

Is fissure sealing out of date?

Sometimes dentists can only shake their heads in disbelief at the expectations that some mothers have about what can be done with their children's teeth.

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How can mothers, who normally know everything down to each biological nutrient in their child's cereal (but not the hidden sugar content), be expected to know that "tooth sealing" does not provide complete protection for the whole tooth?

It would be just wonderful if all the teeth could be "varnished" when they initially erupt and dentists put out of work because of a lack of carious lesions.

Even though only a section of the tooth can be protected against attack by streptococcus mutans in all its variant aggressive forms by applying a thin resin film, IP 5 (German prophylactic treatment guideline) is still beneficial.

Fissure sealing has not really been around that long. I certainly did not learn the technique during my university training. According to a report on fissure sealing by the DGZMK (German Maxillofacial Surgery Association) it was also controversial in the 1960s and 1970s because the loss rate of the materials at that time was relatively high. In the interim period, however, it has become a tried and tested prophylactic treatment, which represents an excellent method of reducing caries for the correct indications.

Unfortunately, health insurance companies only pay for fissure sealing on permanent molars and only on one surface per tooth. According to the above report, buccal and palatal fissures, the junction to the cusp of Carabelli and foramina coeco should also be sealed.

New research has found that, when a tooth (Fig. 1) has been attacked by

(slight) occlusal initial caries, the caries is suspended if the supply of cariogenic substrate ceases. If the affected area is treated beforehand with ozone, treatment is even more successful. This should not of course be regarded as a licence to "apply something to the tooth" with uncooperative children to get round their fear of drilling. In my opinion, however, with initial caries fissure sealing in conjunction with continuous local fluoridation is preferable to taking no action at all (provided there has been a proper diagnosis as well as regular check-ups including radiological checks, Fig. 2).

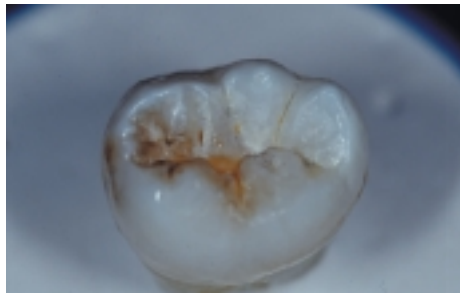


Fig. 1

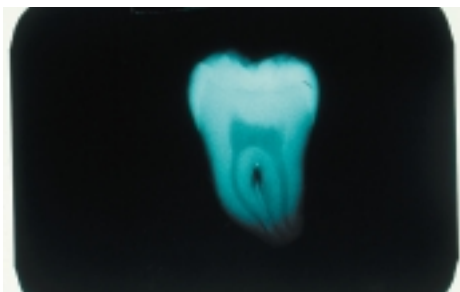


Fig. 2

The above-mentioned DGZMK report is well worth reading as it contains comprehensive information. It can be easily downloaded under "DGZMK- Stellungnahmen und Fissurensiegelung". I highly recommend reading the report as parents frequently ask about the risks and side effects of this preventative treatment for caries. Though there is agreement regarding the indications for fissure sealing and the correct technique, there are numerous different materials for IP 5 treatment.

There is a consensus of opinion that composites are the best materials with a few exceptions (uncooperative

children, poor drying options).

DETAX, well-known for its A-silicone bite registration material, greenbite apple (with green apple flavour), new tempofill for direct temporary restorations as well as more traditional impression materials, put smartseal, a new light-curing fissure sealant, onto the market at the IDS 2003. We were able to try it out in our practice and would like to report our findings.

Our practice is best described as an all-round practice. We place great importance on prophylactic treatment for children, which reflects our philosophy that prevention is better than cure. Two dentists are expertly assisted by two qualified dental assistants and two dental hygienists.

If at all possible, our hygienists use a rubber dam when sealing teeth, but to be honest, this is rarely successful as newly erupted molars provide very little retention for holding the rubber dam. Hygienists learn, however, to deal with these situations in the course of their comprehensive training, and adequate drying of the treatment area usually proves effective.

