

Eighty sound bovine incisors have been selected for this study, and divided into eight groups (N=10). The labial enamel of group 1 was conventionally etched by 37% phosphoric acid, group 2 roughened with diamond bur then acid etched, group 3, 5, and 7 etched by Er;Cr:YSG Glaser with a power of 1W, 2W and 3W respectively, groups 4, 6 and 8 same as groups 3, 5 and 7 but followed by acid etching. After that self-etching bonding agent applied and cured then a composite core made and loaded till failure. One-way ANOVA test showed significant differences between groups ($p < 0.05$). Duncan multiple range post-hoc test showed that the SBS mean value for group 3 was (5.8 ± 1.2 MPa), and the group 4 (9.7 ± 1.6) which was significantly higher than group 3, but both of them were significantly lower than other groups. There were no significant differences among group 5 (15.6 ± 1.2), group 7 (16 ± 1.1) and group 1 (17.1 ± 2.6). No significant differences were found among group 2 (21.2 ± 1.9), group 6 (21.3 ± 2.2) and group 8 (22.6 ± 1.5), and these three groups were significantly more retentive than all other groups in this study. Conclusions: 1W laser etching produced the least SBS. 2W and 3W laser etching can substitute acid etching, but they give better results as good as bur roughened+acid etching if they followed by acid etching.