

Marginal integrity of CAD/CAM fixed partial dentures.

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OBJECTIVES: Computer-aided design (CAD) and manufacturing (CAM) allows the milling of high strength zirconia fixed partial dentures (FPD), however bonding to an inert ZrO₂ ceramic surface may effect the marginal integrity of the FPDs. The aim of this investigation was to evaluate the marginal adaptation of zirconia FPDs at the interfaces between zirconia, cement, and tooth. **METHODS:** 32 3-unit FPDs were fabricated of the CAD/CAM Y-TZP zirconia (Lava, 3M Espe, Germany) according to the manufacturers' instructions. Resin cements with corresponding primer and bonding systems were used to lute the FPDs: Compolute/EBS multi (3M Espe, Germany), Panavia F/ED (Kuraray, Japan), Variolink 2/Syntac classic (Ivoclar-Vivadent, FL) and RelyX Unicem/without treatment (3M Espe, Germany). Aualloy FPDs (BioPontostar, Bego, Germany) were cemented with RelyX Unicem and Harvard (Harvard, Germany) as the control. Marginal adaptation was evaluated with scanning electron microscopy using replica specimen before and after artificial aging. After aging, microleakage tests were performed with fuchsine solution. The interfaces between cement-tooth and cement-FPD were examined. **RESULTS:** At the interfaces (cement-tooth and cement-FPD), the systems showed a 95% or higher perfect margin before and after aging. Only Variolink2/Syntac had a marginal adaptation, lower than a 70% perfect margin. Generally, the fuchsine penetration was below 20%, only BioPontstar/Harvard andLava/Variolink2 showed penetration results between 80% and 100%. **CONCLUSION:** The success of the adhesive cementation of zirconia FPDs depends on the cement system. Under the conditions of this study, zirconia FPDs showed good to sufficient marginal integrity in combination with Panavia/ED, Compolute/EBS and RelyX Unicem.

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