

A closer look at the new nano-hybrid composites **Visalys® Fill and Visalys® Flow:**

Case report on minimally invasive restorations in the posterior region

Naturally beautiful teeth as the result of minimally invasive treatment is a common desire amongst patients. Besides having a dental team who work well together, favorable handling properties and a natural appearance of the restorative material are critical for successful treatment. In recent times, composites that use just a few shades to cover all the Vita shades, like the new Visalys® Fill and Visalys® Flow composites by Kettenbach Dental, have attracted attention.

Case history and material

The patient presented with amalgam fillings on teeth 46 and 47 that were considered unesthetic and of toxicological concern. An esthetic restoration was requested. In addition, the patient was not satisfied with the unsightly, exposed cervical dentin at teeth 35 and 36.

This case was a good opportunity for me to test the Kettenbach Dental nano-hybrid restorative materials **Visalys® Fill** and **Visalys® Flow**, launched on the market in March 2023.

According to the manufacturer, they combine the key properties of modern composites: advantageous handling properties, excellent stability, and an impressive chameleon effect that enables esthetic treatments with just 5 shades and two special shades. This meets the demands of most dental practices for materials that are easy, safe and quick to apply. Plenty of good reasons to take a closer look at the new materials!



REPLACEMENT OF AMALGAM FILLINGS

Clinically, the treatment involved two class I cavities in an abraded dentition. Teeth 46 and 47 reacted sensitively to the cold test without delay and also did not display any abnormalities in the percussion test (**Fig. 1**).

The tooth shade was selected based on the wet tooth. The Flex Shade system made it very easy to select the matching composite shade, in this case A3, for the new restorative materials **Visalys® Fill** and **Visalys® Flow**.

The rubber dam was applied before removing the amalgam fillings and preparing the cavity. The isolation of teeth 46 and 47 ensured a dry and unobstructed work environment, and protected the patient against inhaling or ingesting amalgam particles containing mercury while removing the fillings (**Fig. 2**).

Diamond-coated burs were used to remove the amalgam fillings. The cavity was then prepared. Stained, but firm dentin was left in place for the purposes of the minimally invasive treatment. The cavity was completely free of caries and had a depth of 2 mm. A discreet angling of the enamel with fine-grain diamonds ensured a fluent transition between the tooth and restoration in terms of shape and color. Sharp edges were rounded (**Fig. 3**).

The preparation was followed by etching. First, etching gel (Omnident, 37% phosphoric acid-based) was applied to the enamel, then to the dentin.

After the recommended application time of 20 sec. for enamel and 10 sec. for dentin, the cavity was able to be thoroughly flushed with water spray and the tooth surface was blown dry with oil-free air without overdrying the dentin (**Fig. 4 and Fig. 5**).

As Kettenbach Dental does not recommend a specific bonding material, I was able to use my customary iBond Universal (Kulzer) adhesive. The universal, light-curing adhesive was applied to the entire surface of the cavity in a single layer with an application tip and gently rubbed in for 20 sec. It was then gently dispersed with air to prevent excess bonding material on the cavity floor. Light polymerization occurred with the Bluephase PowerCure (Ivoclar) LED polymerization lamp for 10 sec. (light intensity: 1200 mW/cm²) (**Fig. 6**).



Fig. 1: Amalgam fillings in situ



Fig. 2: Application of the rubber dam



Fig. 3: Minimally invasive removal of the insufficient amalgam fillings



Fig. 4: Etching the enamel with 37% phosphoric acid-based etching gel



Fig. 5: Etching the dentin with 37% phosphoric acid-based etching gel



Fig. 6: Bonding with iBond Universal

To cover the heavily stained dentin, the opaque **Visalys®** Fill OA2 was used for the first layer. Although, given the shallow depth of the cavity, only a very thin layer of OA2 was applied, the staining was already nicely masked after curing with the Bluephase PowerCure for 10 sec. (light intensity: 1200 mW/cm2) (**Fig. 7**).

This was followed by the application of a thin layer of **Visalys®** Flow in shade A3 with subsequent light polymerization. This layer was used as a liner on the entire cavity floor (**Fig. 8**).

