

What YOU Should Know About Sealants



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Pit and fissure sealants for preventing dental decay in the permanent teeth of children and adolescents

Summary

Children who have their molar teeth covered by a resin based sealant are less likely to get dental decay in their molar teeth than children without sealant

Sealants are coatings applied by the dentist or by another person in dental care on the grooves of molar teeth. These coatings are intended to prevent the growth of bacteria that promote decay in the grooves of molar teeth. The review shows that after 4.5 years the sealed permanent molar teeth of children aged 5 to 10 had reduction of decay in over 50% of biting surfaces compared to teeth without sealants.

Background

Fissure sealants used on occlusal tooth surfaces were introduced in the 1960s for protecting pits and fissures from dental caries. Although sealants have demonstrated to be effective in preventing caries, their efficacy may be related to the background caries prevalence in the population.

Objectives

The primary objective of this review was to evaluate the caries prevention of resin based pit and fissure sealants and glass ionomer cements or sealants in children and adolescents.

Search strategy

We searched the Cochrane Oral Health Group's Trials Register (last update December 2002), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library, Issue 4, 2002), MEDLINE via OVID (1966 to December 2002), EMBASE (1974 to February 2002), SCISEARCH, SIGLE, CAPLUS, INSPEC, JICST-EPLUS, NTIS, PASCAL (February 2002) and DARE, NHS EED, HTA (March 2002). Reference lists from included articles and review articles were searched for additional relevant articles. All relevant studies in most languages were considered and translated.

Selection criteria

Randomised or quasi-randomised controlled trials of at least 12 months in duration in which sealants were used for preventing caries in children and adolescents under 20 years of age were included. The primary outcome was the increment in the numbers of carious occlusal surfaces of premolars and molars.

Data collection and analysis

In the first phase, two reviewers independently examined whether a given study was likely to be relevant on the basis of the title, key words and abstract. In the second phase, four of the reviewers independently classified studies to be included in final analyses. Study authors were contacted for additional information. In the split-mouth studies relative risk ratios were calculated for the paired differences of tooth surfaces being carious or not. In studies comparing resin based sealant with no treatment, fixed effect meta-analyses were used to combine the estimates of relative risk ratios. In one parallel group study, the mean DFS data as continuous data, the effect estimate being the difference in mean DFS, was calculated from data of occlusal surfaces of teeth included in the test and control groups.

Main results

Eight trials were included in this review of which seven trials were split-mouth studies and one a parallel group study. Six studies provided data for comparing sealant with no treatment and three studies for comparing glass ionomers with resin based sealants. The overall effectiveness of resin based sealants in preventing dental decay on first molars was high.

Based on five split-mouth studies with 5 to 10 year old children there were significant differences in favour of the second-generation resin sealant compared with no treatment with pooled relative risk values of 0.14, 0.24, 0.30, 0.43 at 12, 24, 36 and 48 to 54 months respectively. The reductions in caries therefore ranged from 86% at 12 months to 57% at 48 to 54 months. The 24 month parallel group study comparing second-generation resin sealant with control in 12 to 13 year old children found also significantly more caries in the control group children with DFS = 0.65 (95% CI 0.47 to 0.83). Allocation concealment was classified adequate in three of these six studies. However the information on background levels of caries in the population was insufficient to conduct further analyses to estimate the effectiveness of resin based sealants related to baseline caries prevalence.

Only one study provided data for the comparison between glass ionomer sealant and control. Based on this, there is not enough information to say whether ionomer sealants are effective, or not.

The results of three studies comparing resin sealants with glass ionomer sealants were conflicting and the meta-analyses were not carried out.

Authors' conclusions

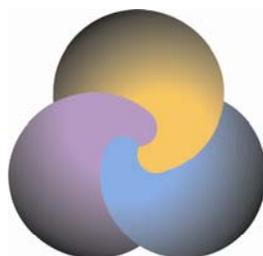
Sealing with resin based sealants is a recommended procedure to prevent caries of the occlusal surfaces of permanent molars. However, we recommend that the caries prevalence level of both individuals and the population should be taken into account. In practice, the benefit of sealing should be considered locally and specified guidelines for clinicians should be used.

The methodological quality of published studies concerning pit and fissure sealants was poorer than expected.

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