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Deadline for submission: January 5, 2001

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Shear bond strength of composite bonded to different treated dentin surfaces. L. CEBALLOS*, M. TOLEDANO, R. OSORIO, FR. TAY, GW. MARSHALL (U. of Granada, Spain; U. of Hong-Kong, China; U. of California, San Francisco, USA)

The purpose of this study was to compare shear bond strength (SBS) of dentin surfaces following different treatments. Eighty human extracted molars were sectioned and ground to expose uniform surfaces of superficial or deep dentin. Specimens were randomly assigned to four equal groups. Group 1: treatment with 35% H₃PO₄. Group 2: 35% H₃PO₄ + 5% NaOCl, 2 min. Group 3: irradiated with an Er-YAG laser (KaVo) at 2 Hz and 180 mJ, with water cooling. Group 4: laser + 35% H₃PO₄. Each molar was embedded in a Watanabe shear test assembly for a single plane lap shear. Scotchbond 1 Adhesive System (3M) and Z100 resin composite (3M) were bonded onto the prepared surfaces. Specimens were stored in water for 24 hours at 37°C and thermocycled (500x). Samples were tested in shear to failure using an universal testing machine at a crosshead speed of 0.75 mm/min. Bonded interfaces were completely demineralized in EDTA and processed for transmission electron microscopy. Mean and SD (Mpa) are shown in the Table.

| Dentin treatment | Superficial dentin, M (SD) | Deep dentin, M(SD) |
|--|----------------------------|--------------------|
| H ₃ PO ₄ | 22.54 (3.41) a | 23.41 (5.51) a |
| H ₃ PO ₄ + NaOCl | 15.65 (7.47) b | 12.77 (5.04) b |
| Laser | 4.0 (2.2) c | 6.29 (2.98) c |
| Laser+ H ₃ PO ₄ | 16.68 (2.9) b | 12.99 (3.16) b |

Groups with the same letter are not statistically different ($p > 0.05$)

ANOVA and Tukey's tests found that dentin depth did not affect mean SBS. Acid etched specimens achieved the highest SBS values. Laser treatment showed the lowest SBS results and no differences were found between laser/ H₃PO₄ and H₃PO₄ + NaOCl treated specimens. (G. #MAT98-0937-C02).

Presenter Information:

8. Area of Review (check only one):

(1) ☐ Behavioral Sciences/Health Services Research

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of the 79th General Session of the International Association for Dental Research (June 27-30, 2001)