Visalys® Fill, shade A3, was then applied in individual increments and light-polymerized for 10 sec. in each case. The low stickiness of the material was pleasantly noticeable, particularly given the small quantities of composite

used for each layer: adaptation in the cavity was very easy and the material immediately adhered in the cavity but not to the instrument. The good stability enabled a natural-looking cusp build-up; the material was malleable to work with (**Fig. 9**).

Protruding restoration margins and the macrotexture were removed with a coarse diamond tool, with the rubber dam still in place (**Fig. 10**).

After removing the rubber dam, the filling was carefully ablated with a rotating instrument until the static and dynamic occlusion was adjusted. Rubber polishers (Venus Supra Polisher, Kulzer) and polishing brushes (Occlubrush, Kerr) were then used to create a smooth and glossy surface with an anatomically functional occlusal surface and esthetic appearance (**Fig. 11**).

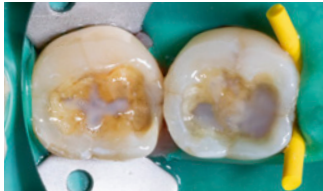


Fig. 7: Covering the staining with opaque composite, shade OA2

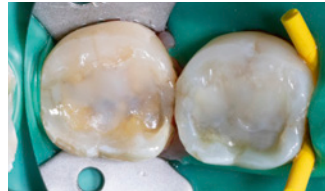


Fig. 8: Applying the first layer of **Visalys®** Flow composite, shade A3

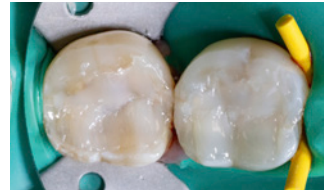


Fig. 9: Individual increments after light curing, **Visalys®** Fill, shade A3



Fig. 10: Rough preparation of the filling under rubber dam



Fig. 11: End result

► Finished and polished filling. The filling is harmoniously integrated. The filling is initially slightly visible due to the treatment-related drying of the enamel.

CERVICAL DEFECTS

For the restoration of the cervical defects, too, the tooth shade was first determined based on the wet tooth and the composite shade of the restorative material was determined using the Flex Shade system. The cavity was then cervically assessed (**Fig. 12**).

In this case, the defect was equigingival and was portrayed with a retraction cord size 000.

After the discreet angling of the enamel and cleaning of the cavity, enamel etching (20 sec.) and dentin etching (10 sec.) was followed by the removal of the etching gel with water spray. The tooth surface was blown dry with oil-free air without overdrying the dentin.

iBond Universal was once again selected as the adhesive with light curing for 10 sec. As was previously the case, the dark staining was covered by placing and polymerizing a very thin layer of the opaque **Visalys®** Flow OA2 on the

stained dentin surface. The good flowability of the material made the very thin layer easy to apply.

The flowable composite **Visalys®** Flow A3 was then applied to the neck of the tooth and perfectly molded against the margin of the cavity with a probe to create a perfect marginal seal even without further finishing. The exceptional adaptability of the flow material was extremely advantageous in this respect. The material was promptly polymerized and this was followed by an increment of packable material (**Visalys®** Fill A3, Kettenbach Dental) to shape the tooth contour in the coronal direction.

After light polymerization, protruding restorative margins and bonding residues were removed with a fine-grain diamond tool before being polished to a high gloss with polishing cups. A probe was used to check the smooth transition of all restorative margins (**Fig. 13**).



Fig. 12: Starting situation: generalized cervical defects in the lower jaw



Fig. 13: Finished and polished filling.

CONCLUSION

The case shows that reliable esthetic results can be achieved with simple shade selection when using the new **Visalys®** Fill and **Visalys®** Flow composites by Kettenbach Dental. The long-term outcomes of a composite restoration depends, among other things, on a smooth and homogeneous surface, which was completely achieved with the **Visalys®** Fill material due to its easy polishability.

The application, stability, homogeneity, and adaptation of the material met the expectations for a modern composite.

Note: For shallow depths of stained cavities (such as in our case), make sure to only apply very thin layers of opaque OA2, otherwise the certain transparency of the main shades of **Visalys®** Fill and **Visalys®** Flow could lead to overly light restorations for darker tooth shades or overly dark restorations for very light-colored teeth.



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