G-ænial ANTERIOR/ POSTERIOR

International case studies

G-ænial captures the genius of nature

Dental professionals around the world are discovering how **versatile and adaptable** G-ænial composite is and how **wonderful aesthetic results** can be achieved with ease.

Versatility
Adaptability

The results are so good that we wanted to collate some of the **best clinical cases** for you to see and, where appropriate, share with your patients.

Read on and discover a whole new world of **excellence in aesthetic composite restorations**.

Advanced layering with G-ænial

Case Study 1

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The use of direct adhesive restorations is a therapeutic option that is minimally invasive and that can lead to highly aesthetic outcomes. The layering technique can closely mimic the anatomy of the natural tooth, even in complex cases. When finishing and polishing the restorations with a standardised technique, it is possible to achieve a seamless transition between the tooth and the restoration.

Introduction

A female patient presented at the dental clinic at Catalonia International University, and asked to: "have one of my fillings replaced".

After a clinical examination, the ideal treatment recommended was orthodontic work prior to replacing the filtered (leaking) restoration (1.1). This solution was rejected by the patient. We therefore performed a direct composite restoration on 1.1 using an anatomic layering technique (**Figure 1 – Initial condition**).

Technique

Photographs should always be taken before any cosmetic restoration, as they help identify the anatomical features of the tooth. It is also extremely helpful to keep the photograph on a computer screen during the layering procedure (**Figure 2 – Contrast**).

After choosing the base colour for the restoration, we made a silicone mould of the patient's mouth (**Figure 3 – Mould**).

We then completely removed the previous restoration with a medium-grain diamond bur fitted to a reduction contra-angle handpiece and used a microscope to preserve as much of the healthy dental structure as possible.

After removing the previous restoration, we completely isolated the surgical field (**Figure 4 – Preparation**), and then started the layering process.

We started the procedure by applying orthophosphoric acid (37%) for 30 seconds, passing 2mm beyond the margin of the preparation. After this, the area was thoroughly washed until all the gel had been removed; we then applied bonding, as the restoration was exclusively located in the enamel, and photopolymerised the area for 40 seconds, as increasing the photopolymerisation time increases the duration of the adhesive interface.

Anatomical layering

Firstly, and with the help of the silicone plug, we created a wall of palatine enamel (Outside shade IE, G-ænial, GC) as thin as possible (**Figure 5 – Framework**). We then placed the dentine mass (Standard shade A2, G-ænial, GC), which we were using in an attempt to mimic the anatomical form of the natural dentine, paying particular attention when copying the mamelons (**Figure 6 – 1st Dentine mass**), the various features (Standard shade A1, G-ænial, GC) as well as reproducing the hypocalcification lines present on the adjacent tooth (**Figure 7 – Features**).

Figure 1 – Initial condition.

Figure 2 – Contrast.

Figure 3 – Mould.

Figure 4 – Preparation.

Figure 5 – Framework.

Figure 6 – 1st Dentine mass.

Advanced Layering with G-ænial (continued)

At this time, we applied effects (Outside shade TE, G-ænial, GC) to limit the opalescence of the incisal edge (**Figure 8 – Effects**) and finally the vestibular enamel (Outside shade IE, G-ænial, GC). Silicone brushes and tips were of great assistance for this activity (**Figure 9 – Vestibular enamel**).

Lastly, an application of fluoridation gel was used for the final photopolymerisation, to inhibit oxygen and further increase the conversion (**Figure 10 – Oxygen inhibition**).

During the final stage of the treatment we finished and polished the restoration. We started the process with coarse-grained burs in a reduction contra-angle handset at 200rpm, then used silicone tips and polishing pads, completing the work with diamond paste and aluminium oxide (**Figures 11, 12, 13 – Final photos**).

Conclusion

Adhesive restorations provide a minimally invasive solution for cosmetic dental cases. The wide range of composite materials offered by the various systems means it is now possible to adequately mimic the specific anatomical features of each case.

