Minimally invasive treatment method is the deciding factor – Composite Veneers

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The advantage of direct composite veneers is that there is, compared to porcelain veneers, usually less filing required. In addition, the treatment can be completed in only one session.

I am purposefully not mentioning the time savings advantage because the question is how much time you want to earmark for a composite veneers. And factors which can increase the time needed might also play a role: for example, this is the first time you are making a free-hand composite veneers, the veneers has a difficult colour composition or you need to create various surface structures. In addition to the advantages, there are, of course, also disadvantages associated with the direct use of composite. Some examples are wear-and-tear and degradation of the material over the course of time, loss of surface shine and cohesive cracks in the material. Direct composite veneers are also difficult concerning the processing and colour composition. Adapting and modelling the composite correctly without creating air bubbles – gaps and voids – is important. A lot of the natural layering materials of aesthetic composites are a bit stiff. This can be useful for modelling, but it makes adaptation between the various layers of composite trickier.

In this case, the patient’s teeth had deteriorated quite a bit (Fig. 1 + 2). After first having implemented oral hygiene and plaque removal measures, we replaced all restorations which were not so good (bad). But it was the front teeth which were slated to be the crowning glory of the treatment. The front teeth are often the most important part of the treatment for the patient because they provide immediately visible results (also for others) and therefore tend to play a major role in the patient’s social life.

Crowns or veneers

In this patient it was his many discoloured restorations and broken-off/worn-out incisal edges that led us to decide, together with the patient, to construct composite veneers (Fig. 3 – 6). The other treatment options were porcelain crowns or porcelain veneers. Because a lot of healthy tissue must be filed off for porcelain crowns, this was actually not an option (neither for me nor – after a brief explanation – for the patient). In the ar-
Article by Chun et al which I discussed in the February issue of Dental Practice, (selective, page 49: ‘Fracture strength of incisors restored with porcelain veneers and crowns’), it was clear that we do not need to use full crowns to ensure the strength of the teeth. That also applies to this situation. Porcelain veneers were not chosen for (the patient’s) financial reasons. But this would also have been a good option because such veneers can be constructed in a minimal thickness. We created an incisal reference in order to determine the incisal length and make the angle equal with the pupil line. Using a little bit of putty and a short stirring stick, the reference was applied so that it ran parallel to the pupil line (Fig. 7).

COMPONEER

Instead of applying a conventional direct composite veneers, the recently marketed COMPONEER (Coltène/Whaledent) were used for this patient. COMPONEER are polymerised, nanohybrid enamel composite shells (Fig. 8). An advantage of these shells is that the outside (buccal side) of the ‘direct composite veneers’ are smooth and fully hardened. Because these shells are only 0.3 mm thick, they can also be applied to teeth with minimal filing. COMPONEER are available in three sizes (S, M, L) and two colours (WO and Universal). With the assistance of the contour guide, we selected size L for this patient (Fig. 9 + 10). A few minor adjustments were required to get the veneers to fit appropriately (Fig. 11). The COMPONEER are affixed using a direct composite material (SYNERGY D6, Coltène/Whaledent). The telescoping shade guides can be used to determine the colour. In consultation with the patient, the WO (white opalescent) shells were selected in combination with the A2/B2 colour of SYNERGY D6 dentin composite (Fig. 12 + 13).

Preparation

Working on enamel is, just like for porcelain veneers, also better for composite restorations. Due to degradation of the hybrid layer, dentin has worse adherence properties, both initially as well as in the long term. In in-vitro and in-vivo studies we conducted at the University of Groningen, we determined that good adhesion can be obtained if the old restorations are silicated (Cojet + silane, 3M ESPE) and silanised. However, the old restorations do need to be of good quality, as they are in this case. This is a major advantage because we can then create veneers without the old restorations needing to be removed.

Therefore, the filing and separation needed is in this case minimal (Fig. 14 + 15). Any undercuts do not need to be removed, which means that a lot of tissue can be saved. In order to obtain optimal results, we carried out a small gingival correction using the electrotome (Fig. 16).

After the teeth were filed, a rubber dam and contour strips were inserted in order to place the veneers without liquid contamination (Fig. 17). After silicating the old composite restorations and the enamel was etched, the old restorations were silanised and the bonding was applied over the total adhesion sur-
face (Fig. 18 + 19). After hardening of the bonding layer, the pre-heated direct composite shell, COMPONEER, was applied to the tooth and adapted; especially cervically and approximally at the outline (Fig. 20 – 24). Bonding was applied to the inside of the shells as well as a thin layer of composite in order to prevent air bubbles from forming underneath the shell. Applying the shells at the right length, position and rotation is the most critical and difficult aspect of the treatment. The COMPONEER were applied by inspecting the application site from several sides and using the incisal key (Fig. 25). A thin, flat ash was used to model the approximal shape and transition. Then the composite around the veneers was hardened (Fig. 26).

Finally, the veneers were finished off with diamond drill bits and polished with various composite polishers (Fig. 27 – 30). The brush was used to obtain a shine. The outline was finished off using the EVA corner tool. Little files can be inserted into the EVA corner tool with different diamond granule sizes, thanks to which you can create an invisible transition that the patient cannot feel (Fig. 31 – 33).

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Fig. 19: Application of the bonding to the entire surface.

Fig. 20: Application of the composite.

Fig. 21: Adapting the composite cervically and approximately as well as possible.

Fig. 22: Positioning of the COMPONEER.

Fig. 23: Finishing of the composite.

Fig. 24: Finishing of the composite veneers.
Fig. 25: Check whether the veneer is well placed with regard to the intended incisal line.

Fig. 26: Hardening of the composite to fix the veneer.

Fig. 27: The transitions are polished using the EVA corner tool.

Fig. 28: Recesses are filed a bit more with SwissFlex discs.

Fig. 29: Polishing of the COMPONEER.

Fig. 30: Final polishing of the COMPONEER with various brushes.

Fig. 31: The result.

Fig. 32: Details of the result.

Fig. 33: The final result.