Retention of glassionomer sealant in primary teeth in young children

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ABSTRACT. Aim: The purpose of the study was to determine the retention of glassionomer sealants in primary teeth of preschool children. Methods: Fissure sealants (Fuji II LC) were placed on primary molars, without conditioner, by two experienced dentists under good clinical conditions in well-equipped clinics and with the assistance of a chairside dental assistant. Sealants were scored as "fully retained", "partly retained", or "completely lost" after two years. Results: There were 65 children included, out of which 29 had all primary molars. Mean age at the time of sealing was slightly less than 4.7 years. Mean follow-up time was two years. About 75% of the sealants placed in second primary molars were fully or partly retained after 12 months, compared with less than 50% of the sealants placed in first primary molars. New carious lesions were too few to allow for an assessment of the effectiveness of whether the sealants were effective in preventing caries. Conclusion: Retention rates for glass ionomer fissure sealants were satisfactory. However, high-quality randomised clinical trials to estimate the caries preventive effect are still needed.

KEYWORDS: Sealants, Glassionomer cements, Primary teeth, Clinical trial.

Introduction

Fissure sealing in permanent teeth has proven efficacious in a large number of controlled clinical trials [Llodra et al., 1993] and the relevancy of this method in preventing caries in the permanent teeth of school age children has been demonstrated in several large-scale field studies [Heller et al., 1995; Wendt et al., 2001]. On the other hand, the appropriateness of the method for prevention of caries in primary teeth in young preschool children has been questioned, due to difficulties in obtaining sufficient moisture control in such children.

As retention of glassionomer sealants is less dependent on good moisture control, this material has been suggested as an alternative to resins for sealing primary teeth [Nunn JH et al., 2000; Welbury et al., 2002].

The purpose of the present short communication is to report the retention of glassionomer sealants in primary teeth of young children.

Materials and methods

The study was originally designed as a split-mouth trial to assess the efficacy of glassionomer sealants in preventing dental caries in the primary teeth of young children. However, after a follow-up period of two years, only a small number of carious lesions had developed, thus making it impossible to assess the cariostatic effect of the method. However, as data on fissure sealing in primary teeth of young children is scarce in the dental literature, it was decided to report the retention of the sealing material.

The study took place in the municipality of Skanderborg, about 20 km south of Aarhus, Denmark. The municipality has for many years had a public dental service for children. The fluoride content in the drinking water is low (≤0.2 ppm), but fluoridated toothpaste is commonly used by the population and is also recommended to preschool children. All sealants were placed by two experienced dentists with more than 20 years experience in delivering clinical dental care to children, including preschool children. The sealants were placed under good clinical conditions in well-equipped clinics and with the assistance of a chairside dental assistant. The material was Fuji II LC used without conditioner, and according to the manufacturers instructions. Allocation of side to be sealed was determined using a table of random numbers.
At the follow-up visits sealants were scored as “fully retained”, “partly retained”, or “completely lost” by the same two dentists who had applied the sealant. For the subsequent analyses the categories “fully retained” and “partly retained” were combined. Teeth, in which approximal fillings had been placed, were excluded from the analysis, as the status of the sealant material at the time the filling was placed could not be determined.

Kaplan-Meyer statistics were calculated using SPSS 10.0. Loss of sealant was assumed to have taken place at the midpoint between the examination when it was last observed as fully or partly retained, and the first examination when it was first noted as completely lost.

![Table 1](image1)

**Table 1** - Age at the time of sealing, and length of follow-up period in a study of glass ionomer fissure sealants in preschool children.

![Table 2](image2)

**Table 2** - Mean and median survival time in months of glass ionomer fissure sealant according to primary tooth type.

![Graphs](image3)

**Fig. 1** - Kaplan-Meyer graphs showing survival of GIC sealants in different tooth types.
Results
The number of children included in the study was 65, out of whom 29 had all primary molars (both first and second) in both jaws (both upper and lower) of the right side of the mouth sealed. The remaining 36 children had all primary molars in the left side of the mouth sealed. Mean age at the time of sealing was slightly less that 4.5 years, with 25% of the children being less than 4 years and 25% being more than 5 years. Mean follow-up time was two years (Table 1).

Figure 1 shows that approximately 75% of the sealants placed in second primary molars were fully or partly retained after 12 months, compared with less that 50% of the sealants placed in first primary molars. Mean survival time for sealants, placed in second primary molars, was slightly less than two years and approximately one year in first primary molars (Table 2).

Discussion
The retention rates obtained in the present study, at least for the first primary molars, is probably higher than many clinicians would have expected. This could be due to a number of factors, including selection of children with good acceptance of dental care and good clinical working conditions (including chairside assistance from a dental assistant). On the other hand, considering the importance of preventing caries in the very young child, this might be a worthwhile approach to consider in some cases. However, high quality randomised clinical trials to estimate the caries preventive effect are still needed.

Conclusion
Retention rates for glass ionomer fissure sealants were satisfactory. However, high quality randomised clinical trials to estimate the caries preventive effect are still needed.

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References