

POSTER

Influence of conditioning protocol on resin cement adhesion to lithium silica-based glass ceramics

Area: Dental Materials

University/Department:

University of Siena/Department of Medical Biotechnologies

Authors:

Riccardo Fabian Fonzar*, Michele Carrabba, Cecilia Goracci, Alessandro Vichi

Presenter:

Dott. Fabian Fonzar Riccardo

Objective:

To evaluate the influence of conditioning with hydrofluoric acid (HF), whether or not followed by the application of silane (S), and Monobond Etch&Prime (EP) on the micro-shear bond strength (μ SBS) of RelyX Unicem 2 to VITA Suprinity (ZLS) and IPS e.max CAD (LD).

Materials:

ZLS and LD were processed with CEREC InLab MC-XL. Three groups per material were identified with respect to the conditioning protocol: HF, HF+S, EP. In each group (5 milled bars), fifteen specimens ($n=15$) were prepared for μ SBS test building-up RelyX Unicem 2 with a specific device. Data were analyzed using Two-Way ANOVA and Tukey's post-hoc test ($p=0.05$). Failure modes were assessed using an optical stereo-microscope, classified as adhesive, mixed, cohesive in resin or ceramic, and statistically analyzed using Fisher's Exact Test ($p=0.05$). One additional bar per group was destined to SEM observation of the conditioned surface.

Results:

No significant differences in the adhesion to ZLS and LD were appreciated ($p=0.744$). Conditioning with EP showed higher bond strengths than HF ($p=0.005$). No significant differences were recorded comparing EP and HF+S ($p=0.107$), HF+S and HF ($p=0.387$). The material-conditioning protocol interaction was not statistically significant ($p=0.109$). Whether ZLS yielded similar bond strengths under the tested protocols, adhesion to LD was statistically stronger after conditioning with EP rather than HF ($p=0.002$). No significant differences were recorded comparing EP and HF+S ($p=0.443$), HF+S and HF ($p=0.056$). Material and conditioning protocol affected the failure modes distribution ($p=0.000$ and $p=0.017$ respectively). ZLS exhibited significantly more mixed failures and less adhesive failures than LD. Mixed failures were statistically more frequent than adhesive failures by conditioning with EP rather than HF and HF+S ($p=0.021$ and $p=0.030$ respectively).

Conclusion:

As an alternative to the conventional etching protocol with hydrofluoric acid followed by silane priming, Monobond Etch&Prime can be conveniently used to promote adhesion between resin cement and lithium silica-based glass ceramics.