Following usual pretreatment, e.g. cleaning the teeth to be sealed with small brushes, polishers and airbrasive units (Fig. 3 and 4), the surfaces to be sealed are conditioned (etched) for approx. 30 seconds with smartseal etch orthophosphoric acid, which is included in the set (Fig. 5).



Fig. 3

Then after thoroughly rinsing and drying the teeth (the enamel should have a milky, chalk white colour and surface when dry), smartseal is

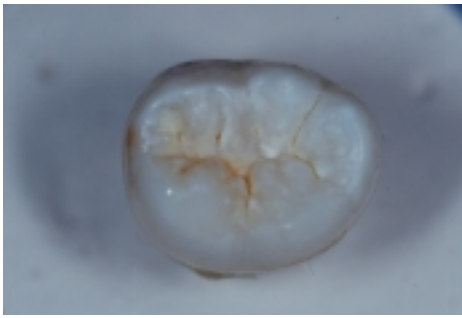


Fig.4

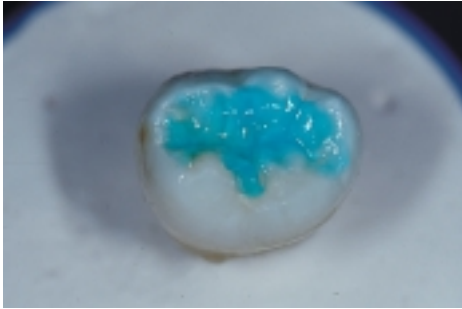


Fig.5

applied into the fissures beginning at the edge using the application syringe (Fig. 6).

The consistency of the thixotropic material is a little unusual. There is a good reason why it flows a little more slowly than other manufacturers' products: smartseal contains more fillers than other sealants and, according to the manufacturer, this means it is not so easily abraded

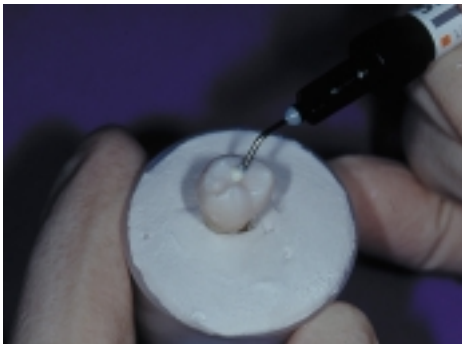


Fig. 6

from the occlusal surfaces.

After only a few seconds the material does in fact flow evenly over the whole fissure. Any air bubbles can be removed using the tip of a probe (Fig. 7), a microbrush (Fig. 8) or a fine small brush, ensuring a perfect seal for the fissured occlusal surface.

The surface is light cured in the usual way (Fig. 9) and the occlusion is checked for high spots. Then a fluoridation solution (smartfluoride lacquer or emulsion) is applied to refluoridise all the etched enamel areas outside the sealed region.

In the smartseal introductory set (Fig. 10) Detax supplies an opaque, similar to the tooth shade, and a clear version. Though I prefer the opaque version, the clear version is also very useful. As already described above, it is general practice to seal "discoloured" fissures to stop the supply of potentially cariogenic substrates. Clear sealant is useful in monitoring the cavity in such cases.



Fig. 10

According to Detax, smartseal (Fig. 11) not only has the advantage of being an aesthetic sealant that is quick and easy to handle due to its extra long application tip with its optimum flow properties preventing the formation of any marginal gaps, it also provides added permanent protection by the long-term release of sodium fluoride for remineralisation of the enamel surface.



Fig.11

In my opinion smartseal from DETAX is a valuable aid in the prevention of fissure caries when it used by experienced dental assistants and dental hygienists (Fig. 12).

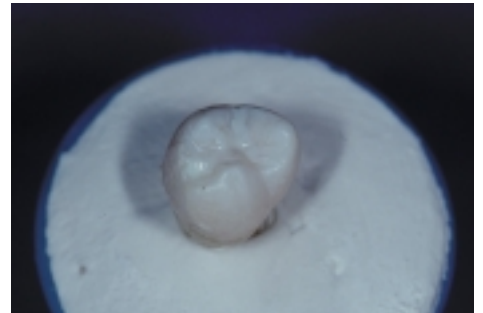


Fig.12

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Fig. 7



Fig. 8



Fig. 9