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# Direct Composite Veneers: A Viable Treatment Option

## INTRODUCTION

Direct composite veneers are one of those restorative treatments that have mixed opinions. In general, when a veneer is indicated, porcelain is the ideal material as it has strength and beauty. Porcelain is also much easier for the dentist, in terms of fabricating the actual restoration(s), since it is the ceramist who builds the restoration(s). Direct composite veneers, by contrast, can be difficult and frustrating for the dentist to layer, shape, and polish directly in the patient's mouth. In addition, composite will generally not last as long as all-ceramic materials. When a patient is considering porcelain vs composite for smile enhancement procedures, the cost difference between the 2 options plays a significant factor, especially when many teeth are involved. Direct composite veneers are a wonderful treatment option to provide for patients who are not able to currently afford indirect porcelain veneers. Proper composite material selection, along with proven polychromatic layering techniques, enable the clinician to more confidently and predictably deliver direct restorations chairside.

## CASE REPORT

### Diagnosis and Treatment Plan

A patient in her mid-40s was referred by her orthodontist for a consultation to discuss the options for correcting residual spaces following her orthodontic treatment. The orthodontist did an excellent job positioning the maxillary anterior teeth with equal spacing, which made restorative planning and execution much easier for proper gingival emergence profiles and tooth proportions. The patient had existing direct composite veneers on teeth Nos. 4 to 13 that were done in her 20s. These restorations exhibited obvious wear and staining, and the gums had since receded, thus exposing the margins.

To gain more information, and to help in the treatment planning process with the patient, extraoral photographs were taken with a DSLR camera, and the high-resolution images were displayed on the computer screen (Figure 1). The patient

*Many dental patients desire smile enhancement procedures that are less invasive on their teeth and wallets.*

was then asked to look over the photographs and describe what bothered her and what she envisioned her restorative outcome to be. She was unhappy with the size, shape, and color of her teeth and, now that the orthodontic treatment was complete, she knew that there were excess spaces to deal with. She desired whiter teeth and envisioned a big, broad smile that would fill her buccal corridor.

Different restorative dental materials and techniques were then described, enabling the patient to make an informed decision on how she would like to proceed with enhancing her smile. After considering the advantages and disadvantages of composite and porcelain restorations, the patient decided to go with direct composite veneers. Her existing composite veneers were more than 20 years old, and, although they had obvious signs of facial and marginal wear, they had never chipped or broken. She had no history of parafunctional habits or bruxism, which would normally be a risk factor in anterior direct composite veneers, so she felt confident she could get many years of function out of new composite veneers. She had also just finished paying for comprehensive orthodontic treatments for her and her daughter, so the significant cost difference between composite and porcelain was a real consideration.

Whether doing composite or porcelain veneers, proper planning is key to success. Chief among the planning tools is a diagnostic wax-up. Some of the important information that can be gained from the diagnostic wax-up includes gingival contours and zenith levels, tooth preparation/reduction, incisal edge

*continued on page 64*



**Figure 1.** Preoperative photos taken at the postorthodontic restorative consultation.

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**Direct Composite Veneers: A Viable...***continued from page 62*

position, tooth size/shape/contour, and occlusion. In addition, the diagnostic wax-up can be used as a trial smile for the patient. This is done by taking an impression of the wax-up

and then using a provisional crown material (Turbo Temp 2 [Zest Dental Solutions]) to duplicate the wax-up in the patient's mouth. This important step in the planning protocol allows the patient to see and feel what the intended final restorations will be like and to scrutinize them. Help-

ful feedback is often received from the patient, replacing any fears and/or anxieties that he or she may have had about the proposed treatment with excitement and enthusiasm. In this case, the patient emphasized her desire to build out the facial contours of the premolars and first molars as

much as possible to fill in the buccal corridor.

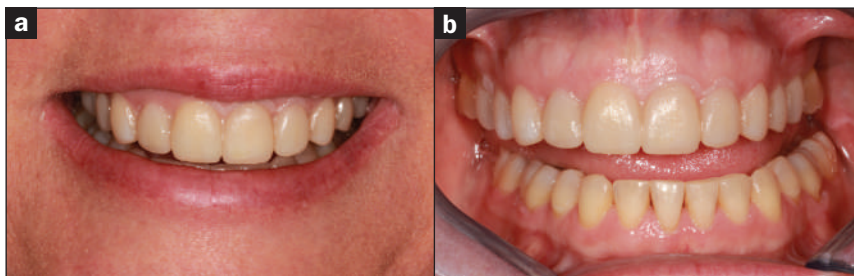
**Clinical Protocol**

Alginate impressions were taken to make 2 sets of study models from which bleaching trays and a diagnostic wax-up were fabricated. The patient whitened her teeth using a 9.5% hydrogen peroxide gel for 10 days while the diagnostic wax-up was being completed. Once the diagnostic wax-up was ready, a trial smile was done using a stint fabricated from the wax-up. The patient gave her approval on the form and function of the teeth and the smile line (Figure 2).