The progress made in resin-based restoration materials means they can be used with predictable results in the anterior sector. The improvement in the physical and chemical properties of these materials has led to long-term cosmetic and functional results, with only minor adjustments required during annual checkups.

The full text of this article together with all references is available at **www.gcasia.info**

Figure 7 – Features.

Figure 8 – Effects.

Figure 9 – Vestibular enamel.

Figure 10 – Oxygen inhibition.

Figure 11 – Final.

Figure 12 – Final.

Figure 13 – Final.

Diastima closure using multishade layering

Case Study 2

Dr Javier Tapia-Guadix
Madrid, Spain

Before.

After. G-ænial ANTERIOR AO2, A2, A1, JE.

GC Technique Tip

G-ænial features a unique shade system that allows clinicians to use a simplified layering technique that will readily fulfil highly aesthetic restorative demands. Standard shades of G-ænial are further enhanced by the use of G-ænial special shades. Special Inside shades bring opacity to areas where dentine is being replaced while Outside shades replace the enamel layer and create depth to the restoration. The Outside shades feature a unique age and site specific shade range which simplifies shade selection and helps ensure the appropriate value (lightness/darkness) of the restoration is achieved.

JE – **Junior Enamel**
for young patients

AE – **Adult Enamel**
for adult patients

SE – **Senior Enamel**
for senior patients

TE – **Translucent Enamel**
simulates a depth-effect within restorations

IE – **Incisal Enamel**
can be applied on the enamel occlusal third and proximal surfaces, particularly with young patients

CVE – **Cervical Enamel**
offers the right translucency to let the darker cervical dentine shine through

Before.

After.

Veneers with G-ænial

Case Study 3

Dr Fred Calavassy
Castle Hill, Australia

History
The patient is a 44 year old female in good physical health. Her remaining dentition is in good health. She has been regularly attending our practice for a number of years and decided on a 'renewal' of her direct bonded composite resin veneers done many years ago prior to her attending our practice.

Digital radiography revealed no relevant clinical signs worth noting beneath the existing restorations. The teeth were periodontally sound.

The pre-treatment appearance of the smile and teeth is illustrated below.

Treatment
The treatment involved direct bonding of the 12-22 with the desired effects being as follows:

- Removal of discoloured restorations
- Evening of smile line
- Brightening of value
- Re-creation of natural tooth contour to emulate nature.

Clinical treatment involved the following steps:

1. Occlusion was checked and noted. This was to allow a mental image of the finish lines of composite resin on the lingual inclines.
2. Local anaesthetic was not used, as the existing restorations were confined to enamel, except for the incisal edges of the central incisors.
3. Shade selection was performed prior to placement of rubber dam and tooth dehydration. In this case a GC product was used ("G-ænial Anterior") due to its ease of placement and non-slumping characteristics, as well as its superb polishability and excellent durability. The shades chosen were B1 and JE translucent to improve the value.
4. As the patient was happy with the shape and length of her existing veneers, a direct putty stent was made to facilitate replication of the existing shape and length of the teeth.
5. The anterior segment was isolated with rubber dam to facilitate a dry operative field. It is worth noting the importance of placement of rubber dam, even whilst working in the anterior segment, due to high relative humidity which may affect bonding through contamination. During palatal sealing of the rubber dam with fast setting bite registration material, the putty stent was seated to later allow the stent to be seated while the rubber dam is in situ and sealed.
6. The existing restorations were removed using a high speed handpiece and the teeth prepared for delivery of the new definitive restorations.
7. The teeth were etched with 37% phosphoric acid and washed as per recommendations.
8. A wet bonding technique was used (using "Optibond Solo +" by Kerr).
9. Incremental build up of direct bonded composite resin was placed utilising the stent for guidance of length and lingual wall position. An initial layer of shade JE was used, followed by a second layer of B1, followed by a third layer of JE. G-ænial is exceptional at colour blend and matches natural tooth translucency/opacity extremely well.
10. Following composite placement, the resin was grossly contoured, then the rubber dam was removed.
11. Prior to final finishing, occlusion was checked for lateral and protrusive interferences and canine protected lateral excursions.
12. Composite resin was finished with interproximal finishing strips, "Soflex Discs" (3M) , and finally with "Pogo" rubber impregnated polishing wheels (Dentsply) to create a high surface lustre.

