

TOP TIPS

GRANDTEC GLASS FIBRE STRIPS

Klaus Peter Hoffmann offers two different applications for GrandTEC glass fibre strips from VOCO

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.

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.

IN USE

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 an 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 following case examples demonstrate the different possible applications of GrandTEC with composite.

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Klaus Peter Hoffmann is a dental technician and dentist who practised for many years in Germany and Luxembourg. He joined VOCO in 2008 and is head of product management.

CASE STUDY ONE

USING AN EXTRACTED TOOTH FOR AN IMMEDIATE TREATMENT

After clinical and radiological diagnostics an extraction was required. An incisal shell was fabricated on the unconditioned teeth with composite before the extraction, which is needed for setting the tooth crown in the space. The tooth was then extracted, the root

severed and root canal sealed with composite. The natural tooth was then reconstructed to make a replacement tooth. The shell enables a problem-free and custom-fitted repositioning of the tooth in the space. After conditioning and bonding of the teeth bordering the space

severed and root canal sealed with composite. The reconstructed natural tooth was repositioned and fixed in the space using GrandTEC and Grandio Flow. Following the extraction, an aesthetic result was achieved without any preparation of the teeth bordering the space.



Figure 1: Tooth 31 cannot be saved following a root fracture



Figure 2: A composite impression was prepared before the extraction of 31



Figure 3: The gap after extraction



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



Figure 5: Tooth 31 is repositioned in the mouth with the help of the silicone impression and inserted using GrandTEC



Figure 6: Completion of the insertion of the restoration 45 minutes after the extraction

Clinical photographs by Dr. Walter Denner, Fulda, Germany

CASE STUDY TWO

SPACE CLOSURE IN THE PRE-MOLAR AREA OF AN OLDER FEMALE PATIENT

The restorations in the teeth that confined the spaces were removed and thus space

created for anchorage of the GrandTEC glass fibre. The build up of a tooth with a flowable

composite (Grandio Flow) was carried out in steps.



Figure 7: An existing gap in region 14



Figure 8: 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



Figure 9: GrandTEC is positioned in an arch shape in the gap



Figure 10: The composite is inserted in a V shape



Figure 11: After shaping of the composite



Figure 12: An aesthetic and functional restoration created in the practice within an hour

Clinical photographs by Drs Henk Alting, Groningen (the Netherlands)