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Direct resin veneering with Quadrant Anterior Shine

There is no such thing as a universal super composite. Otherwise there would not be such an enormous selection and there would not be a constant stream of new products on the market. This is due to the composition and therefore the optical and mechanical properties of dental tissues and composite materials. By definition, enamel and dentine cannot be imitated exactly in a composite, as the structures are too different. Nevertheless, in their own way, composite manufacturers do, succeed, in approaching the major properties of dental tissues.

A natural tooth consists of enamel and dentine, 2 materials with very different properties.

Enamel acts like a frosted glass window, through which the dentine is visible..

Part of the light that strikes the tooth is reflected; the rest is refracted by the enamel. Part of this is absorbed by the enamel, the remaining light reaches the dentine and the majority of it then leaves via the enamel (fig. 1.a.). In the cervical region the enamel layer is thin, so this is where the warm colour of dentine can be seen most clearly. To the layman, the element appears yellower and darker there, due to higher colour saturation and a slightly lower value (brightness) than in the central area. In the middle of a tooth, the enamel layer is thicker, so the colour of the underlying dentine shows through less clearly and the element appears lighter and less yellowish than in the cervical region: the colour saturation (chroma) decreases and the value increases (fig. 1.b.).

In regions where there is no underlying dentine, at the incisal edge in young teeth, the enamel is a kind of transparent. The incisal edge then appears darker and more bluish than the rest of the tooth: the colour saturation is minimal and the value low.

Every composite has its strong and weak sides. It is very difficult to copy the mechanical and optical properties of enamel and dentine with composite material, which after all, consists of a resin component and glass particles.

For treating a wide range of clinical cases, the practitioner should have more than one single brand of composite to his disposal to benefit from the various advantages of the different brands in different situations. Knowledge of the properties of composites is, of course, essential.

It always takes some time to get used to the individual characteristics of a new composite. There is a learning curve for each new material. The material is too quickly blamed if the result is not what was expected while, with some more experience, good results can be achieved with various materials. One should therefore not be tempted to change composite brands too quickly, but take the time to gain experience, something that does not, incidentally, apply exclusively to composites.

A case:

A 41-year-old woman asks for cosmetic treatment of tooth 22. This tooth is positioned so far palatally that it is placed in cross-bite, (without occlusal interferences).

Tooth 22 is, as it were, in the shadow of the neighbouring elements and therefore appears darker.

After initial periodontal treatment some years ago, there has been some recession of the marginal gingiva. This gingival recession further emphasises the fact that tooth 12 is narrower cervically than tooth 22, partly because of the dark triangles formed by the dark background of the buccal cavity (figures 2.a to 2.c).

The patient does not wish any orthodontic treatment, so the only treatment option is to creatively mask the shape and position of teeth 12 and 22. After making a mock-up with composite, it is decided in consultation with the patient, to build up tooth 22 in labial direction by means of a direct composite veneer restoration. Tooth 12 will be built up very locally in proximal direction in order to mask the dark spaces.

A number of subjects need to be taken into account in treating this case:

- A shape has to be realised that produces a harmonious dental arch
- Tooth 22 should be shaped in such a way that it is in line with the dental arch
- The colour build-up of the restorations should match the adjacent teeth and should not attract attention under different lighting conditions
- The restorations should be finished in such a way that light reflections match those of the other teeth in the arch
- There should be no interference in occlusion or articulation

For this case, Quadrant Anterior Shine (Cavex) was opted for. The choice was partly determined by the following features of Quadrant Anterior Shine:

- excellent polishing properties
- easy to process in layers
- good fluorescence properties



First of all, the incisal edge of tooth 22 is ground just far enough to prevent the incisal edge protruding behind the lower front teeth, without exposing any dentine.

A Contour Strip® (Ivoclar-Vivadent) is applied as a matrix interdentally and cervically. Cervically, the band produces an angle of approximately 45 degrees to the length axis of the element. This makes it easy to produce a cervical contour suggesting that the built-up element is emerging in a natural way from the gingiva (fig. 3.a). In principle, the Contour Strip® should not be secured by wedges, but by a transparent bonding material. In this case, it was not possible to secure the band sufficiently without using wedges.

To avoid making a dent in the composite approxinally, the mesial wedge is put in from the palatal side.

After a 3-step adhesive procedure (etching, priming, bonding), using Quadrant UniBond (Cavex), several layers of various shades of Quadrant Anterior Shine are applied and polymerised subsequently.

Shade OA2 was used for the first layer (see fig. 2.a). The reference OA2 implies that it is a dentine shade and more opaque than the enamel shades, corresponding with the Vita colour A2. This layer is necessary to prevent the thick restoration becoming too translucent and therefore too greyish.

Shades A3 (cervical area), A2 (central area) and D3 (incisal area) are then successively applied in overlapping layers, as can be seen in figures 3.a to 3.2.d.

A3 ensures colour saturation (chroma) in the cervical area, A2 is less saturated and has a higher value and D3 is even less saturated and has a lower value than A2.

Quadrant Anterior Shine can easily be finished with rotary instruments. The contouring can be easily performed with fine and extra-fine diamond finishing burs. The final finishing can be completed with multifluted carbide burs in a red handpiece. The diamond burs act in a way, as a grater, leaving behind scratches in the composite (and dental tissue!). Carbide burs act as a slicer, planing the scratches produced by the diamond particles (figures 3.a and b). The finishing touch is easily performed by polishing with the finest Soflex discs or polishing rubbers.

The final result of the veneer restoration of tooth 22 is shown in fig. 4. The reflections of the camera flash are natural and match those of the adjacent teeth. The colour is in harmony with the adjacent teeth the tooth looks natural. Having the right amount of fluorescence, the restoration will not be noticed in blacklight (figures 6.a and 6.b.)



Fig. 1.a.
Effects of light striking a section of an upper incisor

Fig. 1.b.
The colour of the underlying dentine is most easily determined through the thin layer of enamel in the cervical area. Enamel is not supported by dentine at the incisal edge.



Fig. 2.a. Frontal view of patient with tooth 22 positioned palatally and moderate gingiva recession



Fig. 2.b. View from the right. Tooth 12 shows cervical constriction and interdental papillae are flattened



Fig. 2.c. View from the left. Tooth 22 is wider than tooth 12 and is in cross-bite



Fig. 3.a. A layer of dentine composite is applied, shade OA2



Fig. 3.b. A layer of composite in shade A3, which continues to the cervical outline, ensures the warm, yellowish aspect in the cervical area



Fig. 3.c. A thin layer of A2 is applied, overlapping, further towards the incisal edge, which provides the basic colour in the central area (less colour saturation, slightly higher value)



Fig. 3.d. Finally, D3 is applied in over lapping layers to produce less saturation towards the incisal edge and provide a slightly bluer aspect (again slightly less colour saturation and lower value)



Fig. 4.a. An example of composite restorations on teeth 21 and 22, which have been contoured using fine diamond finishing burs



Fig. 4.b. The same restorations as in fig. 4.a, but now finished using a multifluted carbide bur



Fig. 5.a. Final result of a veneer restoration on tooth 22, immediately after treatment. Light reflections on element 22 are symmetrical and parallel with adjacent teeth.



Fig. 5.b. Close-up of a veneer restoration on tooth 22. The surface texture structure is visible more clearly.



Fig. 6.a. Two examples of full composite crowns made from Quadrant Anterior Shine, created on phantom teeth



Fig. 6.b. The same composite crowns illuminated by blacklight. The degree of fluorescence corresponds with that of the natural teeth.