Technique

A spring-loading device for the Watson gastrointestinal biopsy capsule

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The Watson gastrointestinal biopsy capsule operates on the principle of activation of a spring-loaded knife to cut off a fragment of gastric or jejunal mucosa. The most difficult aspect of the assembly of the capsule has been in placing the spring correctly within the knife module after cleaning the capsule or after dislodging the spring during removal

of biopsy tissue. This procedure often takes up to 10 minutes, can damage the knife blade, and causes much irritation to the operator. This communication reports the manufacture of a simple, inexpensive device to enable the spring to be loaded in less than two minutes and with no risk to the knife blade.

A stainless steel cylinder, 1.7 cm high and 8.5 mm in diameter, is turned on a lathe to form the device shown in Figures 1 and 2. It consists of a solid knurled handpiece, 7.0 mm in height and 8.5 mm in diameter as the base, a solid plain piece 7.0 mm high and 8.3 mm in diameter above this, and then a hollow cylinder 2.7 mm high and with an internal diameter of 4.5 mm and an external diameter of 4.6 mm above this. These dimensions should fit the inner core of the circular knife module exactly.

Two pins, a long one measuring 2 mm in height and 0.75 mm in diameter, and a short one, 1.0 mm in height and 0.75 mm in diameter, grooved on their outer edge, are mounted on the base of the stainless steel cylinder so that they are 0.73 mm from the outer edge of the cylinder and 4.4 mm between the centres of the pins.

The short retaining limb of the spring is placed on the grooved side of the short pin and the spring wound around the hollow cylinder by the use of a hook so that the curved longer limb of the spring fits around the long pin. The knife is then placed over the spring wound cylinder and the spring transferred into the knife module as shown in Figures 3, 4, 5, and 6. The knife module is then loaded into the capsule which is then ready for firing.

This device has enabled the spring to be loaded easily, quickly, and without risk of damage to the knife blade and has proved to be of much value. Suitably modified, it could be used for the Crosby-Kugler capsule as well.

FIG. 1. Side elevation of loading device showing dimensions.

FIG. 2. Top elevation of loading device.

Fig. 3

Fig. 5

Fig. 6

Fig. 4

FIG. 3. Loading device on the left and spring on right.

FIG. 4. Loading device with spring in situ on left and hook to place spring on device on right.

FIG. 5. Device, spring, and biopsy knife before transfer of spring into knife module.

FIG. 6. Knife module loaded with spring.