BACK-TO-BASICS

Waxing: Perfecting the Dip Technique

Back-to-Basics *is a series of articles focused on basic skills necessary for a successful career in dental technology. For skilled professionals it will be a useful tool as a refresher for skills learned on the job—or long ago. For those new to dental technology, it will be an invaluable resource to keep on hand.*

This is the second article in the Back-to-Basics Series that is designed to reinforce core skill training with an emphasis on the science behind the materials being used in the techniques shown. We continue our series with the dip technique in waxing. It is our hope everyone in the lab will benefit from this review.

Please Note: *Step 1 is intentionally repeated from the March 2003 issue, "Model and Die: A Proper Beginning" for clarity.*

Once perfected, the following dip pot waxing technique can dramatically increase the quality and number of units produced per day. Dip pot waxing eliminates layering the wax with hot and cold layers and allows for a compression fit. The technician can construct bridgework with metal as thin as 0.35 mm, maximizing the beauty of porcelain.

Step 1. Prepare the die

Trim the die and outline the margins with a hard Sanford #745 red wax pencil. Blockout all undercuts on the die with a blockout wax. Apply two coats of Die Spacer (28 microns) for relief during cementation. Dip or brush on a Die Sealer just below the margins. Blot with tissue or gently blow off with air hose to ensure an even coat. Allow sealer to dry for a few minutes (**Figure 1**).

Step 2. Lubricate the die

Apply a non-alcohol based lubricant (**Figure 2**)**.** An oil-based lubricant has the ability to run away from heat during the margin heat-sealing process. Alcohol based lubricants that contain silicones tend to "alloy" into the wax when a hot instrument is applied to the die. This creates a softer wax that will distort primarily at the margins.

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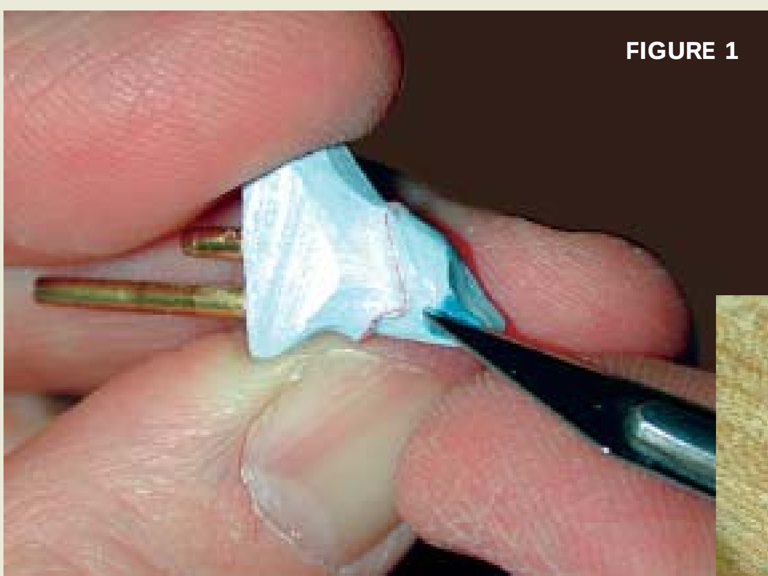

FIGURE 1

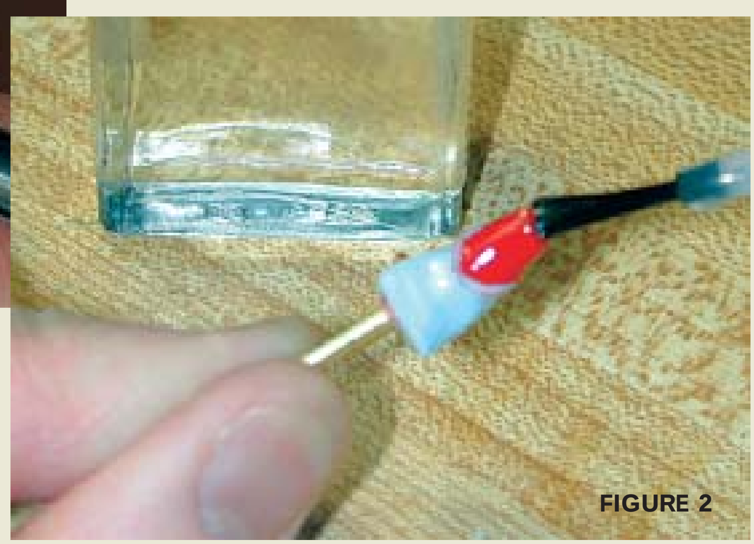

FIGURE 2

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FIGURE 3

Step 3. Mark margins

Outline the margin with a soft Sanford #20045 red wax pencil (**Figure 3**). When using this soft red pencil, the red outlined margin will create an exact imprint of the margin on the inside of the wax coping. This will be your quality control procedure when removing the wax pattern.

