Posterior restoration with a new nanohybrid Ormocer composite – a clinical case report

Jurgen Manhart presents a direct composite posterior restoration case using a pure nanohybrid Ormocer restorative

Summary
Today, direct composites in posterior teeth are a very successful part of the standard therapy spectrum in modern restorative dentistry. They are very popular filling materials with dentists as well as their patients.

The performance of this treatment method, even in the masticatory load-bearing posterior region, has been conclusively proven in many clinical studies. Aside from composites based on methacrylate chemistry, the choice of filling materials has now been extended by a pure nanohybrid Ormocer restorative without any conventional methacrylate monomers in its formulation.

Introduction
For many years, the use of composite resin materials has increased along with patients' growing demand for metal-free restorations. This trend has been driven in large part by patients looking for an aesthetic alternative to repair carious lesions or traumatised teeth and patients who are concerned about potential systemic adverse reactions of amalgam restorations (Radz, 2015).

In recent years, an extensive range of new materials for direct composite restorations has emerged on the market (Kunzelmann, 2007; Kunzelmann, 2008; Ferracane, 2011; Weinzmann et al, 2005). In addition to regular hybrid and nanohybrid composites for universal use, a great number of highly aesthetic composite systems were introduced to dental professionals due to rising aesthetic demands of patients. These restorative systems contain composite materials in a sufficient number of shades and different opacities or translucencies (Manhart, 2006).

Some of these composite systems comprise more than 30 different composite materials of different shades and translucency. It is therefore essential to have appropriate experience in the handling of these materials, which...
The need for composite-based direct restorative materials is predicted to grow in the future. Therefore, high-quality, scientifically tried-and-tested and clinically well-documented composite resin materials will be in much demand.

Shade determination was done on the moist tooth prior to the application of rubber dam (Figure 4a and 4b). The tooth was subsequently isolated with rubber dam (Figure 5). The rubber dam separates the operation area from the oral cavity, facilitates clean and effective work and ensures that the working area remains clean of contamination (eg blood, saliva, food and saliva). Contamination of the enamel and dentin would result in markedly poorer adhesion of the filling material to the dental hard tissues and endanger the long-term success of the composite restorations with optimal marginal integrity.

In this clinical case, the adhesive was applied using Admira Fusion (Voco). Treatment started with thoroughly cleaning the etched tooth surface. The tooth was excavated and subsequently the enamel and dentin were dried. Phosphoric acid 35% (Vococid, Voco) was applied along the enamel margins first for a reaction time of 15 seconds. After rinsing, a self-etching primer and bonding agent was applied along the dentin surface for an additional 15 seconds (Figure 6). Adhesive Bonding Admira Fusion (Voco) was placed with an adhesion layer of 5 µm onto the etched dentin for a reaction time of 20 seconds (Figure 7).

The result was a shiny cavity surface, evenly covered with adhesive (Figure 14). This should be carefully checked, as any areas of cavity that appear dull are an indication that insufficient amount of adhesive has been applied (Figure 15). In the worst case, this could result in reduced bonding of the restorative in these areas and at the same time, reduced dentin sealing, which may lead to post-operative sensitivity if such areas are found in the visual inspection, additional bonding agent is selectively applied to them. The Ormocer Admira Fusion was applied into the cavity, starting at the mesial proximal extension. The entire cavity floor was levelled out sufficiently polymerised the matrix system was removed (Figure 16). The Ormocer Admira Fusion was applied into the proximal box, especially at the gingival seat, were the teeth contacts to neighbouring teeth still represents a challenge. With the subsequent increments of the Ormocer restorative, the occlusal morphology of the tooth was reconstructed cusp by cusp (Figure 17). After each single composite application, the excess material was light-cured for 20 seconds (Figure 18).

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light-activated direct placement restorative materials were expanded by a nanohybrid Ormocer version that does not contain any more conventional dimethacrylates in its chemical formulation.

References


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