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SCIENTIFIC SECTION

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An *in-vitro* investigation into the use of a single component self-etching primer adhesive system for orthodontic bonding: a pilot study

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Abstract

Objective: This pilot study assessed force to debond (N); time, and site of bond failure of a single component self-etching primer (SEP) and adhesive system, Ideal 1 (GAC International Inc., USA) and compared it with the conventional acid etch and rinse regimen using 37% *o*-phosphoric acid solution and either Transbond™ XT (3M Unitek) or Ideal 1 adhesive.

Design: *In vitro* laboratory study

Setting: Bristol Dental Hospital, UK. Sept 2003-Sept 2004

Material and Methods: Nine groups of 20 premolars were bonded using metal orthodontic brackets using three protocols: (1) 37% *o*-phosphoric acid etch and Transbond™ XT adhesive; (2) 37% *o*-phosphoric acid and Ideal 1 adhesive; (3) Ideal 1 SEP and Ideal 1 adhesive. Force to debond and locus of bond failure were determined at three time intervals.

Results: Enamel pre-treatment prior to bonding, namely SEP versus conventional etching had no significant effect on the median force to debond with the Ideal 1 adhesive. Similarly, when the enamel was conventionally etched, the adhesive type, namely Ideal 1 or Transbond™ XT, had no significant effect on the measured force to debond. However, there appeared to be differences in the locus of bond failure: failure predominated at the enamel/adhesive interface for the Transbond™ XT conventional etch group and at adhesive/bracket interface for the Ideal 1 SEP and adhesive group and the Ideal 1 adhesive conventional etch group.

Conclusion: These results suggested that the complete Ideal 1 SEP and adhesive system might be successful *in vivo* leading therefore to a clinical trial. However, implications for clean up time are discussed and improvements to *in vitro* study designs are advised.

Key words:

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