

Marginal Integrity of Self-Adhesive All-Ceramic MOD Inlays after Airpolishing Treatment

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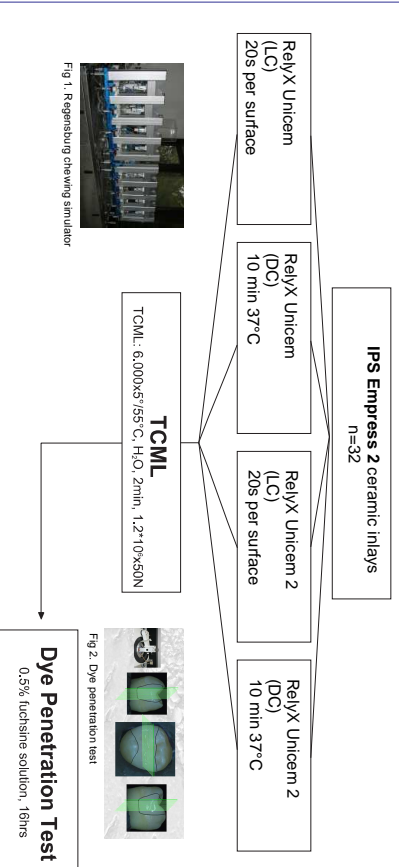


Introduction:

The aim of this study was to investigate the in-vitro marginal adaptation of all-ceramic inlays which were luted with two different self-adhesive resin cements after airpolishing surface treatment.

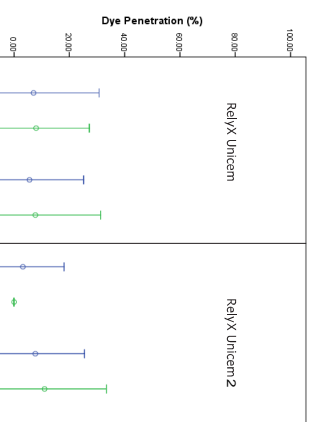
Material and Methods:

The marginal integrity of all-ceramic class II (MOD) inlays was determined with dye penetration tests (0.5% Fuchsin, 16hrs, 37°C). The marginal integrity of each tooth was evaluated at dentin and enamel margins at the interface between tooth and cement. The inlays were luted on human molars with two resin-based cements (ReliX Unicem and Automix LC) in accordance with the manufacturer's recommendations in light (LC; 20s per surface) - and dark (DC; 10 min 37°C)-curing modus. Surface treatment was performed with water soluble, **glycine based airpolishing powder** (Clinpro Prophy Powder; 15sec per side; 3M Espe). All tests were performed after thermal cycling with mechanical loading (TCML, 1.2x10⁶x 50N, 6000x5°/55°, 1.6 Hz). Statistics: ANOVA, Tukey test ($\alpha=0.05$).



Results:

Dye penetration values varied between 0.0+/-0.0% and 11.0+/-22.4% (enamel margin) and 3.2+/-14.9% and 7.1+/-23.7% (dentin margin). Only in the group ReliX Unicem 2 Automix LC at the enamel interface significant lower values were found in comparison to all other groups.



	ReliX Unicem LC	ReliX Unicem DC	ReliX Unicem 2 LC	ReliX Unicem 2 DC
Dye penetration enamel	7.1+/-23.7	5.6+/-19.6	3.2+/-14.9	7.7+/-17.8
Dye penetration dentin	0.0+/-0.0	11.0+/-22.4	0.0+/-0.0	11.0+/-22.4

Fig. 3. Dye penetration (%) (mean/standard deviation)

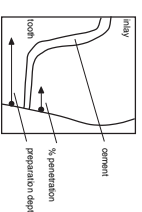


Fig. 4. Dye penetration principle

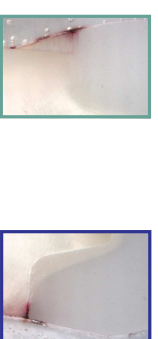


Fig. 5. Dye penetration (example enamel, dentin)

Conclusion:

Air polishing with glycine based airpolishing powder seems to be a reliable cavity cleaning procedure prior to cementation. The investigated self-adhesive luting cements in combination with the airpolishing surface treatment seem to bond sufficiently to dentin as well as enamel cavities.