1697 Effect of Phosphonic Acid Concentration on Enamel Bonding.
M.I. SHINGCHI, K. SOMA, N. NAKABAYASHI (Tokyo Med Dent Univ, Tokyo, Japan).

It was hypothesized that the decreased concentration of phosphonic acid for etching could minimize adverse effect of enamel treatment. It would choose the achieving having high potential to promote bonding strength up to the root surface. The purpose of this study was to determine the relationship between depth of penetration and tensile bond strength of a photo-cured resin and phosphonic acid etched enamel and the efficacy of enamel etchants that was less aggressive than the concentration of 10% APS. The tensile bond strength of each sample was produced by a photo-cured (Cul) resin consisting of pre-polymerized TMS-TMS in 3% HPMF (Tegum) on acid-etched enamel was determined. The enamel etched cleans were various concentrations (4% to 6% in 0.5% phosphoric acid). The results were analyzed by ANOVA and all means were compared by LSD. The tensile bond strength of enamel etched with 4% phosphoric acid (0.5%) was tested to be the most effective on the enamel, and the results did not show significant differences (p>0.05). It was found that the depth of penetration increased significantly from 25um for 3% HPMA to 12um for 20% 10% phosphoric acid and 2um for 30% phosphoric acid. The results showed that the bond strength increased significantly from 12um. In conclusion, 4% phosphoric acid was more effective on the enamel etched with 4% phosphoric acid.