

# Aesthetic layering principle for beautiful anterior restorations

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It is not always easy to obtain aesthetic, natural-looking restorations in a direct restorative procedure using composite: The result is strongly dependent on many different factors such as the material of choice, correct shade selection and the layering technique. The following case report illustrates a simple approach to lifelike composite restorations using a putty index and the aesthetic layering principle.



*Figure 1: Initial situation: The anterior teeth of this patient need an adjustment in colour and form.*

## Patient Case

The 22-year-old female patient came to our practice with the wish to have whiter front teeth. Years ago, the maxillary central incisors of this woman had been endodontically treated and restored following a trauma.

There were two different problematic aspects: On the one hand, tooth 11 (FDI) had a brownish and tooth 21 a greyish shade. On the other, the not completely restored left central incisor had a slightly palatal position, while tooth 22 showed a distal rotation, resulting in a diastema between those teeth (Fig. 1).

## Treatment Plan

The treatment plan was to clean the pulp chambers of both central incisors in the first step, remove the guttapercha and bleach internally with sodium perborate for one week. Afterwards, the correct shade and translucency should be determined. It was planned to create direct composite restorations on the central incisors: A class IV restoration on tooth 11 and an extension of the incisal edge of tooth 21, mainly in order to optically change its position. Furthermore, we decided to create a direct restoration on the left lateral incisor for diastema closure and optical rotation of this tooth. Taking into account the desires of the patient, we opted for an approach with only minimal characterization, without microcracks, and planned to work with a slight translucency in the incisal line.

## Treatment Approach

After endodontic treatment and internal bleaching, but before starting with the preparation of the teeth (Figs. 2 and 3), the occlusion and articulation were checked. In addition, a silicone index was produced using putty impression material. In this context, an adjustment to the central embrasure and the incisal edge was made right away using an instrument with cylindrical nibs and rounded ends (Ash 49).

Subsequently, the existing restorations were removed, the teeth prepared (Fig. 4) and rubber dam was placed for conditioning of the tooth surfaces. In order to create a microretentive surface ensuring high bond strength, the areas of the old composite restorations were sandblasted, followed by etching, priming and bonding (Fig. 5). Mylar strips were used to separate the teeth from each other during the restoration procedure (Fig. 6).



Figure 2: Situation prior to tooth preparation.



Figure 3: Occlusal view of the anterior teeth after endodontic treatment and internal bleaching.



Figure 4: Prepared teeth prior to conditioning.



Figure 5: Situation after sandblasting and etching of the prepared tooth surfaces.



Figure 6: Teeth with mylar strips.

In the first step, the palatal area of the central incisors was built up (Fig. 7). For this purpose, a small amount of enamel mass (3M<sup>TM</sup> ESPE<sup>TM</sup> Filtek<sup>TM</sup> Supreme XTE Universal Restorative, shade A2E) was applied on the silicone index. The index was then placed in the mouth and the restorative material adapted to the tooth with instruments to create a foundation for the restorations.

For the build-up of the dentin core, a layer of Filtek Supreme XTE in the shade A3D was applied (Fig. 8), followed by a layer of material in the slightly more translucent shade A2B. At this stage, it is already decisive to take into account the space required for the labial enamel layer which is also responsible for a natural incisal translucency.

The remaining space was filled with a translucent composite. Prior to the application of the buccal enamel layer consisting of highly translucent composite, some pigments were added for characterization. The desired effect was discussed with the patient, who opted for a precise copying of the adjacent tooth. The characterization was visible through the final layer of composite. Its high translucency also ensured a glass-like enamel effect.

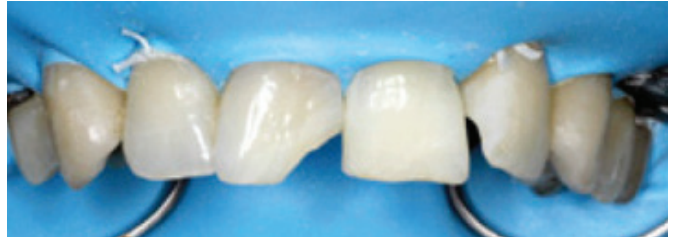


Figure 7: The palatal walls of the restorations are created with a thin layer of composite.



Figure 8: Situation after build-up of the dentin core.

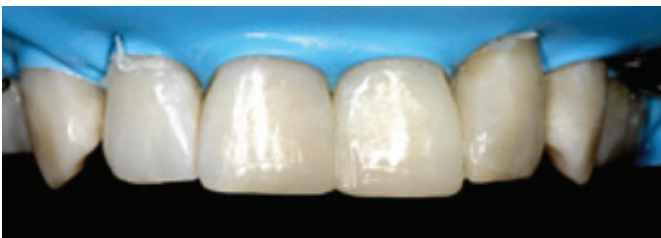


Figure 9: Result of the restoration procedure.



Figure 10: Harmonic integration into the overall picture.

In order to ensure highly aesthetic results, special attention should be paid to the finishing and polishing process. In the present case, a diamond veneer burr was used for the buccal contour. For shaping of the incisal edges, 3M<sup>TM</sup> ESPE<sup>TM</sup> Sof-Lex<sup>TM</sup>

Finishing and Polishing Discs were employed and for the approximal areas, abrasive strips turned out to be well-suited. The restorations were subsequently polished with polishing cups and finally a buff disc with aluminium oxide polishing paste (Enamelize<sup>TM</sup> Polishing Paste, Cosmedent) was used to obtain a natural gloss. For the creation of a smooth transition of the composite material to untreated and non-covered enamel, a scalpel can be a useful tool. Figure 9 shows the result immediately after finishing and polishing.

Well-integrated, harmonic restorations with a symmetric appearance and a uniform gingival margin are obtained (Fig. 10). Figure 11 shows the result nine months after the treatment: The incisal edge of the anterior restorations follows the lip line, so that a natural look is achieved.

## Conclusion

Direct composite restorations created according to the aesthetic layering principle by use of the putty index technique can be highly aesthetic. In my view, Filtek Supreme XTE Universal Restorative is extremely well-suited for the production of life-like anterior restorations using this technique. The material is easily applied into the index and sculpting of the distinct layers is possible without difficulties. Due to the hardness of the material, it is possible to polish the surface structure to a high-gloss.



*Figure 11: Result after nine months: The anterior teeth are symmetrically shaped.*

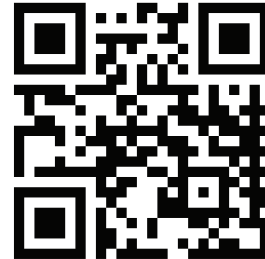
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