Since the soft tissues required minor modification with a radio-surge (Cynosure), a small amount of local anesthetic was administered in the maxillary anterior segment. Prior to tooth preparation, the gingival zeniths were balanced, and a small amount of papilla contouring was done to allow for proper composite shaping (Figure 3). Facial probing depths were noted, and bone sounding was done after the gums were numb to ensure that the gingival zenith contouring would not violate the biologic width.<sup>†</sup> Because of the excellent gingival health, no gingival packing cords were required to assist with moisture control. It should be noted that this is not always the case with the gingiva, and crevicular fluids can present a difficult challenge to manage when doing direct layered composite restorations.

The old composite resin veneers were removed with a medium diamond bur (Kerr Dental), and the remainder of the preparations were completed with a fine diamond bur and Sof-Lex Discs (3M) (Figure 4). The silicone putty (Panasil [Kettenbach LP]) index that was fabricated from the diagnostic wax-up was tried-in to verify the fit prior to beginning the bonding (Figure 5). A total-etch protocol was used, along with OptiBond Solo Plus (Kerr Dental) adhesive resin (Figure 6). A polychromatic composite system (Estelite Omega [Tokuyama Dental America]) was selected since it has desirable characteristics of hue, chroma, and value to realistically replicate the natural dentition. In addition, it also has excellent handling and sculpting qualities that make it easy to work with when doing the layering steps.

Following the classic polychromatic layering technique developed



**Figure 2.** A trial smile was done using a silicon guide fabricated from the diagnostic wax-up.



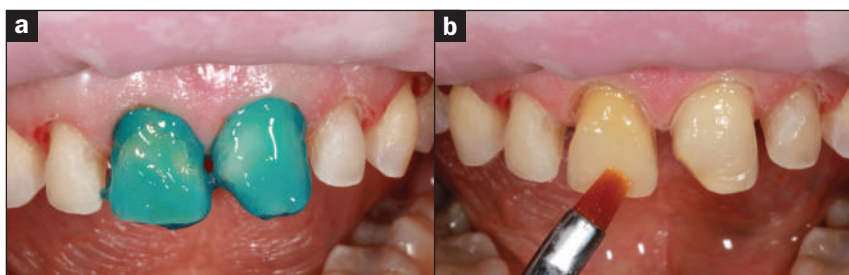
**Figure 3.** Gingival recontouring, prior to tooth preparation.



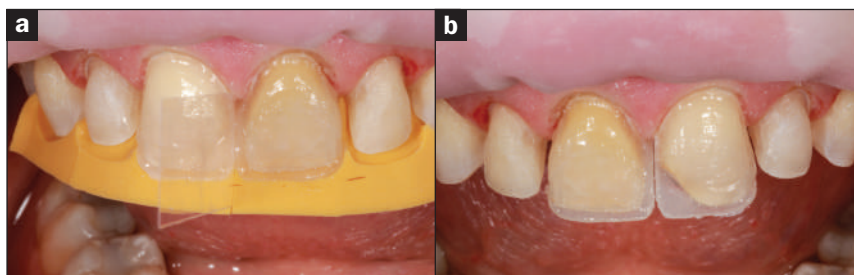
**Figure 4.** Preparation of teeth Nos. 3 to 14.



**Figure 5.** Try-in of the silicon putty index fabricated from the diagnostic wax-up.



**Figure 6.** Application of the etchant gel and the adhesive bonding resin (OptiBond Solo Plus [Kerr Dental]).



**Figure 7.** Establishing the lingual shelf using the silicone putty index and the milky white (MW) shade of composite resin (Estelite Omega [Tokuyama Dental America]).



**Figure 8.** Application of the dentin shade (DA2).



**Figure 9.** Application of the translucent shade (TRANS) along the incisal and interproximal edges.



**Figure 10.** The first enamel shade (EA1) was placed along the gingival half.



**Figure 11.** White characterization (BL1) was added to the incisal edge.



**Figure 12.** Enamel shade EB1 was feathered onto the incisal third.



**Figure 13.** A thin top layer of MW composite was applied to the incisal half.



**Figure 14.** Layering was completed on teeth Nos. 3 to 14.



**Figure 15.** Shaping and polishing were completed.



**Figure 16.** One-week postoperative photos.

by Fahl,<sup>2,3</sup> the lingual shelf was created on teeth Nos. 8 and 9 with the achromatic milky white (MW) shade, using the silicon putty index as the guide. A clear Mylar strip was inserted into a slot created within the silicon putty index to facilitate the establishment of the midline and interproximal contact (Figure 7). This Mylar strip technique was helpful in that both central incisors could be layered to full contour at the same time so that symmetry was easier to maintain.<sup>4</sup>

Once the lingual shelf was in place, the general outline form of the tooth/teeth was/where visible, and the subsequent layers of composite were then

natural tooth structure.

