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### Edelweiss Veneers Lecture and Workshop

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# Pre-fabricated composite veneers: a novel technique for large restorations of anterior teeth

By Rafael S. Beolchi, DDS, MSc



"The re-birth of the pre-fabricated veneer now offers a one-visit, cost-effective alternative to direct composite veneers as well as a good option compared to ceramics..." owadays, the creation of beautiful, life-like restorations is possible due to the advances in the field of Biomaterials, which allowed the creation of a newer generation of composite resins, improved materials with optimum mechanical and optical properties.<sup>1</sup>

Those advances are particularly important for executing procedures based on the concept of Minimally Invasive Dentistry.

Needless to say, the advantages of this kind of treatment, the main one being that this conservative approach seeks to minimize the restoration/re-restoration cycle, benefits the patient over a lifetime.<sup>2</sup>

That being said, it is important to save the maximum amount of tooth possible in every and each restoration, having in mind not only immediate aesthetic results, but also the oral health of the patients as a whole in years to come.

However, some situations demand a more invasive approach to be properly resolved. Cases comprising large restorations/decay, with loss of natural tooth; non-vital, discoloured teeth; traumatized, discoloured elements (without endodontic treatment); severe/extended tooth fracture and/or extended tooth dysplasia or hypoplasia can be satisfactorily treated with veneers.<sup>5</sup>



Figures 1 and 2. Initial situation.

The veneering of anterior teeth was first proposed in 1937.<sup>3</sup> Almost 40 years later, the technique was revisited, unsuccessfully, due to the material limitations (methyl-methacrylate matrix and large glass fillers), which lead to rapid loss of surface gloss and surface degradation.<sup>4</sup> Along with the advances in the field of enamel and dentin bonding, porcelain veneers, which also have the advantage of an individual fabrication process, took the lead for this kind of restorative procedure and the concept of pre-fabricated veneers was practically abandoned.



Figure 3. Transmitted green light reveals several fracture lines.

However, in light of new, recently developed technologies, such as high pressure molding, heat curing processes, advances in the field of photo-curing and bonding, there has been a rebirth of the concept of pre-fabricated veneering of the anterior teeth.<sup>5</sup>

This article presents a case where five anterior, pre-fabricated composite veneers were placed for optimum aesthetic results.

#### Case report

A 35-year-old female patient presenting several aesthetic discordances in her anterior teeth sought treatment for aesthetic reasons. Figure 1 illustrates her smile and Figure 2 depicts a closer look where it is possible to see large restorations with loss of natural tooth anatomy and colour together with a non-vital, discoloured root-filled tooth (upper left canine). The other canine, however was sound and healthy, without any aesthetic anomalies.

A closer look of the upper right central incisor, under transmitted green light, allows the visualization of several fracture lines on the tooth structure (Figure 3). The green light was emitted from a Valo curing light (Ultradent Products, Inc.) with a proper green TransLume lens attached to the curing light's tip.

After different treatment options were discussed, the case was selected for veneering of the anterior teeth. A specific request from the patient was that the tooth position remained as close as possible after the treatment as it was before, in order to maintain the unique features of her smile (Figure 4). For economic reasons, the patient rejected ceramic veneers. The choice was made in favour of a novel pre-fabricated composite veneer system called Edelweiss (Ultradent Products, Inc.).

The veneers are made from composite, but during the fabrication process, undergo the application of high pressure and elevated temperatures. This allows the fabrication of a material with a greater cure percentage, much higher than the values obtained clinically. With a thickness around 0.5 mm in the facial surface (thinner on cervical and thicker on the incisal edge), the facial aspect of those veneers also pass through a laser vitrification process, where a pure inorganic glass surface, homogenous and smooth like a ceramic surface is achieved, providing an excellent gloss.



Figure 4. Patient requested tooth position remain unchanged.







Figures 5-7. Application of Ultrapak #0 retraction cord.



