

Influence of Flowable Composites on Clinical Outcome of Direct Restorations

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Introduction

Due to the characteristic polymerization shrinkage of resin-based composites, clinical success with composite restorative materials is dependent on effective and durable adhesion to enamel and dentin (1). Flowable resin composites have been reported to adapt well to the cavity wall (2). This optimal adaption may result in an improvement of the adhesive performance of resin composites (2-4). Moreover, a number of new self-etch adhesives have been developed to simplify clinical bonding procedure. The efficiency of these simplified bonding systems is still controversia (5).

Aim

Therefore, the purpose of this prospective randomized clinical study was to compare the clinical performance of the self-etching adhesive system Futurabond DC in combination with the composite GrandiSO and the influence of the additional application of the flowable resin composite GradioSO Heavy Flow after six months.

Material and Methods

In 50 patients 32 class I and 68 class II cavities were placed with at least two restorations per patient. The adhesive system Futurabond DC was used for all the restorations. In one of the two fillings in each patient, an additional layer of the flowable resin composite GrandiSO Heavy Flow was applied in the entire cavity and separately light-cured. The fillings were placed under rubber dam. All materials were used as recommended by the manufacturer. Two clinicians evaluated the restorations at baseline, two week following placement, and at the six month recall visit according to the modified clinical criteria of Ryge. For this sensitivity, hypersensitivity, marginal discoloration, marginal adaption, recurrent caries, surface, color match, proximal contact and filling integrity were considered. All data were analyzed by Man-Whitney-U-test.



Figure 1: The used materials GrandiSO and GrandiSO Heavy Flow (Voco, Cuxhaven, Germany).



Figure 2-4: Restauration placed without an additional layer of GrandiSO Heavy Flow.

Results

After six months 50 patients could be re-examined. All teeth remained vital and did not show any signs of postoperative sensitivity. Marginal adaption code Bravo could be evaluated in one filling (with flowable liner). In three teeth a marginal discoloration was scored as Bravo (two with and one without fowable liner). None of the teeth showed signs of secondary caries. Statistical analysis showed no significant difference between techniques for any of the evaluation criteria ($p > 0.05$, Man-Whitney-U-test).

