

Fabricating a Hawley Retainer with Pontic

Safety glasses should be worn for all lab procedures as well as gloves when handling acrylics. Items featured in this technique are found on the last page.



- 1 The Hawley retainer can be designed to include a tooth or teeth within the acrylic foundation. A plastic tooth of desired shade and size is selected to fill the edentulous space. Usually the plastic tooth (pontic) require some adjustment. Adjust the preformed pontic using a carbide taper bur and a lab handpiece. Trim along mesial and distal sides of the pontic to fit in the edentulous area. Trim along the base of the pontic to adjust height. Incisal adjustments are only made at the end of the appliance fabrication process.



- 2 Check the size of the trimmed pontic to the edentulous space.



- 3 Also check alignment to the arch and opposing model.



- 4 Cut a groove into the lingual area of the plastic tooth with a carbide cutting bur and a lab handpiece. This will increase tooth to retainer acrylic adherence.



- 5 With medium soft hygienic base plate wax, relieve interdental undercuts along the cervical crowns of the teeth adjacent to the pontic. Also apply a small layer of wax to the facial or labial tooth surfaces. Remove excess wax with lab knife. Wax should remain at undercut areas. Smooth with a torch. Place pontic on model to confirm fit after undercuts are removed. Adjust pontic if needed.



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



- 7 Sticky was is used to stabilize the pontic to the model. Heat one end of the sticky wax rod and apply it to secure the pontic to the model.



- 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. Add layers of powder and liquid resin to cover the cervical crown of the pontic. Remove excess acrylic resin from the model with a spatula. Resin should only be within the pontic area and extend slightly onto the palatal lingual tissue.



- 9 Place the model with the pontic and 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 and remove the model.



- 10 Carefully, remove the pontic from the model with a lab knife. Also remove wax from the pontic. Trim the acrylic saddle of the pontic with a carbide taper bur and a lab handpiece. Acrylic should extend to the mesial and distal ends of the pontic. It should also extend 4-5mm along the palatal tissue. The thickness over the tissue is about 1mm. The facial acrylic can be trimmed to the gingival tooth contours.



- 11 The wire work is fabricated. Clasp and labial bow designs can be made. Apply liquid separator to the model except along the facial surfaces where the wires will be waxed in place. Place the pontic on the model and secure in place with sticky wax along the facial surface. Also stabilize the wires to the model with sticky wax or hygienic base plate wax.



- 12 For the Biostar® or MiniSTAR® machine, adjust the pellets within the pellet cup to elevate the model. For a Hawley retainer, the top tooth surfaces should be at the height of the cup's rim. Fill the gap between the model and the cup's rim with pellets. Sweep excess pellets with a 1" brush. Pellet level should be against the occlusal tooth surfaces, heel of model, and should extend to the rim of the cup. Make sure the pellets are removed from the cup's rim.



13 Select a 2mm biocryl disc. A variety of colors and pattern designs are available. Clamp the biocryl disc onto the chamber. Identify the material's heating time or Biostar code and enter it into the machine. Swing the lamp over the material to initiate the heating cycle. With 45 seconds remaining in the heating cycle, mix monomer liquid and polymer powder to a syrup-like consistency with a #7 spatula. With approximately 20-30 seconds remaining in the heating cycle, apply the mixed resin to flow along wires as well as the lingual acrylic of pontic. The heating cycle and resin application should conclude at the same time.



14 At the end of the heating cycle, remove the lamp and swing the chamber over the model in the pellet cup and lock the chamber in place to initiate the forming process. Allow to cool under pressure for 2-3 minutes. During this process, the applied resin will cure. At the end of the cooling and curing cycle, evacuate the pressure from the chamber. Unlock the chamber and clamped material. Swing open the chamber and remove the formed material and model. With a lab knife, remove any pellets that may be stuck to the material.



15 With a lab knife, carefully loosen the wires that were held in place with wax along the facial surface of the model and remove formed plastic.



16 Using a carbide cutting bur and a lab handpiece, cut out the retainer from the disc. Start by cutting along the back of the appliance at the first or second molar reference. Cut long the lingual cusps of the posterior teeth and near the incisal edges of the anterior teeth. Caution must be used around the wires that are embedded in the plastic. At the pontic, cut around the facial side of the tooth surface. Once the cut has been made in the plastic, remove the retainer from the disc.



17 The posterior segment is scalloped $1\frac{1}{2}$ mm above the gingival margins to rest against the cervical crown surface and rounded to the interdental papilla height along the anterior dentition. This is accomplished by using a carbide cone or taper bur and a lab handpiece. At the pontic, do not trim into the plastic tooth. The back or heel of the retainer is often tapered forward near the mid-palatal area. Maintain plastic contact against the last tooth on each side of the arch and taper acrylic forward about $\frac{1}{4}$ of an inch. The formed retainer acrylic that caps the top of the pontic is removed using the nose of the taper bur. Do not grind into the plastic tooth. Carefully remove the plastic that is over the tooth and level retainer acrylic to the interdental papilla height. Finally, the scalloped posterior and rounded anterior segments are blended into the retainer body.



18 A sandpaper mandrel with a 3" piece of 150-grit sandpaper is used with a lab handpiece on medium speed to smooth trimmed surfaces.



- 19 This retainer is pumiced and polished using the same procedure as outlined for the upper Hawley retainer.

Items featured in technique:

235-010	Astro Spec Safety Glasses (reg./blue)
235-062	N-Dex Non-latex Gloves (Med)
190-063	Electric Waxer
260-018	Pink Wax
260-013	Sticky Wax
	Biocryl Disc Material (Summer Shades, Glitter, Pattern)
040-016	Biocryl Resin Kit
175-102	Monomer Bottle
225-040	Pressure Pot
215-020	SnapStone
075-004	Model Brush
175-027	Resimix Cup
165-004	Spatula
175-034	Separator
075-007	Separator Brushes
030-014	1mm Copyplast
080-006	Micro Torch
080-009	Gas Refill
170-005	Lab Knife
105-025	Lab Handpiece
145-008	Air Handpiece
085-027	Cutting Bur
085-009	Carbide Taper Bur
085-003	Carbide Cone Bur
086-038	Saw Bur
075-008	Bristle Brushes
085-022	Sandpaper Mandrel
060-007	Sandpaper Roll
230-003	Medium Pumice
086-003	Plastic Rag Wheel
180-002	Lathe with Quick Chuck
110-014	Splash Pan w/Light (right side)
105-060	Handler Portavac
086-002	Muslin Buffs
180-016	Lathe Threaded mandrel
230-007	Tripoli
230-008	Fabulustre
230-010	Metal Polish



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