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Abstract

[SANTOS, Alex José Souza dos](#) et al. Effect of irradiation mode and filling technique on resin/dentin bonding strength in class I cavities. *Braz. oral res.* [online]. 2004, vol.18, n.3, pp. 260-265. ISSN 1806-8324. doi: 10.1590/S1806-83242004000300015.

Factors such as light-curing mode, filling technique and cavity configuration may affect the bonding strength to dentin. This study evaluated the effect of irradiation mode and filling technique on resin/dentin bonding strength on the buccal wall of class I cavities in human teeth. Occlusal enamel was removed to expose a flat dentin surface. Occlusal cavities (4 x 3 x 3 mm) were prepared in dentin. The adhesive Single Bond was applied according to the manufacturer's instructions and TPH Spectrum composite resin was placed using the following: oblique incremental, horizontal incremental or bulk filling techniques. The composite resin was light-cured either by continuous (600 mW/cm² for 40 s) or Soft-Start (250 mW/cm² for 10 s + 600 mW/cm² for 30 s) modes. Specimens of the control group were obtained by bonding the material to the flat exposed buccal wall of the cavity (C-factor = 1). The teeth were stored in water at 37°C for 24 h and prepared for microtensile testing. Bonded beams of approximately 0.8 mm² were obtained from the buccal wall and tested with a tension of 0.5 mm/min. Results were analyzed by two-way ANOVA, Tukey's test and Dunnett's test ($\alpha = 0.05$). Incremental placement techniques with both irradiation modes produced higher bonding strength values than the bulk technique ($p < 0.05$). Bonding strength tested in the cavities had lower values than those obtained in flat dentin surfaces (control group) ($p < 0.05$), except for incremental fillings using stepped irradiation. Bonding strength to the cavity walls depends on the filling technique and on the irradiation mode of composite resins.

Keywords : Composite resins; Dentin; Dental cements; Dental enamel.

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