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Effect of the prior enamel etching and light curing source on the superficial and internal tooth/restoration bond interface integrity

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Objectives: The aim of this study was to evaluate the effect of the prior enamel etching (PEE) and light curing units (LCUs) on the marginal adaptation (MA) of Class I composite restorations using self-etching bond systems. **Methods:** For the MA evaluation, cavities (4.8 x 4.8 x 3mm) were done in 96 molars (n=8). The specimens were assigned to 12 groups, in accordance to the factors under study: Adhesives (Clearfil SE – CSE and Clearfil S3 – S3), prior enamel etching or not and LEDs (FlashLite 1401 – FL, Radii – RD or UltraLume 5– UL). Next, the cavities were restored using a microhybrid composite (increments technique) and then the superficial marginal adaptation was analyzed with the dye penetration technique (Caries detector, Kuraray). Thereafter, the percentage of gaps was measured (n=8). Moreover, the specimens were cut into two halves and then the dye tracer was used at the internal interface in order to evaluate the internal bond interface integrity. The marginal gaps were evaluated using the software Image Tool. Data were submitted to Kruskall-Wallis and Dunn ($p \leq 0.05$) for statistical analysis. **Results:** For the S3 adhesive, when using the UL and FL, the PEE promoted higher superficial gaps formation (10.2% and 8.7%, respectively), when compared to the same groups using the conventional adhesive application. In addition, the PEE was not influenced neither by LCUs or PEE for the superficial bond integrity. The internal adaptation showed worse results of gap formation, when the S3 was used without PEE. **Conclusions:** The prior enamel etching promoted, in general, a better superficial marginal sealing for both adhesive systems. The internal adaptation is dependent on the adhesive system and LED curing unit used.