Fabricating a Hawley Retainer with Spring

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 To incorporate a spring into a Hawley retainer, first fabricate the spring and waxed to the model.

2 Apply a thin layer of hygienic base plate wax to the model where the active portion of the spring will be located. Position the spring against the tooth to be moved and secure it with wax. The wax stabilizes its position and allows it to be freely activated under the acrylic retainer. Remove excess wax from around the spring with a lab knife. Wax covering the spring should be to the top surface of the spring wire and should not extend past the tooth to be moved. Lightly flame the wax covering the spring to smooth.

3 Apply liquid separator with a brush to the model. Remove excess separator from under the spring wire.

4 Wax in place the retainer wire work.

5 Mix a small amount of Biocryl resin in a resinmix cup with a spatula. Acrylic mix should be a thick syrup consistency. Apply a small layer of resin over the waxed area of the spring. This will shield the wax during the thermal forming process.

Place the model and acrylic 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 model.

6 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.

7 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 spring wax. The heating cycle and resin application should conclude at the same time.

8 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.

9 Loosen the wires that were held in place with wax along the facial surface of the model and remove plastic.

10 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. Once the cut has been made in the plastic, remove the retainer from the disc.

11 The posterior segment is scalloped 1 ½ 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. Finally, the scalloped posterior and rounded anterior segments are blended into the retainer body.

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

13 This retainer is pumiced and polished using the same procedure as outlined for the upper Hawley retainer. Remove wax from around spring with hot tap water and scrub brush or steam cleaner.

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
080-002	Wax Cup
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
150-025	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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