

The minimally invasive alternative

Here Julian English tells the story of Edelweiss Direct Veneers, a new technology offering a clever, minimally invasive alternative to porcelain, demonstrated on his own teeth



Figure 1: Edelweiss Direct Veneer

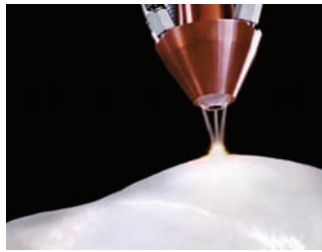
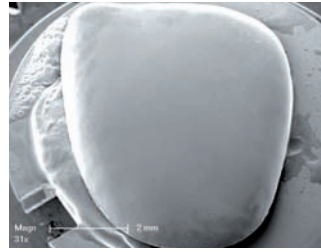


Figure 2: Laser vitrified Veneer shells



Smooth inorganic surface without visible composite structure

Figure 4: Before



Figure 5: After



Figure 3: Direct Venear Toolbox

World famous Dr Didier Dietschi, at the University of Geneva in Switzerland, has had a hand in the development of a growing-in-popularity dental treatment, offering a real alternative, with real clinical benefits, to porcelain veneers.

What you are about to read is from the heart, as I had six Veneers placed in about 90 minutes, using the following system and procedure (Figure 1).

The principle involves a minimally invasive approach, which is possible with the system designed by Edelweiss and new product Direct Veneer and Composite System.

Edelweiss Direct Veneers are ready-made veneer shells, made from nano-hybrid composite. They are manufactured using a special patented process that uses modern laser technology to achieve an optimum surface finish, coupled with

ideal physical properties. The manufacturing process produces a vitrified inorganic surface that essentially overcomes the failings and problems that are normally associated with conventional dental composites. But I will explain the laser treatment later.

Underpinning product development is the concept of bio-aesthetics. The material used is closer to natural tooth structure in terms of its hardness and composition, using a dentine-like centre (body) and an enamel-like shell (skin). The nano-hybrid composite offers strong aesthetics and a similar hardness to real tooth structure.

The system is uncomplicated. A prefabricated shell of composite is used, based on the natural layering concept developed in 1995 by Professor Dietschi. He measured the dentine and enamel of real teeth separately and through this information,

Edelweiss founded a base colour, Skin Bleached, from which all veneer shells start out with; and offers each veneer shell in three simple shapes (small, medium, large) for young, adult and elderly patients. This single shade acts like a chameleon and simplifies the system significantly. So Edelweiss developed seven dentine body intensity shades and five enamel skin shades which are used to cement the Veneer onto the tooth. Termed as 'body' and 'skin', these are comparable respectively to dentine and enamel. The dentine core clicks into an enamel shell and can be matched to the patient, by holding it next to their dentition, just like enamel on dentine in natural tooth structure, and the conventional Vita shade system, which is already familiar to dentists.

The dentine body shades exhibit high opacity and

fluorescence, which correspond to natural shades of dentine.

The enamel skin shades exist in different degrees of translucency, increase the true opalescence for all optical variations found in natural dentition.

So now the Edelweiss Composite system provides the clinician with everything required to enable successful applications with this procedure; and it is simple, to match the shade of any patient, with very few components.

As I mentioned earlier, the composite veneer shell is laser-vitrified (Figure 2).

With high pressure, the composite is condensed and heated to cause a sintering affect on the material, which increases its mechanical properties. Obviously this process needs to be done outside the mouth. This enhanced material is then lasered to cut, layer and melt the surface of the material to create a surface resistant to plaque, providing the best of both worlds: the surface like a ceramic, but the inner body of a highly condensed but flexible and dynamic composite, but being as hard and abrasive as natural enamel.

Due to the laser vitrification process – a type of fusion/coating process – a pure inorganic glass surface that is homogenous and smooth like a glass ceramic surface is achieved on the surface of the Veneers to provide an excellent gloss. Unlike milling procedures, no micropores remain on the surface after the removal of the glass particles from the filler matrix; thus creating an absolute, homogeneously sealed surface.

The application of 100 bars of pressure during manufacturing, which produce a high condensation of glass on the inside of the Direct Veneer combined with thermal temperisation at 120°C, create a stable and dynamically-sintered composite core. This allows very thin Veneers (cervical area 0.2 mm, facial surface 0.5 mm, and incisal edge 1.0-1.3 mm) to be manufactured as well as additional handling/adaptation by the clinician.

With this laser technique, Edelweiss has overcome the inherent shortfall of composite, which even the most ardent composite users accept; that the material just does not last as long as ceramic. We all know that. But with the laser manufacturing process, the material is now a serious challenge to ceramic at a fraction of the cost. And speaking

of fractions, chips and cracks are not as difficult and expensive to repair as with porcelain veneers. They can be repaired with the special nano-hybrid composite.

The company behind the technology

Edelweiss is what can be termed as a think tank, that has harnessed inspiration and technical know-how into the production of the Direct Veneer and Composite System, and mated it with state-of-the-art laser technology and made the product available to the dental profession.

Edelweiss Direct Veneers are thin with measurements of only 0.2mm at the cervical area, 0.6mm on the labial aspects and 1.0-1.3mm at the incisal edge, thus allowing the retention of true tooth profile and integrity. Direct Veneers are cemented using the same nano-hybrid composite material, which produces a stable monobloc between dentine/enamel, composite and the veneer shell.

