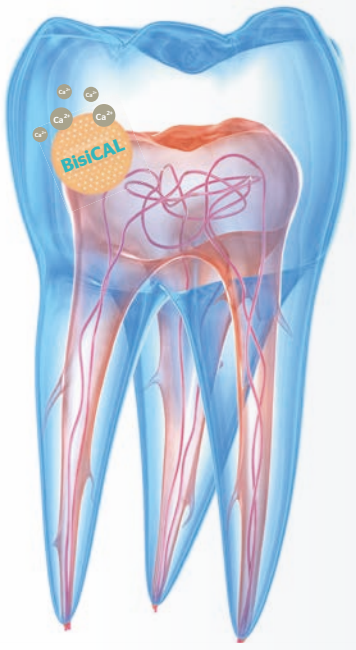


BisiCAL

The calcium plaster for the pulp

The following is a report on a clinical trial of a vitality-preserving treatment option using the product BisiCAL, a bioactive, light-curing, resin-modified calcium silicate for pulp capping with MTA fillers.

Text Dr. Benjamin Kette
Picture Dr. Benjamin Kette, bisico GmbH & Co. KG

Initial situation

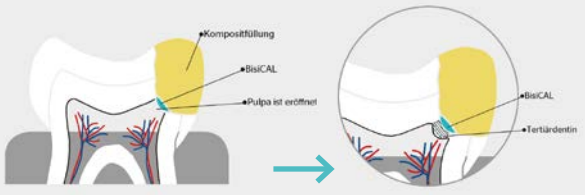
The following patient presented as a new patient with no previous complaints. The initial situation (Fig. 1) shows the old fillings with shiny greyish secondary caries spots on teeth 24 to 26. The teeth were all vital, insensitive to percussion and palpation, free of poor probing depths and also did not show any apical inflammation.

Treatment

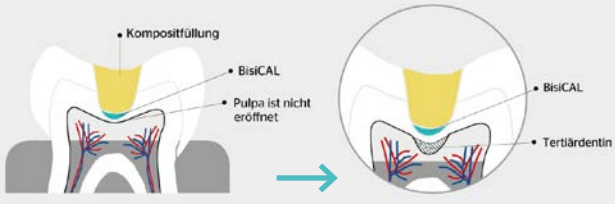
After removal of the old fillings (Fig. 2), the secondary caries appeared over a large area. With careful removal of the caries, the pulp horn of tooth 26 was opened. After disinfection and haemostasis using 2% sodium hypochlorite rinse (Fig. 3), the teeth were prepared for filling with a Tofflemire matrix band under relative drainage (Fig. 4). By stopping spontaneous bleeding within three minutes, we were able to carry out direct pulp capping using light-curing BisiCAL. Otherwise, classic root canal treatment would have been necessary or a pulpotomy, which has recently started to be applied again thanks to MTA and Biodentine.

After checking the drainage, we applied BisiCAL directly to a small area of the opened pulp with a small ball plugger (Fig. 5). Selective enamel etching using 37% phosphoric acid was carried out for 30 seconds following exposure of the cavity walls, so as not to endanger the dentin area close to the pulp during spraying. The dentin was rewetted for one minute using 2% Chlorhexamed rinse. The teeth were adhesively conditioned using E-Bond LC. BisiCAL is so positionally stable that it is not sprayed off after light curing. As things progressed, the two composite restorations on teeth 24 and 26 were layered in a multi-layer technique. First, the missing proximal walls were restored and then the cusps were built up with proximal finishing (Fig. 6). Distally on tooth 25, we also used BisiCAL as an indirect cap – but in reverse order

direct capping of the pulp



indirect capping of the pulp



Initial situation of old composite fillings with secondary caries on teeth 24-26

Removal of the old restorations and visualisation of the caries

Complete caries excavation with opened pulp horns. Tooth 26 was haemostatic and disinfected with 2% sodium hypochlorite..

Preparation for filling placement on teeth 24 and 26 after relative draining.

Direct capping with BisiCAL MTA on tooth 26 and application of E-Bond-LC

Fillings placed in the approximal space on teeth 24 and 26, indirect capping on tooth 25

Final X-ray image of the fillings placed on teeth 24 to 26

Finished and polished composite restorations on teeth 24 to 26

of treatment. First selective etching was carried out, then. The final X-ray (Fig. 7) was used to recheck the marginal seal of the restorations, possible filling overhangs and the proximity of the restoration to the nerve. Figure 8 shows the finished and polished restorations on teeth 24 to 26. Since the treatment, the patient has been pain-free and is very satisfied with his new fillings.

Discussion

Applying BisiCAL pulp capping material with MTA fillers directly from the syringe saves a lot of time. Light curing in particular has its benefits compared to chemical curing of other well-known products for maintaining the vitality of the teeth, such as Kerr Life, Dycal or MTA. BisiCAL is best applied using a small ball plugger. If the application needle were a little narrower or the consistency of the material a little more viscous, it would be possible to work directly with the application syringe.

The consistent quality of the material, without any mixing errors on the part of the dentist or the assistant, ensures optimum treatment results. Setting by light curing is perfect, as it cannot be sprayed off even after the teeth have been conditioned with phosphoric acid.

The treatment sequence described avoids over-etching in the area close to the pulp and reduces postoperative discomfort. BisiCAL simplifies and speeds up the entire workflow in dealing with deep filling placement and in striving to preserve vitality in routine daily practice, and ensures a good treatment outcome. However, the correct diagnosis for treating a caries or caries profunda remains essential.

Dr. Benjamin Kette M.Sc.

Dentist –
Zahnarztpraxis Dr. Elmar Mayer M.Sc.
Leibnizstraße 5 · 88471 Laupheim
Tel.: +49 7392 91 14 44
E-Mail: praxis@dr-elmar-mayer.de
www.zahnzentrum-laupheim.de

product information

BisiCAL is a bioactive light-cure resin reinforced pulp capping material with MTA-f-illers. The release of calcium-ions supports the formation of tertiary dentine. The result is a safe pulp protection. The high alkaline pH level has bactericidal effects and thus supports healing and protects against hypersensitivity. BisiCAL is moisture tolerant, insoluble and shows a high radiopacity. Thanks to its thixotropic behavior and with the supplied needletip BisiCAL can be applied very precisely, even in deep cavity preparations.

Light cure of BisiCAL ensures controlled setting. After 40 seconds of light curing the next clinical step is possible. BisCAL is a one-component material, mixing times and errors are avoided. The light curing process ensures a fast and controlled fixation of the material. The high pH value creates an environment that is hostile to bacteria. Thanks to bioactive fillers, tertiary dentin (hydroxyapatite (Ca5(PO4)3(OH)) is formed by releasing Ca2+ and OH-ions. The pulp is protected and supported in healing.