

## **Effects of oral hygiene, residual caries and cervical Marginal-gaps on the survival of proximal atraumatic restorative treatment approach restorations**

### **Abstract:**

Background: Although Atraumatic restorative treatment (ART) approach has been in existence for a while, the reasons for the poor performance of multisurface ART restorations are not very clear. Aim: The aim of this study is to investigate the effects of oral hygiene, residual caries and cervical marginal-gaps on survival of proximal ART restorations. Settings: Two rural divisions in Kenya were selected for the study. Design: A randomized clinical trial. Material and Methods: The 804 children in the study had their baseline- and 2-year dental plaque levels documented. Each child received one proximal restoration in a primary molar using ART approach, together with trained and pre-tested operators/assistants, three glass ionomer cements (GIC)-brands and two tooth-isolation methods. The restorations were clinically evaluated soon after placement and after 2 years. Post-restorative bite-wing radiographs taken soon after restoration were also evaluated. Statistical analysis: Statistical Package for Social Sciences (SPSS) version 14 computer programme was used and results tested using Pearson's correlation, Cox Proportional Hazards regression analysis and Multiple Logistic regression models tests. Results: At baseline and after 2 years, the mean cumulative survival and plaque index changed from 94.4% to 30.8% and 2.34 (Standard Deviation, or SD of 0.46) to 1.92 (SD 2.1) respectively, with higher plaque indices associated with higher restoration failures. Of the 507 radiographs evaluated, 48 (9.5%), 63 (12.4%) and 9 (1.8%) restorations had residual caries (RC), cervical marginal-gaps (CMG) and both RC/CMG respectively. Survival of the restorations with RC/CMG was significantly lower ( $p = 0.003$ ) compared to those with RC or without RC. Conclusion: Low survival of proximal restorations in the study was associated with the presence of cervical marginal-gaps.