

PREVIEW TECHNIQUES FOR PLANNING AESTHETIC RESTORATIONS: PART 1

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As a general rule, aesthetics and function must be monitored and restored simultaneously when significant aesthetic alterations are performed. Since there is some subjectivity associated with incisal edge determination, additional diagnostic tests are often required during treatment, with the patient's input, for actual visualisation of the final incisal edge position. They include for example, computer imaging, the addition of composite resin, diagnostic waxing, provisional restorations and trial units. Several preview techniques devised before setting the anterior guidance in the wax-up are especially useful when it is necessary to add length, add fullness or add length and fullness.

Preview increase in display and length

Initially, it is best to generate length additions directly in the mouth so that both the patient and the clinician mutually agree on the desired length (Figures 1 and 2). To that effect, composite resin should be directly added to the anterior teeth and light-cured in place. Then, an alginate impression registering that length should be made and poured by the laboratory. The dental ceramist now has a model with a known length and may proceed to waxing full contours optimising proportions and arrangement and refining the proper anterior guidance. The provisional restorations created from this waxing will allow us to verify the new length a second time and proceed to any minor refinement. In this approach, the length is checked twice, which allows us to confidently complete the final restorations with the proper length. The preferred rule here is that 'length is generated by the clinician'.

Preview increase in fullness only

It is best to delegate alterations in fullness to the dental technician, as it would be a very time-consuming proposition intraorally to shape the new facial aspects to new esthetic contours. When the incisal third is retrusive (Figure 3), it should

be waxed in a more facial position (Figure 4) perpendicular to the occlusal plane. The next step involves making an accurate silicone impression of the wax up. The wax-up in turn should be loaded with a bis-acryl composite temporary material and left to polymerise in the patient's mouth as part of the initial esthetic workup (Figure 5). Thus, a new preview can be produced intraorally in less than five minutes over six to ten teeth. The clinician needs to verify that the new fullness is esthetically pleasing and also in harmony with the lower lip using the F and V test (Figure 6). The preferred rule in this situation is that the dental technician generates fullness.



Figure 1: Composite mocks bonded for length preview



Figure 2: Completed all-ceramic restorations

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Figure 3: Incisal edges are retrusive and will be restored more buccally



Figure 4: Wax up preserving length and restoring the incisal edges to the buccal aspect



Figure 5: The impression of the wax-up is filled with a composite temporary material and inserted over the unprepared teeth to evaluate the aesthetic possibilities



Figure 6: The new incisal edge position should be evaluated against the lower lip for phonetics and comfort



Figures 7 and 8: Orthodontic treatment in progress - it was decided to open mesio-distal spaces for improving proportions



Figures 9 and 10: As the spaces were opened up, new composite resin was added in order to visualise the desired proportions



Figures 11 and 12: Typical changes visualised in this composite mock-up involve increase in length and increase in fullness. Note that the axes of several teeth are straighter and less convergent

Preview of proportions, display and length with orthodontic treatment

When all the teeth in the aesthetic zone are present, one frequent strategy with diastema closure is to add composite restorations on demand as the orthodontic treatment proceeds in order to assist the orthodontist in the final finishing stage prior to removal of the brackets (Figures 7-10).

Preview increase in display, length and fullness

When significant changes are anticipated, the clinician should review with the patient, the aesthetic goals which often include an increase in length and fullness. Therefore, the preview will be structured as a combination of the two factors. The clinician will preview the length first intraorally with direct composite mocks polymerised over the incisal edges. Then, an alginate impression registering that new length should be made and poured by the laboratory. The dental ceramist using that known length should then wax the

incisal third perpendicular to the occlusal plane and will refine all teeth contours esthetically and functionally. This new wax-up will also incorporate any gingival corrections required according to the esthetic analysis. The wax-up is then tried in the patient's mouth using the silicone impression filled with the bis-acryl composite temporary material left to polymerise for approximately five minutes as described above (Figures 11 and 12).

Preparation guide

In a recently conducted survey, 67.6% of polled practitioners preferred minimum and conservative veneer preparations mostly confined to enamel, whereas the remainder cut their preparations into the dentin as needed. Several methods have been advocated to create precise reduction guide during porcelain veneer preparations so that the preparation remains conservative and there is maximum enamel preserved. This is especially useful when the wax-up is mostly additive and aims



figure 13: Veneer preparation using the composite restorations as a depth guide



Figure 14: Using this technique, the veneer preparations incorporate maximum areas of enamel and yet provide sufficient space for the ceramist



Figures 15 (left) and 16 (right): Completed veneer restorations (Ceramist: Mr. Aki Yoshida)

to add length and fullness is selected areas. Silicone indexes have been described with great success and the composite preview portrayed above was described by Gurel as a key part of this calibration process. In this method, the composite preview generated from the wax-up is placed intra-orally on the same day as the preparations are to be made. The veneer preparations are made directly on the composite, essentially treating composite and tooth as one unit (Figure 13). Any residual composite excess can be eliminated with a spoon

excavator on completion of the preparations. Besides the main advantage of providing conservative and well-controlled preparations (Figure 14), this technique also results in a uniform thickness of porcelain in relation to the final restorations, with maximum aesthetic control (Figures 15 and 16).

Acknowledgement

Figures 1 and 2, are reproduced from the textbook by Chiche G., Aoshima H...: Smile Design. Quintessence Pub. Co. Inc. Chicago 2005.