

Stable and aesthetic dental restorations with modern composites: A universal nanohybrid restorative material in clinical use

Svetlana V. Chlebas

Introduction

The demands on dental restorations in terms of functionality, aesthetics and durability have risen significantly in recent years, and today a wide range of modern composites are available on the market which largely meet such requirements. As a result, dentists are now spoiled for choice. The material chosen should, however, be equally suitable for the posterior and anterior regions and also have a high level of stability, meaning it can also be recommended for restorations of extensive cavities in the masticatory load-bearing region. Last but not least, the economical factor also plays an important role in selection. The material should therefore be time-saving and easy to apply.

My choice of composite is the universal nanohybrid restorative material Polofil NHT from VOCO, which combines the tried and tested composite technology with innovative nanotechnology, providing benefits both in terms of material properties and handling. Thanks to the nanoparticles evenly distributed in the matrix, Polofil NHT has a high filler content of over 83% by weight, resulting in a low polymerisation shrinkage of under 1.8% by volume.

At the same time, the material has a high compressive strength of over 440 MPa, a high flexural strength of over 157 Mpa, a modulus of elasticity of 17,000 MPa similar to that of dentine and a high abrasion resistance of under 20 μm (ACTA abrasion). This makes Polofil NHT ideally suited for restorations in the posterior region. In Polofil NHT I have a material with which even cases of bruxism can be treated appropriately and with long lasting results, which is particularly important in view of the ever increasing number of findings.

Polofil NHT is also perfectly suited for anterior restorations as its high translucency and chameleon effect enable highly aesthetic results with just one shade which correspond to the natural tooth. Polofil NHT also boasts outstanding handling. The material does not adhere to the instrument during layering and modelling, preventing it from developing a "ripped look". The increments can be quickly and easily applied into the cavity and light-cured as directed in the instructions for use. The material is available in five shades (A1, A2, A3, A3.5 and B2), which is perfectly adequate for the range of restorations usually carried out in practices and enables natural-looking results to be achieved. A shade guide made from light-cured original composite simplifies shade selection and individual adjustment. Subsequent checks have confirmed the high colour stability of Polofil NHT in all cases.

¹ Svetlana V. Chlebas
Lecturer, National Medical Academy
for postgraduate training, Kyiv, Ukraine.
Private Practice, Scientific Centre for
Clinical Stomatology SNKZ. training
Contact: khlyebassv@ukr.net

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Figure 1: Initial situation: insufficient composite restoration in tooth 36



Figure 2: The cavity after preparation



Figure 3: Final result: a natural-looking aesthetic restoration

Clinical case

A female patient presented with an insufficient composite restoration in tooth 36.

After the administration of a local anaesthetic the cavity was prepared and rinsed and dried. The universal adhesive Futurabond U (VOCO) supplied in a practical SingleDose blister was chosen for bonding, and was used in the self-etch mode in this case.

The adhesive was applied evenly in the cavity with a microbrush and rubbed in for 20 seconds. After blowing gently with air, light-curing was carried out for 10 seconds with a conventional polymerisation lamp.

The composite Polofil NHT was then applied in shade A3 in 2 mm increments and every layer was light-cured for 20 seconds with a light output of 500 mW/cm².

After modelling the occlusal surface the occlusal contacts were checked, followed by finishing with a diamond polisher with a small tip, as well as polishing with paper and silicone grinding burs.

Finally, a varnish containing fluoride (Bifluorid 12, VOCO) was applied to seal the restoration margins with fluorides. The result shows a natural-looking restoration, the colouring of which also harmonises perfectly with the natural tooth substance.