

Technique

Paediatric small intestinal biopsy capsule with two ports

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The paediatric intestinal biopsy capsule with two adjacent ports described in this report was originally designed for two reasons; first, to obtain more mucosal tissue safely from infants and young children, and, second, to sample a wider area of mucosa. Both these aims have been achieved without any increase in the size of the capsule.

Paediatric biopsy capsules are usually designed with a single circular port 2.0-2.5 mm in diameter. Such capsules provide an adequate specimen for histology and may also yield sufficient tissue for estimation of mucosal disaccharidases at the same time. In our experience, there is often insufficient tissue for any further investigations such as frozen sections for rapid histological assessment and enzyme histochemistry, immunological and microbiological studies, and estimation of other mucosal enzymes. The use of a capsule with a larger port to

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try and obtain more tissue can be dangerous in small infants because of the risk of taking too deep a biopsy and thus causing a perforation (Partin and Schubert, 1966). A capsule with two small ports provides more tissue without this risk.

Capsule with two ports

The capsule used is the paediatric version of the Crosby capsule (Crosby and Kugler, 1957) with a modification in the knife block and spring described by Evans *et al.* (1970). This is the paediatric capsule that is normally supplied by the manufacturers mentioned and it required no change in dimensions for two port holes to be accommodated side by side in place of the usual single port. The capsule with two ports is made by and obtainable from T. C. Components Ltd., 42, Uxbridge Road, Hampton, Middlesex, TW12 3AD.

Figure 1 shows the capsule before assembly and Fig. 2 shows it ready for use. The overall length of the capsule is 16 mm and the diameter is 7.5 mm. Each port is an ellipse measuring 2.5 by 1.5 mm and the ports are separated by 1.3 mm. After firing, the first specimen is removed from the capsule in the normal way. The knife block has to be removed from the capsule so that the second specimen can be easily retrieved. The size of the specimens obtained varies between 6 to 15 mg each. Usually each specimen is around 10 mg and measures between 5.0 by 3.5 mm and 6.0 by 4.0 mm when spread out gently on filter paper. The biopsies sometimes contain a variable amount of the muscularis mucosa but are never deeper than this.

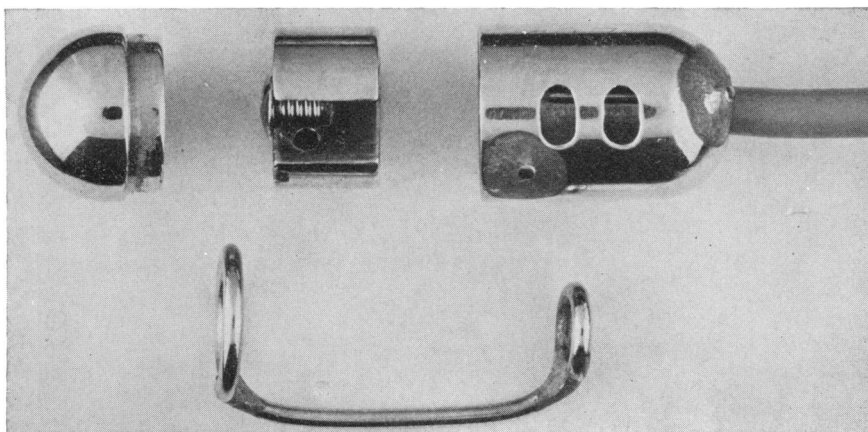


Fig. 1 Dismantled capsule.

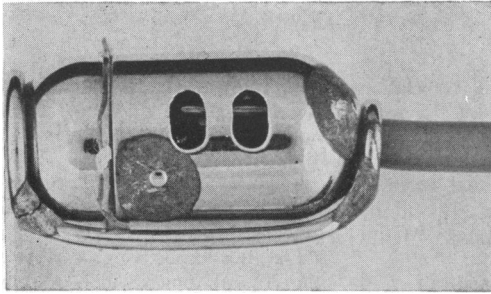


Fig. 2 Capsule assembled for use (overall length 16 mm).

Comment

One hundred and thirty biopsies have now been performed using this capsule. The capsule has failed to fire on only one occasion when the spring had been incompletely cleaned. There have been no complications such as perforation or bleeding. The usual precautions were taken in selecting patients for biopsy and biopsies have not been performed on infants with acute gastroenteritis, with a bleeding tendency, or with an acutely dilated small bowel. The capsule has been used safely on several infants weighing between 3 and 4 kg but no infant has been biopsied who weighed under 3 kg.

Now that a wider area of mucosa is sampled, it has become clear that, in many infants with a small intestinal enteropathy, the mucosal changes may be patchy. Considerable variation may be seen in the severity of the abnormality even over a small area—for example, an area of flat mucosa has been seen close to an area with normal villi in an infant with the post-enteritis syndrome. Similar patchiness has also been seen in cow's milk protein intolerance and

in childhood coeliac disease relapsing under gluten challenge.

Ament and Rubin (1973) have described their modification of the multipurpose biopsy tube that makes this instrument suitable for use in infants, the smaller version having two ports in place of the standard four. A paediatric capsule with two ports has been described previously (Latham *et al.*, 1969), but this required that the capsule itself be modified with elongation of the knife blade and, therefore, the overall length of the capsule. The advantage of the present capsule is that it is a standard size already easily obtainable.

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