Technique Tips: Making Excellent Impressions in Challenging Situations

Abstract: **Making final impressions can be one of the most challenging phases of a complex restoration. There are many problems that can lead to a frustrating experience, such as:**

- **Margin location**
- **Soft tissue quality**
- **Location of the teeth to be impressed**
- **Patient's inability to open the mouth sufficiently**
- **Excess salivary flow**
- **A large tongue**

The key to managing these situations is to gain control of the environment and soft tissue before attempting the impression.

Frank M. Spear, DDS, MSD
Founder and Director
Seattle Institute for Advance Dental Education
Seattle, Washington

Affiliate Assistant Professor
University of Washington School of Dentistry
Seattle, Washington

Private Practice
Seattle, Washington

Managing soft tissue is often a difficulty that dentists face. A variety of possible conditions can result in significant inflammation, which is problematic for preparing teeth and making accurate impressions. Gingival inflammation gives way to gingival shrinkage when the tissue heals, which results in an inaccurate impression and an ill-fitting restoration. The technique described below controls the tissue to allow the construction of an excellent-fitting temporary. While many products can be used for this technique, the products listed here are examples of what the author would use regularly.

Anesthetize the tooth and gingiva. If the tooth had already been restored, remove the old restoration and clean the margins. If the tooth isn't restored, prepare the tooth to the gingival margin. Place a layer of #1 Ultrapack® cord (Ultradent Products, Inc, South Jordan, UT) coated with ViscoStat® (Ultradent Products, Inc) just apical to the prepared margin (Figure 1 and Figure 2). When significant inflammation exists, it is easy to place the cord through the attachment; therefore it is critical to place the cord just apical to the preparation.

Inject local anesthetic (the author prefers lidocaine 1:100,000 epi) directly into the buccal papilla on both the mesial and the distal, applying pressure until the tissue blanches white. Repeat this process from the lingual (Figure 3). Using a fine wire tip on an electrosurgery unit, place the tip on the cord previously placed in the sulcus. Rest the tip against the margin of the tooth holding the electrosurgery unit parallel to the path of draw of the preparation. Turn on the electrosurgery unit and trace around the preparation, removing any tissue that is interfering with access to the margin. When

Managing soft tissue is often a difficulty that dentists face. A variety of possible conditions can result in significant inflammation, which is problematic for preparing teeth and making accurate impressions.

Figure 1—Patient presents with severely inflamed tissue from a loose bridge abutment.

Figure 2—Local anesthesia has been administered and one layer of cord placed.

Figure 3—Anesthetic was infiltrated directly into the papilla on the facial and lingual, and then a fine wire electrosurgery tip was used to remove the excess tissue.

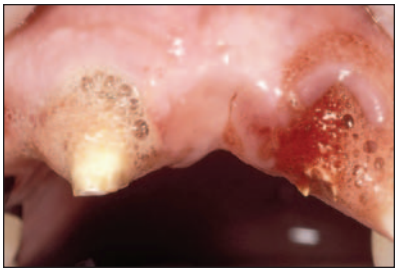

Figure 4—The debris is cleaned with hydrogen peroxide.

Figure 5—A second layer of cord has been placed, completely controlling the area. The tooth has been built up and an impression could be made. Instead, the author chose to make a well-fitting temporary and allow healing to see if any gingival shrinkage occurs.

Figure 6—The tissue health around the temporary 3 months later.

finished, the cord in the sulcus should be completely visible 360° around the tooth.

Clean the area with hydrogen peroxide and pack a second layer of Ultrapak® cord—#1 if the sulcus is relatively shallow, #2 if the sulcus is deep and the tissue is thick (Figures 4 through 6). The combination of directly infiltrated anesthetic and two layers of cord should have completely controlled the gingival environment. Complete the preparation and any build-ups that may be necessary.

Finally, pull the top cord and check for bleeding (Figure 7). If bleeding does occur, use astringent in the Dento-Infusor® (Ultradent Products, Inc) to dab the bleeding area while running water on the site to avoid any clotted material building up on the preparation. When the hemorrhage is controlled, dry the area and make the impression using a product such as Aquasil Ultra XLV syringe material and Aquasil Ultra Heavy (Dentsply Caulk, Milford, DE).

