



ACCURATE TRANSFER OF SOFT TISSUE MORPHOLOGY WITH INTERIM PROSTHESIS TO DEFINITIVE CAST

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With conventional fixed dental prostheses, the interim restoration is a valuable diagnostic tool in the evaluation of esthetics and function. To achieve predictable definitive esthetic results, information about the subgingival and the supragingival contour of a properly designed restoration should be communicated to the dental laboratory technician. The technique described enables the accurate transfer of the soft tissue morphology developed with an interim prosthesis to the definitive cast. This modified definitive cast allows the dental laboratory technician to fabricate a restoration with an emergence profile identical to that of the interim prosthesis. (J Prosthet Dent 2014;111:159-162)

When teeth in the esthetic zone are restored, the interim restoration is an important diagnostic tool and acts as a blueprint for the definitive restoration. The interim restoration can create an esthetic emergence profile of the planned definitive restoration in an esthetically compromised patient.

For predictable esthetic results, definitive restorations must follow the optimal soft tissue modification established intraorally with the interim restoration. To do this, the soft tissue contour created on the interim restoration must be preserved on the definitive cast. However, conventional methods for making a definitive cast can result in the removal of the soft tissue emergence profile around the prepared teeth.

Soft tissue casts are often used to fabricate the optimum cervical contour of the implant prosthesis, and their use for conventional fixed dental prostheses may be important in achieving a successful esthetic outcome. Several techniques for fabricating the soft tissue casts for conventional fixed dental

prostheses (FDPs) have been described in the literature.¹⁻⁵ A technique using a second cast from the definitive impression as a soft tissue guide has been described previously.^{1,2} The problem with this approach is that the gingival tissue is distorted during the impression procedures. Others have suggested making a gingival cast obtained from an impression using the copings of the definitive restoration and poured with a soft tissue model material.^{3,4} However, the gingival tissue around

teeth prepared with a subgingival margin may collapse when the interim restoration is removed. In addition, this technique requires a coping, additional impression making, and remounting of the cast.

Several techniques have been reported for the accurate transfer of the periimplant soft tissue developed by an interim restoration for implant-supported FDPs.⁶⁻⁸ All of these techniques use interim restorations for accurate soft tissue reproduction.



1 Pretreatment intraoral condition.

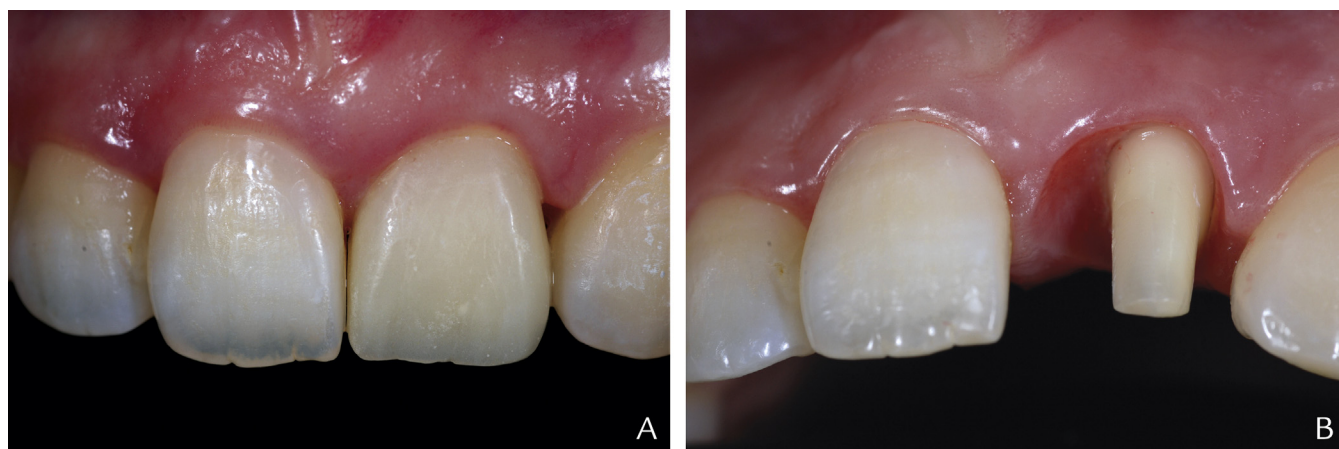
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2 A, Interim crown after development of soft tissue contour. B, Gingival sulcular contours of prepared tooth with interim crown removed.