Direct composite application

After selection of the most appropriate Direct Veneers shell(s), the Edelweiss Direct Composite System can be used.

For my teeth, the CEO of the Edelweiss, my dentist and a technician Stephan Lampl used the dentine Body Intensity, which is similar to A1 on the Vita shade guide – and a perfect tooth match was achieved. However, the beauty of the system is that it can be as simple or as complex as the dentist needs, because a darker composite shade can be used for bonding to adjust the shade for perfection. So the system will work for high street dentists and specialists alike.

Exact colour matching can be achieved using the Edelweiss natural layering technique. This will achieve a natural synthesis of light, material and colour that will in turn produce a true and natural reproduction of the tooth structure.

So with this technique and simple materials, it was possible to do my case quickly and easily with minimal preparation, by just roughening the tooth surface to maximise the bond. Perfect for me, as I had been waiting for a minimally invasive system.

Sizes

There are many different tooth sizes and shapes. But this simple system uses a standardised shape of tooth by taking an average of all the different tooth sizes. So now, the system offers the options of small, medium and large in the maxilla. For the mandible, Edelweiss offers the



One incisor Direct Venear in situ



Six Venears in situ in 90 minutes



Edelweiss headquarters



DIRECT VENEARS showing a very smooth and shiny surface, resulting from surface vitrification

options of small and medium only. (Figure 3)

This is however fully adjustable 'freehand' using the supplied composite, which is of course shade matched perfectly. Adding stains to make the veneers perfect is simple. Just use your normal stain kit to characterise the Direct Venear by applying flowable dentine or enamel composite onto the inner cervical area (e.g. darker shade tones), and the incisal area for more translucencies, or to create mamelons.

The composite material has been developed specifically for use with the Direct Venears technique; and its high filler content of 82%, allows for much easier handling and polishing, than will be found with more conventional materials. As the filler also contains zinc oxide, this serves to prevent the risk of staining.

Applications and indications

Edelweiss Direct Venears open up a whole range of possible treatment options and solutions for tooth discolouration, correction of anatomical irregularities, diastema closures and as an alternative to anterior fillings. The Direct Venears can also be adapted and used successfully on premolar teeth. The advantages of this technique can clearly be seen, as it has benefits for both patient and clinician. The improved properties now inherent in modern composites make them eminently more suitable for a wider range of aesthetic and restorative treatments.

Case study

As a person with a reasonable knowledge of dentistry, I presented to Edelweiss and Stephan Lampl with significant attrition. My bruxism must be the result of fortnightly working on award-winning *Dentistry* magazine! I had been looking for a solution to this issue for over a decade.

Apart from wear (Figure 4), my dentition is strong and sound with all teeth vital. Our sister organisation Independent Seminars runs courses on veneers regularly with Larry Rosenthal, Nasser Barghi and many others. To have been a patient would have been easy, but I could not see the sense in removing perfectly sound dentition through heavy preparation to make way for porcelain veneers. And the issue of initial cost, cracks and expensive remakes (being a tight Yorkshireman) meant that this option was not right for me.

So when I found a lower cost, easily reparable solution with genuinely minimal preparation, I jumped at the chance to cover up my exposed dentine and turn back the years (about 20 of them). (Figure 5 after)

Cost

Due to the direct application in only one appointment, there is significant savings in time and costs related to impressions, provisionals, etc. A semi and indirect treatment via the dental technician is however still possible. These savings can be passed on directly to the patient. One Venear costs



The patented laser finish technology is also used by medical device and prestige car manufacturers including Mercedes, Porsche (GT3), Lamborghini, Bentley and the world's most expensive car, the Bugatti Veyron, for its gear shift and start button



around £40-£50 to the dentist, which is a tenth of the cost of a typical porcelain veneer. This allows the dentist to pass on an attractive price advantage to the patient without impacting on margin. I'm sure you'll agree this is a significantly lower cost than porcelain veneers.

Conclusion

Direct Venears are a minimal preparation, easily reparable, genuinely lower cost alternative to porcelain veneers.

They have a specially lasered surface, giving them the smooth feel of porcelain, making them harder than composite and resistant to plaque.

The bond between the tooth and Edelweiss Direct Venear is a nano-hybrid composite,

which is shade-matched to the natural dentition for a seamless polishable finish, which improves aesthetics.

The system is inherently simple to use, with a minimal number of tooth shapes, sizes and shades. However, with the composite bonding and repair

material, the system is flexible to the wants and needs of the patient and the skill and patience of the clinician.

When you add the cost factor in, Edelweiss Direct Venears offer a very real, low cost alternative to porcelain veneers, with many added benefits.

Comprehensive kits that include a full selection of Edelweiss Direct Venears, with dentine and enamel composites in both paste and flowable form, applicator tips, total-etch and veneer bond, etchant gel, shade and sizing guides are now available, and will be supported by instructional courses for UK dental professionals through Optident.

For further details, contact Optident Ltd, International Development Centre, Valley Drive, Ilkley, LS29 8AL or call 01943 605050, email sales@optident.co.uk or visit www.optident.co.uk.