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

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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 microabrasion, direct composite restorations, and the whole spectrum of laminate veneer system options, ranging from full veneers, 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 discolouration 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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Fig. 1: Pre-op situation. Multiple diastemas were present. The patient’s wish was to have them closed. Fig. 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. Fig. 4: Full-contour veneers were pressed using highly translucent IPS e.max Press Lithium Disilicate (layer thickness of 200 to 300 µm). Fig. 5: In the mandible, the diastemas were closed with lithium disilicate edge-ups.

Fig. 1
Fig. 4a
Fig. 2b
Fig. 3
Fig. 4b
Fig. 5

Closing multiple diastemas with non-prep veneers can be quite a challenging task.
While a classical mock-up requires chair time of 15 to 20 minutes, the digital mock-up can be done in less than one minute by a dental assistant or clinician, if osable clinical and technical images are available. By superimposing an image of the wax-up over the preoperative photograph, a digital image of the final result can be obtained. The only requirement is matching dimensions, inclination and perspective.

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 and distally. While high translucency is required to “capture” some colour from the underlying tooth structure and thus ensure a natural appearance, the material also requires reasonable opacity in order to mask the darkness of the oral cavity shining through in the area of the diastemas. For a standard case, occlusal forces can be problematic if wide diastemas (1.5 mm and wider) are involved.

In recent years, the aesthetic properties of IPS e.max Press (Ivoclar Vivadent) were greatly improved. The value shades of Variolink Vivadent allow the clinician to create a beautiful, natural result. IPS e.max Press (Ivoclar Vivadent) is a highly translucent lithium disilicate ceramic. The luting composite Variolink Veneer, a purely light-cured luting composite, is used in combination with IPS e.max Press. This combination allows for a full veneer to be created. In some cases, even non-prep veneers (edge-ups) can be placed. Under the guidance of the dentist, the clinician can control the thickness of the lateral incisors and canines so that they would not have been compatible with the central incisors. This would have created the need for two or three additional veneers.

Patients who have a history of periodontal disease or who are non-compliant with oral hygiene will benefit from this technique, as there is a low risk of fracturing the veneer and the tooth structure, which can lead to periodontal problems in the long term. As shown in Figure 12, both issues can be controlled if the thickness of the ceramic layer is minimal and the veneer can be fabricated digitally. These 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 the central incisors. This would have created the need for two or three additional veneers.

In this case, the luting composite Variolink Veneer (Ivoclar Vivadent) provided assistance. The value shades of Variolink Veneer enable the clinician to make slight adjustments to the shade of the restoration. The High Value shades allow the shade to be lightened gradually, while the low Value shades for permanent cementation, a solvent-free bonding agent (Heliodon for enamel bonding, Ivoclar Vivadent) and a light-cured luting composite (Variolink–Veneer, High Value +1) were used (Figs. 6–9).

Conclusion

The photographs taken one week after placement of the veneers showed their seamless integration with the surrounding gingiva. The mandible teeth were subjected to a one-time bleaching process. The gingiva was still slightly traumatized at this point. The final result after two months...