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THE EFFECTS OF SURFACE CONTAMINATION ON THE SHEAR BOND STRENGTH OF COMPOMER

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The latest concepts in bonding are "total etch", in which both enamel and dentin are etched with an acid to remove the smear layers, and "wet dentin" in which the dentin is not blown dry but left moist before application of the bonding primer. Ideally, the application of a bonding agent to tooth structure should be insensitive to minor contamination from oral fluids. Clinically contaminations such as saliva, gingival fluid, blood and handpiece lubricant are often encountered by dentists during preparation of a restoration.

The aim of this study was to evaluate the effect of contamination by hemostatic agents on shear bond strength of compomer restorations. One hundred and ten extracted human maxillary and mandibular molar teeth were collected. The teeth were cleaned from soft tissue remnant and debris and stored in physiologic solution until they were used. Small flat area on dentin of the buccal surface were wet ground serially with 400, 800 and 1200 abrasive paper on automatic polishing machine. The teeth were randomly divided into 11 groups. Each group was conditioned as follows:

- Group 1 : Dentin surface was not etched and not contaminated by hemostatic agents.
- Group 2 : Dentin surface was not etched but was contaminated by Astringedent (Ultradent product Inc., Utah, U.S.A.).
- Group 3 : Dentin surface was not etched but was contaminated by Bosmin (Jeil Pharm, Korea.).
- Group 4 : Dentin surface was not etched but was contaminated by Epri-dent (Epr Industries, NJ, U.S.A.).
- Group 5 : Dentin surface was etched and not contaminated by hemostatic agents.
- Group 6 : Dentin surface was etched and contaminated by Astringedent.
- Group 7 : Dentin surface was etched and contaminated by Bosmin.
- Group 8 : Dentin surface was etched and contaminated by Epri-dent.
- Group 9 : Dentin surface was contaminated by Astringedent. The contaminated surface was rinsed by water and dried by compressed air.
- Group 10 : Dentin surface was contaminated by Bosmin. The contaminated surface was rinsed by water and dried by compressed air.
- Group 11 : Dentin surface was contaminated by Epri-dent. The contaminated surface was rinsed by water and dried by compressed air.

After surface conditioning, F2000 was applied on the conditioned dentin surface. The teeth were thermocycled in distilled water at 5°C and 55°C for 1000 cycles. The samples were placed on the binder with the bonded compomer-dentin interface parallel to the knife-edge shearing rod of the Universal testing machine (Zwick 020, Germany) running at a cross head speed of 1.0mm/min.

There were no significant differences in shear bond strength between groups 1 and group 3 and 4, but group 2 showed significant decrease in shear bond strength compared with group 1.

There were no significant differences in shear bond strength between group 5 and group 7 and 8, but group 6 showed significant decrease in shear bond strength compared with group 5.

There were no significant differences in shear bond strength between group 5 and group 9, 10 and 11.