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Repair may increase survival of direct posterior restorations - a practice based study

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Short Title: Survival of repaired restorations

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Abstract

Objectives: To investigate repairs of direct restorations by a group of Dutch general dental practitioners (GDPs) and its consequences on longevity of restorations. **Methods:** Data set was based on dental records of patients attending 11 general dental practices (24 Dentists) in the Netherlands. Patients that received Class II Amalgam or Composite restorations were included in the study. The outcomes were considered in two levels: "Success" - When no intervention was necessary on the original restoration, it was considered clinically acceptable. "Survival" - Repaired restorations were considered clinically acceptable. Kaplan–Meier statistics and Multivariate Cox regression were used to assess restorations longevity and factors associated with failures ($p < 0.05$). **Results:** 59,722 restorations placed in 21,988 patients were analyzed. There was a wide variation in the amount of repairs among GDPs when a restoration had failed (Level 1). Repairs of multi-surface restorations were more frequent ($p < 0.001$). A total of 9,253 restorations (Level 1) or 6,897 restorations (Level 2) had failed in a 12-year observation time. "Success" and "Survival" of the restorations reached 65.92% (AFR=4.08%) and 74.61% (AFR=2.88%) at 10 years, respectively. Patient (age, removable denture) and tooth/treatment-related factors (molars, >2 restored surfaces, endodontic treatment, Amalgam) were identified as risk factors for failure ($p < 0.001$). **Conclusion:** Overall, the GDPs showed satisfactory rates of restoration longevity over 10 years. Repair can increase the survival of restorations although, substantial differences exist among practitioners in repair frequency and AFRs. Molars, multi-surface restorations, presence

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