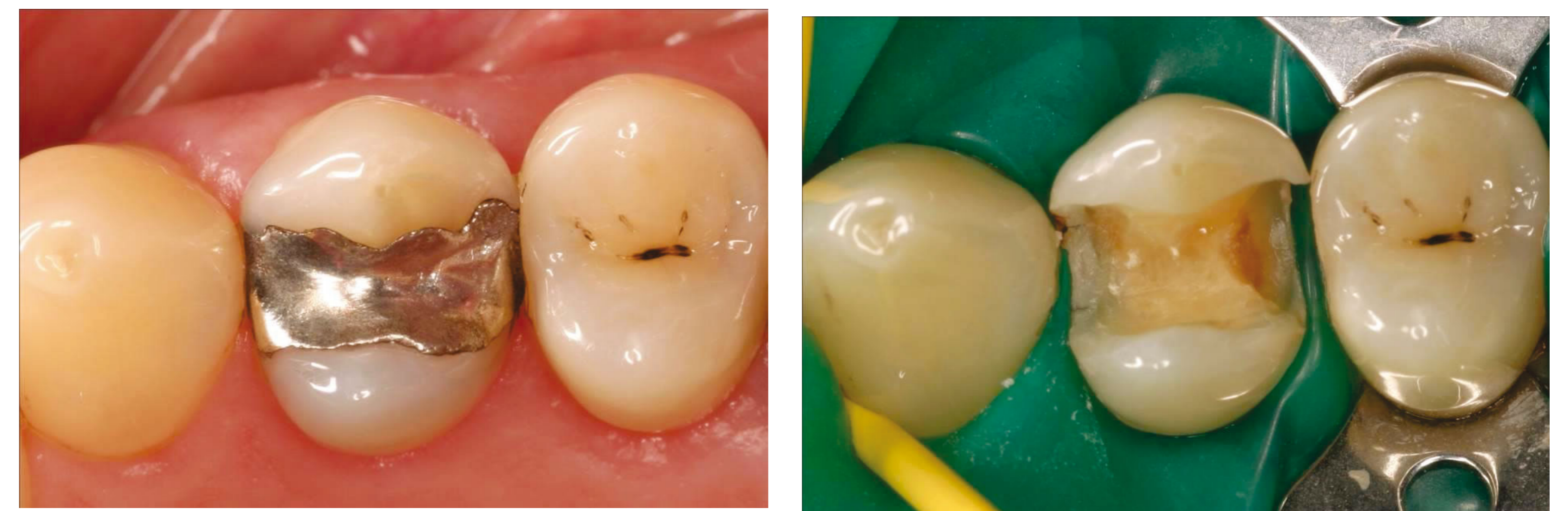


Figure 5 and 6: Old amalgam restauration. Situation after removal of the old filling and caries excavation.

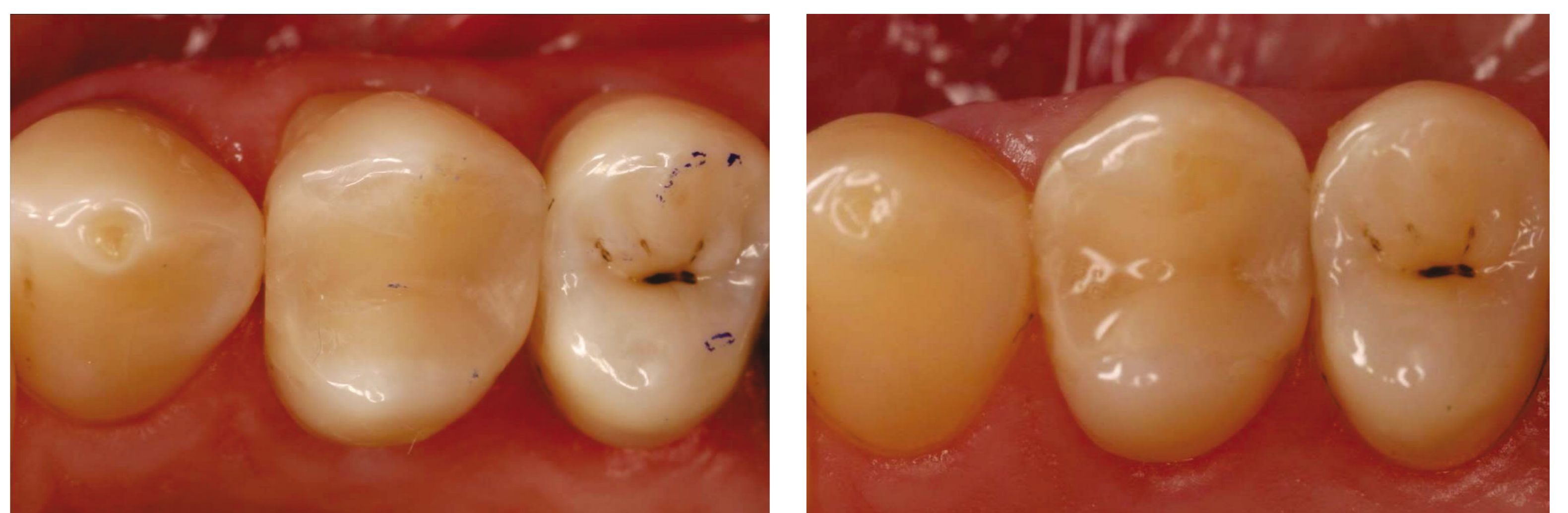


Figure 7 and 8: Situation at baseline (left) and after six months (right).

Conclusions

After six months the use of a flowable composite showed no significant impact on the clinical performance of class-I and -II restorations. The self-etch adhesive Futurabond DC might be a promising alternative to other systems.

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References

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