
Failure of dental restorations in primary molars. HASSAN S. HALAWANY*, STEPHEN EKLUND, ROBERT FEIGAL, LLOYD STRAFFON. The University of Michigan.

Objective: To assess and investigate the failure of dental restorations in primary molars using a wide variety of definitions of failure and different attributing variables (age of the child at time of placement the restoration, gender, caries risk of the child, having one or more dentists for dental care, restorative material, dental arch, tooth type, and year of placement of the restoration)—some of which had never before been tested in the literature.

Methods: From more than 19 million procedures in private insurance claims data from Delta Dental Plan of Michigan, more than 92,000 dental restorations were considered according to certain inclusion criteria. Restorations were placed between 1992 -1998 in primary molars in children born between 1982-1992. All dental restorations were followed in this retrospective cohort design from the time of placement until the time of any significant dental procedure (e.g., replacement, pulpotomy, modification, or extraction) or until the end of observation (31st December 1999). Restorations were divided into three major groups: one-surface restorations, two-surface restorations, and stainless steel crowns (SSC). Survival analysis and the Cox-regression model were used to estimate the survival rates for each group of restorations and the significance levels of the above-mentioned attributing variables according to different definitions of failure.

Results: Using the general definition of failure (including replacement of the restoration, pulpotomy, or extraction—which was adjusted for natural exfoliation time), 87.21% of one-surface restorations survived the entire period of observation, 82.61% of two-surface restorations survived, and 88.45% of SSC survived. When other definitions of failure were used, different survival percentages resulted for each group along with different levels of significance for each tested attributing variable. Overall, SSC had the highest survival rates in most definitions of failure, followed by one-surface then two-surface restorations.

Conclusion: Within the limitations of a retrospective design, this study provided precise and detailed survival percentages of different restorations, which would help clinicians in treatment-planning and decision-making processes when dealing with primary molars.