

Technique

New techniques for speeding small intestinal biopsy

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Small intestinal biopsy with the Crosby capsule may be a time-consuming operation. This paper describes two modifications for reducing the time taken to obtain a biopsy with this instrument.

Modification of Crosby Capsule

The Crosby capsule has been modified by replacing the original spring with a simpler design. The old spring was often difficult to load and this difficulty could lead to blunting of the blade against the horizontal (knife anchor) pin. The new spring allows the capsule to be rapidly and easily assembled and minimizes rubbing the cutting edge of the blade against the knife anchor pin.

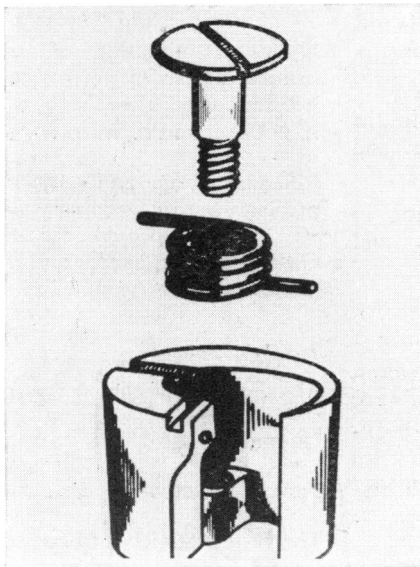


Fig. Modified knife block and spring for Crosby capsule.

The capsule has been modified by replacing the knife block with one of a different design to accommodate a simple coil spring with short straight legs at each end, opposed 180° to each other, retained in the block by a screw through the coils (Fig).

The large head of the spring-retaining screw, in conjunction with the absence of the original semi-circular spring groove, now presents a greater surface area for the rubber diaphragm to push on, resulting in a more positive release of the knife from the knife anchor pin.

The spring is easily taken out for cleaning by unscrewing the spring-retaining screw. This is best done with the knife block assembly removed from the capsule.

Loading is carried out by dropping the knife and spring assembly into the capsule so that the spring anchor pin in the base of the capsule lies between the knife block and the free leg of the spring. The probe may occasionally be required to ease the leg of the spring gently over the pin.

The knife is then cocked ready for use in the normal way, by inserting the loading tool in the hole in the knife block, turning anti-clockwise and lifting to engage the knife anchor pin in its slot.

Intestinal Intubation with Guide Tube under Direct Vision

The main reason for delay in obtaining an intestinal biopsy is the time taken for the capsule to pass through the pylorus and on through the duodenum. It was originally suggested by Laws (1964) that a relatively stiff outer cuff could be used to guide the biopsy capsule into position. This suggestion has now been adopted here as a routine procedure.

The radioopaque intestinal biopsy tubing, Ödman-Ledin red arterial no. 1 Kifa catheter (Frič and Lepšik, 1965; Salem, Salt, and Truelove, 1965), is threaded through an outer polythene tube, leaving the loaded capsule free at the distal end. The standard gauge 17 Luer cannula is then inserted into the proximal end of the Ödman-Ledin catheter. The outer polythene sleeve, which need not be radioopaque, is about 100 cm long. Portex PP 325 tubing has sufficient internal diameter to accommodate the Ödman-Ledin catheter and also possesses a useful degree of inflexibility. For children radioopaque polyvinylchloride tubing (Portex R/1 SH 90) is attached to the infants' Crosby capsule¹ and the most suitable outer polythene non-radioopaque tube is Portex PP 260.

The patient sucks a lignocaine lollipop and swallows the capsule and outer tube together. The curve of the outer cuff, due to the coiled shape in which it is supplied, should be concave to the patient's right so that this can assist its passage into the pylorus. The relative stiffness of the outer sleeve enables the operator to pass the capsule into the oesophagus with minimum dependence on the patient's ability to swallow tubes. The time saved by this reduces the patient's discomfort. The outer sleeve can then be manipulated to the pylorus under fluoroscopic control and the inner radioopaque tube attached to the capsule can be pushed through into the duodenum and upper jejunum.

With this technique a biopsy can usually be obtained

¹Two-thirds size of adult Crosby capsule, manufactured by T.C. Components Ltd., 42 Uxbridge Road, Hampton, Middlesex.

from the small intestine within 15 minutes. On occasion the capsule has been pushed on into the ileum within a further five to ten minutes. Sometimes the capsule turns up the greater curvature towards the fundus. This difficulty can be overcome by turning the patient on the right side with the left shoulder well forward and legs drawn up, thus encouraging the capsule to fall towards the pyloric canal, where it can easily be manipulated into the pylorus.

The method has obvious advantages for the patient. The tube is easier to swallow; radiation time can be reduced; there is no need for injections to relax the pylorus; and the period of intubation and associated discomfort is minimal. The saving of time is also valuable for the clinical staff. This technique has enabled biopsies to be obtained from patients in whom previous attempts have failed because of local difficulties produced by a large hiatus hernia, chronic duodenal ulceration, or previous pyloroplasty.

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References

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Comment

Significance of Early and Late Positive Responses to Insulin Hypoglycaemia in Patients with Intact Vagi

Burns, Cheng, Cox, Payne, Spencer, and Welbourn (1969) have discussed the significance of early and late positive responses to insulin hypoglycaemia in 100 duodenal ulcer patients before surgery, using the 'dividing line' suggested by Ross and Kay (1964). On two points of fairly fundamental importance their results differ from the results of a similar study performed in our department, where 59 duodenal ulcer patients had insulin tests before surgery. We have used 0.4 I. E. insulin/kg body weight intravenously and pH 3.5 as the endpoint for electro-metric titration.

Burns *et al* found the mean spontaneously secreted acid output in men to be 0.8-3.9 m-equiv H⁺/hour whereas our 53 subjects produced 7.7 m-equiv H⁺/hour. In the series of Burns *et al* 37 patients had a late positive response, while this was the case in only eight of our 59 patients. Fifty-seven of our 59 patients had a positive response within 60 minutes after insulin injection, one man a positive response after 60 minutes, while one man had a negative response, having a mean spontaneous acidity of 93 m-equiv H⁺/l. We have found a significantly lower spontaneous acid output in patients having an early positive test (45 min) than in patients with a positive response after 45 minutes. In the work of Burns *et al* this was only the case in which the division between early and late positive was made at 60 minutes. The smaller number of late positive insulin tests and

the higher mean spontaneous acid output in our work may be explained by a more complete collection of gastric secretions than that of Burns *et al*. The higher dose of insulin used in our work cannot explain the difference in response. Information concerning the blood glucose concentration 30 minutes after insulin injection is lacking in the article by Burns *et al*. In our patients the blood sugar level was below 50 mg % 30 min after insulin injection in all cases.

We fully support the suggestion that division into 'early' and 'late' positive responses is artificial and can have no meaning in predicting the completeness of the vagotomy when used after this operation. Also the division between positive and negative tests according to Hollander (1948) is highly problematic. Of 300 patients with duodenal ulcer followed for three to four years after