

AESTHETIC PREVIEWS FOR GINGIVAL ALTERATIONS

GERARD J. CHICHE

There are three techniques that allow dentists to plan gingival levels and to communicate these with the periodontist: The simplest technique is to simply draw the new desired gingival outlines on the diagnostic model. A decision made from common sense is used, using adjacent landmarks and anatomical average lengths such as 10-11mm for central incisors. A model with the new designed levels maybe sufficient for the periodontist during surgery by measuring the distance from the incisal edge on the model or the buccal cusp tips to the new gingival level and transpose that measurement to the mouth. The bone level will then be resected accordingly. When increased fullness of the bicuspids is planned to fill the buccal corridors, it may be necessary to elongate the bicuspids surgically so that they may emerge progressively to the buccal aspect in a natural fashion. In this example (Figure 1), the primary maxillary canine needs to be extracted for placement of an implant, and the fullness of the bicuspids will be augmented buccally. Therefore all the gingival levels will be positioned apically from canine to first molar. After the desired gingival outlines are drawn on the model, a clear vacuum formed template was adapted over the model (Figure 2). It was carefully cut with curved suture scissors to follow the new gingival outlines (Figure 3). The periodontist will use the template during surgery to check the new gingival levels, which will alleviate the need to make measurements during surgery.

With a mock composite build up, an alternative to drawing the desired gingival levels on the model is to generate them directly in the mouth. This technique requires additional chair time but it is extremely valuable to demonstrate to the patient the aesthetic possibilities generated by crown lengthening. A hybrid composite material (Figures 4 and 5) is applied across the gingival aspect of the maxillary central incisors starting with the central incisors and proceeding to the laterals and canines and finally, as necessary, to the bicuspids. As the new length is generated, the resulting proportion is checked and each time the new composite level is deemed satisfactory in relation to the proportion, it is immediately light cured before proceeding to the next tooth.

*Dr. Gerard J. Chiche
Helmer Professor and Chairman of the Prosthodontics Department at
Louisiana State University, School of Dentistry, New Orleans LA.*



Figure 1: Preoperative aspect prior to crown elongations.



Figure 2: Drawing gingival outlines on the diagnostic cast.



Figure 3: Vacuum-formed template trimmed to the desired gingival levels.



Figure 4: Increase in length is planned for aesthetic improvement.



Figure 5: Hybrid composite material.



Figure 6: Hybrid composite material applied and cured across the gingival levels for precise preview of the prospective elongations.



Figure 7: Model replica of the direct composite mocks.



Figures 8 and 9: Vacuum-formed template trimmed to the desired gingival levels.



Figure 10: Preoperative aspect. Increase in length and fullness are planned along with crown elongations.



Figure 11: Wax up incorporating all planned corrections.

This practical technique can be undertaken by the clinician who is expected to build speed over time. The composite should be built in increments, so that there is no need to shorten the composite with a bur along with the potential of lacerating the tissues. An important tip to remember when generating the new level of the maxillary canine is that in general its incisal-gingival length is similar to that of the central incisor. Experience demonstrates that aesthetically pleasing

maxillary canines are about the same length as the central incisors minus 0.5mm. This relation provides useful guidance in the absence of adjacent landmarks or when a brand new composition is created. Once the patient and the clinician are satisfied with the outcome (Figure 6), an alginate impression should be made with the composite additions in place and model poured.

The gingival levels usually need to be lightly redefined on the

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Figures 12 and 13: Composite material flowed into an impression of the wax-up and seated over the unprepared teeth. The new gingival levels can be visualised and shown to the patient.



Figure 14: Clinical aspect following crown elongations.

model with a sharp instrument and they also may be marked with a pencil for ready identification (Figure 7). From there the restorative dentist and the periodontist may elect to either proceed with the model and use measurements as discussed above, or preferably use a clear template (Figure 8) which is

carefully scalloped and trimmed to the desired gingival levels (Figure 9).

In the third technique, the visualisation of the new gingival levels is delegated to the dental technician, usually as part of a comprehensive aesthetic wax-up. The new elongated gingival levels are waxed to their most ideal position along with the new design and proportions. As previously described, this will be translated into a bis-acryl composite temporary material preview in the mouth. In the following example, a brand new smile design needs to be visualised including increased incisal display, increased length, increased fullness of the incisal thirds, improved proportion of the central incisors, improved tooth-to-tooth proportion, and improved gingival levels of the right maxillary lateral incisor and canine. When the study models, the wax-up and its duplication are meticulously handled at every step, the new gingival levels should be very clearly defined in the composite preview and the excess material should be extremely thin and translucent: this is the typical sign that the wax-up is being very precisely transferred to the mouth (Figures 10-13 are in collaboration with Dr. D. Fat).

A general rule underlying all the above techniques is that the gingival levels are predicated from the incisal position that in turn is set by the desired display against the upper resting lip. In other words, the rule is to treatment-plan from the incisal edge up as the incisal levels set the gingival levels. Therefore, it is preferable whenever possible to set the desired incisal edge position prior to crown lengthening in order to alleviate any possible confusion. While the guides described previously, accurately determine the desired gingival levels for the periodontist, it is strongly recommended to predetermine the incisal edge position with bonded composites, or provisional restorations or with simple reshaping of the anterior teeth. In the following example, it was deemed following crown lengthening (Figure 14) that the proportions of the final veneers might not be acceptable, especially for the central incisors.

Optimising short-fat proportions is accomplished in general either through an increase in length or through a decrease in width. In this example, a wax-up was fabricated following the

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Figures 15 and 16: Central and lateral incisors veneer preparations are narrowed distally for optimum proportion control.



Figure 17: Silicone key used as an aid to the proximal stripping.



Figure 18: Completed porcelain veneers

surgery and it was determined that narrowing the width of the anterior teeth would be the option of choice and should be accomplished through a stripping technique: the veneer preparations are first completed in a conventional manner, after which the distal aspects of the central incisors are reduced with a diamond strip or more efficiently with a diamond disc (Figure 15). Obviously this technique is not necessary if full crowns had been considered, however porcelain veneers were deemed the most conservative option for the patient. According to the wax up, it is determined if the lateral incisors can accommodate the new increase in width or should be narrowed likewise with a diamond disc (Figure 16).

Finally the canines veneers will be widened mesially, which should not be too detrimental since only their mesial aspect is visible when facing the patient.

Simply stated, this technique is based on narrowing all four incisors on their distal aspect to give the dental ceramist control of the proportions. Upon completion of the wax-up in the laboratory, a silicone matrix capturing the incisal third of the wax-up was fabricated and positioned during the preparations to serve as a guide for the amount of required distal reduction of the incisors (Figure 17). The final porcelain veneers were completed with optimum proportions (Figure 18).