The injectable helpmate for many workflows

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Dr. Gökhan Dokumacıgil *was born in 1989 in Türkiye. After graduating from the Faculty of Dentistry in 2014, he completed his Postgraduate in Restorative Dentistry at the Marmara University in Istanbul (Türkiye). In 2017, he was awarded the "Best Aesthetic Case Report" poster presentation as part of the 21st International Congress of Restorative Dentistry, in Türkiye organised by the Turkish Society of Restorative Dentistry. He was also awarded "Best Poster Presentation" in 2019, at the 9th CONSEURO Congress in Germany organised by the European Federation of Conservative Dentistry.*
He is especially interested in Anterior and Posterior Direct & Indirect Restorations, and CAD-CAM restorations. Gökhan is an international lecturer on the topics of "anterior composite restorations", "posterior direct & indirect restorations", "rubber dam isolation" and "dental photography". Currently, he works as a restorative dentistry specialist at his private clinic in Istanbul. Additionally, he has a passion for graphic design and always enriches his presentations with original 3D dental animations. He also develops videos and 3D animations for dental companies.

In the dental practice, we encounter a variety of restorative situations to deal with. After the improvement of up-to-date composite resins, they have become the first choice for direct anterior and posterior restorations, showing long clinical service in a multitude of studies. Because of their aesthetic appearance, minimal invasiveness, enhanced mechanical properties and lower cost, they are more often utilized than ceramic restorations. Previously, only paste-type composites were used for the final restorative steps while flowable composites were just being used as base or liner for direct and indirect restoratives.

With the introduction of contemporary highly-filler content injectable composites, new possibilities arose and entirely changed the perception of their convenience. Now, these materials are useful in many restorative areas, such as cavities from any Class, immediate dentine sealing (IDS), deep margin elevation (DME), composite repair, fibre mesh stabilisation and injection moulding. Furthermore, thanks to their wide colour range, all anterior aesthetic restorative steps can be completed by using only injectable composites. While the opaque shades of G-ænial Universal Injectable (GC) composite could be used to mask discoloured tooth surfaces, the body shades are mostly being used to define the chroma of restoration. Moreover, higher translucent enamel shades allow for light transmittance and enable to generate a translucent halo effect on the incisal third of teeth.

The versatility of injectable composite is illustrated in the following case series, showing 8 different situations that could all be solved using G-ænial Universal Injectable.

Class I Restoration (Figs. 1-3)

Case: The patient visited the dental clinic because of caries on one of his molars (Fig. 1). After caries removal and etching (Fig. 2), the adhesive G-Premio BOND (GC) was applied, and the restoration was completed with G-aenial Universal Injectable composite, shade A2 (Fig. 3).

Fig. 1: Occlusal cavity on tooth 26

Fig. 2: After cavity preparation

Fig. 3: After restoration with G-ænial Universal Injectable

Class II Restoration (Figs. 4-8)

Case: The patient came to the dental clinic due to fact that she experienced sensitivity on her upper left 1st molar tooth. After clinical and radiological examination (Fig. 4), it was observed that it had an old composite filling. Then, the old filling was removed, and the enamel surface of the tooth was selectively etched. Following the sectional matrix adaptation (Fig. 5), G-Premio BOND was applied to the cavity and light-cured. After that, a proximal wall was created by using G-ænial Universal Injectable composite (Fig. 6). Then, the cavity was filled with the fibre-reinforced composite everX Flow up to the dentine-enamel junction (Fig. 7) and covered cusp by cusp using G-ænial Universal Injectable (Fig. 8).

Fig. 4: Leaking composite restoration causing hypersensitivity

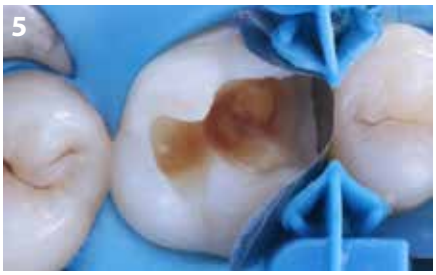

Fig. 5: A sectional matrix is used to obtain a nice contact point

Fig. 6: First, the proximal wall is built

Fig. 7: Cavity bottom strengthened with everX Flow

Fig. 8: Entire restoration with injectable composite (G-ænial Universal Injectable)

Class V Restoration (Figs. 9-12)

Case: Traumatic toothbrushing may result in gum recession on the cervical circumstances of teeth. A female patient visited the clinic since she had hypersensitivity on her teeth number 13 and 14. After clinical examination, the patient was diagnosed with toothbrush abrasion on the cervical surface of teeth. (Fig. 9). After sandblasting with 29 µm Al_2O_3 (Fig. 10), sharp cavity edges were bevelled by using a rugby ball bur (Fig. 11). Following selective enamel etching, G-Premio BOND was applied and the teeth were restored using G-ænial Universal Injectable composite (Shade A2), finished and polished (Fig. 12).

