ONLINE ISSN : 1881-1361
PRINT ISSN : 0287-4547

Dental Materials Journal
Vol. 25 (2006) , No. 1 p.59-65

Shear Bond Strengths of Self-etching Adhesives to Caries-affected Dentin on the Gingival Wall

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(Received August 23, 2005)
(Accepted November 25, 2005)

Abstract:
The purpose of this study was to evaluate the bonding ability of five current self-etching adhesives to caries-affected dentin on the gingival wall. Seventy extracted human molars with approximal dentin caries were employed in this study. In order to obtain caries-affected dentin on the gingival wall, grinding was performed under running water. Following which, specimens mounted in acrylic blocks and composite resins of the bonding systems were bonded to dentin with plastic rings and then debonded by shear bond strength. With Clearfil SE Bond, bonding to caries-affected dentin showed the highest bond strength. With Optibond Solo Plus Self-Etch, bonding to caries-affected dentin showed higher shear bond strength than AQ Bond, Tyrian SPE & One-Step Plus, and Prompt-L-Pop ($p<0.05$) . Further, the bond strengths of Clearfil SE Bond and Optibond Solo Plus Self-Etch to sound dentin were higher than those of Prompt-L-Pop, AQ Bond, and Tyrian SPE & One-Step Plus ($p<0.05$) . In conclusion, besides micromechanical interlocking through hybrid layer formation, bond strength of self-etch adhesives to dentin may be increased from additional chemical interaction between the functional monomer and residual hydroxyapatite. The results of this study confirmed that differences in bond strength among self-etching adhesives to both caries-affected and sound dentin were due to chemical composition rather than

acidity.

Key words:
Self-etch adhesives, Caries-affected dentin, Gingival wall

doi:10.4012/dmj.25.59
JOI JST.JSTAGE/dmj/25.59