Restorative treatment of an approximal caries on tooth 16 with the bulk-fill material "VisCalor bulk" (VOCO)

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Introduction

Both the patient and the dentist want a restoration of carious lesions that is fast and as aesthetic as possible. Conventional bulk-fill materials have already made it possible to restore large defects very quickly, but they have problems with narrow, small cavities, as adapting to cavity walls and floor is often difficult to achieve. The new bulk-fill material VisCalor bulk (VOCO) combines primary flowability and final modelling in one product, thus making the treatment procedure much easier. In the case described below, a 24-year-old female patient was directly restored with VisCalor bulk (VOCO) in an approximal primary caries on tooth 16 diagnosed during the annual check-up.

Case description

Case history

- **Patient's age and sex**
  The patient, female, was 24 years old at the time of treatment.
- **Reason(s) for dental consultation**
  The patient presented for the treatment of an approximal caries, which was discovered during the annual check-up on an X-ray (OPT) together with several other lesions.
- **Dental and Medical history**
  Patient was healthy and had not been to the dentist for about 5 years.
- **Patient's expectations**
  The patient wanted a tooth-coloured restoration of the lesions,+ if possible.

Records and Diagnosis

- **Clinical and instrumental records**
  Clinically, occlusal carious lesions were found on all wisdom teeth. The patient already had several fillings in quadrants 1-3, but these were intact. The X-ray revealed several approximal carious lesions in the molar region (16, 46, 47). Clinically, all teeth were vital and not sensitive to percussion.
- **Diagnosis**
  Primary caries was diagnosed on all wisdom teeth and on teeth 16, 46 and 47.

Therapy

- **Treatment plan**
  First of all, only one lesion had to be treated in order to re-introduce the patient to dental work. To begin with, tooth 16 was selected. Due to the diagnosis of an approximal primary caries without involving the pulp, together with the patient's wish for a tooth-coloured restoration, an adhesive filling therapy with VisCalor bulk was chosen and an appointment was made after providing the relevant information.
- **Timeline of treatment steps**
  After prior anaesthesia and keeping the working field dry with a rubber dam, the caries was first completely exposed and then excavated. A matrix (Triodent V3 Matrix System, Dentsply Sirona) was then applied for shaping. After selective enamel-dentine etching with Vococid (VOCO) and bonding with Futurabond U (VOCO), the defect was filled with VisCalor bulk (VOCO), shade A3 and A2, and the anatomical tooth shape was modelled and restored. Finally, the filling was polished with burs and Dimanto polishers (VOCO) until a high gloss was achieved.

Results

- **Bevor vs. After comparison**
  Discoloured, insufficient occlusal-palatal filling. Subsequently, anatomical cusp and molar tooth shape was restored. Good colour matching thanks to high translucency.

Discussion

- **Rationale behind this treatment**
  Based on the diagnosis of primary caries without pulp involvement and since the patient wanted a fast restoration as close as possible to the tooth's colour, treatment

with VisCalor bulk (VOCO) was chosen.

- **Indications of the VOCO Products used**
  Adhesive filling
- **Special advantages of the VOCO Products used**
  VisCalor bulk (VOCO) is impressive for its quick processing in two viscosities within a same work step and its good colour matching. Preheating of the material allows good application which does not have a negative effect on the material's properties after polymerisation (Yang et al. 2020). It combines the flowability of a flowable and the modelling properties of a packable composite, and can be used for both narrow and large cavities.

Conclusion

- **Patient satisfaction**
  Patient was very satisfied with the result. She was particularly impressed by the fact that this approximal lesion was diagnosed at an initial stage during the annual check-up and therefore did not require extensive restoration measures. The patient was also positively surprised by the fast and uncomplicated treatment of the lesion.
- **Reasons for the results**
  The lesion could be diagnosed already at its initial stage. This way, a minimally invasive procedure was possible.
- **Take-home message**
  Compared to conventional layered adhesive filling materials, Viscalor bulk stands out for the easier and faster application of larger layers (Colombo et al. 2020). In addition, its comparatively high translucency and the four available colour shades ensure good colour matching.
- **Acknowledgement**
  We would like to thank the patient for her willingness and patience.

Fig. 01: The occlusal overview shows a neat, almost caries-free permanent dentition. The affected tooth 16 clinically hardly shows its distal caries

Fig. 02: Occlusal detail view of tooth 16: The distal caries is hardly visible

Fig. 03: The patient's X-ray image (OPG): These lesions can be diagnosed as approximal caries 16 (C3) and approximal caries 46/47 (C3)

Fig. 04: Occlusal view of tooth 16 after placing the rubber dam

Fig. 05: View of #16 after removal of marginal ridge and presentation of the lesion

Fig. 06: View of #16 after complete removal of the caries, the old restoration and the preparation of the cavity

Fig. 07: View of #16 after placing an already anatomically curved matrix

Fig. 08: Occlusal view after phosphoric acid application for selective enamel etching

AFig. 09: View of the tooth after the entire cavity was covered with phosphoric acid

Fig. 10: Occlusal view of the cavity after conditioning with phosphoric acid

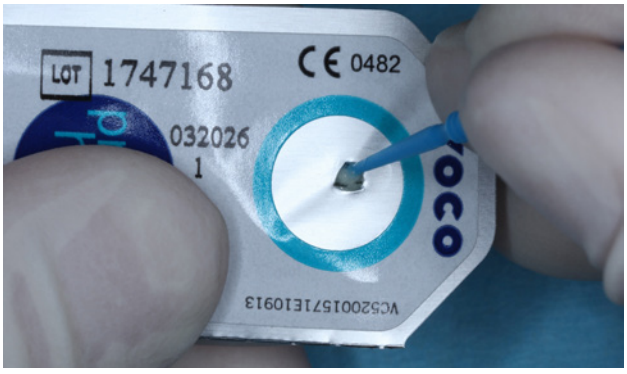

Fig. 11: The activation of Futurabond U (VOCO) before application

Fig. 12: Occlusal view of the cavity wetted with with Futurabond U (VOCO)

Fig. 13: The VisCalor Dispenser (VOCO) enables a simple and effective heating of the composite to 65°C. Two different settings, which differ in warming time, are available

Fig. 14: The four different colour shades of the VisCalor bulk (VOCO) material: In addition to a universal shade of colour, A1, A2 and A3 are available

Fig. 15: The VisCalor Dispenser (VOCO) during the heating phase in setting 1: the blue LED line flashes for 30 seconds, after which the heated composite can be applied

Fig. 16: Occlusal view of the cavity with filling material applied. In this case, two different shades of colour (A3 and A2) were used

Fig. 17: View directly after placing the filling and removing the matrix in the run-up to finishing and polishing

Fig. 18: Final occlusal view of the final restoration after finishing and polishing

Fig. 19: At the end of treatment, a smiling and satisfied patient

Detailed references

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