

Quick and effective restoration with glass hybrids: the stamp technique

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Glass hybrid restoratives offer a unique combination of advantages in dentistry. They are biocompatible and require neither the application of bonding agents for adhesion nor absolute isolation protocols. Their high viscosity and chemical setting makes them suitable to be applied in bulk, irrespective of the cavity depth, avoiding interfaces, and also makes them easy to mold with the help of an instrument or - as will be shown in the case presented here - a stamp. Moreover, the cost-effectiveness of this class of materials, even for load-bearing posterior restorations, has recently gained attention in the scientific literature¹.

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EQUIA Forte HT is the newest material in this category. Its composition includes highly reactive, surface-treated fluoroaluminosilicate glass particles and high-molecular weight polyacrylic acid. The particle size distribution has been meticulously optimized. As a consequence, the handling has improved, compressive strength and wear resistance increased²⁻⁵. The system includes a synergistic coat (EQUIA Forte Coat) that seals the restoration, renders a smoother surface and reduces the wear, making the material adequate for long-term restorations. It also provides an aesthetic 'glazing effect' while protecting the material from early loss of ions and water, both important for optimal mechanical properties⁶. The material can be sculpted easily with a probe or a spatula and also enables easy application with the stamp technique, using a small copy of the tooth structure, based on the patient's own tooth or even a conventional wax-up.

A case report: Class-I restoration with EQUIA Forte HT and the stamp technique



Fig. 1: Non-cavitated carious lesions in tooth 46 and 47. The greyish aspect of the enamel and the hypersensitivity experienced by the patient of tooth 47 suggest an underlying dentine lesion requiring restorative treatment.

A 16-year-old female patient, in good general health, got restorations in the molars of the lower jaw due to caries lesions in the recent past. Aware of her background, the patient requested a dental check-up at least once a year and tried to carry out good hygiene habits. When she came for a dental check-up, she mentioned new "black pigmentations" in the lower jaw molars and sensitivity in the last molar of the fourth quadrant (Fig.1). During the clinical examination, retentive areas were found in tooth 46 and 47. The composite restorations in the molars of the third quadrant were apparently in good condition.

Observing the lesions, the enamel of tooth 47 looked greyish, suggestive of an underlying dentine lesion in need of treatment. The occlusal surfaces were practically intact, without cavitation. Therefore, it was possible to make a copy of the anatomy using a ball instrument and a low-viscosity resin material. In this case, a blue-colored utility resin (LC Block-Out Resin, Ultradent) with good visibility and flow was used, but any resinous material with sufficient flow and strength can do the trick.

First, a thin layer of the resin was applied on the pits and fissures and polymerized (Fig. 2a). Then, a medium-sized ball instrument was placed on the occlusal surface already covered with the resin and a second layer of resin was added, enclosing the ball. The addition of

layers was continued until both the surface and the instrument were sufficiently covered (Figs. 2b-c).



Figs. 2 a-c: The anatomy of the occlusal surface was copied with utility resin to create a stamp. The tip of a ball-shaped instrument was incorporated to give a handle to the stamp.



Fig. 3: The stamp shows a detailed imprint of the occlusal anatomy



Fig. 4: The cavity after preparation



Fig. 5: The stamp was firmly pressed onto the cavity filled with EQUIA Forte HT when the material had reached a rubbery state.



Fig. 6: After removal of the stamp, the nicely shaped occlusal anatomy could immediately be seen.



Fig. 7: EQUIA Forte Coat was applied and light-cured



Fig. 8: Final result, easily obtained without the need for shaping or polishing.

Then, the stamp was separated from the tooth (Fig. 3).

Once the copy of the occlusal face was obtained, the lesion of 47 was opened with a small-sized, round diamond bur at high speed and abundant water irrigation. The resulting Class-I cavity (Fig. 4) was restored with a glass hybrid (EQUIA Forte HT, GC; Shade A2).

Once the relative isolation with cotton rolls was done, a very thin layer of GC Cocoa Butter (GC) was applied on the adjacent teeth and areas where the glass hybrid shouldn't adhere. Because of the good handling properties and the handy capsule format, EQUIA Forte HT from GC, the material can be homogeneously mixed and injected into the cavity fast and easily. By applying the content of a single capsule we managed to cover the cavity completely and then we placed the stamp (Fig. 5), previously obtained with the low viscosity resin, and press firmly on top of the tooth and restorative material.

The excesses were removed with the help of a spatula and probe, during the rubbery phase of the glass hybrid. The stamp was removed and the beautifully reproduced occlusal anatomy became present (Fig. 6). No separating agent such as glycerine or Teflon tape was required since the stamp does not stick to the glass hybrid material. On the contrary, when a resinous stamp is used, light-curing a resin composite restoration with the stamp *in situ* might cause issues – due to light attenuation as well as co-polymerization of the stamp with the restoration itself.

To finish the restoration, small excesses that remained were eliminated with a probe and a small diamond flame-shaped bur was only briefly used on the mesiolingual cusp to make a small occlusal adjustment. The EQUIA Forte Coat facilitates the final steps of the restoration as no polishing procedures are required. The field was again isolated with cotton rolls, a thin layer of EQUIA Forte Coat (Fig. 7) was applied with of a microbrush and light-cured for 20 seconds, leaving a smooth, shiny surface (Fig. 8). The coat is on average 35-40 µm thick and did not interfere with the occlusion.

Conclusion

Keeping in mind the patient's history and the cavity's properties, a glass hybrid restorative material was very well indicated in this case. The bulk-fill material with fluoride content enables to restore large and deep cavities in the posterior area, even those that are loaded during mastication, in a fast, durable and cost-effective manner.

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References

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