

## 0110 Fracture Strength of Zirconia Posterior Fixed Partial Dentures

M. ROSENTRITT, M. BEHR, C. KOLBECK, and G. HANDEL, University of Regensburg, Germany

**Objectives:** The aim of this in-vitro study was to determine the fracture strength of tooth colored zirconia fixed partial dentures (FPDs) with a different kind of cementation.

**Material&Method:** 96 human molars were inserted in PMMA resin to create three-unit (10mm) oral situation. The roots of the teeth were covered with an about 1mm thick layer of polyether to simulate the periodontium. 2x8 bridges of each series were made of the zirconia materials and fixed with an adhesive bonding system (Syntac classic/Variolink2; Ivoclar-Vivadent, FL) and recommended conventional cementation: A) Digizon/GC Initial (Fuji Plus, Girrbach, G), B) Lava/Lava Ceram (Ketac Cem, 3M Espe, G) and Cercon/Cercon Ceram (Harvard, DeguDent, G). After thermal cycling and mechanical loading (TCML; 6000 thermal cycles [5°C/55°C] and  $1.2 \times 10^6$  mastication cycles [50N]) fracture strengths (UTM 1446; Zwick; v=1mm/min) of 8 FPDs of each series were determined. Statistical analysis was performed with the Mann-Whitney U-test (p=0.05).

### Results:

fracture force [N]	Digizon		Lava		Cercon	
Cementation :	Variolink	Fuji Plus	Variolink	Ketac Cem	Variolink	Harvard
median	843	1332	992	1062	1227	1525
25 % percentile	738	1131	815	941	1115	1323
75 % percentile	945	1474	1596	1146	1467	1802

**Conclusion:** There were no statistical differences between the different zirconia FPDs with conventional cementation. All FPDs showed lower fracture results with adhesive bonding, but only for Digizon the difference was statistically significant. The fracture forces of all zirconia FPDs were at a level where clinical application in posterior areas seems promising.

Seq #16 - Dental Materials: Ceramics and Luting Materials

9:00 AM-11:00 AM, Friday, 27 August 2004 Crowne Plaza Hotel SEDIR II

[Back to the Scientific Program Program](#)

[Back to the Joint Meeting of the Continental European, Israeli, and Scandinavian \(NOF\) Divisions of the IADR \(August 25 -- 28, 2004\)](#)

[Top Level Search](#)