Rubber dam isolation and stent try-in.

Palatal sealing of rubber dam with a fast setting bite registration under the putty stent.

Existing direct bonded composite resin restorations removed.

Initial translucent shade building up palatal wall of tooth. Shade – JE.

Body layer blending to natural tooth structure. Shade – B1.

Final layer overcontoured for polish and contour. Shade – JE.

Veneers with G-ænial (continued)

Before.

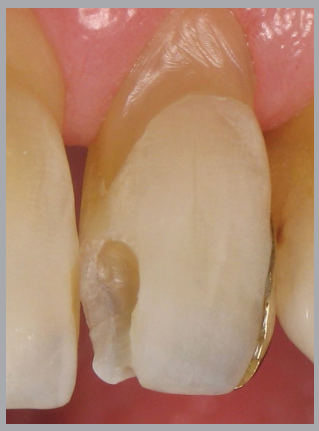
After.

Quick, single shade restoration A2

Case Study 4

Dr Graeme Milicich
Hamilton, New Zealand

Often a case will present where the patient has limited funds and other health issues. Standard shades give flexibility in this situation, offering aesthetically invisible single shade restorations. In this case an opaque shade was not needed as the remaining palatal enamel was sufficient to stop it "greying out". Standard shades of G-ænial offer a delicate balance between hue, value, chroma and translucency. The cervical lesion was restored with G-ænial Universal Flo shade A2.



Before.

Application of G-ænial Bond.

After. G-ænial ANTERIOR A2.

Shade simplicity

Case Study 5

Dr Anthony Mak
Woollahra, Sydney

The diversity of filler structure within G-ænial enables a smooth transition from composite to adjacent tooth surfaces and routine single shade restorations deliver a high degree of aesthetics. When using a simplified layering technique for posterior restorations, subtle variations in value can be introduced that ensure the lightness/darkness of the restoration can be perfectly matched to the surrounding tooth.

In this case Tooth 1.4 was restored with G-ænial POSTERIOR A1. Tooth 1.5 was restored in a multilayer technique using G-ænial Universal Flo A2 and G-ænial POSTERIOR A2, JE.

Before.

Cavity preparation.

After.

Posterior laminate technique

Glass ionomer replacing dentine, G-ænial replacing enamel

Case Study 6

Dr Jason Smithson
London, United Kingdom

In clinical situations where there are high C-Factor cavities and structurally compromised teeth, a high strength glass ionomer cement can be used to bulk fill the cavity and therefore reduce stress to the remaining tooth structure due to its slower achievement of modulus.

G-ænial ANTERIOR is used as the external laminate in this technique and the inclusion of an Outside enamel shade gives the restoration an extra aesthetic dimension. Monochromatic composite restorations may give the appearance of less vitality compared to ceramic, and the use of G-ænial outside shades aligned to the age of the enamel helps match the value of a tooth and give more depth to the final result.

Prior to treatment.

Provisional removed, pulp chamber cleaned, particle abrasion and enamel selectively etched.

Autocure RMGIC (Fuji VIII) as a dentine replacement.

Hyperchromatic dentine, G-ænial CVD.

G-ænial A3 as a dentine shade.

Enamel mass G-ænial JE and bleach shade value modifier added.

Finished restoration.

