

Direct composite veneers – an aesthetic alternative

Elaine Halley examines an attractive option for aesthetics with the economical benefits of reduced visits and chairtime whilst achieving good control of aesthetics and the promise of limited staining

Porcelain veneers have long been considered the gold standard in terms of appearance in the provision of a long-term aesthetic restoration in the correct clinical circumstances (Belser, Magne, Magne, 1997; Gurel, 2003). This is because each veneer is crafted by hand, entirely customised and individualised. However, this comes at a price, both financial and, sometimes, in terms of tooth tissue.

There is no doubt that the profession has increasingly embraced minimally-invasive techniques such as orthodontic pre-alignment followed by whitening and composite additions, and the advent of no-prep veneers has caught the public's eye in terms of delivering a minimal invasive yet aesthetic result.

Even with porcelain veneers, there is an increasing awareness of the need to preserve healthy tooth tissue and many techniques have been developed to enhance this, including preparation stents and guides (Gurel, 2003) (see Table 1). CAD/CAM options such as Cerec are able to produce porcelain veneers chairside without the need for impressions, but include the additional cost of the equipment.

Direct composite additions or direct composite veneers have often been heralded as a more conservative alternative to porcelain, and with the advent of microhybrid and nano-hybrid composites, the finishing and polishing of these restorations can rival that of porcelain (Fahl, 2000; Fahl, 2007). In 1997, Lambrechts et al found an 89% success rate in terms of aesthetics of direct composite additions to maxillary anterior teeth after five years and the aesthetics and durability of these materials has improved dramatically since then.

However, obtaining optimal results with direct composite restorations can provide a technical challenge in certain circumstances, particularly when treating multiple teeth. A third alternative has been developed with the introduction

Aims and objectives

To look at direct composite veneers, an option for aesthetics.

Expected outcomes

Correctly answering the questions on page xx will demonstrate you understand an aesthetic alternative to porcelain veneers.

Verifiable CPD hours: 1



of direct composite veneers. Although direct veneers are not a new concept (France, Myers, 1976), their failure has been in the thickness and the durability of the polish of the restorations compared to other techniques.

Edelweiss

Edelweiss is the name of a European Think Tank including dentists such as Didier Dietschi and Stephan Lampl from the University of Geneva. Edelweiss Direct Veneers (not a spelling mistake, this is how they have been branded) are direct composite buccal facings.

They are distributed by Optident in the UK and come beautifully presented in a kit complete with composite and bonding solutions. The sizes are small, medium and large and their form has been developed out of the study of numerous tooth shapes and utilising the concept of natural layering to reproduce the optical effects found in the natural

Table 1: The whole spectrum of aesthetic procedures embraces four different types of treatments (Dietschi, Devigus, 2011)

Treatment approach	Usual procedures
Non-invasive	Bleaching, microabrasion, orthodontics
Minimally-invasive	Direct composites, enamel recontouring
Micro-invasive	Veneers, inlays and onlays
Macro-invasive	Crowns and bridges

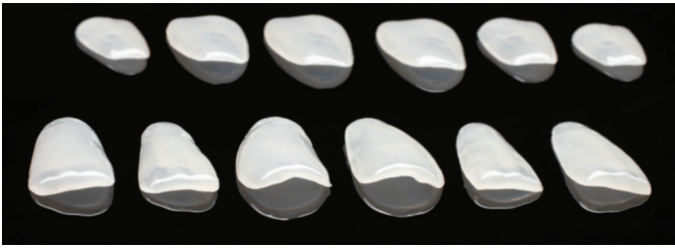


Figure 1: Edelweiss Direct Veneers are buccal facings with anatomical form



Figure 2: Dimensions of the Edelweiss Direct Veneer



Figures 3 and 4: A wear case treated with Edelweiss Direct Veneers (dentistry by Dr Stephan Lampf)

tooth by mimicking the dentine and enamel layers (Dietschi, Ardu, Krejci, 2006). In 2008, Chu and Okuba studied the tooth widths of male and female populations and found that 90% fell within 0.5mm of the normative range, which has allowed for the development of three 'average' sizes of buccal facings. In this system, the two layers are referred to the 'body' – composite replacing dentine, and 'skin' the indirect composite veneer replacing enamel.

They are polymerised, prefabricated, laser-machined, radiopaque, highly-filled nano-hybrid composite enamel shells with a highly glossy inorganic surface. They have a facial anatomical pattern in the shape of a thin composite shell, which allows for easy direct veneering of single and multiple anterior teeth (Figure 1). The veneers are cemented using the same material that they are made from to create a stable monoblock restoration (between the dentine/enamel and restorative composite and veneer). The body dentine has 82% filler content and the manufacturer's claim it contains zinc oxide to prevent the risk of staining (Salehi et al, 2010).

The veneers are very thin with measurements of only 0.2mm at the cervical area, 0.6mm on the labial aspects and 1-1.3mm at the incisal edge (Figure 2). They are buccal only and do not extend interproximally, thereby allowing the dentine composite to shape this area. Unlike placing porcelain veneers, they are also very strong and can be placed under firm finger pressure, which allows the dentine composite to flow and ensures good adaptation of the composite to the veneer.

Case selection

Case selection is obviously paramount. The ideal clinical indications include:

- Anterior and posterior restorations
- Tooth discoloration including multiple large restorations, which have resulted in the loss of the natural tooth colour and correct buccal anatomy. Non-vital teeth
- Anatomical deformities
- Diastema
- Worn dentition, after proper occlusal diagnosis and care.

