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498 Tooth-brush-abrasion and thermo-mechanical loading of direct and indirect veneer restorations

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*Saturday, September 7, 2013: 11:30 a.m. - 12:30 p.m.*

*Location: Limonaia*

*Presentation Type: Poster Session*

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**Objective:**

This study investigated toothbrush-abrasion, thermo-cycling and mechanical loading on ceramic and composite veneers (d technique), restored on artificial teeth and human incisors.

**Method:**

Identical artificial incisors (n=24, Veneering composite SR Adoro, Ivoclar-Vivadent, FL) and individual human incisors (n=24) were prepared with:

- a) indirect composite-veneer (Compoener, size L/Synergy-D/One-Coat-Bond/Coltene, CH),
- b) indirect ceramic-veneer (e.max press/Variolink II/Heliobond/Ivoclar-Vivadent, FL),
- c) direct composite-veneer (Filtek Supreme XTE/ 3M Espe, USA).

Toothbrush-abrasion (ZM-3, SD-Mechatronik, G, 7200 cycles) was performed with toothbrush and abrasive dentifrice (Col Anti Caries 250g/1L). Surface-roughness Ra was determined on three spots (incisal, central, cervical) before and after toothbrush-abrasion (Perthometer SP6, Perthen, G).

In order to simulate a five years period on artificial teeth and human incisors of oral service thermo-cycling and mechanical loading (6,000 thermal cycles 5°C/55°C, 1.2 Mio cycles a 50N, 8.3 days) was performed using steatite antagonists (d=12mm). After TCML all specimens were examined by transmission microscopy and SEM. Statistical analysis: means and standard deviations; ANOVA; Bonferroni- post-hoc analysis (α=0.05)

**Result:**

Toothbrush-abrasion provided a non-significant (p=0.560) roughness-increase for all materials (indirect composite: 0.12±0.04µm, composite: 0.18±0.14µm, ceramic: 0.35±0.16µm). No significant differences could be determined between the materials after testing (p<0.001). After TCML direct and indirect composite-veneers on composite-teeth showed no failures or damage. After TCML on human anterior teeth, transmission microscopy indicated a crack in the cervical area of the veneer near to the incisal edge and a chipping (2mmx2.5mm) in cervical area for one indirect composite-veneer. Two direct composite-veneers lost retention. For both types of simulation no restoration showed chipping or failure on facial or palatal sides.

**Conclusion:**

All materials showed comparable wear resistance. Indirect ceramic-/composite-veneer restorations provided comparable fit and satisfying longevity.

**Student Presenter**

**Keywords:** Ceramics, Dentin, Enamel, Loading and Wear

**Presenting author's disclosure statement:** \*\* MISSING DISCLOSURE \*\*

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