

Class II and V restorations in milk teeth

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Introduction

For many years, there was considerable debate among dentists regarding the usefulness and necessity of treating and restoring milk teeth. And not without reason, as dental treatment in children is associated with a wide range of difficulties and can cause serious psychological trauma, resulting in a life-long fear of dentists.

The techniques and processes employed in therapeutic treatment were not always suitable for performing every step, from preparation of the cavity through to placement of the restoration and polishing, to a sufficiently high quality. In addition, the materials used in paediatric dentistry to restore milk teeth failed to ensure a durable bond and restore the tooth's masticatory and other functions.

Today, it is undisputed that proper care of primary teeth, their treatment and preservation are no less important than the restoration of permanent teeth. Modern dentistry has solved the majority of the problems and brought about an improvement in the dental treatment of deciduous and mixed dentition. Technological advances, treatment rooms furnished with children in mind, consultations for psychological preparation and sedation, and working in pairs make it possible to prepare younger patients optimally for the upcoming treatment, reduce treatment times and overcome other difficulties.

The dentist's task is not only to restore the anatomy and function of milk teeth as a harmonious component of a complete dental and oral system, but also to preserve them until they are naturally replaced. This scenario places special demands on the materials employed to restore primary teeth.

A number of special factors need to be taken into consideration when treating milk teeth: the thin and poorly mineralised tooth enamel, which is incapable of guaranteeing a strong enough bond, the voluminous pulp

chamber, small teeth, acute progression of caries, rapid generalisation of infections and difficulties isolating the operating site.

Furthermore, young patients are often unable to hold their mouth wide open for long enough. In light of the above, the restorative materials need to exhibit a range of special features. They must adhere well to insufficiently structured enamel and dentine, where the wide tubules are filled with dentinal fluid. They must not be toxic, nor require a complete absence of moisture. They must be easy to carve and polish, and must cure quickly. They must strengthen the enamel for the entire life of the tooth and display abrasion and hardness properties similar to those of primary enamel.

Material selection

Glass ionomer cements satisfy the majority of these requirements. They ensure mechanical and chemical bonding to the dental hard tissue, tolerate small quantities of moisture, are not toxic and release fluoride throughout their period of use, which strengthens the crystal lattice of the tooth enamel. However, these materials' abrasion resistance is inadequate. Another significant disadvantage associated with their use is the additional time required for mixing, setting and covering with a protective varnish.

The task is not a difficult one for Class I cavities. If the preparation rules and instructions for use of the selected material are followed, it is possible to establish sufficiently secure conditions for the retention of a restoration in the tooth.

Unfortunately, Class II and V cavities (Black's classification) are encountered very frequently. Restorations on approximal surfaces are subject to high tensile loading during mastication and present unfavourable conditions for mechanical retention.

In addition, the stable preservation of a qualitatively good contact point also represents an important prerequisite for a healthy interdental papilla. Thus, the restorative material needs to satisfy even more requirements.

Compomers possess the requisite physico-chemical properties, as they combine the advantages of glass ionomer cements and light-cured composites. Thanks to their ductility, they can be introduced into the cavity and carved quickly and easily.

Compomers are combined restorative materials with constituents including strontium glass and fluoroaluminosilicate glass as an inorganic filler. Compomers are highly aesthetic and characterised by their strength, low shrinkage and cariostatic and cumulative effect. They are available in packable and flowable versions.

One of the most in-demand materials for the treatment of primary dentition is the compomer Twinky Star (VOCO GmbH). It is available in caps, which are used with a special dispenser. The packable material is available in eight shades and the flowable version in two.

Application

Due to its high modulus of elasticity and the simplicity of placement, it is often worth giving preference to the flowable material – especially when treating Class V cavities. Difficulties in isolating the operating site are encountered when placing restorations in this area.

The dentist is forced to work as quickly and precisely as possible. Twinky Star is applied and cured in layers of up to 2 mm in thickness. Sometimes a single layer is sufficient, which cuts the working time considerably. The flowable compomer should preferably be applied as the first layer before the packable material so as to create as congruent a filling surface as possible relative to the prepared cavity in the tooth. One layer is normally sufficient in shallow cavities.

The special colours and the resulting unusual aesthetics represent an important psychological factor for the child. Following placement and polishing of the restoration, the tooth should be covered with a fluoride-containing varnish, for example Bifluorid 12 (VOCO), in order to strengthen the enamel at the restoration/enamel junction and thus protect against secondary caries.

This method makes it possible to utilise all the advantages of Twinky Star and create a high-quality, durable restoration, preserve a healthy interdental papilla and ensure adequate function of the milk tooth until it is replaced naturally.

Children usually pick the bright fillings for their posterior teeth. Class V cavities generally occur in anterior teeth. The selected material in this case is Twinky Star in Silver. It conforms outstandingly to the aesthetics of the anterior teeth and is practically invisible after polishing.

Restoring Class II cavities in milk teeth is certainly the most difficult and responsible task. As is the case with permanent molars, it requires the qualitative production of an intact contact point, which renders the use of a matrix essential. Following isolation of the operating site, fixation of the matrix, pharmaceutical treatment of the cavity and use of the adhesive restoration technique, a thin layer of adaptable Twinky Star Flow is applied. The remaining portion of the restoration, including the approximal wall and contact point, is formed with the packable material.

During carving, the aim is to restore the lost portion of the tooth and thereby replicate its anatomical features as precisely as possible so as to ensure good masticatory efficacy without detriment to the occlusion plane.

Grinding of the restoration to ensure correct occlusion is an obligatory step.

The material is easy to polish and does not require any additional, time-consuming measures. The single-stage Dimanto polisher (VOCO) can be used for polishing and shining.

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Illustrations



Fig. 1: Use of curved matrices on the deciduous molars to create a qualitatively good contact point



Fig. 2: Finished restorations in teeth 54 and 55 (upper right first and second molars) with Twinky Star in Pink and Gold



Fig. 3: The distal restoration on tooth 84 (lower right first molar) was placed using a curved matrix and the flowable and packable Twinky Star versions in Blue