Seven-year Clinical Evaluation of Restorations Repaired by Composite Resin

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Objectives: To evaluate the long-term clinical performance of repaired restorations based on the minimal intervention concept.

Materials and Methods: Thirty-eight restorations in 16 patients were repaired with: Composite materials - Filtek Supreme and Filtek Flow (3M ESPE); Clearfil AP-X, Clearfil ST, and Clearfil Opaquer (Kuraray Medical); and Palfique Estelite (Tokuyama Dental). Adhesive materials used were Mega Bond, K-etchant, and Clearfil Porcelain Bond Activator (Kuraray Medical); and Metal primer II (GC). Restorations were evaluated using USPHS criteria at baseline (immediately after polishing) and 7 years after repair. No statistical analysis was performed. Observations are reported.

Results: Thirty-one teeth (32 repaired restorations in 12 patients) were recalled at 7 years (recall rate=84%). Reasons for repair at baseline were secondary caries (20), abrasion (5), new caries (3), and others (4). Types of restorations to be repaired were composite resins (17), metal crowns (7), porcelain fused to metal crowns (7), and metal inlay (1). Locations of repairs were root surface (18), Class V (6), wedge-shaped defect (5), and Class III (3). One tooth was excluded from the evaluation because of root fracture (tooth survival rate=97%). Seven teeth were re-repaired during the 7 years (re-repair rate=23%). Reasons for re-repair were problem of repaired portion - secondary caries (1), bulk fracture of composite resin (1); new caries (2); problem with primary restoration - secondary caries (1), failure of restoration (1); and other (1). Four of seven re-repaired cases occurred in high caries-risk patients. Conclusions: The long-term durability of repaired restorations was affected by several reasons with 77% success at 7 years. Clinical Significance: The majority of the repairs were done because of secondary caries and performed on root surfaces. Within the limitations of this study, that suggests that material selection is critical for restorative treatment success. Repairs may extend the survival of teeth.