However, such techniques have not been reported for conventional FDPs. This article describes how the properly adapted soft tissue morphology of the prepared tooth developed with an interim restoration was transferred to the definitive cast. The treatment of a patient with an esthetic problem is used to describe this technique. The maxillary left lateral incisor was located in the left central incisor area (Fig. 1). Interdental spacing and an asymmetric gingival line were present. A single ceramic crown was planned for the treatment of the maxillary left lateral incisor.

TECHNIQUE

1. Place an interim crown after tooth preparation and gradually adjust its gingival contour to the desired contour (Fig. 2A, B).

2. Make a definitive impression of the prepared tooth with a conventional displacement cord technique (Ultrapack Cord no. 00, no. 0; Ultradent Products Inc) with polyvinyl siloxane impression material (Silagum DMG; Chemisch-Pharmazeutische Fabrik GmbH).

3. Fabricate a modified definitive cast (modified according to Geller)⁹ (Fig. 3). To create this cast, trim the individual die to a conical taper shape with grooves, reposition in the impression, and pour the base.¹⁰ Capture the soft-tissue contour surrounding the



3 Definitive cast fabricated. Soft tissue around prepared tooth was distorted by gingival displacement and collapsed during definitive impression.



4 Interim crown seated on definitive cast. Base of cast around interim crown was trimmed to provide space for soft tissue material.

interim crown precisely during impression making with gingival displacement, considering the slight gingival tissue

rebound after removal of the interim crown. Therefore, additional steps are needed to accurately reproduce the

contours of the interim crown on the definitive cast.

4. Remove the interim crown. Adapt it to the individual die and verify complete seating.

5. Trim the gingival area of the cast around the interim crown to provide space for soft tissue 4 replication material (Exaflex injection type; GC America Inc) (Fig. 4). If necessary, make notches to allow the indexing and retention of the soft tissue material.

6. Seat the interim crown on the prepared tooth without interim luting agent and dry the surface. With a brush technique, apply autopolymerizing acrylic resin (GC Pattern Resin; GC America Inc) to the facial and palatal surfaces of the interim crown and to the gingival tissues, including the interdental papilla (Fig. 5). If interproximal undercuts are present, block them out with soft wax (Utility wax sheets; Kerr Dental Laboratory Products).

7. Remove the interim crown with the acrylic resin remaining from the patient's mouth.

8. After trimming any excess acrylic resin that interferes with seating on the cast, seat back onto the definitive cast (Fig. 6). Make small holes with tungsten carbide burs (SH 71E; Shofu Inc) at the buccal and lingual sides of the attached acrylic resin (GC Pattern Resin) and inject low-viscosity polyvinyl siloxane impression material (Exaflex injection type; GC America Inc) into the space between the definitive cast and pattern resin. After cutting the excess impression material around the holes, remove the interim crown and pattern resin from the definitive cast and impression material. After trimming away the attached pattern resin, recement the interim crown into the mouth.

9. The gingival soft tissue reproduced on the definitive cast duplicates the soft tissue developed by the interim crown in the mouth (Fig. 7). The dental technician can accurately reproduce the subgingival contours and emergence profile of the interim crown on the definitive crown (Fig. 8).



5 Autopolymerizing acrylic resin applied to facial and palatal surface of interim crown and gingival tissue.



6 Definitive cast with interim crown and acrylic resin device seated. Low-viscosity polyvinyl siloxane impression material injected into space of definitive cast between interim crown and pattern resin.



7 Definitive cast with soft tissue material which transfers information of emergence profile of interim crown to technician.

SUMMARY

The technique illustrated allows the accurate transfer of the well-

adapted soft tissue morphology of a prepared tooth developed by an interim crown to the definitive cast. This procedure does not require a



8 Intraoral view of completed restoration. Definitive lithium disilicate crown was fabricated by heat pressing technique.

coping, additional impressions, or remounting procedures. With this procedure, a definitive prosthesis can be fabricated that mimics the subgingival contour of a well-adapted interim crown. The technique requires an interim crown with adequate marginal fit and internal adaptation, and it does require additional laboratory procedures.

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