

Randomized 36-month follow-up of posterior bulk-filled resin composite restorations

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Objective: The aim of this double blind, randomized controlled trial was to evaluate the 36-month clinical performance of the layering technique (incremental [IF] vs. bulk-fill [BF]) in posterior composite resin restorations bonded with self-etch (SE) and etch-and-rinse (ER) strategies.

Methods: Posterior dental cavities of 72 participants (n = 236), with a cavity depth of at least 3 mm, were randomly divided into four groups. The restorations were bonded using either the Tetric N-Bond ER or Tetric N-Bond SE. The composite resin Tetric N-Ceram Bulk-Fill was placed either IF or using BF. Two experienced and calibrated examiners evaluated the restorations using FDI criteria in the baseline and after 12, 24 and 36-month. The statistical analyses were performed using the Wilcoxon Signed rank test ($\alpha = 0.05$)

Results: After 36-month, 14, 21 and 33 restorations showed minor fractures, marginal desadaptation and color mismatch, respectively ($p > 0.05$). Thirty-three restorations showed some marginal discoloration after 36-month with significant difference between ER (3 for ER-IF; 3 for ER-BF) and SE (14 for SE-IF; 12 for SE-BF; $p < 0.05$).

Conclusion: The BF technique showed excellent clinical performance, which was comparable during the 36-month of clinical evaluation with the 2-mm IF and it was not affected by the adhesive strategy. However, using the ER strategy reduces the risk of some marginal discoloration, irrespectively of the filling technique.

Clinical relevance: The bulk-fill material showed excellent clinical behavior when compared to its use in an incremental filling technique, mainly when associated to etch-and-rinse adhesive material after 3 years of clinical evaluation.