The complexity of the case will depend on the tooth position and alignment. A good arch form as a starting point is preferable to avoid excessive tooth preparation.

The clinical procedure consists of correct diagnosis and treatment plan, including stabilisation of any active disease processes. The correct size of veneer is selected and the tooth is prepared as necessary, and the margin of the veneer can be finished to a minimal chamfer. The dentine shade can be assessed and tried on the tooth.

Adhesive procedures are carried out on the tooth using the supplied adhesives for the tooth and the veneer and colour characterisation can be applied, if necessary, using flowable composites or small amounts of tints. The veneers appear translucent after the application of the bonding agent and so it is easy to manipulate the underlying composite to provide the desired shade.

The veneers are placed with separation, cured and finished and polished. The placing procedure is obviously different to placing conventional veneers as these veneers do not 'fit' and so have no definite final position. It is

therefore recommended to fit multiple veneers at the same time, using strips of clear matrix for separation. The veneers can then be manipulated into the desired position before curing and finishing. The body composite is stiff enough to hold the veneers in place without the tendency for them to float away, which would happen if a flowable composite was used. The body composite will also sculpt well interproximally or into any areas where the veneer skin does not reach.

The option of direct placement of preformed composite veneers has many advantages:

- Direct chairside technique in only one appointment
- Minimally invasive, conservative tooth preparation
- Simple and versatile application
- No impression required
- Minimal application time needed (approximately 90-minutes for six direct veneers)
- Cementation using the same material as the laser-fabricated direct veneer
- Less expensive than lab-fabricated ceramic veneers
- Highly polished surface giving long-lasting, natural-looking aesthetic clinical results.

Case study

A 24-year-old patient attended, extremely dental phobic, and unable to sit in the chair for long periods of time. She was medically fit but prone to low blood pressure and syncope brought on by the anxiety of attending for dental care. She had not attended a dentist for 10 years but was due to be married in one week and was concerned about the discolouration on her anterior teeth caused by mesial and distal cavities. The caries was removed and Edelweiss Direct Veneers were placed on her maxillary incisors. The benefits for this patient were ease of handling as she could not have laid back in the chair or coped with traditional veneer preparations and impressions.

Direct composite veneers would have been challenging due to having to treat this patient upright and having long enough appointments. In addition, even simple finishing was a challenge for her and so the minimal polishing required with this system was an added advantage. She will be monitored and maintained due to her historical high caries rate, and in time her confidence levels should increase to allow for more interventions, but the Edelweiss Direct Veneers were an excellent treatment option in this case.

Figure 5: Bride with Edelweiss Direct Veneers, upper 2-2

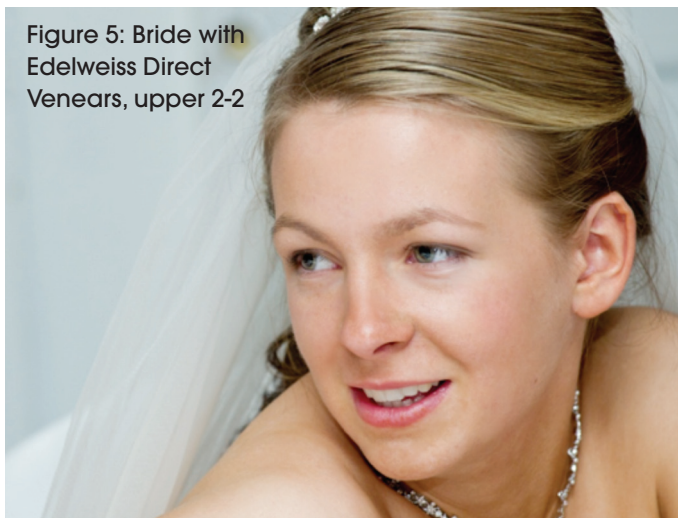


Table 2: Edelweiss Direct Veneers can provide a solution for challenging cases:

Certain groups of patients present us with a challenge in general practice and yet they have the same requests and expectations in terms of their smile:

1. Phobic patients who cannot handle long appointment times
2. Hypersensitive gag reflex which prevents impression taking for porcelain veneers or a matrix for direct composites
3. Medically compromised patients who need short appointments
4. Patients who for whatever reason cannot lie back in the chair.

Further techniques and applications

To further save chairside time, the Edelweiss facings can be chosen to fit onto study models. This also enables a preoperative assessment of the amount of tooth reduction required. The prepared model can easily be indexed to provide a preparation guide and the seated veneers incorporated into a clear suck down to enable precise placement and stability during curing.

Other uses of the Edelweiss Direct Veneers include incorporating them into long-term temporary crowns and bridges either in the lab or at chairside for complex rehabilitation or implant cases. The laser vitrified polymer coating resists water sorption and staining so the temporaries retain their aesthetics until definitive restorations can be constructed.

They may also be used as facings to existing crowns where there has been damage to buccal porcelain but the fit of the crown is not compromised.

The kits have now been developed to include lower incisor veneers, and it is straightforward to adapt the upper canine veneers for use on upper premolars.

In summary, while porcelain veneers may provide the ultimate in individualised aesthetics, and direct composites can produce excellent results, Edelweiss Direct Veneers offer an attractive third option with the economical benefits of reduced visits and chairtime while achieving good control of aesthetics and the promise of limited staining.

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Questions on page xx

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