The pros and cons of a smile makeover with indirect veneers

A clinical case of closing multiple diastemas in a 37-year-old female patient

Dr Eduardo Mahn & Volker Brosch
Chile & Germany

For quite some time, we have known about minimally invasive techniques for the aesthetic restoration of the oral cavity. Whether a patient wishes to have stains removed, teeth bleached or tooth shape and general appearance improved, the range of treatment options is almost limitless. Procedures include tooth bleaching, enamel micro-abrasion, direct composite restorations, and the whole spectrum of laminate veneer restorations, involving more aggressive preparation, and the different types of thin or micro-veneers to non-prep veneers and edge-ups.

In cases in which a major improvement in the shade and shape is desirable, indirect veneers are clearly the clinician’s first choice. Owing to their superior aesthetic and mechanical properties, indirect veneers are ideal when extensive aesthetic adjustments are required.

Before selecting a material, the clinician needs to be aware of the two main challenges of aesthetic oral restoration: selecting the proper shade and opacity of the material and determining the amount of tooth structure that needs to be removed in order to achieve the desired result. For example, in cases in which teeth are moderately to severely misaligned and orthodontic treatment is not possible, aggressive preparation will be needed. The same applies to teeth with heavy staining caused by fluorosis or tetracycline.

Multiple diastemas may be present when teeth are too small for the maxilla and mandible or after the patient has undergone orthodontic treatment to achieve an adequate Class I canine relationship. This is an ideal situation for minimally invasive treatment with thin, non-prep veneers, especially if there is no major discoloration and after the teeth have been prepared and the temporary restorations have been placed. These adjustments are then communicated to the dental technician before the final restoration is fabricated.

In the case of non-prep veneers, a direct mock-up can be challenging to fabricate and the final outcome difficult to visualise owing to the minimal thickness of the final restorations and the differences between the resin (used for the mock-up) and the ceramic (used for the final veneers).

Presentation and imaging software programs (which are easily available and affordable for everyone) present a novel option for simulating the final outcome, as they allow digital mock-ups to be created on the computer screen. This method is extremely easy, accurate and reliable.

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UAE INTERNATIONAL DENTAL CONFERENCE & ARAB DENTAL EXHIBITION
5 - 7 February, 2013
Dubai International Convention & Exhibition Centre
www.aedcd.com

Fig. 1: Pre-op situation: Multiple diastemas were present. The patient’s wish was to have them closed.

Figs. 2a & b: The wax-up on the model with the gingival mask in place gave an idea of how the situation could be improved.

Fig. 3: A digital image of the wax-up was superimposed over a photograph of the pre-op situation. In this way, a digital mock-up was created.

Fig. 4: Full-contour veneers were pressed using highly translucent IPS e.max Press Lithium Disilicate (layer thickness of 200 to 300 µm). Full ceramic veneers were pressed using highly translucent IPS e.max Press Lithium Disilicate (layer thicknesses of 200 to 500 µm).

Fig. 5: In the mandible, the diastemas were closed with lithium disilicate edge-ups.
Closing multiple diastemas with non-prep veneers can be quite a challenging task. In most cases, the veneers will be extremely thin on the labial aspect but very thick mesially. While high translucency is required to “capture” some colour from the underlying tooth structure and thus ensure a natural appearance, the material also requires high transparency in order to mask the darkness of the oral cavity shining through in the area of the diastemas. Therefore, occlusal forces can be problematical if wide diastemas (1.5 mm and wider) are involved.

In recent years, the aesthetic properties of IPS e.max Ceram have been significantly improved thanks to the introduction of different gradations of translucency. Nowadays, lithium disilicate ceramics can be processed using either CAD/CAM or press techniques. These materials are available in up to five different levels of translucency and show flexural strengths ranging from 560 to 400 MPa. For the case discussed in this article, IPS e.max Press HT (Ivoclar Vivadent), a highly translucent lithium disilicate glass-ceramic, was selected.

Clinical case report
A 57-year-old female patient dissatisfied with her appearance presented to our office. She did not like the multiple diastemas that showed when she smiled (Fig. 1) and was hoping for a durable and predictable treatment option that did not involve any tooth preparation and could be done at a reasonable price. The patient had undergone orthodontic treatment before and teeth #11 to #21 had been restored distally with composite fillings.

In non-prep veneer cases, it is essential for the dental technician to have detailed knowledge of the sulcus depth. Therefore, two retraction cords were placed (#00 Ultraspan, Ultradent), which remained in place during impression taking, and #0, which retracted her gingiva and was removed before the impression was finalized.

A wax-up was fabricated (Figs. 2a and b), digitised and superimposed over the clinical image to create a digital mock-up, which was then discussed with the patient (Fig. 3). In the laboratory, thin veneers were pressed on the basis of the wax-ups using IPS e.max Press and then stained and glazed (Fig. 4). Their thickness was about that of a human nail.

In the mandible, we faced a different challenge, as diastemas between the lateral incisors and canines were present on both sides. While the patient did not expect a dramatic change in the shade of her teeth, her main concern was costs and the avoidance of any kind of tooth preparation. To meet her wish, we decided to restore her teeth with partial veneers (edge-ups, Fig. 5). Traditional non-prep veneers would have increased the thickness of the lateral incisors and canines so that they would not have been compatible with