Posterior laminate technique

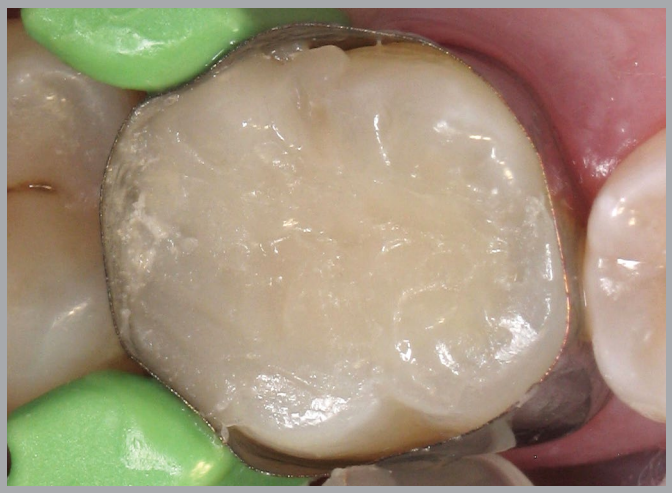
Case Study 7

Dr Graeme Milicich
Hamilton, New Zealand

A patient presents with a lingual cusp fractured off a lower molar. The decision was made to place a direct, closed sandwich restoration using Fuji IX EXTRA as a bulk dentine replacement and G-ænial POSTERIOR to replicate occlusal and proximal enamel.

Lingual cusp fracture on a lower molar.

Fuji IX EXTRA is manipulated into place with a microbrush dipped in Fuji LINING LC. G-BOND is applied to all surfaces, vigorously air dried and polymerised.



The restoration is then incrementally built with G-ænial POSTERIOR using shades P-A2 for the deeper sections and P-A1 for the final surface layer.

Completed restoration.

Perfect enamel replacement with single shade G-ænial A3

Case Study 8

Dr Jason Smithson
London, United Kingdom

When your best treatment option is not in line with a patient's financial circumstances, you can offer a functional, fast and highly aesthetic option for a patient by only using one shade of G-ænial ANTERIOR.

Due to G-ænial's impressive physical properties, you also have the flexibility to use the anterior in the posterior and the posterior in the anterior regions.

Pre-operative.

Caries removed.

Fuji VIII GIC base.

G-ænial ANTERIOR A3.

With G-ænial, everyone can capture the genius of nature

Before.

After.
G-ænial ANTERIOR AO2, A2, TE, JE.
Gradia Intensive Colour IC-9 (White stain).

Dr Javier Tapia-Guadix
Madrid, Spain

Before.

After.
G-ænial ANTERIOR AO2, A1, JE.

Dr Graeme Milicich
Hamilton, New Zealand

Before.

After.
G-ænial ANTERIOR AE, AO3, A3, TE.

Dr Javier Tapia-Guadix
Madrid, Spain

Before.

After.
G-ænial POSTERIOR P-A2.

Dr Javier Tapia-Guadix
Madrid, Spain

G-ænial ANTERIOR

G-ænial ANTERIOR is perfect for beautiful and natural looking high gloss restorations.

It features enhanced light scattering abilities to bring a more natural vitality, with exceptional shade matching for superior aesthetics. This is achieved through an extremely diverse structural composition, which enables light movement to mimic the optical properties of a natural tooth.

G-ænial ANTERIOR gives more working time, so you are free to shape, flow and sculpt to obtain anatomical form with ease. Its smooth, non-sticky consistency can be shaped with either an instrument or a brush, giving you total control over your results.

Standard shades:
XBW, BW, A1, A2, A3, A3.5, A4, B1, B2, B3, C3, CV, CVD
Inside special shades:
AO2, AO3, AO4
Outside special shades:
JE, AE, SE, IE, TE, CVE

G-ænial POSTERIOR

G-ænial POSTERIOR features a similar diverse filler structure to G-ænial ANTERIOR, but introduces shades with a deeper concentration of colour to better match the optical properties of posterior teeth.

G-ænial POSTERIOR is formulated for both strength and low shrinkage stress. It also features high fracture toughness and reduced polymerisation shrinkage stress to help reduce the risk of long term failure.

G-ænial POSTERIOR has an increased filler loading to give firmer consistency and greater control when contouring anatomical form in posterior restorations. The packable consistency will still wet and flow when manipulated to ensure intimate adaptation to cavity walls.

Standard shades:
P-A1, P-A2, P-A3, P-A3.5
Outside special shades:
P-JE, P-IE

Both ANTERIOR and POSTERIOR shades of G-ænial are formulated for universal applications (ie anterior shades can be used in posterior restorations and vice versa).

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