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| Author(s)              | 孫, 繼皓   |
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# 学位論文内容の要旨

博士の専攻分野の名称 博士（歯学） 氏名 孫 継皓

学 位 論 文 題 名

## **A new approach to micro-tensile bond strength: double-ended method**

（両端に試験片を設定した新しい微小引張り試験の検討）

The purpose of this study was to evaluate the micro-tensile bond strength of two universal adhesive systems to enamel by using a new approach: double-ended micro-tensile bond strength test (D-MTBS).

One hundred and ten human third molars were used for this study. Twenty third molars were randomly employed to test 4 groups (n=5) in the traditional micro-tensile bond strength method (MTBS): CLEARFIL Universal Bond self-etch (KUE), CLEARFIL Universal Bond etch-and-rinse (KUS), Scotchbond Universal Adhesive self-etch (3MS) and Scotchbond Universal Adhesive etch-and-rinse (3ME). The rest were used to test in the D-MTBS method where each tooth was cut mesially and distally to make enamel/dentin discs (two discs/tooth). The discs were then made flat at their enamel ends by grinding with #600-grit SiC for 20 s under running water and bonded

with each other at their dentin ends with CLEARFIL SE Bond 2 according to the manufacturer's instruction. The enamel ends were then randomly treated with CLEARFIL Universal Bond and/or Scotchbond Universal Adhesive in either etch-and-rinse or in self-etch modes to obtain 6 groups (n=15): KUS VS KUE , 3MS VS 3ME , KUS VS 3MS , KUE VS 3ME , KUS VS 3ME and KUE VS 3MS . After storage at 37°C for 24 h, bond strength of specimens were obtained by subjecting the beams (1 mm<sup>2</sup>) to a universal tester at a crosshead speed of 1mm/min. The MTBS data achieved from the traditional method were analysed with one-way ANOVA followed by Tukey's test ( $\alpha= 0.05$ ). The D-MTBS data were analysed to evaluate the winners between adhesive systems and their application modes. The results of MTBS method revealed no significant difference between the adhesives and the application modes ( $F = 2.068$ ;  $p > 0.05$ ). However, according D-MTBS results, Etch-and-rinse mode performed better than self-etch mode in case of enamel bonding and CLEARFIL Universal Bond showed better results than Scotchbond Universal Adhesive.

D-MTBS method enabled us to compare two different universal adhesive systems and their different application modes at the same time. Further studies could prove the new double-ended micro-tensile bond strength method as the stepping-stone to the

evolution of the next generation micro-tensile bond strength test method.