



## Invisible Retainer with Multi-Tooth Pontic Fabrication Technique

*(Single-Tooth Pontic Procedure also available)*

*Safety glasses should be worn for all lab procedures as well as gloves when handling acrylics. Items featured in this technique are found at the end of the procedure.*



- 1 The invisible retainer can include a tooth or series of teeth within the appliance



- 2 Placement of multiple pontics is processed in a similar manner as the single pontic procedure. Select plastic teeth of desired shade and size to fit the edentulous space. Usually some adjustment of the teeth is required.



- 3 With medium soft hygienic base plate wax, relieve interdental undercuts along the cervical crowns of adjacent teeth to the pontics. Also apply a thin layer of wax to the facial or labial tooth surfaces. Apply model separator along edentulous area of the model. Spread separator with a brush.



- 4 Mortite Weather Stripping Caulk can be obtained online or at your local hardware store. This clay-like material will be placed along edentulous area of model to hold teeth in place as they are adjusted.



- 5 Align plastic pontics along archform against mortite in desired position. In this example, you will notice the mesial distal pontic sizes are too large to properly fit edentulous area. They will require adjustment before they can be incorporated into the invisible retainer.



- 6 Adjust the pontics with a carbide taper or cone bur in a lab handpiece. Trim the pontic's cingulum and underside of tooth to fit along edentulous ridge. This will also provide proper vertical positioning. Equally trim mesial and distal sides of pontics maintaining symmetrical tooth shapes. Also sculpt cervical contour to gingival margin of natural teeth. Trim the remaining teeth to fit edentulous area as a group.



- 7 Red Sprue wax is used to temporarily hold the pontic position for acrylic application. Also a torch, pink wax, and spatula will be needed. Round sprue wax to facial arch of dentition and pontics. Cut excess wax along tooth crowns.



- 8 Adhere ends of sprue wax with hot spatula. Secure pontics to sprue wax with hot spatula and pink wax.



- 9 Carefully remove mortite along lingual area with spatula. Make sure pontics maintain original positions. Adjust if needed.



- 10 Once mortite is removed, check pontic alignment with opposing model. Adjust if needed.



- 11 Using the salt and pepper technique, apply resin to flow around the base of the pontics. Create a saddle-like foundation over the edentulous part of the arch to stabilize the alignment of the pontics.



- 12 Add layers of the powder and liquid resin to cover the cervical crown of the pontic. For this example, a #62 tooth shade polymer is used with clear monomer. Also a tissue-toned polymer may be used.



- 13 Remove excess acrylic resin from the model. Resin should only be within the pontic area and extend slightly onto the palatal-lingual tissue.



- 14 Place the model with acrylic resin into a humid pressure pot for 15 minutes. Pressure should be adjusted to approximately 20psi. At the end of the curing cycle, evacuate the pressure from the pot. Remove model and cured acrylic.



- 15 Carefully remove the pontic from the model with a lab knife. Also remove wax from the plastic pontic.



- 16 Trim the acrylic saddle of the pontic with a carbide taper bur in a lab handpiece. Acrylic should extend to the mesial and distal ends of the pontic. It should also extend 2-3mm onto the palatal tissue. The thickness over the tissue should be about 1mm. The facial acrylic can be trimmed to the gingival tooth contours.



- 17 Place pontic on model to check trim accuracy. Adjust as needed. Also check alignment of pontics to opposing model.



- 18 Smooth facial area of pontic using a medium grade pumice and rag wheel with a low speed lathe. Pumice and wheel should be moist. Also, a lighted splash pan is recommended. This application usually takes place using the left side of the lathe.



- 19 Rinse and dry pontic. Polish only pumiced surface with Fabulustre and 4" muslin buff on a low-speed lathe. Polish application is accomplished on the right side of the lathe. A splash pan with light and vacuum is recommended. Clean residual polish with hot tap water, liquid dish soap, and a scrub brush, then dry.



- 20 Stabilize the pontic to the model using a drop of Great Lakes Adhesive. A small drop is placed on the pontic along tissue contact side. Place on model and let dry for 1 minute. The pontic is now ready for invisible retainer fabrication.



