The Management of Gingival and Esthetic Problems: A Clinical Case

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Current dental practice very often requires the clinician to create esthetic illusions that can be quite demanding. Undoubtedly, the ideal treatment plan usually incorporates some esthetic procedures. To achieve optimal results, the relationship between the surrounding soft tissue and the emerging crown form should be carefully considered. Weisgold reported on the relationship between the gingival margin and the cervical third of the crown.[1] In this case report, provisional crowns are fabricated with enough tissue support to provide for an optimal crown-gingival interface.

Clinical Case

A 25-year-old dental student presented to the university dental clinic. The patient's chief complaint was that the crown margins of teeth Nos. 7 through 10 looked gray. In addition, the gingival tissues bled easily when she brushed the area and the shade of her teeth was also unacceptable.

Diagnosis

The crown margins were found to be less than adequate, with the cervical thirds of the crown margins undercontoured in the subgingival areas. Weisgold detailed subgingival undercontour as being thin-scalloped periodontium and thick-flat periodontium.[1]

Two characteristics of the thin-scalloped periodontium are that, initially, there is little or no gingival reaction, although eventually, the gingival margin may become "rolled" and slightly inflamed or may give the appearance of "creeping" incisally. The latter phenomenon will most likely be the result of the tissue not being supported by the subgingival contour. Therefore, the tissue flattens out, giving the appearance of the gingival margin moving incisally.

Additional characteristics of the thick-flat periodontium are that, initially, there is little or no gingival inflammation, although eventually, the tissues may become highly reddened, have a sponge-like appearance, and usually will be positioned more incisally on the crown.

Treatment Plan and Clinical Procedure

After removing the old crowns, the highly inflamed gingival tissues were found

Abstract: *The coordinated management of gingival and esthetic problems is important in dentistry. In addition, the most difficult variable to control in the treatment of anterior esthetics is the soft tissue. This article discusses the relationship between the surrounding soft tissue and the emerging crown form. The authors introduce a soft-tissue index model technique that will help the technician in fabricating the final crown with a form similar to the provisional. In this case report, provisional crowns are fabricated with enough tissue support to provide for an optimal crown-gingival interface. The present case demonstrates how to manage the gingival margin in the provisional stage and how to transfer the provisional and soft tissue to the laboratory model.*

Figure 1—The pretreatment view reveals the unacceptable tooth shade as well as the gray crown margins of teeth Nos. 7 through 10.

Figure 2—The highly inflamed gingival tissues bled easily.

Figure 3—Properly contoured provisional crowns were fabricated.

Figure 4—After 1 week, the provisional crowns were removed and an overall improvement in gingival health was noted.

Figure 5—Sounding of the sulci revealed a measurement of 4 mm from bone level to labial gingival margin for tooth No. 8.

Figure 6—Sounding of the sulci revealed a measurement of 3 mm for tooth No. 9.

to bleed easily (Figures 1 and 2). The teeth were prepared again and the carious material was removed. The properly contoured provisional crowns were then fabricated (Figure 3). After 1 week, the provisional crowns were removed. At this time, an overall improvement in gingival health was noted (Figure 4). The gingiva was then analyzed to determine if the biological zone had been compromised.[2,3]

The next step in this case was to evaluate the symmetry of the gingival margin. The clinical crown of tooth No. 8 was found to be shorter than the clinical crown of tooth No. 9. Sounding of the sulci from the bone level to the labial gingival margin was then performed for both teeth.[4] Tooth No. 8 revealed a measurement of 4 mm and tooth No. 9 revealed a measurement of 3 mm (Figures 5 and 6).

Generally, the biological width measures approximately 3 mm (ie, 1.07 mm of connective tissue attachment, 0.97 mm of junctional epithelium, and 0.69 mm of sulcus). A gingivectomy was then performed and 1 mm of soft tissue was excised from tooth No. 8 (Figure 7). Ten days after the gingivectomy, the clinical crown of tooth No. 8 was still found to be

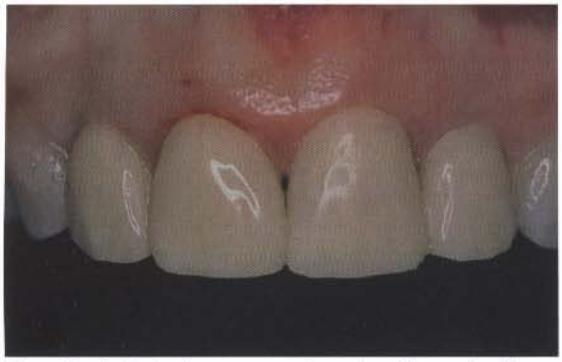

Figure 7—A gingivectomy was performed and 1 mm of soft tissue was excised from tooth No. 8.

Figure 8—Ten days after the gingivectomy, the clinical crown of tooth No. 8 was still longer than tooth No. 9 and the color of gingival margin was dark.

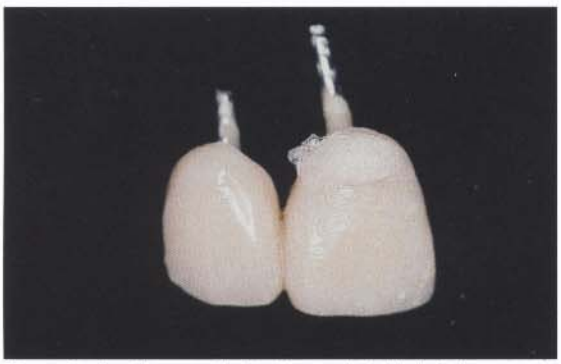

Figure 9—Acrylic was added to the cervical third of the provisional crown of tooth No. 8.

