Edelweiss VENEERs and OCCLUSION-VDs: A holistic concept for bio-aesthetics and function

Claudio Novelli[1]

In times of growing health awareness, users and patients are increasingly looking for alternative treatment options to conventional, usually invasive, ceramic and crown veneers without wishing to compromise on aesthetics and function. In this interview, Dr Claudio Novelli, Clinical and Scientific Director of edelweiss dentistry, talks about a solution provided by the Austrian company that allows holistic restoration using prefabricated, laser-sintered enamel shells made of composite in just one appointment.

Edelweiss: Prof. Claudio Novelli, as Clinical and Scientific Director of edelweiss dentistry, you have always been at the forefront of the development of the DIRECT SYSTEM. What led you and your colleagues to the idea of producing and expanding upon prefabricated enamel shells made of composite?

Prof. Claudio Novelli: We were well aware that it is an artistic and technical challenge for many users to produce high-quality direct composite veneers using the freehand layering technique. The idea was to simplify this method, yet still produce a precise result without making compromises on material properties. The focus was on a high-quality and minimally invasive treatment option for patients with a tight budget. Patients are becoming more critical about aesthetic dental treatments. Quality is a given, so it is the cost that matters. We are not interested in developing dental ceramics that only 5 per cent of the world's population can afford; rather, we are striving to reach a greater market with our system.

Owing to their biomechanical similarity to natural dental enamel, prefabricated veneer and occlusion shells offer an ideal alternative to the widespread more rigid and

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invasive ceramic veneers and crowns currently available. Nowadays, composite resins have taken on a leading role among restoration materials. They offer aesthetic potential, satisfactory durability and lower costs for dentists and patients than the equivalent ceramic restorations. Our patented technique of laser sintering the enamel shells composed of nano-hybrid composite results in highly aesthetic surface enhancement. Besides easy placement, which can be performed in a single appointment, this is a bio-aesthetic quantum leap for the dentist and patient alike.

What does the industrial production of these enamel shells entail?

The specially developed process for producing veneer and occlusion shells combines the best of both worlds, resulting in a dynamic composite core with a high-gloss surface.

The highly filled edelweiss nano-hybrid composite material (83 per cent) is moulded under high pressure and processed into wafer-thin prefabricated enamel shells in the form of anatomically optimised veneers and occlusion onlays.

The subsequent laser sintering, a kind of fusion or coating process, gives the enamel shells a purely inorganic surface, homogenously sealed, as smooth as ceramic with an outstanding gloss. This surface not only protects against discolouration, but also produces a perfect aesthetic and functional result.

The contourable enamel shells for the maxillae and mandible are fabricated in several sizes based on intensive studies of the shape and size of the tooth geometry. Their translucency and layer thickness are comparable to those of natural youthful enamel, thus allowing their universal use in combination with suitable shade-matched composite dentine chromas.

Could you please explain the term "bio-aesthetics"?

Let's remove the term "bio" and replace it with "natural". Natural, of course, means minimally invasive treatments. Restoration and optimisation are carried out while considering and preserving the healthy tooth structure. The function and aesthetics are reconstructed with a composite very similar to the tooth substance—a concept that clearly speaks in favour of non-restorative or additive techniques.

In contrast to our method are invasive grinding of healthy teeth and restoration with ceramic crowns without taking natural biomechanics into consideration to obtain a Hollywood smile. This is not in line with the edelweiss dentistry philosophy.

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What distinguishes this new application method from ceramics?

For the user, it is important to remember that, even if high-quality adhesive systems are used, ceramics are mainly supported by enamel and not dentine. The prefabricated enamel shells, however, show very strong bonding and flexibility, which provides for good performance and resistance to cracking even when bonding to dentine.

In contrast to ceramics, enamel shells can be adjusted to the existing tooth situation and shape individually directly on the patient or model. This allows the smile design and reconstruction to be freely configured, for instance in the presence of severe bruxism. The wafer-thin enamel shells allow minimally invasive application, in that the tooth is freed of residue and is only minimally roughened. The restored tooth is then prepared using the etch-bond technique and is cemented with highly filled composite material. This produces a biomechanical monoblock, which ensures optimal adhesion and integration in the given tooth situation. Using Ultradent Products' Peak Universal Bond, this technique even allows for existing metal and ceramic restorations to be veneered.

Improved and true-to-life shade matching is guaranteed by the enamel and composite shades included with the system, based on the Natural Layering Concept by Dr Didier Dietschi.

Owing to the lifelike biomechanical properties of the composite material and therefore also of the veneers, none of the surrounding tooth substance is affected or damaged, which underscores the ethical aspect of this method in contrast to ceramic restorations. By virtue of their flexibility, the enamel shells are also ideally suited for use in the mandible, as the wear of the antagonist second dentition is better, more true to nature than that of ceramic. This makes edelweiss VENEERs and OCCLUSION-VDs the ideal solution for patients with a low budget, especially for young people or for those who practise contact sports.

Alongside veneers, there are prefabricated occlusal onlays in your system. What new possibilities do they offer?

The translucent OCCLUSION-VD shells represent the anatomical basis for individual or complete reconstructions,

as well as for lifting the vertical dimension in the posterior region. Hence, the name OCCLUSION-VD, where VD stands for vertical dimension. Just like optimally correcting glasses can relieve headaches and improve poor posture, OCCLUSION-VDs, functioning as an occlusal splint and adapted according to the patient's individual problems, can influence our entire postural system.

As a result of their natural morphology, the prefabricated OCCLUSION-VDs are very easy to integrate into the existing occlusion. OCCLUSION-VDs help eliminate or prevent the causes of craniomandibular dysfunction. In addition, OCCLUSION-VDs serve to correct inherent malocclusion and deep bites in a minimally invasive way. By the occlusal surfaces being covered, usually in the mandible, the mandible is brought into the correct position in relation to the maxillae. This makes it possible to attain functioning guidance of anterior teeth and canines by using edelweiss veneers. The combination of edelweiss VENEERs and OCCLUSION-VDs allows for complete rehabilitation and holistic restoration of the dental arch to be undertaken in order to achieve the best possible overall outcome. Individual re-occlusion achieves a new functioning, balanced and smoothly working masticatory apparatus.

Your system largely supports the direct procedure. How does this work, for instance in achieving a vertical bite increase with OCCLUSION-VDs? Does this require a laboratory?

For restorations with edelweiss VENEERs and OCCLUSION-VDs, besides the direct chairside method, a dental laboratory can always be called upon, where fitting can be performed

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Figure 20

indirectly on an existing plaster model using a semi adjustable articulator. The prefabricated anatomic enamel shells allow the option of fitting and relining the bite situation in the laboratory, thus optimising the time and cost factors.
In fact, in complicated initial situations, articulating the bite in the laboratory is absolutely recommended.
Practical use in the respective indication area can be learnt at one of our one-day workshops. Those interested can obtain detailed information on the workshops from all of our trading partners or directly from edelweiss dentistry.