

The three pillars of aesthetics

Authors_ Dr Julio Reynafarje Reyna & Dr Gustavo Watanabe Oshiro, Peru

_How often do we encounter heavily stained anterior teeth in dental practice? Nearly every clinician has come across this problem at least once. In such cases, an invasive approach is usually required, i.e. the teeth need to be prosthetically restored with ceramic veneers or even crowns. However, since the concept of "minimal invasiveness" has attracted quite a following recently, it might be a good idea to start rethinking our ways of dealing with stained anterior teeth. Today's state-of-the-art composites enable dental professionals to use minimally invasive treatment protocols and achieve outstanding restorative results.

aspects: shape, shade and surface texture. These are the three indispensable pillars without which the aesthetic restoration of anterior teeth would be impossible. However, in most cases attention is only paid to one of the aspects, namely shade. Why is this so? This article will show how all the three elements can be taken into account in order to achieve an aesthetic outcome.

_Preoperative situation

A female patient presented to our dental practice with a stained central incisor (Figs. 1 & 2). She refused to have the tooth prosthetically restored with ceramic material and expressed her desire to receive minimally invasive treatment. We decided to apply a direct restorative technique using a

Training courses held on the subject of aesthetic dentistry usually focus on three basic

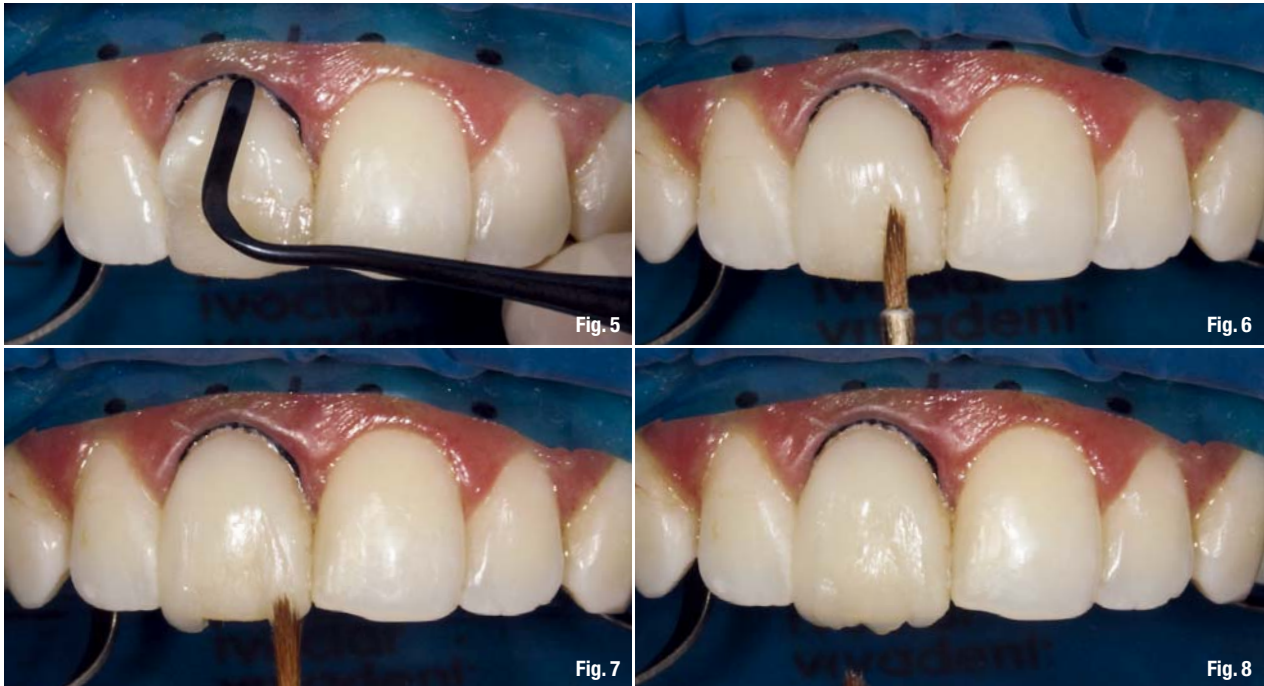
Fig. 1 _Initial situation: severely stained tooth #11.

Fig. 2 _A close-up of the upper anterior teeth shows that the aesthetic appearance is poor.

Fig. 3 _Situation after minimally invasive preparation of the tooth.

Fig. 4 _The adhesive was brushed onto the tooth structure for 10 seconds.





state-of-the-art composite resin (IPS Empress Direct, Ivoclar Vivadent).

Initial steps and tooth preparation

As the degree of tooth discolouration varied from mild to medium, a preparation depth of 0.3 to 0.5 mm was sufficient. Following minimally invasive preparation, a retraction cord was placed to prevent contamination of the working field with sulcus fluid (Fig. 3). When fabricating layered restorations, the application of the adhesive is the step most prone to error. Therefore, it is advisable to use an adhesive system that is easy-to-use, but provides reliable adhesion.

