To seal or not to seal

Zhang W, Mulder J, Frencken J E. Is preventing micro-cavities in dentine from progressing with a sealant successful? Br Dent J 2019; 226: 590–594. DOI: https://doi.org/10.1038/s41415-019-0195-9.

Sealants have many uses within dentistry and are a common go-to solution for many different situations. Uses include sealing incipient lesions within enamel to prevent progression by essentially cutting off the supply of nutrients to this area, with the aim of arresting the lesion and preventing further spread. Sealants are even more commonly placed within pits and grooves for prevention of initiating a carious lesion, due to its susceptible site.

However, have you ever seen a sealant used on dentine? No, no you have not. The question really should be, why are sealants not used on dentine? Why aren’t sealants being used to prevent the progression of a carious lesion within dentine?

In the study, sealants were placed over the 79 sealed, micro-cavitated lesions, with only four of these lesions progressing from a small dentine carious lesion to a frank cavitation over the period of four years. This supports the hypothesis and evidently reflects that sealants placed over micro-cavities have the ability to stop carious lesion progression.

This still raises the question: with this high success rate, why don’t we use sealant to seal micro-cavities within dentine?

At the beginning of the trial, carious lesion preventative instructions were presented to school children Throughout the study, no information was gathered regarding the children’s dietary habits or their oral hygiene habits. The lack of information with regard to these social habits is essential to consider when referring to the progression of carious lesions, as dietary sugars play a pivotal role in the progression of the lesion. In addition, at the beginning of the study, the children, on average, were only 12 years of age, making them a higher risk for caries. However, throughout the four years, the patients’ oral hygiene habits, as well as knowledge gained with maturity, meant that they went from a high caries risk to a low caries risk.

The results of the trial reflect the importance of education with regard to oral health and attitudes towards oral health, as ‘the behavioural management of the occlusal surfaces by the child was as good as sealing these in preventing the development of cavitated dentine carious lesions.’ Although sealing the micro-cavities within dentine meant the progression of the carious lesion was low, the child population moving from high risk to low risk was a major factor as to why the carious lesions didn’t progress.

So the question ‘why don’t we use a sealant to seal micro-cavities within dentine to prevent the progression of a carious lesion?’ really should be: why do we need a sealant when we can do a pretty good job at preventing this ourselves?

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