

Another Reason to Consider Repair Instead of Replacement (6/08)

Moncada G, Fernández E, Martín J, Arancibia C, Mjör I, Gordan W. Increasing the longevity of restorations by minimal intervention: a two-year clinical trial. *Oper Dent* 2008;33:258–264.

This investigation assessed the effectiveness of alternative treatments compared to the replacement of amalgam and resin-based composite restorations. Sixty-six patients with 271 defective restorations (193 amalgam; 78 resin-based composite) were evaluated during this two-year study. Two calibrated examiners assessed the restorations independently at the beginning of the study using seven parameters chosen from the USPHA/Ryge criteria (Marginal Adaptation, Anatomic Form, Roughness, Marginal Stain, Occlusal Contact, Secondary Caries and Luster). The defective restorations were then randomly assigned to one of five different treatment groups: Repair (n = 27); Sealing of margins (n = 48); Refurbishing (n = 73); Replacement (n = 42) and Untreated (n = 81). All procedures were accomplished using rubber dam isolation when possible. Repair consisted of gaining exploratory access by removing the restorative material, followed by tooth structure removal/modification when conditions warranted. Amalgams were restored with a dispersed-phase alloy with mechanical undercuts prepared into the existing amalgam. Composite restorations were restored with a self-etch, one-step adhesive and a resin based composite. The sealant group had the defective area receiving a resin-based sealant after phosphoric acid etching and drying. Refurbishing consisted of defective amalgams being smoothed with carbide burs and polished with silicone-impregnated points. Resin-based composites were refurbished using either aluminum oxide finishing strips or a series of aluminum oxide finishing discs followed by diamond-impregnated points. The replacement groups were treated with the defective restoration totally removed and replaced with either a new amalgam or resin-based composite. Finally, the untreated groups did not receive any treatment. At the two-year recall, the examiners were recalibrated and evaluated the 256 restorations (178 amalgam and 78 resin-based composite) available for examination at this time. Results were that marginal defect sealing demonstrated significant improvements in marginal adaptation ($p < 0.05$). Refurbishing of the defective restorations significantly improved anatomic form ($p < 0.0001$), luster ($p < 0.016$), marginal adaptation ($p < 0.003$) and roughness ($p < 0.0001$). Restoration repair significantly improved anatomic form ($p < 0.002$) and marginal stain ($p < 0.002$). Replacement showed significant improvements for all parameters ($p < 0.05$). The untreated group showed significant deterioration on marginal adaptation ($p < 0.013$). The authors concluded that for at least two years **sealant, repair, and refurbishing treatments improved the clinical properties of defective amalgam and resin-based composite restorations by increasing the longevity of the restorations with minimal intervention.**



DECS Comment: I must confess that once during the tenure of my undergraduate dental education, I raised a question during lecture if a certain amalgam restoration could be “repaired”. The teaching staff instantly retorted that restoration repair was only accomplished by unprofessional, “back alley” dentists. Nevertheless, attitudes regarding the evaluation and treatment of existing restorations are changing. Evidence exists that replacing an otherwise acceptable restoration due to an isolated imperfect area results in needless loss of sound tooth structure. This study is one of a series of evaluations that is reporting clinical results of restoration repair/refurbishment versus total restoration replacement. Although this report does present promising results that encourages restoration repair, further studies are encouraged that will evaluate repair versus replacement over a longer period of time.

References

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