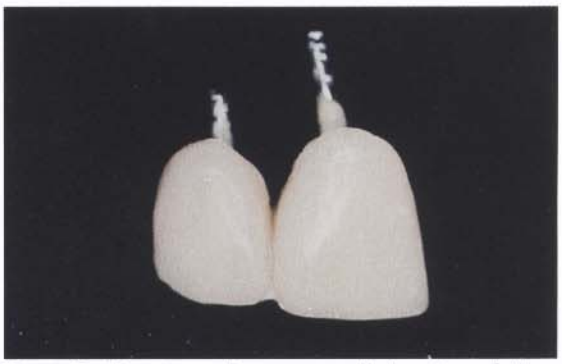

Figure 10—The extra acrylic was removed followed by polishing.

Figure 11—After 2 weeks, the tissue appeared stable and healthy.

Figure 12—Cast gold post cores were fabricated for teeth Nos. 7, 8, and 10 after endodontic re-treatment.

longer than the clinical crown of tooth No. 9, and the color of the gingival margin was dark (Figure 8). At this point, acrylic was added to the cervical third of the provisional crown (tooth No. 8) until the soft tissue returned to a healthy pink color (Figures 9 and 10). The extra acrylic was removed and the crown was polished. In some circumstances, this procedure may need to be repeated a number of times until the tissue is stable. In addition, the only way to test the crown anatomy is by adding or subtracting the provisional crowns. After 2 weeks, the tissue appeared stable and healthy (Figure 11). Endodontic re-treatment was performed for teeth Nos. 7, 8, and 10 and cast gold post cores were fabricated (Figure 12).

After endodontic treatment and fabrication of the post cores, whitening was performed on the maxillary and mandibular teeth to improve the shade using Colgate® Platinum Overnight®. After that step, an impression of the maxillary anterior teeth was taken and a soft-tissue index model was

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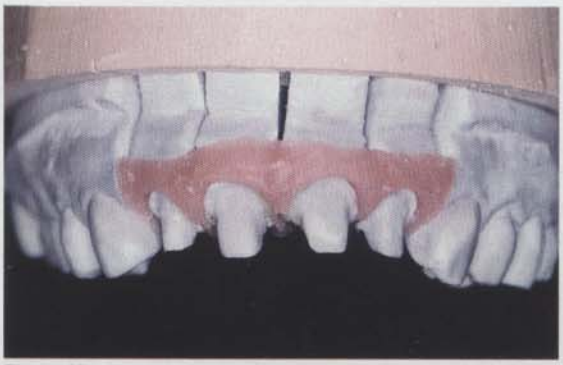

Figure 13—The soft-tissue index model without the provisional.

Figure 14—The soft-tissue index model with the provisional.

Figure 15—The right lateral view demonstrates the emergence profile.

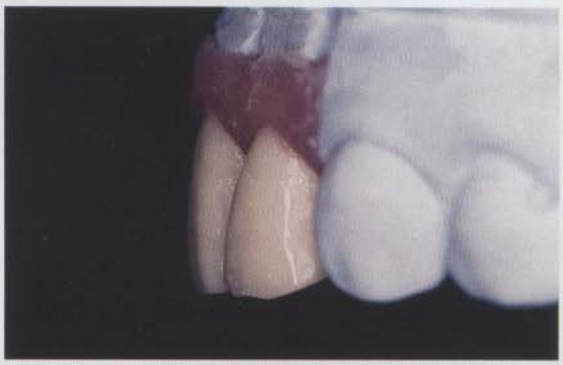

Figure 16—The left lateral view demonstrates the emergence profile.

Figure 16—Try-in of the Captek™ castings.

Figure 17—The final restorations.

poured (Figures 13 through 16). The purpose of the index model was to transfer the soft-tissue profile and demonstrate to the technicians the contour of the cervical thirds. In this way, the intended positioning of how the crowns should support the soft tissue can be ensured.

A try-in of the Captek™ castings[b] was accomplished and found to be acceptable (Figures 17 and 18). A try-in of the final restorations was performed before staining and glazing. The final crowns were then inserted. Figures 19 and 20 demonstrate the crowns at 6 months postinsertion.

[b]Captek™ division of Precious Chemicals, Inc, Longwood, FL 32779; (800) 921-2227

A comparison of the original appearance (Figure 1) with the final appearance (Figures 19 and 20) reveals firm and healthy tissue. In addition, the shading of the final crowns has been significantly improved.

Conclusion

The most difficult variable to control in the treatment of anterior esthetics is the soft tissue. In this case, the provisional restorations were fabricated to successfully provide tissue support as well as improve the anterior esthetics of the patient's dentition.

Because many of today's patients are cosmetically oriented, esthetic reconstruction is a

Figure 19—The crowns postinsertion.

Figure 20—The crowns 6 months after insertion.

very important issue in the modern dental practice. Usually, with proper treatment planning, a predictable esthetic result can be achieved. To reach the patient's goals, the anatomy of teeth and the relationship between the soft tissue and the crown need to be understood. Of all the phases of treatment, the provisional phase is the most important for evaluating the soft-tissue response before taking the final impressions.

The soft-tissue index model technique is an excellent approach for communication between the dentist and the technician.

References

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