- 21 Apply liquid separator to all model surfaces that will come in contact with forming material except pontic.



- 22 The Biostar or MiniSTAR machine with model platform or pellet cup may be used. For this application, the MiniSTAR will be used. Start by turning power on to the machine. Then select a material that is compatible with the use of acrylic. In this example, a 1mm thick Invisacryl A material is selected. Remove blue packing film from both sides of the disc.



- 23 Secure disc to chamber with clamping ring. Position the platform on the inner lip of pellet cup. The platform should fit flush to inner lip of cup. Pellet level should be below half-fill level of cup.



- 24 Position model with pontic facing open chamber on the left. This will further prevent pontic movement as chamber is swung down over model.



- 25 Enter heating time of material into the machine. Prepare clear liquid monomer in a small resinmix cup. Mix clear polymer powder to monomer liquid.





- 26 Initiate heating cycle by swinging the heating lamp over material. Acrylic mix should be a syrup consistency.



- 27 With about 5 seconds remaining in the heating cycle, apply acrylic resin to lingual side of pontic.



- 28 When heating cycle is complete, remove the heating element and swing the chamber over the model to form material. Allow formed material to cool and acrylic to cure for 2 minutes. You may leave chamber closed longer than the default time indicated.



- 29 To open, release pressure from chamber. Unlock the chamber and loosen the clamping frame. Open chamber and remove the formed material on model.



- 30 Cut out plastic on model with a  $\frac{3}{4}$ " lightning disc on a standard mandrel in a lab handpiece. Cut 2-3mm below gingival margin along facial areas. Cut around distal border of last tooth on each side of the arch. Also cut plastic 2-3mm below gingival margin along palate or lower lingual tissue anatomy.



- 31 Cut a slot from outer disc edge to model cutout. This will provide easier removal of excess plastic.



32 Carefully remove plastic from model.



33 With a lab knife, carefully remove appliance from model. Pry under distal edges first, then near incisors.



34 Trim the retainer border to the gingival margins using a carbide taper bur in a lab handpiece. Also trim ends to the distal marginal ridge of the last tooth on either side of the arch.



35 Trim palatal or lower lingual tissue 1-2mm below gingival margins. If present, remove residual adhesive under pontic with bur.



36 Using a PRO Dymo multi-functional or miniature satin buff, smooth trimmed edges. Use on medium handpiece speed.



37 Liquid Acrypol may be used to touch up areas of the retainer especially around pontic. Do not over-apply liquid. Allow 5 minutes drying time.



Completed retainer with pontic(s).

**Items featured in technique:**

- 235-010 Astro Spec Safety Glasses (reg./blue)
- 235-062 N-Dex Non-latex Gloves (Med)
- 085-009 Carbide Taper Bur
- 085-003 Carbide Cone Bur
- 150-025 Lab Handpiece
- 260-018 Pink Base Plate Wax
- 175-034 Liquid Separator
- 075-007 Separator Brush
- 040-012 #62 Tooth Shade Powder Polymer
- 040-022 Clear Monomer
- 165-004 Wax Spatula
- 225-040 Adjustable Temperature Pressure Pot
- 170-005 Lab Knife
- Mortite Weather Stripping Caulk  
*(on-line search or hardware store)*
- Red Sprue Wax (10GA – Corning Waxes)
- 080-006 Micro Torch
- 180-002 Lathe with Quick Chuck
- 086-003 Plastic Center Rag Wheel
- 230-003 Medium Grade Pumice
- 110-014 Handler Splash Pan w/light on right
- 086-002 Loose Muslin Buff
- 230-008 Fabulustre
- 105-060 Handler Porta-Vac w/Vacuum
- 175-041 Great Lakes Adhesive
- 021-053 Invisacryl A .040" 1mm/125mm
- 040-016 Clear Biocryl Resin
- 086-027 3/4" Lightning Disk
- 085-019 Standard Mandrel
- 086-043 Dimo Pro Grinding & Finishing Wheel



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