FIGURE 4

Step 4. What to look for in a waxing system

For optimum results and accuracy, we rely on an electronic Dip Pot with a digital display. A composite housing that allows you to rest your hand on the pot will increase control and accuracy (**Figure 4**). *Caution: For units that are in constant use, discard all the wax and replenish with fresh wax at least once a month to insure the integrity of the wax. If you are experiencing warped copings, this is one of the variables that could be the cause.*

Step 5. Create the coping

Due to temperature fluctuations in the laboratory, dies can vary in temperature causing the copings to be too thick or too thin. It is a good practice to make a test coping on a standard die prior to dipping all your dies (**Figure 5**). *Remember, keeping metal calipers by the waxing unit keeps them out of the metal finishing room.*

Plunge the die quickly into the wax reservoir 2mm past the margin and hold for 1 second. Withdraw slowly and uniformly (**Figure 6**). This technique chills the wax from the inside out, giving the coping a compression fit. *Have you ever seen concentric circles on the inside of your copings? This is due to the reverse (plunging slow and removing fast). This also gives you a sloppy fit as the wax is cooling from the outside in and pulling away from the die.*

FIGURE 5

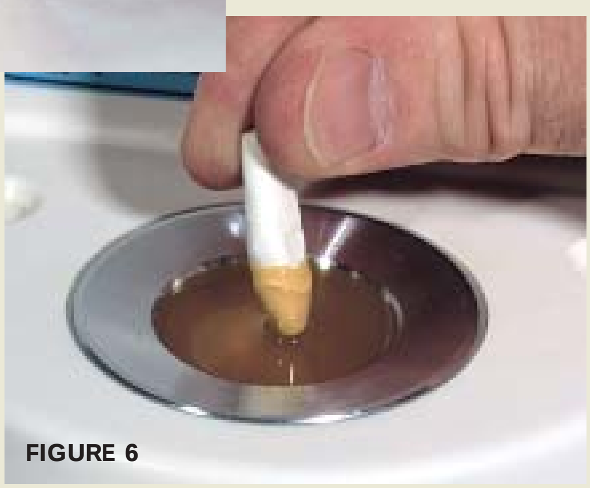

FIGURE 6

Step 6. Seal the margin

Rewet the dip wax along the margin with a hot #7 spatula with short back and forth strokes. Do not add or subtract any wax in this area.

This procedure contracts the wax, giving it an excellent adaptation to the margin (**Figure 7**).

Step 7. Hot trim the margin

Use a 1/2 Hollenback instrument to hot trim the margin (**Figure 8**). As you can see, the instrument eliminates the wax underneath the margin while simultaneously heat


