Customised protection of fissures with a chlorhexidine-containing protective varnish

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Fissures are exposed to a high caries risk. Owing to their surface structure, they are difficult to clean and offer bacterial plaque an ideal breeding ground. However, appropriate measures can minimise the risk. Susceptible sites can be protected as early as the teeth erupt by means of a chlorhexidine-containing protective varnish. After the permanent teeth have fully erupted, they may be permanently sealed if necessary.

Fissure sealing is not indicated while the teeth are erupting. An alternative measure is therefore required, since premolars and molars are particularly susceptible to caries during this stage. The enamel is still relatively porous and no highly resistant.

Thorough dental care is difficult to achieve because the surfaces are not yet freely accessible. In addition, children between 6 and 7 years of age are not yet in a position to perform optimal oral hygiene because of their level of development. This applies to even a larger extent to children of younger ages. Even for these children, appropriate protective measures should be available, since the health of the deciduous dentition is an essential prerequisite for the health of the permanent dentition.

The application of a chlorhexidine-containing protective varnish represents a measure that meets the specific requirements necessary for the treatment of children during these critical stages. With Cervitec Plus from Ivoclar Vivadent, a material that is particularly suited for providing appropriate oral health care is available to dental practitioners. The varnish contains 1 per cent chlorhexidine and 1 per cent thymol.

Chlorhexidine (CHX) is regarded as the active ingredient of choice and quality standard in matters of achieving effective bacterial control in the oral cavity. Mutans streptococci are particularly sensitive to CHX. The active ingredient prevents bacteria from adhering to the teeth, inhibits the metabolism of the microorganisms, and, in its initial concentration, destroys the cell walls of the bacteria.

Chlorhexidine is characterized by long-term availability and consequently by extended efficacy. These favourable properties are enhanced by supplying CHX in a varnish delivery form. Undesirable side effects of chlorhexidine such as unpleasant taste, impaired taste perception or staining are mostly avoided.

Generally, the application of the varnish places less high demands on the working technique and the compliance of young patients than the application of a fissure sealant. The cleaned tooth surfaces are quickly dried with blown air from an air syringe and dabbed dry with a cotton stick. The varnish can be distributed rapidly and easily with a brush and cures in the course of a few seconds (Fig. 1). The material easily flows into the fissures and remains there for an extended period of time after curing.

Under normal circumstances, Cervitec Plus is applied every three months. In the course of an intensive care programme, the varnish may be applied at shorter intervals, e.g. every six weeks.

The advantage of the varnish delivery form is that the active ingredients can be administered exactly to the area where they are needed. Professional application in the practice enables controlled dosing. In addition, the treatment does not cause pain and this positive experience encourages compliance for future treatments. Because of the targeted application of the varnish, chlorhexidine does not taste as strong as in other delivery forms. Generally, the varnish delivery form enjoys a high rate of acceptance among children.

Clinical studies with a CHX-containing varnish confirm the protective effect on fissures. The number of new carious lesions is clearly lower in patients with a high caries risk if the varnish is applied on a regular basis. Both deciduous molars and permanent teeth can be treated in this manner. Furthermore, investigations document a clear decrease in mutans streptococci counts. Hence, the application of a protective varnish provides a viable alternative if fissure sealing is not possible.

Once the critical stage of tooth eruption has been successfully completed, fissure sealing may be considered. This measure is indicated if fissures and pits at high caries risk are present. Long-term international experience has confirmed the caries-preventive effect of this method. Composite-based sealing materials with or without fluoride release such as HelioSeal F or Heliosel from Ivoclar Vivadent have proven to be particularly effective.

The working technique is key to achieving good quality. The teeth to be sealed should always be subjected to a risk
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analysis and caries risk diagnostics prior to the application of the sealant. Cleaning and isolation play an essential role in the long-term success of the sealing.

Professional cleaning with a prophylactic paste, e.g. Proxvon from Ivoclar Vivadent, and a rotating brush creates favourable conditions for the subsequent application of the sealant. The use of a fluoride-free paste is not mandatory. It is essential to rinse the teeth thoroughly as paste or plaque residues may adversely affect the subsequent working steps and therefore impair the quality of the sealing.

Next, the working field should be isolated as well as possible. Various devices to achieve access to the fissures and pits and obtain a dry working field are available. A flexible lip and cheek retractor such as OptraGate from Ivoclar Vivadent provides excellent access and clear visibility of the intraoral area (Fig. 2).

If used in combination with cotton rolls, a saliva extractor and air syringe, this may be the best individual solution for some patients. For other patients, complete isolation with a rubber dam, e.g. OptraDam from Ivoclar Vivadent, may create the best conditions for the success of the sealing.

An etching gel, which is allowed to react for 50 to 60 seconds, ensures that the sealant can form a close bond with the enamel. After the etchant has been thoroughly rinsed off, the surfaces are carefully dried with oil- and water-free air. The surface which has been treated with the acid-containing gel should demonstrate a white mat appearance. If this is not the case, the enamel may have become contaminated with saliva and the etching procedure should always be repeated.

The sealant is applied in a fine, bubble-free coating and dispersed (Fig. 3). Care should be taken not to apply too much material in the upper jaw and to disperse the material rapidly as the sealant has a tendency to flow to the distal side due to the force of gravity. A waiting time of 15 seconds allows the material to penetrate the fissure and enamel pores, which has a favourable effect on retention.

The sealant is cured with an appropriate polymerization light, e.g. bluephase from Ivoclar Vivadent, for 20 seconds. With regard to curing lights, an important note should be observed: In general, the light performance of every polymerization light should be checked on a regular basis to ensure complete curing.

Next, the quality of the sealing is checked. If an opaque sealant such as Helioseal F has been applied, the margins can be checked more easily (Fig. 4). The occlusion is checked and, if necessary, the sealing is adjusted with finishing and polishing instruments. Polishing is recommended even if the contact appears optimal already during first occlusion. The treatment is completed with fluoridation. The fluoride-containing protective varnishes Fluor Protector or Fluor Protector N from Ivoclar Vivadent are particularly suited for this purpose.

Fissure sealings should be checked at regular six-month recalls. Experience has shown that defects, if any at all, tend to form within the course of the first twelve months after the sealing has been applied.

If necessary, the sealing has to be partially or completely replaced. Long-term studies confirm that retention times of 10 years or longer are possible if an optimal working technique is used.

Fissures can be protected from caries for extended periods of time. Applying a protective chlorhexidine-containing varnish and sealing fissures and pits on a regular basis are part of a successful dental care programme. Age-appropriate dental care at home and in the practice and fluoridation based on the patient’s individual caries risk complete the oral health care programme.

Editorial note: A complete list of references is available from the publisher.

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