Fig. 9: Non-carious cervical lesions causing hypersensitivity

Fig. 10: After placement of retraction cords

Fig. 11: Rounding sharp edges and bevel placement

Fig. 12: After restoration with G-ænial Universal Injectable (Shade A2)

Injection Moulding (Figs. 13-17)

Case: The patient consulted the dentist because she was dissatisfied with the appearance of her teeth. Some old fillings were visible and there were some irregularities on the incisal edges of the maxillary anterior teeth (Fig. 13). After impression taking, the dental technician made a wax-up model for injection moulding (Fig. 14). The mould was created with a clear silicone impression (EXACLEAR, GC) from the wax-up (Fig. 15). Then, this silicone mould was placed onto the upper anterior teeth and restorations were made by injecting G-ænial Universal Injectable composite (Figs. 16-17). Using this technique, time can be taken to create the surface texture in absence of the patient, which can be copied in detail through the mould (Fig. 17).

Fig. 13: Anterior maxillary teeth prior to treatment

Fig. 14: Wax-up from 13 to 23

Fig. 15: Transparent silicone mould (EXACLEAR)

Fig. 16: Teeth after treatment, showing harmony and symmetry

Fig. 17: Close-up showing the surface texture

Repair (Figs. 18-20)

Case: The patient visited the dental clinic due to a fracture in his old direct composite restoration on upper left canine tooth (Fig. 20). After air abrasion with 29µm Al2O3 particles, the surface was etched with phosphoric acid (Fig. 21). Following G2-BOND Universal (GC) application, the fracture was repaired with G-ænial Universal Injectable (Fig. 22).

Fig. 18: Chipped composite restoration

Fig. 19: After air abrasion and rounding of the edges

Fig. 20: Repair with injectable composite

Deep Margin Elevation (Figs. 21-25)

Case: The patient came to the dentist because he had noticed a hole in an upper left posterior tooth. Upon clinical examination, a deep caries lesion that had progressed through the subgingival area was found on tooth 26 (Fig. 21). Following the rubber dam placement, the caries was removed, and sectional matrix bands were placed on both sides of the cavity. Since both cavity borders were located in the subgingival area, a Teflon Tape Wedging (TTW) technique was applied to stabilize the matrix system (Fig. 22). Following the etching process, G-Premio BOND was applied to the cavity and the mesial and distal margins were elevated by using G-ænial Universal Injectable composite (Fig. 23). After preparation (Fig. 24), the tooth was restored with an indirect overlay of hybrid ceramics (CERASMART270 CAD/CAM block, GC) (Fig. 25).

Fig. 21: Tooth with caries extending underneath the gingiva

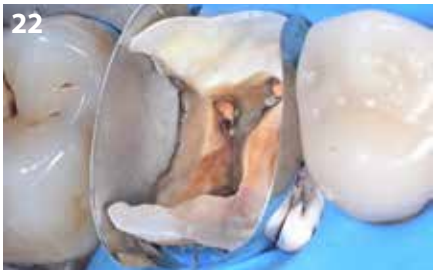

Fig. 22: After removal of the old composite and caries. Teflon Tape Wedging was applied to isolate the teeth.

Fig. 23: Deep marginal elevation with G-ænial Universal Injectable

Fig. 24: After preparation for an overlay

Fig. 25: After placement of a hybrid ceramic overlay (CERASMART270)

Immediate Dentine Sealing (Figs. 26-29)

Case: The patient visited the clinic to have her old posterior tooth fillings replaced (Fig. 26). After removing old restorations (Fig. 27) the dentine surfaces of teeth number 35 and 36 were coated with G-ænial Universal Injectable composite (Fig. 28). Later, these teeth were restored with indirect overlay restorations (Fig. 29).

Fig. 26: Old, wide composite restorations

Fig. 27: After removal of the old restorations

Fig. 28: Immediate dentine sealing with injectable composite

Fig. 29: Teeth restored with overlays

Fibre Embedding (Figs. 30-34)

Case: The patient experienced discomfort near an old amalgam restoration on his upper left first molar (Fig. 30). Following the removal of the former restoration, crack lines were found on the cavity bottom (Fig. 31). In such a case, placing a fibre mesh is a good option to avoid further crack development. Therefore, a fibre mesh was applied to the tooth surface, embedded in G-ænial Universal Injectable composite (Fig. 32). Next, the tooth was prepared for indirect overlay restoration (Fig. 33). Finally, the restoration was completed by using a CERASMART270 hybrid CAD/CAM block (Fig. 34).

Fig. 30: Large old amalgam restoration causing discomfort

Fig. 31: Using magnification, the buccopalatal crack line could easily be seen

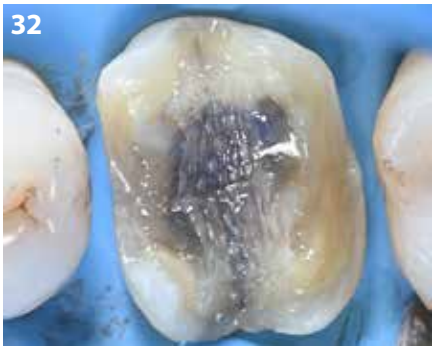

Fig. 32: A fibre mesh, embedded in injectable composite, was placed on the bottom of the cavity

Fig. 33: The fibres were entirely covered with the composite

Fig. 34: After indirect restoration

Rapid advances in composite technology have increased their use and opened up whole new avenues of opportunity for a dental practice. The the highly versatile composite G-ænial Universal Injectable can be used in a wide variety of cases, allowing dentists to explore their creativity and use the material in exciting ways.