COMMENTARY

SHEAR BOND STRENGTH OF A SEALANT TO CONTAMINATED-ENAMEL SURFACE: INFLUENCE OF ERBIUM : YTTRIUM–ALUMINUM–GARNET LASER PRETREATMENT

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Sealants remain one of the most valuable yet most underutilized devices in all of dentistry. The ability to protect the occlusal surface from otherwise inevitable destruction merely because of its morphology cannot be underestimated in value to patients. The reasons for the significant underutilization of sealants are many, including relatively low reimbursement for time/technique/value, and technique sensitivity. When placed correctly, and with proper isolation, sealants have been shown to be uniquely effective in caries prevention; without proper isolation and meticulous adherence to placement technique, sealants will likely not be successful. To some this taints their reputation. A sealant that is not placed properly may appear to result in a caries lesion when there is contamination or other lack of effective intimate adhesion on the surface. However, we know that it is not the sealant that caused that caries progression—it is the poorly placed sealant that did not fulfill its intended purpose.

This excellent work by Lepri and colleagues further elucidates the importance of good sealant technique in sealant success. Some dentists have attempted to use lasers to treat surfaces in advance of placing sealants. The present work clearly shows that a contaminated surface is a "deal breaker." Regardless of surface treatment, with or without phosphoric acid etching (as opposed to etching via self-etching primer adhesives that are highly acidic[1]), and with or without laser treatment, a saliva-contaminated surface will not support the retention of a sealant. More than 30 years ago, experts showed us the acid-etch technique and elucidated the micromechanical mechanisms by which resin is adhered to an enamel surface after selective removal of mineral from that (enamel) surface using 37% phosphoric acid. Attempts to alter that etched surface using, for example, an erbium : yttrium–aluminium–garnet laser, are not effective in better retention, and, in fact, result in reduced retention, as shown in the present study as well. The selective removal of mineral from the enamel surface by simple acid-etch technique on enamel, is "as good as it gets" when it comes to achieving sealant retention that lasts. I recently attended the annual session of the American Academy of Esthetic Dentistry, the theme of which was "Built to Last." What we heard throughout the outstanding lectures of that meeting was that nothing is built to last better than the (healthy) tooth itself. It is similarly clear that one of the greatest innovations in dentistry for protection of teeth is a pit and fissure sealant.

Work by Feigal and colleagues[2] has shown that, when the pit and fissure surface is contaminated after acid etching, placement of an amphiphilic primer, such as exists in "part A" of a fourth generation dentin adhesive, in the advance placement of the (hydrophobic) resin, will gain valuable retention compared with such a primer component being placed. Yet, this extra treatment does not gain retention on an uncontaminated surface.

The real meaning of the present paper is that a good sealant technique, as a sealant is known to require, will result in effective and predictable sealant retention.[3] Contamination, laser treatment, and other surface "effects" will not improve retention; they will reduce it. We should not undervalue sealants; we should honor their purpose and respect their strict requirements for good technique. This paper further supports this important premise of proper use of pit and fissure sealants.

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