In the case presented, we decided to use Excite F adhesive (Ivoclar Vivadent). After having conditioned the enamel with phosphoric acid gel (Total Etch, Ivoclar Vivadent) for 30 seconds, the adhesive was brushed onto the tooth structure for 10 seconds (Fig. 4) and blown to a thin layer with a weak stream of air. Subsequently, the adhesive layer was light-cured for 10 seconds with the bluephase curing light using the low power mode. Then, the first composite layer was placed. In order to achieve optimum masking, we chose to use the opaque B2 shade from the IPS Empress range of dentine materials.

Layering

Mimicking the shape and shade of natural teeth is a huge challenge and requires considerable attention to detail. In order to achieve the

same reflections as those of natural teeth, the dentine shade was applied in the form of an arch. As the composite material readily adapted to the preparation margins, only light pressure with the modelling spatula (Fig. 5) had to be applied.

The composite increment was deliberately moulded with a slight taper towards the centre of the tooth. In this way, an invisible transition to the subsequently placed increments was ensured (Fig. 6). Then, the composite was light-cured with the bluephase curing light for 15 seconds using the soft start mode.

Fig. 5_In the gingival portion, composite was applied in an arch shape to follow the gingival outline (B2 Dentine).

Fig. 6_The composite was adapted to the natural tooth structure.

Fig. 7_Placement of composite in the proximal portion of the tooth. An “arch” was moulded in this region too.

Fig. 8_The A1 Dentine shade was chosen for the central portion of the tooth (mamelon area). The incisal edge was covered with translucent opalescent material.

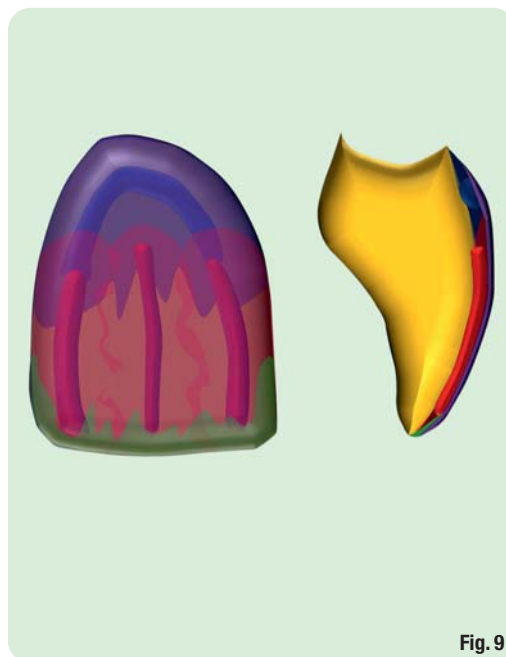


Fig. 9 Layering scheme showing the masking composite layers.



Fig. 10 Application of the enamel layer (B1 Enamel).

Fig. 11 Final polishing of the restoration with the Astropol system.

Figs. 12 & 13 The final result: aesthetic reconstruction of tooth #11 involving minimum loss of tooth structure.

After having moulded the gingival "arch", which outlined the gingival margin of the veneer, the proximal portions were moulded in a similar fashion. As each layer was thinned out, the different shades and shapes blended well into each other (Fig. 7). Once the mamelon-type increment had been placed in the centre, the discolouration was completely masked. The A1 Dentin shade was used in both the proximal and central areas.

To copy the appearance of the adjacent teeth, a translucent opalescent material was applied along the incisal edge. Finally, the entire composite build-up was covered with a layer of IPS Empress Direct B1 Enamel as indicated in the layering scheme (Figs. 8–10).

Finishing

In order to reproduce the morphology and anatomy of natural teeth closely, just as much effort should be applied in finishing the restoration as in layering it. Following polymerisation, attention was paid to creating an optimal surface texture. First, the restoration was pre-contoured with fine-grit burs to remove possible composite excess. Fine-grit instruments provided the advantage of allowing an optimal shape to be achieved in a controlled fashion. Moreover, the inadvertent creation of undesirable retentions or depressions was avoided. After pre-contouring the restoration, finishing and polishing were performed using the Astropol system (Ivoclar Vivadent; Fig. 11).

Conclusion

With state-of-the-art composites such as IPS Empress Direct, natural-looking restorations can be created. Easy-to-use materials in combination with individual layering schemes enable the employment of minimally invasive treatment procedures, even in cases in which indirect restorations would normally be indicated. By selecting a suitable restorative and following the treatment protocol described in this article, the three pillars of aesthetics can be taken into account in the restoration of anterior teeth (Figs. 12 & 13).

contact

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Dr Julio Reynafarje Reyna
Jr Grimaldo del Solar 231,
Office 101
Miraflores, Lima 18
Peru
cda_peru@live.com



Dr Gustavo Watanabe Oshiro
Miguel Angel 220
San Borja, Lima
Peru
gustavowatanbeo@hotmail.com



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COMPREHENSIVE DENTISTRY USING DIGITAL IMPRESSION TECHNOLOGY



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Julia E. Wehkamp, C.E. Director, Dental Tribune Study Club
Phone: (416) 907-9836, Fax: (212) 244-7185
E-mail: j.wehkamp@DTStudyClub.com