cement by mixing glass ionomer with  $\text{H}_2\text{O}_2$  to produce voids and gas bubbles.

#### ***RESULTS:***

Fracture resistance was independent from cement layer thickness (median ranging from 1220 to 1367 N). Oil contamination moderately reduced fracture resistance (1135 N). Fracture resistance was significantly affected by the presence of a considerable amount of voids or gas bubbles in the cement (877 N).

#### ***CONCLUSIONS:***

The fracture resistance of thin zirconia plates was not affected by different cement layer thickness but by contamination of the tooth surface as well as by high cement porosity due to simulated handling errors.

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