

Quick and Easy: Indirect Fabrication of Composite Veneers

By Dr. Kenneth A. King, Dr. Llewellyn Powell

Composite veneers can be fabricated directly on a vinyl polysiloxane (VPS) die. Using the following technique, a dentist (or their trained auxiliary) can quickly fabricate an esthetic composite veneer with an acceptable marginal fit. This article describes such a technique.

Introduction

With the increasing popularity of esthetic dentistry and the utilization of veneers, the probability of a veneer debonding or fracturing may also increase. Therefore, the need to fabricate interim or emergency veneers that are highly esthetic and well fitting may be required. A patient may also desire the correction of an esthetic problem, such as a peg lateral, and due to age, financial or other factors, an option other than a laboratory fabricated veneer may be considered.

The use of VPS flexible dies for the fabrication of provisional restorations and composite inlays has been reported previously in the literature.^{1,2,3,4} This technique involves making an impression of the prepared tooth or teeth and using this impression to fabricate a working model utilizing impression materials routinely found in a dental office. First, an impression is made of the prepared tooth (teeth). After the impression is completed, VPS impression material



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is carefully syringed into the first impression. (If both materials are VPS, a separator is required to prevent adhering.) Once set, the VPS model is removed. Using an external form (ie. trimmed crown former or VPS putty mold), a provisional can be made directly on the model and allowed to set. This method also allows for freehand fabrication of the provisional, directly on the die. The provisional can then be easily removed. The flexibility of the die material minimizes the effect of undercuts in the prep(s). There is also no need for a separator at this point, as most provisional materials will not adhere to the VPS die.

The technique above has also been adapted for the fabrication of an indirect composite veneer. When using fast setting impression materials, a die can be produced in approximately five minutes.

An advantage to this technique is that it allows the dentist to fabricate the composite veneer out of the mouth, thus creating a less-stressful procedure for the dentist and the patient. There is no need for the patient to keep their mouth open for long periods of time and the composite veneer can be fabricated without the possibility of contamination by saliva or blood. The operator has full visibility of the preparation. To further save

clinician chair time, the fabrication of the veneer can be done by properly trained auxiliaries.

The operator will easily be able to build up the composite veneers in layers⁵ and polish to a high shine on the “bench top” to create a more esthetic result. The veneer can then be tried-in and minor modifications can be made prior to cementation. Once the dentist and patient are satisfied, the veneer can be cemented either as a provisional or for long term use.

This technique may be used to replace fractured or lost veneers and may also be used for diastema closures. Veneer preparations with open proximal contacts work the best with this method because tearing of the interproximal areas of the impression is minimized. For demonstration purposes, the

Figure 1



Tooth with veneer preparation.

Figure 2



Alginate impression of prepared tooth.

Figure 3



VPS impression material syringed into alginate impression.

Figure 4



VPS Cast.

Figure 5



Placing composite on VPS die.

Figure 6



Completion of composite placement.

technique is shown using a typodont.

Materials used:

- Alginate (irreversible hydrocolloid)
- Low viscosity “wash” VPS impression material
- Rigid VPS impression material
- Composites
- Finishing burs
- Finishing discs
- Polishing points, discs

Procedure

1. Prior to initiating treatment, the shade should be selected while the tooth is still moist and before a rubber dam has been placed.^{6,7} Without etching the tooth or placing bonding agent, a small amount of composite can be placed on the prepared tooth and light cured to verify the shade selection.⁶
2. Remove any composite remaining from the shade verification procedure and modify tooth preparation as necessary. (Figure 1)
3. Make an alginate impression of the tooth requiring treatment. (Figure 2)
4. Once the alginate has set, remove from the mouth and disinfect.
5. Using a mixing tip, syringe very low viscosity VPS wash impression material into alginate impression, quickly followed by rigid VPS impression material and allow to set. (Figure 3)
6. Once set, remove VPS cast from alginate impression. (Figure 4)
7. Begin to layer composite onto VPS cast. Light cure between layers. (Figures 5 and 6)
8. Complete composite veneer to rough contours. (If an auxiliary is fabricating these veneers on the bench, they may begin to contour and finish the veneer.) (Figure 7)
9. Try-in composite veneer on tooth. (Figure 8)
10. Adjust contours of the veneer as necessary with finishing burs and/or with finishing discs.
11. Polish veneer with diamond micro polishing points and discs.
12. Veneer is ready to cement. (Figure 9)

Discussion:

This procedure utilizes materials commonly found in the dental office. One may also use materials specifically formulated for this procedure such as the Mach 2[®] silicone die system by Parkell Inc, Edgewood, NY. Composite resins were chosen for their ability to restore teeth both esthetically and functionally.⁸ Research evaluating the fit of indirect composite restorations using vinyl polysiloxane dies has been favorable. Clinical studies have shown that in vivo margin adaptation of an indirect composite restoration is better than that of a direct composite restoration. When using an irreversible hydrocolloid impression and vinyl polysiloxane, research has shown an acceptable margin fit of < 100 microns. Though the fit was not as good as a Type IV stone die, the difference was not statistically

Figure 7



Preliminary contouring of composite veneer.

Figure 8



Try-in of composite veneer on prepared tooth.

Figure 9



Completed composite veneer.

significant.⁹ Though one would not use this procedure for every case, for those highly esthetic cases or for those cases where the composite veneer would be used long term, this technique gives the dentist a quick alternative for high quality care.

Conclusion:

Vinyl polysiloxane dies have been described in the literature as a method for fabricating indirect provisionals and composite inlays for years. The adaptation of this technique for the fabrication of composite veneers is a good addition to the dentist's armamentarium for quality patient care.



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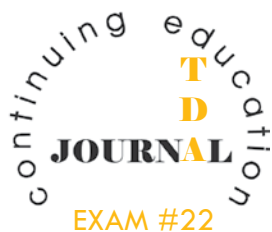
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Questions for Continuing Education Article - CE Exam #22

1. The use of VPS flexible dies for fabrication of provisional restorations and composite inlays is:
 - a. tantamount to malpractice
 - b. too flimsy to be accurate
 - c. liable to produce unacceptable marginal fit
 - d. reported in the literature
2. If the initial impression is taken with VPS, before VPS is injected in the impression to provide a die:
 - a. gold foil must be used as a liner
 - b. lavage of water must precede the new VPS injection
 - c. temporary cement should be used
 - d. separator is required to prevent sticking
3. The flexibility of the VPS die material:
 - a. makes it unsuitable for accuracy
 - b. maximizes undercuts
 - c. makes it difficult to retrieve from the original impression
 - d. minimizes the effect of undercuts in the preps
4. An advantage of this technique is:
 - a. less stress
 - b. no need for patients to keep mouths open for long periods
 - c. no contamination with blood or saliva
 - d. all of the above
5. The VPS technique may be used:
 - a. to replace fractured or lost veneers
 - b. for diastema closure
 - c. composite inlays
 - d. all the above

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