FIGURE 7

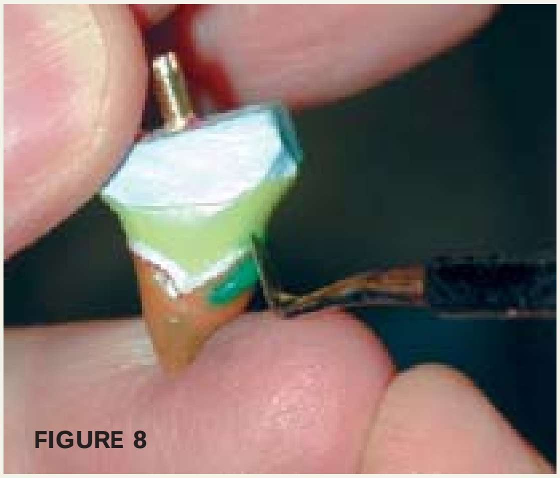
FIGURE 8

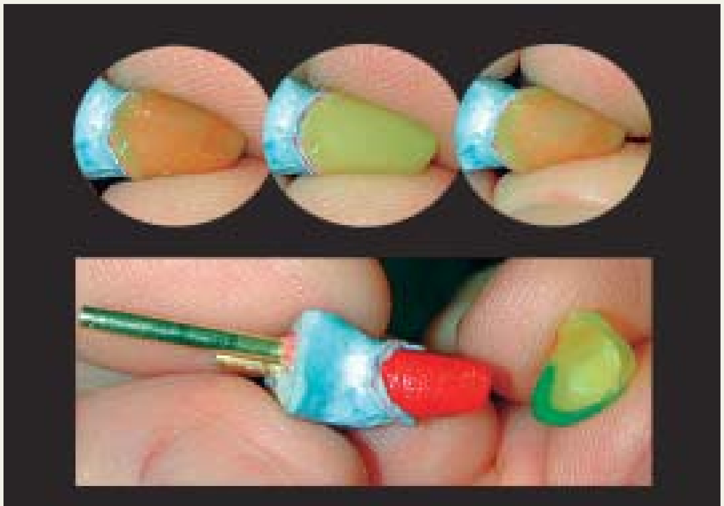
FIGURE 9

sealing the margin. This method provides optimum marginal integrity by eliminating undo stresses and the need to cut back and flow margin wax.

Step 8. Remove the wax coping

Carefully trim the wax flashing off with a Bard-Parker knife. To remove the wax coping from the die, gently grip the coping and pull to release the seal. Once you see that the coping has gone from translucent to opaque, push the coping back on the die to eliminate distortion (**Figure 9**). Now, relax your fingers by shaking your hand for a second. This simple technique prevents your tense fingers from crushing the side walls of the wax pattern. Have you ever asked the question "Why are my copings tight mesial-distal and the buccal-lingual margins are open?"

Remember, fluctuations in your laboratory's temperature of ± 10° F will affect waxes causing distortions and warping of bridges. Always maintain a temperature between 72-75° F in your lab.

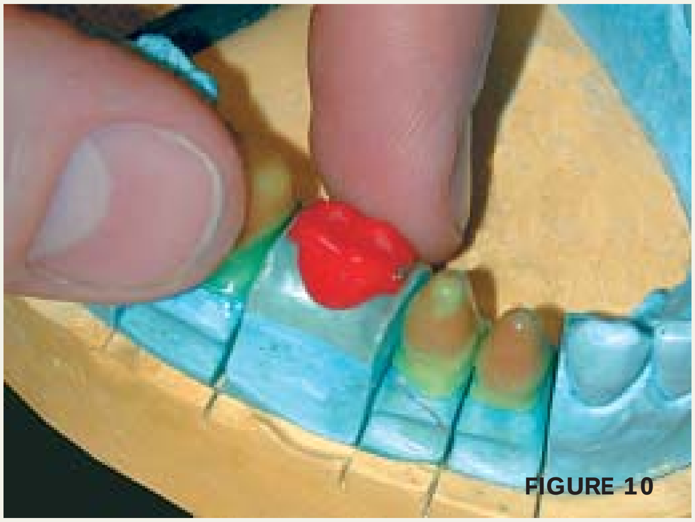
FIGURE 10

Step 9. Construct a bridge

Utilizing prefabricated pontics is a great time saver and can greatly increase productivity. Place a .5mm thick piece of pressure sensitive adhesive wax in the pontic area to provide a uniform space for the opaque and a thin wash of porcelain (**Figure 10**). Once the alignment is correct, use a sculpturing wax to create lingual collars and connect the pontics to the abutments (**Figure 11**, *see page 40*).

Step 10. Stabilize a bridge

Cut all interproximal joints between abutments with a thin blade or monofilament to relieve any stress and strain. Then reseal each joint with a material that is viscous, low in heat and stable (Zapit). Apply the accelerator and wait a few minutes before removing the bridge

