Psychological aspects of dental treatments on children – Use of compomers in paediatric dentistry

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Dentists recommend arranging the initial trip to the dentist before the eruption of the first primary tooth. Since no drilling or injections are required during this visit, the child takes home a positive memory of the trip to the dentist and will attend the next appointment without fear or negative feelings. However, this approach is unfortunately the exception to the rule. Many parents only schedule a trip to the dentist when there are already problems. They regard treatment of the primary teeth as superfluous and often let problems go unchecked. The primary teeth are left to decay which results in development disorders in the permanent teeth. That's why dentists are increasingly appealing to parents to arrange an appointment in good time and avoid conveying negative feelings such as fear beforehand.

At the dental practice, successful communication between the dentist and patient is essential. Sound expert know-how, experience and character traits such as friendliness, attentiveness, empathy, benevolence and patience help the dentist to identify the right treatment strategy to suit the patient's age, build, illness and psychological aspects.

With children it is important to use restorative materials which can be processed quickly and which enable an atraumatic approach to be taken (minimally invasive therapy). Given their positive properties such as good adhesion to the dental hard tissue, reduced preparation, mechanical strength and biocompatibility, glass ionomer cements (e.g. Ionofil Plus, VOCO – radiopaque glass ionomer restorative material) are used widely in paediatric dentistry. The chemical bonding to dentine, enamel and cement ensures perfect margin adaptation and reduces the risk of moisture permeability. The cariostatic effect of the glass ionomer cements is based on the release of fluoride and the formation of fluoroapatite at the border between the tooth and the filling. These materials also boast a toothlike coefficient of thermal expansion which prevents marginal deficiencies and poor marginal integrity with temperature differences in the mouth. Hygroscopic expansion, caused by water absorption and the exchange of ions between the dental hard tissue and filling, ensures that the filling size remains stable in the long term.

Compomers (restorative materials based on glass ionomer technology) are also indicated for paediatric dentistry. These are paste-like single-component materials which cure when exposed to light. Compomers are placed using a self-etch adhesive; the connection between the compomer and tooth is based on micromechanic retention and corresponds to the adhesive luting of restorations with modern composites. Compomers are highly aesthetic and are characterised by their great strength. They are resistant to abrasion and moisture and are indicated for primary tooth fillings for Class I to V cavities. The process for placement of a compomer filling does not differ fundamentally from the process for composite resin fillings.

Twinky Star (VOCO) is a suitable compomer restorative material; it is a coloured, light-curing compomer which is simple to use and which, as is usual with glass ionomer cements, releases fluorides. Twinky Star is cured with a polymerisation device and used in the enamel-dentine adhesive technique (Futurabond M, VOCO). The material is indicated for repairing enamel and dentine defects in primary teeth.
Children can choose from a range of coloured materials with a glitter effect and are thus integrated into the treatment process which, in turn, has a positive effect on compliance. A specific clinical example is described below.

Clinical case

A 5-year-old boy presented with pronounced sensitivity to thermal stimuli in the teeth of the upper and lower jaw. His fear of the dentist meant that he had previously refused to allow treatment. In order to enable treatment, an initial

level of trust had to be established. The five-year-old firstly got to know the treatment room, was allowed to move the treatment chair up and down and sucked up the water from the beaker using a suction device. He was then allowed to choose the shade of the restorative material and agreed to the treatment.

After the teeth had been cleaned, minimally invasive preparation was performed (adhesive restoration technique) with preservation of the intact dental hard tissue. The cavities were then cleaned and dried. The excess water was blown off with a gentle stream of air and the dentine was not completely dried (wet bonding). A calcium hydroxide underfilling was applied in the area near the close to the pulp.

In order to guarantee an optimal bond, a light-curing, self-etching adhesive system with nanofiller technology was selected (Futurabond M from VOCO).
Futurabond M is applied to enamel and dentine; it is then massaged in for 20 s and dried with an air syringe for 5 s. This is followed by polymerisation (10 s) and the placement of the filling. A 2 mm-thick layer of compomer was applied; this was adapted to the cavity walls/floor and light-cured for 40 s. Further compomer layers were subsequently applied and light-cured. Following placement of the restoration, the excess material was removed and the margins were smoothed. Finally, the restoration was polished with diamond burs and polishing wheels and the teeth were fluoridated.

Conclusion

There are numerous aspects which are important for the successful treatment of caries in children. Not only are the treatment methods and means important, so too is the evaluation of the child's and parents' emotional state. In many cases, children refuse to communicate and cooperate with the dentist because of fear of drilling and of the anaesthetic syringe. Parents and dentists should encourage young patients to relax and "ride out" the treatment. With the use of the coloured compomer Twinky Star, patients are integrated into the treatment process and psychological barriers are broken down.

Author

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Clinical case

Fig. 1: The Twinky Star shade guide offers 8 shades

Fig. 2: Futurabond M in *SingleDose*

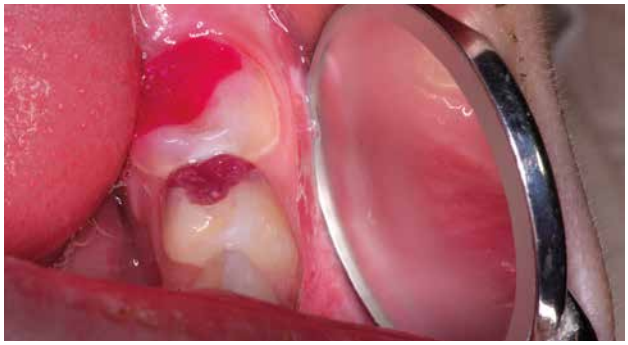

Fig. 3 and 4: Coloured fillings in the primary teeth in the upper and lower jaw

Fig. 4