After the dentin shade was light cured (Bluephase Style [Ivoclar Vivadent]), a small amount of translucent (TRANS) composite was placed at the incisal and interproximal edges (Figure 9). This layer was added to allow light transmission to accentuate any incisal characterization and/or mamelon effects. The thickness and extent of this translucent layer determines how much of those effects is desired to show through. In this case, the patient had minimal incisal translucency on her natural teeth, so the translucent layer was kept thin.

Next, the first layer of enamel com-

restoration; too much will make the restoration look gray. This is also true of the internal translucent layer. Using the appropriate amount takes practice, especially when trying to hide hard lines, such as a Class IV fracture. The same protocol was repeated for the remainder of the treated teeth (Figure 14).

Finishing and polishing were accomplished using a variety of fine grit diamond and carbide burs (Kerr Dental), Sof-Lex discs, rubber cups and discs, and diamond polishing pastes (Cosmedent) (Figure 15). The polishing technique to create the secondary and tertiary anatomy can be quite challenging to learn, but *it can be learned!*<sup>5</sup> Another reason the author chose Estelite Omega for this case, and other similar cases, is because this material has spherical filler particles that provide a highly polished surface with a luster that will last the patient many years.

A follow-up appointment was scheduled to evaluate the soft-tissue health and occlusion and to take final postoperative photographs (Figure 16).

#### CLOSING COMMENTS

Many dental patients desire smile enhancement procedures that are less invasive on their teeth and wallets. In this specific case, porcelain veneers would have been an excellent restorative option due to their strength and durability; however, the cost of porcelain was not a viable choice for this patient at the time of treatment. To some restorative dentists, direct composite veneers may feel like an intimidating procedure. However, by understand-

ing sound principles, selecting the right dental materials, and applying proven techniques, the clinician can deliver predictable and natural-looking direct composite restorations in the anterior segment that provide a life-enhancing treatment for his or her patients. ♦

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#### References

1. Sharma AA, Park JH. Esthetic considerations in interdental papilla: remediation and regeneration. *J Esthet Restor Dent.* 2010;22:18-28.
2. Fahl N Jr. A polychromatic composite layering approach for solving a complex Class IV/direct veneer/diastema combination: part I. *Pract Proced Aesthet Dent.* 2006;18:641-645.
3. Fahl N Jr. A polychromatic composite layering approach for solving a complex Class IV/direct veneer/diastema combination: part II. *Pract Proced Aesthet Dent.* 2007;19:17-22.
4. Brown K. Time saving resin techniques for common emergencies. *Journal of Cosmetic Dentistry.* 2015;31:38-51.
5. LeSage B. Finishing and polishing criteria for minimally invasive composite restorations. *Gen Dent.* 2011;59:422-428.

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placed. In this example, the next composite layer was a dentin shade (DA2) that most closely matched the natural dentin shade of the tooth (Figure 8). The high chromaticity of the dentin shades assists in blocking out any straight-line edges and can be used to recreate internal mamelon effects. Those who have learned this type of polychromatic layering technique understand the difficulty in judging how much of this dentin shade to use. It is one of the most important layers to consider and takes practice to do it with ease. Each composite system has its own unique characteristics and behaviors, and the author likes the Estelite Omega system since it is very user friendly and blends well with

posite (EA1) was placed to full contour at the gingival third and then feathered away toward the incisal to allow room for any additional incisal layers (Figure 10). At this point, the incisal edges were highlighted with a minute amount of bleach white composite (BL1) to provide subtle characterization (Figure 11). A thin layer of enamel shade (EB1) was applied on the incisal third but kept just shy of full contour (Figure 12).

The final contour was then achieved with a thin layer of MW (Figure 13). This achromatic layer gives a 3-D depth to the final restoration. However, care must be taken with this final layer, as it can affect the overall value, or grayness, of the

**Dr. Brown** received his DDS degree in 2006 from the University of Washington School of Dentistry with recognition in restorative dentistry. In 2013, he received accreditation from the American Academy of Cosmetic Dentistry, and he has published numerous articles on direct/indirect anterior restorations in the *Journal of Cosmetic Dentistry* and other publications. He maintains a private practice in Bellevue, Wash. He can be reached via email at kbrown@jensenbrowndds.com.

*Disclosure:* Dr. Brown has received honoraria from Kavo Kerr and Tokuyama Dental America for lectures and articles.