Front-tooth restoration to go

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Introduction

Aesthetic considerations are obviously very important when it comes to highly exposed areas, i.e. in the restoration of front teeth. Patients increasingly expect a perfect appearance, which means increasing demand for improved aesthetics. In many cases, this can be difficult to achieve in direct restorative dentistry. The emphasis usually has been on the preparation of restorations that are invisible at normal speaking distance.

Traditionally, dentists used either the established freehand technique to correct the shade and the shape of a tooth or they opted for classic ceramic veneers. Swiss dental specialist COLTENE developed and created an innovative system that gives dentists another option to choose. The direct composite veneering system COMPONEER both improves and simplifies the time-consuming freehand technique for major front tooth restorations (Fig. 1). Polymerised, prefabricated composite–enamel shells can improve the final quality, while their basic anatomical shape allows dentists to work up to 40 per cent more efficiently. The customisable shells are completely free from air inclusion, which improves marginal adaptation. The homogenous material with a thickness of only 0.3 mm bonds 100 per cent to the processing composite.

Different systems

In general, three basic systems are normally used for restoration of front teeth:

- Direct freehand technique with composite;
- Direct CAD/CAM technique (Cerec);
- Laboratory-fabricated veneers.

Large-scale freehand restorations require time, skill and shaping. However, the direct technique is less invasive and more economical, which makes it attractive to many people. Even so, indirect techniques are often used for restorations because they are more likely to be successful. Major problems with the conventional direct technique are difficulties with shaping margins, management of the top enamel layer and anatomical shaping. Because of the nature of the materials microporosities are common, which often means faster discoloration and problems with appearance. The COMPONEER direct veneering system with its combination of improved materials, specially designed equipment and detailed instructions broadens the range of indications for the direct technique. COMPONEER moreover sets new standards for economy and quality.
The basic principles of the freehand technique have not changed. However, the technique has been simplified and improved. The following example shows some of the most important steps.

_Application_

After defining the indication and the diagnostic goal, the teeth that required restoration were defined. In this case the caries was to be treated from canine to canine in the maxilla and the shape, shade and axial tilts were to be corrected (Fig. 2). The enamel shells are available in various sizes and two different translucent shades: a neutral ‘Universal shade’ and a light ‘White Opalescent’ shade, which is more suitable for a youthful mouth. With the appropriate dentine composite positioned behind the shells any desired combination of shades can be created.

The tooth shape is selected with a COMPONEER Contour Guide (Fig. 3). The shape in the Contour Guide is placed over the tooth that is to be restored, with the blue-transparent colour offering an optimum contrast to the selected tooth. The enamel shells can also be test fitted on the teeth or temporarily cemented with uncured composite to assess where and how much the composite veneer shell requires customisation. Corrections that require grinding can also be marked at this stage. A rough disc at low speed without water cooling is the best tool for correcting the shape of the shell. In general, a larger shape is preferred to cover marginal regions and to allow as much scope as possible for customising the shape.

The specially developed holder is ideal for handling the shell (Fig. 4). The label on the primary package can be removed and filed with the patient file for documentation. Dry working is essential for the best results. The classical rules do not apply for preparation. The minimum coating thickness of 0.3 mm means that the surface only requires minimal reduction (Fig. 5). In some cases, the enamel is simply roughened and there is no defined preparation. Etchant Gel S is applied to all enamel and dentine areas for bonding and evenly distributed with the brush. The curing time on enamel is 30 to 60 seconds and on dentine 15 seconds, then the area is sprayed for 20 seconds. In the basic principle, the Total Etch method is used with One Coat Bond, which is easily filled and offers better wetting with a nanohybrid composite. The One Coat Bond is applied evenly on enamel and dentine and left to cure for at least 20 seconds. Then transparent matrices are placed in the interdental spaces to prevent adhesion of the teeth.

The bonded surfaces are pre-cured for 10 seconds. The unique microretentive surface of COMPONEER (2 μm) (Fig. 6) reduces the conditioning on the inside of the shell because additional processes such as grit-blasting and silanisation are not required. One Coat Bond is applied directly with the brush and does not require light-curing. The result in combi-
nation with the fixing composite is a 100 per cent bond, which means that there is only one homogenous coating of composite on the tooth, thereby increasing the strength of the final result and reducing the tendency to discolour. For an appropriate aesthetic success SYNERGY D6 is recommendable, which is ideally matched in shade to COMPONEER. It can also be used with other systems, in which case testing the shade result before use is highly advisable.

If it is necessary to remove fillings first, COMPONEER can be applied with the corresponding dentine mass and filled from the palatal direction after the initial lightcuring. This can also be done for tooth extensions or diastema closure. On the other hand, cavities can be filled beforehand with dentine mass to establish a homogenous base. Enamel mass can be used for shape corrections or simple shading corrections. Too much enamel will make the restoration grey and too transparent. The composite is applied to the side of the composite shell that is to be fixed with a suitable instrument, e.g. the included MB5 spatula (Fig. 7). The composite is also applied to the tooth to prevent air inclusions. Then the COMPONEER is carefully placed in its final position with constant gentle pressure by the placer (Fig. 8).

The placer has been specially developed for positioning veneers. The working tip is a silicone knob, which provides ideal force distribution. For complete front tooth restorations, I recommend starting with the two central incisors. With the shell held in position, large residues are removed and the composite is shaped to match the margins. The light-curing process is not started until the correct position of the veneer has been verified. Then obvious residues are removed or the preliminary contouring is carried out. Finishing and polishing strips can be used for the proximal regions. Flexible discs are the best tools for shaping interincisal angles. Due to its smooth anatomical structure it is possible to individually characterize the surface or to adapt the shape to the face, bipupillary plane or lip line (Figs. 9 & 10). Microbrushes used without water are ideal for the final polishing to achieve the optimum high gloss (Fig. 11). The complete homogeneity of the composite shells means that the final finishing is in no danger of bringing unwanted porosities to the surface (Figs. 12 & 13). A glossy composite surface of the highest quality for longlasting aesthetics is the final result. The COMPONEER, manufactured from high-quality composite, can be considered as aids for shaping. They are primarily used for making the complete anterior region of the teeth more attractive and guarantee an easily achieved and high-quality result. At the same time, they promote efficient working and reduce treatment time by as much as 40 per cent. This is good for the dentist and also more comfortable for the patient.

Conclusion

The innovative composite veneering technique optimises and simplifies restorative dentistry and offers new options for function, economy and aesthetics that benefit both patients and dentists. COMPONEER are more than simple veneering shells, they are a complete treatment system that extends the range of indications from gap closure, extending incisors to the correction of discolouration and quick single tooth restorations.

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