

## Endodontics: Lateral Condensation Filling Technique

### Armamentarium

Number 50 k files  
Root canal cement (cement powder mixture + eugenol)  
Spatula  
Glass slab  
Gutta percha  
Ruler  
Cotton pliers  
Scissors  
D-11 spreader (stainless sleet may be used for straight canals, titanium spreader for curved canals)  
Stainless steel finger spreaders  
Bunsen burner  
Glick number 1  
Cotton pliers  
X-ray film

*The following script has additional content not included in the audio.*

### Step 1: Check for Canal Patency

Recall the last file used used at the working length. In this case, the last file used at 24.5 mm was the 50 K-file. Place this file in the canal and check for canal patency one last time. The properly placed tip should elicit tugback in the apical region when an attempt to remove the file is made.

### Step 2: Prepare Root Canal Cement

Prepare a mix of root canal cement using the cement powder mixture provided and a few drops of eugenol. Mix a small amount of eugenol with a small amount of powder using the spatula until the mixture is loose and tacky. When pulled with a spatula, the cement should stretch about an inch above the work surface. Continue to add small amounts of powder or eugenol until the desired consistency is attained. When fully mixed, the cement should be smooth and homogenous in texture, not grainy.

### Step 3: Prepare to Fit Master Cone

When fitting the master gutta percha cone you must judge two parameters:

- approximate diameter at the apical constriction, (evidenced by tugback, or resistance at the apex), and
- length at the apex of the root canal that you just cleaned or, working length.

Both the tugback and working length must be correct. When tugback is evident, there will be resistance to removal and the cone will be engaging in the apical constricture.

- If the taper of the canal is too narrow for the gutta percha cone, the cone will not reach the apex.
- If the apex is blocked no tugback will be evident.
- If the apex is over-instrumented the gutta percha will extend beyond the apex.
- If the taper of the canal is large enough it will engage at the apical constricture.

#### **Step 4: Select Master Cone**

Place the last file to the working length and the last file that you shaped with on the bench top. Select a gutta percha master cone that reasonably approximates the shape of the prepared canal by estimating a size that lies between these two files.

#### **Step 5: Measure Cone to Working Length**

Using cotton pliers, remove a single gutta percha cone from the package and measure the cone to the working length. [REMEMBER: Sterile gutta percha cones should be handled with cotton pliers ONLY to prevent infection.]

#### **Step 6: Place Master Cone in Canal**

Place the gutta percha cone in the prepared canal up to the measured working length. If the point binds before reaching the measured length, select a thinner point.

If the tip goes to measurement but does not elicit tugback, cut away 1 mm from the tip of the cone and try again. Continue to cut away the tip and try the cone again until tugback is achieved at the working length. Remember how much you cut away at the tip; you will have to cut this amount away for each subsequent cone that you use in filling the canal. After cutting away the tip, if tugback is achieved but the length is too short, the cone must be discarded and a new cone must be measured and adjusted to fit the canal.

When the tip of the cone binds exactly at the working length and offers resistance to withdrawal or, tugback, check the working length once more to verify that the measurement is correct. Remember, both the tugback and working length must be correct.

#### **Step 7: Take Radiograph of Master Cone**

With the gutta percha cone fitted in the canal, take a radiograph to confirm fit of the master cone.

Develop your radiograph: in the lab, develop your radiograph using the automatic developing unit.

**Step 8: Lateral Condensation**

Once the master gutta percha cone is fit, the canal is ready to be filled using the lateral condensation technique. Begin by placing the cement into the canal using the last working length file. Cover the file with cement and place it into the canal. Use the file to line the walls of the canal circumferentially, distributing the cement on the walls of the canal evenly, two or three times.

**Step 9: Coat Cone with Cement**

Using the cotton pliers, remove a gutta percha cone from the package and cover it with an even coat of cement. Place the cone in the canal it to the working length, until tugback is elicited.

Extrusion cement may be witnessed with the unmounted teeth; this does not cause a problem. While no cement is irritation-free, once it sets the body accepts it and no long-term irritation persists.

**Step 10: Spread Side-to-side**

Place a D-11 spreader in the canal along side the cone. Apply pressure apically to push the spreader in as far as possible, and spread from side to side. This side-to-side or, lateral, spreading motion is the basis for the technique name, lateral condensation.

The D-11 spreader is available in both titanium and stainless steel. The stainless steel spreader may be used for straight canals; for curved canals the more flexible titanium spreader should be used. Stainless steel finger spreaders may also be used.

**Step 11: Remove Protruding Gutta Percha**

Remove the spreader and heat the long end Glick #1 instrument in the Bunsen burner flame. Place the heated Glick #1 in the canal to the floor of the pulp chamber and move the instrument from side to side, heating off the protruding gutta percha.

If the instrument is not hot enough, some of the gutta percha may be left behind. The instrument should be re-heated and the rest of the gutta percha removed.

**Step 12: Compress Gutta Percha**

Place the spreader into the canal as far as possible apically and spread from side to side, compressing the gutta percha and cement against the walls.

**Step 13: Use Accessory Cones to Fill Canal**

Repeat steps 13 through 17 using accessory gutta percha cones, until there is no more room in the canal for additional gutta percha.

Do not place an accessory cone with a diameter larger than the remaining apical end of the canal. The cone will not fit to the end and this can create gaps in the filling.

**Step 14: Have No Gutta Percha on Floor**

When the process is completed there should be no gutta percha on the floor of the chamber. Gutta percha should be placed in the canal only, and should not extend into the pulp chamber.

**Step 15: Remove Remaining Cement**

Use cotton to remove any remaining cement from the inside of the chamber.

**Step 16: Take Final Radiograph**

A final x-ray should be taken when the condensation is completed. In the clinic a final x-ray is taken without the rubber dam in place and with a final or temporary restoration in place on the tooth. Clinically it is possible to take a radiograph only in a bucco-lingual direction; however, in the preclinic, x-rays should be taken in both the bucco-lingual and mesio-distal direction. This will enable complete visualization of the root canal fill.

Develop your radiograph: in the lab, develop your radiograph using the automatic developing unit.