Adhesives and Flowable Composites: Effect on Sensitivity (2/05)

Perdigao J, Anauate-Netto C, Carmo AR, Hodges JS, Cordeiro HJ, Lewgoy HR, Dutra-Correa M, Castilhos N, Amore R. The effect of adhesive and flowable composite on postoperative sensitivity: 2-week results. Quintessence Int 2004;35:777-784.

Patients have reported postoperative sensitivity in posterior teeth receiving composite resin restorations.[1] Self-etching adhesives have been heavily marketed as reducing postoperative sensitivity compared with total-etch adhesives. These self-etching systems may potentially reduce sensitivity by providing simultaneous infiltration of the adhesive to the depth of demineralization and dissolving the smear layer without exposing dentinal tubules. Also, flowable composites have been recommended as a liner under posterior composite restorations to minimize microleakage and reduce postoperative sensitivity.[1] Very limited clinical research is available to substantiate these claims. The purpose of this study was to measure the two-week postoperative sensitivity in Class II composite resin restorations placed with either a self-etch or total-etch adhesive, with or without a flowable composite at the cervical increment. One hundred molars and premolars were restored in 46 patients using Clearfil SE Bond (Kuraray America) for the self-etch adhesive and Prime & Bond NT (Dentsply/Caulk) for the total-etch adhesive. A 1- to 2-mm-thick increment of flowable composite (Filtek Flow, 3M/ESPE) was placed in the proximal box in half of the restorations of each adhesive. Preparations were restored with the packable composite resin (Surefil, Dentsply/Caulk). All procedures were performed under rubber dam isolation. Hypersensitivity and marginal discoloration were evaluated at baseline and two weeks after treatment. Hypersensitivity was measured using a visual analog scale and response time after subjecting the teeth to compressed air, cold, and masticatory forces. Marginal discoloration was evaluated from color photographs. **No differences in postoperative sensitivity were observed between self-etch and total-etch adhesives at two weeks. The use of flowable composite did not decrease postoperative sensitivity.** Marginal discoloration was absent for all restorations at two weeks.

DIS Comment: This well-controlled study suggests that the new self-etch adhesives may not reduce post-operative sensitivity more than total-etch adhesives as originally claimed. Another study by Perdigao and others found similar results.[2] Only a limited number of clinical studies are available evaluating postoperative sensitivity with self-etching adhesives with information in the form of an anecdotal survey[3] or an uncontrolled published study.[4] The efficacy of flowable composite resins to reduce microleakage in laboratory studies is equivocal, with some studies showing reduced marginal leakage[5-7] and others showing no improvement.[8-10] The flowable composite resins, with less filler content, have greater flexibility, however, this benefit may be offset by their increase in polymerization shrinkage.[11] The authors stressed that only one clinical study has used flowable resins in posterior composite restorations. That study found no difference in any parameter after two years, with or without a flowable liner.[12] The authors plan longer-term recall evaluations on the patients in this study.

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