

Creating a firm foundation

GrandTEC – A new, resin-impregnated glass fibre strip



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In some indications, modern bonding agents and composites do not have sufficient adhesive strength to ensure the stability of restorations over the long term, for example when splinting teeth for temporary primary interlocking following orthodontic treatment or during periodontal treatment. A reliable material is also required in trauma therapy or for closing gaps in

teeth as a basis for restorations with composite. The following contribution illustrates different fields of application for metal-free, minimally invasive techniques using the material GrandTEC (VOCO) as an example.

The material GrandTEC is a glass fibre strip consisting of multiple, densely packed, parallel running glass fibres that are also impregnated with a light-curing resin. The material described here increases the fracture resistance of composites, thereby considerably extending their range of applications:

- ◆ Splinting and securing natural teeth after orthodontic treatment, in cases of periodontitis and after damage to a tooth;
- ◆ Semipermanent and permanent restorations of gaps in the teeth using an extracted, natural tooth;
- ◆ Temporary treatment of gaps using an artificial tooth (for example while an implant is healing);
- ◆ Reinforcement of a long-span temporary bridge.

The material is flexible and can be shaped and adapted to the desired shape with the same instruments that are used in the composite adhesive technique. The other materials required for treatment using the glass fibre strip are available in every dental practice: phosphoric acid for conditioning the dental hard tissue, a light or dual-curing adhesive as a bonding agent, a light-curing flowable composite and a malleable composite suitable for the indication, as well as a LED or halogen blue-light lamp for photopolymerisation.

During polymerisation the glass fibres coalesce with the composite. A flowable composite is used in this process as the initial layer. The time-consuming and error-prone process of wetting the glass fibre strips with a bonding agent can be dispensed with because the glass fibre strip has already been impregnated with a resin. The masticatory forces arising are distributed evenly over the restoration by the intensive chemical coalescence of glass fibres and composite, thereby increasing the flexural strength and fracture resistance of the restoration. Modern adhesive bonding techniques and GrandTEC therefore complement each other perfectly resulting in an innovative concept for stable restorations.

The two series of pictures shows how and when the material can be applied using two case studies as examples. ♦

Manufacturer: **VOCO GmbH**,
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Case 1: Use of an extracted tooth in an immediate restoration

Clinical photographs by Dr. Walter Denner, Nuremberg



Fig. 1: Tooth 41 cannot be saved following a root fracture.



Fig. 2: A composite impression was prepared before the extraction of 41.



Fig. 3: The gap after extraction.



Fig. 4: The subgingival parts of the extracted tooth have been removed.



Fig. 5: Tooth 41 is repositioned in the mouth with the help of the silicone impression and inserted using GrandTEC.



Fig. 6: Completion of the insertion of the restoration 45 minutes after the extraction.

Case 2: Closure of a gap in the premolar region

Clinical photographs by Drs. Henk Altling, Groningen (the Netherlands)



Fig. 1: An existing gap in region 14.



Fig. 2: Preparation of the teeth adjoining the gap: existing fillings as well as carious defects are removed and the teeth prepared using the acid-etch bonding technique.



Fig. 3: GrandTEC is positioned in an arch shape in the gap ...



Fig. 4



Fig. 4 and 5: ... and composite is inserted in a "V" shape and shaped.



Fig. 6: Aesthetically and functionally perfect restoration – made in the practice in less than one hour.