

## PRO EXPERIMENTIS

**A New Biopsy-Tube for the Small Intestine**

The necessity of a direct control of the mucosa of the small intestine has suggested—in recent years—several attempts at deduction by means of proof-sticks for biopsy (SHINER<sup>1</sup>; CROSBY and KUGLER<sup>2</sup>).

CROSBY and KUGLER<sup>2</sup> have produced a particular proof-stick, based on the working of the knife by means of an abasing mechanism. The knife is contained in a capsule which is fixed by fitting it in where a rubber membrane is interposed: there is a lateral orifice. The cutting apparatus is contained in the internal part of the capsule. It is formed by a wheeling stick provided with a sharp-cutting edge and with a spiral-spring: this, by the rubber membrane displaced by the decompression, releases the stick, which is previously put into tension and fixed by a metallic anchorage.

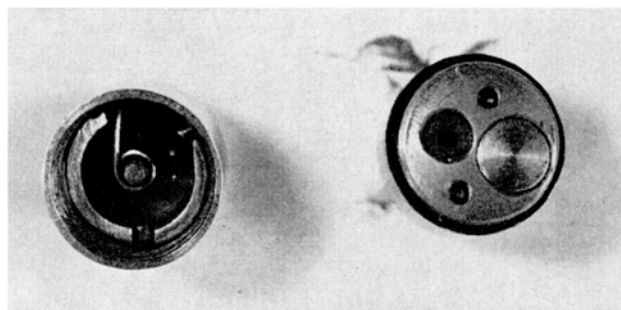


Fig. 1. Details of the capsule: left, distal extremity, right, proximal extremity.

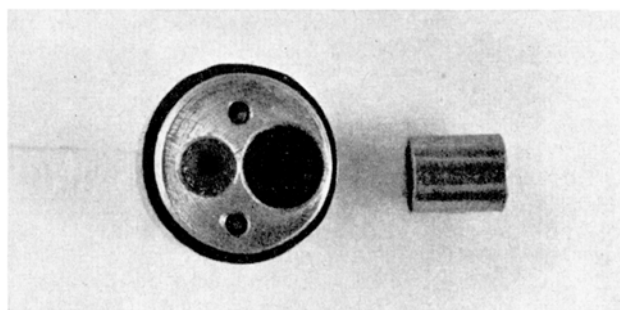


Fig. 2. Details of the proximal extremity; right, the piston.

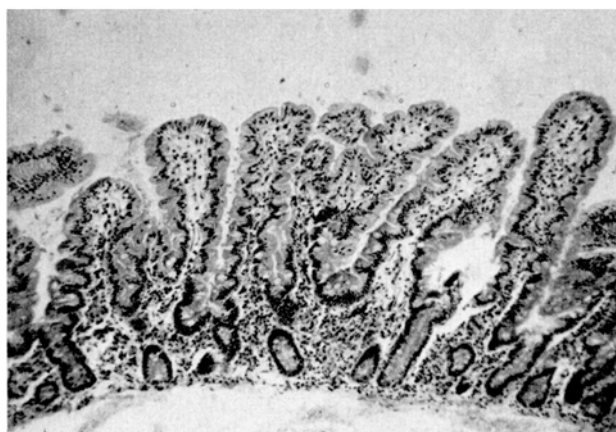


Fig. 3 and 4. Patterns of normal intestinal mucosa.

<sup>1</sup> M. SHINER, *Lancet* 1956 I, 85.

<sup>2</sup> W. H. CROSBY and H. W. KUGLER, *Amer. J. Dig. Dis.* 2, 236 (1957).

syringes. At the other end, a metallic capsule is fixed to the pipe, 20.5 mm long and with a diameter of 10 mm: it may be taken apart into two parts and screwed together in order to cause a perfect pneumatic closing and to avoid the decomposition of the capsule in the intestinal lumen. On the lateral area of the hemisphere, there is a hole of 4 mm for the working of the mucous membrane. The distal hemisphere of the capsule has a knife on a cylindrical block wheeling on a central axis by means of a spring wound on the same axis. The knife is put in charge-position by means of a key that is wheeled in the opposite direction to the spring and anchored to a metallic projection on the internal side of the hemisphere. The proximal hemisphere is formed by a metallic block in which two canals are contained. The smaller of these (diameter 2 mm) is joined to a piece of the polyethylene pipe to carry off the sucus. The second canal, diameter 4 mm, has a metallic piston joined with the second tube of the polyethylene pipe. The function of the piston is to move towards the distal hemisphere—under compression—and to press against the knife to cause the movement.

*Execution of the biopsy.* After fixing the knife in the position of charge, the proof-stick is swallowed and after 2–3 h we observe its position by means of the radioscopia. We suck up about 100 cm<sup>3</sup> until there is a feeling of stoppage; then, keeping the aspiration on, we put in, under pressure, 20 cm<sup>3</sup> of air in the pipe joined with the piston, by means of a second syringe: this causes the falling down and the following movement of the knife and the cutting of the hernial mucous membrane into the hole in the capsule.

The fragment of the mucous membrane is drawn out from the capsule and spread out on filter paper, to avoid its rolling up. Successively, the fragments are fixed with formaline and stained by the usual methods.

*Casuistry.* The biopsy has been made on 28 persons of both sexes: 14 were normal and 14 were patients with different digestive diseases such as chronic diarrhoea (4), chronic gastritis (7), chronic colecystitis (2) and mal-absorptive syndrome (1).

In the choice of patients, we have taken note of some general opposite indications such as conditions of severe defaecation, hemorrhagic diathesis, cardiac vascular insufficiency, severe renal insufficiency.

*Results.* In the cases studied, the technique has always given positive results. In all patients we have got a fragment ranging from 2.5 mm to 3 mm in diameter. The histological study of the biopsy has shown an intestinal mucous membrane of a thickness ranging from the superficial epithelium to the muscular mucosa.

The biopsy has proved to be always without pain and it has never been followed by a symptomatology. In our cases, we have neither incidents nor later complications to complain of.

*Conclusions.* The results of our experience, though limited allow us to make some favourable observations on the methods employed.

The biopsic examination showed no unsuccessful results in all the cases we have studied. In fact, the independence of the fundamental manoeuvres for the deduction, aspiration-compression-section, removes the causes of error of the apparatus formerly used.

The quantity of material obtained in each case underlines the practical utility of the method for the object of diagnosis of affections of the small intestine.

To all this, we must add the lack of unpleasant immediate or late consequences: this gives the technique a character of security and, consequently, shows its practical value for systematic investigations in many casuistries.

*Zusammenfassung.* Beschreibung einer neuen Sonde, die sich für Dünndarmbiopsie eignet und bei der die verschiedenen Vorgänge bei der Biopsie einzeln reguliert werden können. Es wird über Ergebnisse bei 28 Patienten berichtet, wobei keinerlei Komplikationen auftraten. In jedem dieser Fälle konnte eine histologische Wertung durchgeführt werden.

R. CHELI, M. DODERO<sup>3</sup>, and G. CELLE

*Istituto di Patologia medica, Università di Genova (Italy), July 29, 1960.*

<sup>3</sup> Supported by the Consiglio Nazionale delle Ricerche, Roma.