

## Etching effects and microtensile bond strength of total etching and self-etching adhesive system on unground enamel

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### I. Objectives

The purpose of this study was to evaluate the etching effects and bond strength of total etching and self-etching adhesive system on unground enamel using scanning electron microscopy and microtensile bond strength test.

### II. Materials and Methods

The buccal coronal unground enamel from human extracted molars were prepared using low-speed diamond saw. Scotchbond Multi-Purpose(group SM), Clearfil SE Bond(group SE), or Adper Prompt L-pop(group LP) were applied to the prepared teeth, and resin composite(Z-250) was built up incrementally. Resin tag formation were evaluated by scanning electron microscopy, after removal of enamel surface by acid dissolution and dehydration. For microtensile bond strength test, resin-bonded teeth were trimmed to give a bonded surface area of 1mm<sup>2</sup>. Microtensile bond strength test was performed at a crosshead speed of 1.0mm/min.

### III. Results

The results of this study were as follows;

1. A definite etching pattern was observed in Scotchbond Multi-Purpose group.
2. Self-etching groups were characterized as shallow etching patterns and surface irregularity.
3. The results(mean) of microtensile bond strength were SM;26.55MPa, SE;18.15MPa, LP;15.57MPa. SM had significantly higher than SE and PL( $p<0.001$ ), but there was no significant differences between SE and PL.

### IV. Conclusions

SEM observation revealed that the etching with total etching system promoted resin penetration into the unground enamel than etching with self-etching system. And, total etching system produced high bond strength, but self-etching system produced significantly lower bonding strength to unground enamel.