



## Invisible Retainer with Single-Tooth Pontic Fabrication Technique

(Multi-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 Select a plastic tooth or teeth of desired shade and size to fit the edentulous space. Usually, the plastic teeth require some adjustment.



- 3 Adjust the preformed pontic using a carbide taper bur in a lab handpiece. Trim along the base of the plastic tooth to adjust height. Check tooth position to arch form and opposing model. Trim along mesial and distal sides of the pontic to fit in the edentulous area. Incisal adjustment of the pontic is only made previous to retainer fabrication.



- 4 Check the size of the trimmed pontic to the edentulous space. Also check alignment to the arch and opposing model.



- 5 With medium soft hygienic base plate wax, relieve interdental undercuts along the cervical crowns of adjacent teeth to the pontic. Also apply a thin layer of wax to the facial or labial tooth surfaces.



- 6 Apply separator material to the edentulous area of the model. Spread separator evenly with a brush.



- 7 Sticky or base plate wax is used to stabilize the pontic to the model, Heat the wax with a spatula and apply it to connect the model to the plastic pontic.



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



- 9 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.



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



- 11 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.



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



- 13 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.



- 14 Place pontic on model to check trim accuracy. Adjust as needed.



- 15 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.



- 16 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.



- 17 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.



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



- 19 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.



- 20 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.



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



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



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



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



- 25 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.



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



- 27 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.



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



- 29 Carefully remove plastic from model.



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



- 31 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.



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



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



- 34 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  
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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