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The effect of different adhesive types and curing methods on microleakage and the marginal adaptation of composite veneers.

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Abstract

AIM: The aim of this in vitro study was to evaluate the influence of application techniques (with pre-curing vs without pre-curing) for dentin adhesive on microleakage and marginal adaptation of indirect composite veneer restorations. METHODS AND MATERIALS: A total-etch bonding system, Excite/Variolink II (EXV), and a self-etching primer system, Panavia F٢,٠ (PF٢), were used in the study. Forty-eight human central incisors were prepared for composite veneer restorations. The teeth were divided into two groups (n=٢٤). For each resin cement, one half of each experimental group included an adhesive pre-cure (PC) with a halogen light source while the other half received no pre-cure (NPC) prior to resin cement insertion. Thus, four experimental groups were created: A (PC+EXV), B (NPC+EXV), C (PC+PF٢), and D (NPC+PF٢). Veneers made of Tetric Ceram resin composite were cemented using dual-cured resin luting agents. After storage in distilled water at ٣٧ degrees C for ٢٤ hours, the teeth were prepared for marginal leakage. Two samples of each group were selected at random for scanning electron microscopic (SEM) observation and evaluation of marginal adaptation at ١٠٥٠x magnification. Data were analyzed using the Kruskal-Wallis and Mann-Whitney tests (a <٠,٠٥). RESULTS: The highest and lowest microleakage values were observed in dentinal margins of groups B and A, respectively. Dentin margins opposite to enamel margins had a significant difference in microleakage values of PC and NPC groups (P<٠,٠٥). The influence of the adhesive pre-cure was more pronounced than the type of resin cement used. No adhesive layer was visualized for the adhesives used without employing the pre-curing step. CONCLUSION: The effect of pre-cured adhesives was not material specific. The pre-cured adhesives showed the best resistance to dye penetration although the film thickness of these luting agents was only slightly increased. CLINICAL SIGNIFICANCE: Different curing methods (with pre-curing/without pre-curing) regardless of total-etch or self-etch adhesive systems influenced microleakage and the marginal adaptation, especially dentin margins of indirect composite veneers.

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