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FIGURE 11

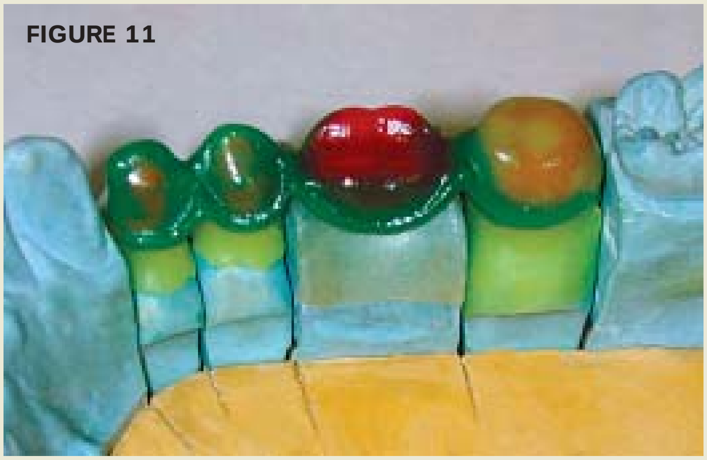
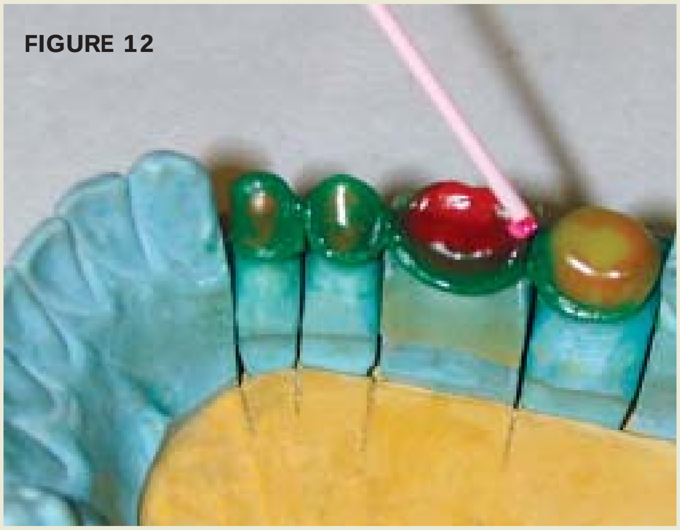


FIGURE 12



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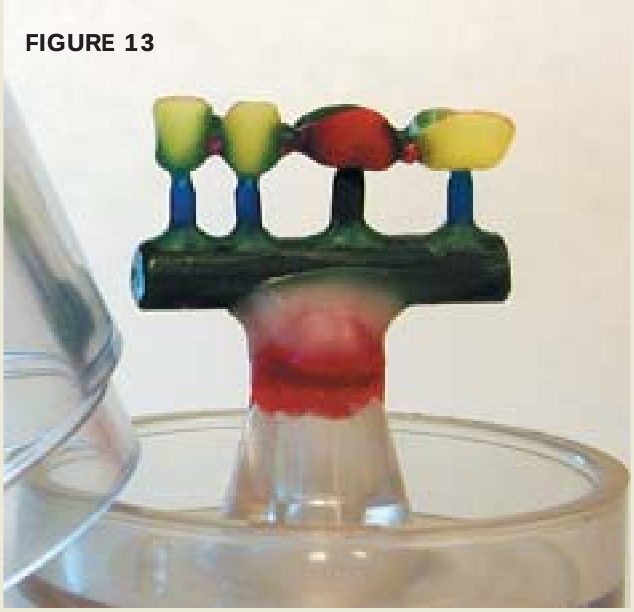
(**Figure 12**). Always remember that the accelerator cures from the outside in, so wait at least 5 minutes.

Tip: Before removing the bridge, lift the model 1 inch off the table and come down with a solid smack. This ever-so-slight jolt relieves the pattern from the dies so you will not experience a difficult removal.

FIGURE 13



Step 11. Engineer sprues to eliminate porosity

There is a law in metallurgy that states: *"If you are able to chill the pattern first, and the sprue system and buttons last, porosity will never exist."* To satisfy this law, use an indirect spruing technique. Begin with a runner bar the size of a pencil (1/4" diameter inlay wax stick works best). This will create an underground stream or flow of metal for a consistent supply of fresh metal to the pattern as it is dimensionally changing. Keep the length of the primary sprues 3/8" in length. Sprue size should be 10 gauge for copings and 6-8 gauge for pontics (**Figure 13**). *Remember, attaching the primary sprue to the runner bar closes a cell; using a "dead" brushing wax will eliminate stress and strain in this area.* **jdt**

The next edition of Back to Basics will feature "Investing for a Precision Fit"

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