The tissue should be evaluated 4 to 8 weeks later to see if recession occurred with healing (Figure 8 through Figure 10). If it does, the tooth can be re-prepared dropping the margin apically before making the new final impression. In this author's experience, this technique has proven very effective for getting excellent impressions in spite of significant inflammation.

In addition to controlling the gingival tissues, it is also necessary to control the patient's lips and tongue to provide access for making the impression. As a rule, the easiest solution for the lips is a spring-loaded plastic retractor that has fingers extending to the posterior part of the mouth, which aids in keeping the lips and cheeks clear of the teeth. For the maxillary arch this retractor solves most access challenges, and, as long as the gingiva

Figure 7—Tissue after removing the temporary.

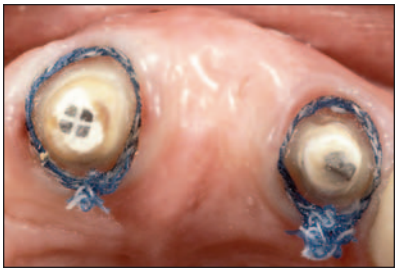

Figure 8—Two layers of #1 cord packed around each tooth.

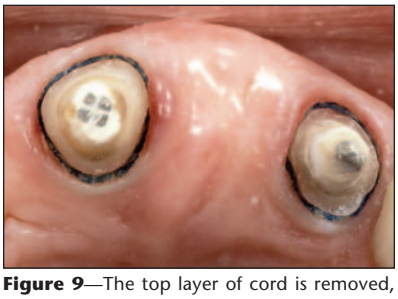

Figure 9—The top layer of cord is removed, revealing no bleeding and an easy impression.

Figure 10—A four-year recall of the final prosthesis showing excellent tissue health and maintenance of gingival levels.

Figure 11—A completely prepared lower on a patient with a challenging tongue.

Figure 12—A Svedopter placed along with two layers of retraction cord on the left side.

Figure 13—The cord on the left was removed and fast set syringe material Aquasil Ultra XLV injected and allowed to harden. Then the Svedopter is moved to the right.

Figure 14—The syringe material on both posteriors has now hardened and is ready to be picked up.

is well managed, a maxillary impression capturing multiple teeth is relatively predictable.

The mandibular arch, however, presents a unique challenge when the impression involves preparations on the left and right posterior. The dentist needs to control not only the lips and cheeks but also the tongue. The dentist can work on each side of the mouth separately on different office visits, but sometimes this is not practical. For instance, to change the vertical dimension, the dentist needs to capture an impression of all the teeth in the arch. In such a case, it is more efficient to capture all the teeth at once. Trying to control a patient's tongue is sometimes impossible; the dentist can gain access to one side and inject the material cleanly, but when he or she switches to the other side the tongue often wipes the material off again. In the author's experience, the following process has proved to be helpful.

Figure 15—The impression of the anteriors and picking up the posteriors.

Complete all the preparations and pack retraction cord (Figure 11 and Figure 12). Use a Svedopter to control the tongue and control moisture on the side the Svedopter is placed. Pull the cord and make a quadrant impression of this side first. Then replace the Svedopter on the opposite side and repeat the process. You now have two quadrant impressions with all the margins of the posteriors. The author makes the initial quadrant impressions first because there may be the potential for distortion of the set syringe material when it is picked up. Doing the separate initial quadrant impressions ensures accurate models of the margins.

Replace the Svedopter and top cord on one of the sides. Pull the cord and inject fast-setting syringe material (Aquasil Ultra XLV fast set, Dentsply Caulk) on the side, leaving the Svedopter in place, and let it harden. Move the Svedopter to the other side and repeat this step (Figure 13). Now that there is hardened syringe material on both posterior quadrants, inject syringe material (Aquasil Ultra XLV regular set, Dentsply Caulk) on the anterior preparations and over the hardened material in the posterior. Immediately after syringing on the wash material, seat a full arch tray loaded with regular set monophase material (Aquasil Ultra Monophase regular set, Dentsply Caulk). The viscosity of the monophase material is less likely to distort the previously set syringe material. Finally, remove the full arch impression, pulling out all the previously hardened segments of syringe material (Figure 14 and Figure 15).

These two techniques have allowed the author to work in awkward environments. Using effective techniques to make challenging situations easier helps to make the restorative process not only more enjoyable but also, more importantly, predictable in producing an excellent final impression.