Beautiful, strong and fast: The next level of posterior composite restorations

In direct restorative dentistry, there is a strong trend towards faster, more efficient placement techniques for resin composite restorations. Additionally, dentists are demanding composite materials that allow simple, yet predictable application in the daily practice. The question is, however, whether an increase in efficiency and simplicity will compromise the quality and aesthetics of the restoration.

The new Tetric N-Ceram Bulk Fill (Ivoclar Vivadent) offers an ideal combination of efficiency, quality and aesthetics. Increments of up to 4 mm can be placed that require a curing time of only 10 seconds (at a light intensity of >1,000 mW/cm²).

How is this possible? Tetric N-Ceram Bulk Fill features the patented Ivocerin photoinitiator to boost polymerisation and to ensure complete curing of the entire composite increment. In contrast to conventional initiators, Ivocerin is much more reactive. This means that it is also activated in deep cavities and thus the material can be reliably cured within a very short time. Clinically, this is significantly time-saving and makes direct posterior restoration significantly more efficient (Illustrations 1–3).

The new Tetric N-Ceram Bulk Fill shade IVA is selected.

Restorations with Tetric N-Ceram Bulk Fill blend well with the surrounding dental tissue because the translucency level of the material is ideally adjusted to natural enamel. Thus, aesthetic restorations with a natural appearance can be created within a shorter treatment time.

Clinical case

An old composite restoration of a mandibular second premolar in a 28-year-old male patient needed replacement because of marginal staining and an open cervical margin with caries (Fig. 1). Prior to the removal of the defective restoration the Tetric N-Ceram Bulk Fill shade IVA is selected.
Clinical Masters Program in Aesthetic and Restorative Dentistry
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Session I: 10 - 14 January 2013 (5 days)
- Direct/Indirect composite Artistry in the Anterior Segment
- Direct/Indirect composite Artistry in the Posterior Segment
- Photography and shade analysis

Clinical Masters:
Didier Dietschi, Francesco Mangani, Panos Bazos

Session II: 24 - 27 April 2013 (4 days)
- Full coverage Anterior/Posterior Restoration
- Partial coverage Anterior/Posterior Restoration,
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Clinical Masters:
Mauro Fradeani, Urs Brodbeck

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and verified by applying and curing a small non-bonded composite sample on the tooth (Fig. 2). Upon removal of the old composite restoration and the decay, all enamel margins were finished with an oscillating ultrasonically driven preparation tip (Fig. 3). The occlusal floor was approximately 5 mm deep (Fig. 4) and the proximal box of the cavity was approximately 6 mm deep (Fig. 4).

In order to optimise the bond quality, all enamel margins were covered with a phosphoric acid gel and left to react for 20 seconds (Fig. 6). Then the etching gel was spread over the entire dentinal surface and left to act for another 10 seconds (Fig. 7). The etchant was rinsed off with water spray for 10 seconds and the surface was then air dried briefly, leaving it with a glossy, wet appearance.

Tetric N-Bond was applied using the convenient VivaPen (Fig. 8). An exact amount of bonding agent was applied directly to all the etched tooth surfaces and agitated for 10 seconds with the brush cannula (Fig. 9).

A circular stainless-steel matrix was placed on the tooth and Tetric N-Ceram Bulk Fill was injected into the proximal box using the Cavifil Injector (Fig. 10). The material was adapted to the cavity floor easily (Fig. 11) with OptraSculpt (cylinder shape) and polymerised with an LED high-power curing light (Bluephase Style; Fig. 12).

Depth measurement of the cavity with a periodontal probe revealed a remaining depth of 3 mm (Fig. 13). Hence, the remaining cavity was filled with just one layer of Tetric N-Ceram Bulk Fill in shade IVA using the Cavifil (Fig. 14). This final layer was quickly adapted and sculpted with OptraSculpt (chisel shape) to create anatomical tooth contours (Figs. 15 & 16).

A final polymerisation of 10 seconds was performed using Bluephase Style. The 10 mm light guide facilitates one full curing cycle because it covers the entire cavity (Fig. 17). The anatomical tooth contours were refined and finished with a football-shaped fine diamond bur (Fig. 18). In order to adapt the colour of the occlusal fissure system to the adjacent tooth, a small amount of a light-curing ochre staining material (Tetric Color) was applied and polymerised (Fig. 19).

The entire restoration was polished in one step to a glossy lustre using OptraPol Next Generation (Fig. 20). The final restoration directly after high-gloss polishing is shown in Figure 21.

Conclusion

With Tetric N-Ceram Bulk Fill, it is now possible for the clinician to restore posterior teeth in a much more efficient, yet aesthetically pleasing way. Owing to bulk application of up to 4 mm and light polymerisation of 10 seconds, the total treatment time can be significantly reduced without compromising the overall quality of the final restoration.

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