Prosthetic Gingival Reconstruction in the Fixed Partial Restoration

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Alternatives to restore defective and deficient edentulous spans should include prosthetic gingival restoration as an integral part of an overall esthetic reconstructive option in the decision-making process. To reestablish natural crown ratios and natural gingival profiles in complex cases, artificial gingiva restorations can reduce the necessity of technique-sensitive surgical procedures that depend on the individual pattern of biologic repair, thereby simplifying and reducing the time and cost of treatment.

Aiming to fabricate proportional tooth form and an ideal anatomy without artificial gingiva, the implant team may undertake bone and gingival grafting to try to return vertical volume to the ridge. In many instances, even when the surgical procedures are essentially successful, they may not completely resolve the esthetic dilemma. Even when the height of the ridge is recovered, it can still be very difficult to reestablish optimal papilla form.

Historically, prosthetic gingival restoration has been underused in partially edentulous cases. Initial attempts were aimed solely at masking the patient’s existing tissue loss without showcasing the artificial gingiva of the restoration because of the obvious esthetic limitations of the prosthetic work executed. When comprehensively understood and correctly planned, artificial gingival restorations can reestablish predictably harmonious anatomy to the lost gingival tissue, reproducing the color, contour, and texture of the patient’s gum line.

Prosthetic gingival restoration requires additional theoretic and technical development of the technician so that he or she can execute these restorations with harmony, balance, and continuity of form between the patient’s gum and artificial gum. The integration of the color of natural and artificial tissue must be planned to minimize the visibility of this junction, restore the asymmetry of the gingival architecture, and replace papilla form.

The tissue loss that occurs in cases in which prosthetic gingiva is indicated usually makes it very difficult to create an adequate tooth arrangement and the correct application of the individual anatomy of each tooth without using artificial gum.

CASE PRESENTATION

History

The patient presented having had, 10 years prior, osseous and soft-tissue grafts, followed by implant placement (Figure 1) with an alumina crown on tooth No. 9 (Figure 2). She presented with misalignment of the incisal edges and papillae on tooth No. 9 and an altered free gingival margin level (Figure 3). It was suspected that her condition may have been caused by a late growth spurt of the maxillary complex or eruption of the adjacent teeth.

The possible treatment options included: (1) remove the implant, perform bone and soft-tissue grafts, then place a new implant; (2) perform distraction osteogenesis on tooth No. 9; or (3) not perform surgery and instead provide an artificial gingival restoration.

The patient was dental-phobic and traumatized by previous dental experiences and so declined any further surgical intervention. She wanted only a simple reshaping of tooth No. 8 to try to match tooth No. 9, which was shorter. She was educated that this plan would not suffice because the differential in length was too great and that the final result would not be in esthetic harmony. An alternative plan was presented to the patient, which was noninvasive and used artificial gingiva.

Because the defect was just beyond the esthetic zone (ie, the interface between artificial and natural gingiva was beyond the lip perimeter when smiling), the pink composite should be done directly in the mouth, facilitating a better match of color,
shape, and texture between natural and artificial gingiva.

The basic requirements for placing pink gingival composite restorations over implants include:

1. No cement line can be placed below the gingiva, which will compromise the tissue health if the excess cement cannot be removed.
2. The restoration must be retrievable because pink gingival composite may not have the same longevity as ceramics and could require replacement or refinishing in 5 to 15 years.
3. Screw retention of the restoration should be used to allow for easy retrievability and refinishing, with no cement line below the gingiva.

In this case, the implant was placed 10 years prior on an angulation that did not allow for screw retention of the restoration (the screw exited on the buccal surface of the crown). Two options to deliver pink gingival esthetics were available:

1. Conventional abutment and a cemented crown with pink gingiva incorporated on the crown. This would create the negative factor of having the actual cement line well...
The ideal shape of the tooth was developed as a diagnostic wax-up to reproduce the missing soft tissue (Figure 20 through Figure 22). Floss must pass readily through the contacts and over the flat or convex apical areas to be able to clean the convex restorative surfaces and passively contact the surface of the remaining soft tissues of the site. Maintenance is key for long-term successful pink restorations.

The abutment was placed secondarily with a retrievable cement to provide for access to the abutment screw if necessary. The crown was cemented in position over the abutment and restorative gingival profile. The restoration was designed to allow the patient to be able to remove plaque and debris accumulating at the soft tissue–restorative interface. The final re-treatment results, with restored harmony to the smile line and soft-tissue profiles.

The technician should have a wider understanding of both the surgical and clinical procedures to be an active participant on the treatment planning team. Training to reproduce not only the teeth but also gingival esthetics and anatomy are paramount. Currently, with the quality of the available materials (ceramics and composite resin) it is possible to mimic the esthetics of nature, matching teeth and gingiva, while allowing for correct maintenance and long-term life expectancy of the implant bridge.

REFERENCES
5. Hannon SM, Colvin CJ, Zurek DJ. Selective

Figure 20 through 22 The restoration was designed to allow the patient to be able to remove plaque and debris accumulating at the soft tissue–restorative interface. Floss must pass readily through the contacts and over the flat or convex apical areas to be able to clean the convex restorative surfaces and passively contact the surface of the remaining soft tissues of the site. Maintenance is key for long-term successful pink restorations.

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