

AESTHETICS IN FOCUS



SEAMLESS RESTORATIONS A GRAND FINISH

Dr Clarence Tam finds Voco's Grandioso composite simple and predictable to use when creating perfect optical and structural tooth restorations

There is no single key to stress-free aesthetics in restorative dentistry today. Indeed, the ingredients leading to the perfect direct composite result are multivariate and may depend to some degree on your artistic tendencies that day. It is no secret that the essential ingredient of cosmetic



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Figure 1: Roeko rubber dam isolation and mesiobuccal oblique angle view of UL4 mesial-occlusal-distal amalgam restoration with proximocervical recurrent caries

and restorative dentistry is predictability. Predictable restorative materials embody the hallmarks of chameleon effect, ease-of-polishability, biomimetic physical properties, ideal texture and handling, minimal polymerisation shrinkage, superior wear resistance and good radiopacity. Basically, the more the material works and the less you have to, the better. Prior to this point, one turned to bonded porcelain restorations for strength and durability. Voco's Grandioso is a cutting-edge nanohybrid composite representing a paradigm shift where direct composite restorations can be placed with such ease, physical and aesthetic predictability that you will find yourself reaching for it time and time again.

BIOMIMICRY

Biomimicry of a material is the next best thing to actually reproducing natural enamel and dentin for a restoration. Prior to this point, the numerous resin composites I had previously tested featured various struggles in compromise. On one hand, a product may be really optically perfect, but a



Figure 2: Preparation photo with amalgam and caries removed: mesiobuccal oblique angle



Figure 3: Occlusal view of preparation after removal of amalgam and caries

nightmare to handle. It may not stick to your instrument, but it may not stick to anything. It might be a pleasure to butter and shape,



Figure 4: Adaptation of dual Triodont V3 rings (Triodont Ltd, Katikati, New Zealand) with sectional matrices and wedges in place

but lack chameleon effect and radiopacity. In the development of Grandioso, Voco has striven to reproduce the optical and physical parameters of natural tooth structure exactly, allowing any direct restoration to restore the original strength of the tooth long term. Grandioso represents the culmination of years of collaboration in research that has produced a composite resin with a strikingly high filler weight percentage of 89%. Correspondingly, a high filler percentage equates with low linear polymerisation shrinkage, previously one of the main struggles of other composite systems. As recurrent caries is the top stated reason for clinical failure, this feature allows for maintained marginal integrity and optimal long-term success.

MATERIAL BEHAVIOUR

Voco has utilised two main ingredients that lend strength to Grandioso. The company has incorporated glass ceramics in a bed of resin featuring 60% functionalised nanoparticles (20-40nm). Strength is integral in the design of a composite as restorative materials will be subjected to the same dynamic and damaging cyclical loads as natural tooth structure. Lending stiffness back to the tooth as well as minimally disturbing residual tooth structure must be an uncompromised quality. Grandioso thus is actually the most tooth-like



Figure 5: Activation of primer into bonding resin of Singledose Futurabond NR (Voco) and mixing of liquid A and liquid B

direct composite material available, boasting an elastic modulus over 16.55 GPa (dentin range: 16.55 to 18.62). The thermal loading figures are equally impressive by showing significant absolute minimal dimensional change within a 5mm diameter lesion and an 11°C variation. This is important to prevent cyclical thermal flexure and fatigue of residual tooth structure, a feature which would in its absence accelerate its demise.

Sculpting direct composite beauty is hard enough. Voco has engineered Grandioso to recognise this by allowing simplicity, not only of placement, but also of shade selection. Due



Figure 6: Application of Futurabond NR (Voco) into the preparation overlapping margins (20 seconds) slightly before air thinning and light-curing (10 seconds) as per manufacturer's instructions

to the unique optical properties of Grandioso, often only a main single shade is required for a completely invisible restoration. You don't have to be ultra creative by mixing shades as Voco have created two unique shades: ^{VC}A3.25 and ^{VC}A5. In the case shown, A5 was utilised for the cervical aspect of the mesial-occlusal-distal (MOD) subgingival lesion, and ^{VC}A3.25 was used for the entire coronal aspect. The polishability of this composite is unmistakably exceptional.

Simplicity in aesthetics, fortitude in predictability, and pleasure in placement make Voco's Grandioso perhaps the single key to predictable aesthetics in restorative dentistry



Figure 7: Marginal ridge construction coronally with ^{VC}A3.25 Grandioso (Voco), cervically with ^{VC}A5 Grandioso



Figure 8: Mesio buccal oblique postoperative photo showing close adaptation and shade match of ^{VC}A3.25 Grandioso to slightly dehydrated tooth surface. Colour integration on full rehydration should be seamless.



Figure 9: Pre-polishing occlusal view after rough contouring with NTI (Kahla, AG) football and needle-point diamonds



Figure 10: Result after occlusal adjustments and final polishing with D*Fine Double Diamond

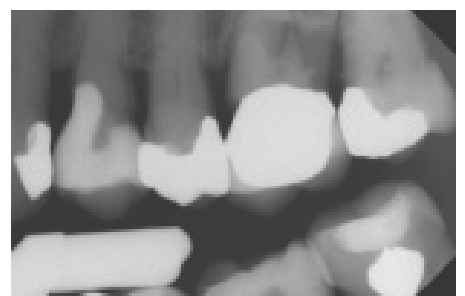


Figure 11: Postoperative PA demonstrating good radiopacity of Grandioso and perfect adaptation to margins along with natural line of interface proximally.

today. The following clinical case study demonstrates the properties and advantages of this modern nanohybrid composite.

CASE STUDY

An 89-year-old female patient exhibited a case of deep recurrent caries involving the proximocervical surfaces of tooth UL4 MOD featuring an old amalgam restoration in situ. After clinical and radiographic analysis of vitality, as well as assessment of residual tooth structure, it was decided to replace the amalgam restoration with a direct composite restoration. It was ascertained that such a polychromatic tooth featuring extensive pulpal sclerosis would be best restored with a direct bonded composite resin restoration due to the need to preserve maximal residual tooth structure. The premolar was isolated with rubber dam before the old amalgam was removed from the tooth and the caries

eliminated by drilling (Figures 1-3). This was followed by the adaptation of two sectional matrices (V-ring system, Triodent, NZ), which were fixed using the appropriate tensioners and interdental wedges (Figure 4). Futurabond NR (Voco), a light-curing self-etch bond, was selected as the adhesive. After activation, the adhesive was massaged in for 20 seconds. The application was followed by five seconds of air drying as well as 10 seconds of light curing, according to the instructions for use (Figures 5 and 6).

The marginal ridge was constructed coronally using the nanohybrid composite Grandioso in shade ^{VC}A3.25, while the cervical marginal ridge was created in shade ^{VC}A5 (Figure 7). After finishing the mesial and distal proximal walls, the remaining occlusal cavity was incrementally filled with Grandioso ^{VC}A3.25, whereby every layer was polymerised for 20 seconds. The shade of the restoration

provides an excellent match to the existing dental hard tissue of UL4 (Figure 8). Coarse contouring was followed by finishing of the occlusal surface. Polishing culminated in the completion of the restoration (Figures 9 and 10). The postoperative X-ray image confirms the excellent radiopacity of Grandioso and shows the precise adaptation of the restoration at the margins, as well as a natural proximal emergence profile (Figure 11).

For further information about Grandioso, please contact Voco's UK sales manager Tim McCarthy on 07500 769 613 or email t.mccarthy@voco.com www.voco.com

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