Figure 8. Following preparation of the left side for veneering.



Figure 9. Isolation of contiguous teeth with Teflon tape.



Figure 10. Etching of upper central incisors.

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Figure 11. Composite is used to characterize the inner surface of each Edelweiss veneer prior to cementing.

Using a modified rubber dam isolation technique, the gingival tissues of five teeth were displaced (Figures 5-7) with a retraction chord (Ultrapak #0, Ultradent Products, Inc.). The teeth underwent preparation, which was performed with diamond burs at high speed and refrigeration. Figure 8 illustrates the process on the left side, were it is possible to note higher chromacity of the upper left canine. The upper right canine was preserved, since it presented no aesthetic anomalies.

After isolation of the contiguous teeth with Teflon tape (Figure 9), both upper central incisors were properly etched (Figure 10) and after the bonding procedure, a uniform and thin layer of an opaque composite colour A2 (Amelogen Plus, Ultradent Products, Inc.) was placed over the facial surface of each tooth, separately. Then, a layering effect was obtained on the inner surface of each veneer with a A4 shade on the cervical region, A2 and then A1 towards the incisal, which in turn received a final, very thin layer of a transparent colour - Trans Gray (TG) (Figure 11).

The first veneer was placed and properly adjusted. A special tip, named PointCure, was attached to the Valo photocuring lamp. This point allows for the polymerization of only the central region of the veneer (Figure 12). Being so, the veneer gets firmly attached in place, but the composite on the margins of the tooth remains uncured, suitable for proper adaptation and posterior curing. Figure 13 depicts both central incisors right after the final curing.

The same procedure was conducted for both upper lateral incisors and also for the upper left canine. This last tooth was the only one which did not receive a layer of A2; instead a more opaque colour - Opaque White (OW) - more effective in covering the darkened dentin was used. The whole procedure consumed 4 full hours of work, a relatively small period of time compared to direct and even indirect veneering techniques.



Figure 12. Spot curing the first Edelweiss veneer in place.



Figure 13. Veneered central incisors after final curing.



Figure 14. Final result 2 weeks post-op.



Figure 15. Close view of healed gingival tissues.

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Figure 16. The original alignment has been respected.



Figure 17. Before and after placement of Edelweiss veneers.

The final result, after 2 weeks, is depicted in Figure 14. This proved to be a good period of time so as to allow a proper healing of the gingival tissues. Figure 15 shows a close view of the healed gingival tissues, 14 days after the procedure.

It can also be noted that the original alignment of teeth was respected, according to the patient's demand (Figure 16).

Figure 17 illustrates the smile, before and after and Figure 18 depicts the natural appearance and excellent aesthetic results achieved in a more harmonic smile.

### Discussion

Winvasive dentistry, it is important to master materials that allows for this kind of treatment. Composite resins are probably one of the most suitable materials for the task, but unfortunately, the wide variety of shades available can make it hard for the dentist to make an accurate shade selection during the restorative procedure. Unfortunately, the direct layering technique is one that is often only mastered by a few due to its long learning curve.

The aforementioned direct composite veneer system does not aim to systematically replace the well-established, individualized porcelain veneer technique nor the direct composite veneering technique of anterior teeth; but rather offers an alternative.



Figure 18. A natural appearance and excellent aesthetic results were achieved.

The re-birth of the pre-fabricated veneer now offers the clinician a one-visit, cost-effective alternative to direct composite veneers as well as a good option compared to ceramics. It is a reparable solution, relatively economical and fast, since there are no lab fees and no need for temporaries and provisionals. The learning curve is also faster and simpler. New materials and advances in technology now allow for a resistant, vitreous, inorganic glossy surface that is handled almost identically to composite. Despite the fact that some questions remain to be answered, this concept gives both doctors and patients a new and promising option.

#### About the author

Dr Rafael Beolchi maintains a private dental practices in São Paulo in Brazil.

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