

PERMANENT INTUBATION IN INOPERABLE CANCER OF THE OESOPHAGUS AND CARDIA

A new tube

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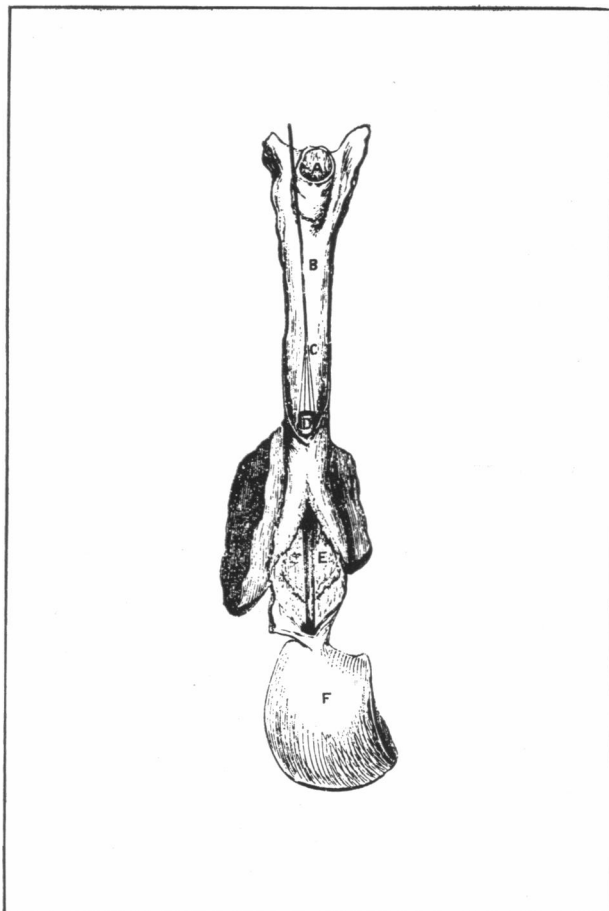
HISTORICAL BACKGROUND

ENDO-OESOPHAGEAL INTUBATION OF malignant strictures has been practised for over a century. As early as 1845 Leroy d'Etiolles was using decalcified ivory to make short tubes that would tunnel through a growth. His attempts, however, were not successful. In this country Sir Morrell Mackenzie was amongst the first to toy with a similar idea, but it was left to Sir Charters Symonds to record the first success in 1885. He was opposed to the use of long tubes (not unlike our present-day Ryle's tube) as recommended by Croft, Durham and Krishaber. Instead he used a six-inch length of No. 10 oesophageal tube which he fixed to a boxwood funnel by German silver wire. Later he used ivory and silver instead of boxwood; and eventually had the tube and funnel made as one in gum elastic. He got over the difficulty of retaining the tube in position by hanging it from a silk thread that was brought out through the mouth or nose and fixed to the ear by strapping. An illustration of his first tube *in situ* in the autopsy specimen is shown in Figure 1.

Symonds's method remained forgotten until revived by Sir Henry Souttar in 1924. In the meantime, in 1914, Guisez suggested the use of a De Pezzer-like catheter for oesophageal intubation. The catheter was 6 cms. long, ended blindly and carried side holes. It was stretched over an introducer, thus narrowing its external diameter and making it easier to navigate the stricture. Once in position the introducer was removed, the catheter being gripped tightly by the stricture. Until Guisez described this technique, tubes had been inserted blindly. Guisez made full use of the oesophagoscope and of bougies; and the method appears to have been very safe in his hands.

Like Guisez, Sir Henry Souttar used direct vision and a special introducer to insert his coiled metallic tubes. They carried a funnel-like top, which he sometimes reinforced by using a wider funnel made of rubber. The method yielded satisfactory results, but tubes were often passed, and false passages were always a danger. To minimize this danger Resano modified Souttar's technique and used a guide to direct the tubes. In Resano's hands the immediate mortality from intubation was as low as 5 per cent.

Resano's work came with the postwar surge of interest in surgery of the oesophagus. Brown in the United States had already recommended the use of a silver tube in 1949, but this was quickly superseded by tubes fashioned from modern synthetic materials. In 1954 Coyas of Athens



To illustrate Mr. Charters J. Symonds's Oesophageal Tube *in situ*.

- A. Upper aperture of larynx.
- B. Oesophagus laid open.
- C. Silk thread by which the tube is retained in position.
- D. Wide upper end of the tube above the stricture.
- E. Narrower lower part of tube below the stricture.
- F. Cardiac end of stomach.

Fig. 1. Symonds's tube.

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working conjointly with Triboulet-Piton in France described a plastic tube (with a metal ring at each end to make it radio-visible) with no funnel to it, but carrying parallel rings that would be gripped by the tumour. The tube is inserted under direct vision using a large oesophagoscope. The same year Kropff described a funnel-carrying polythene tube which

is introduced via a cervical oesophagotomy. Barbin subsequently modified Kropff's tube and adopted a novel technique in intubation.

“ Push ” and “ pull ” methods

Until then all tubes had been inserted by the “ push ” methods, either blindly or through an oesophagoscope. Mousseau and Barbin use what is fundamentally a “ pull ” method. Their tube (Fig. 2) is inserted by threading the catheter-like portion blindly down the oesophagus. If necessary a flexible introducer can be passed down it and withdrawn once it is in the stomach. A high gastrotomy is made, the catheter is recovered and the tube is drawn down the oesophagus by pulling on the former until the funnel is felt to engage the stricture. The excess of catheter and tube is then cut off. This “ pull ” method would appear to be safer than the earlier “ push ” method. The Mousseau-Barbin tube, like all its predecessors, is circular ; it is made of Neoplex and for a given lumen has thicker walls than have metal tubes—hence a lesser flow through it, size for size.

All tubes carrying a circular funnel have the disadvantage that an oedematous ring may form above the funnel and lead to obstruction or to ulceration. Furthermore the distended oesophagus has an oval lumen which is more likely to tolerate an oval structure with greater ease than it does a circular one. Bearing these points in mind, as well as the advisability of intubing the stricture under direct vision, a new tube has been devised. It is in two parts (Fig. 3) :

1. An endo-oesophageal tube.
2. A pilot bougie.

The new tube

The tube is made of natural polythene, is *oval* in its various diameters, and carries a thin, soft *barrel-shaped* funnel. This means that the oesophageal walls do not part from it at an angle (as they do in an ordinary V-shaped funnel) ; instead they surround intimately the gentle curvature of the upper end of the funnel. The latter is 5 cms. long with an opening 18 mm. × 22 mm., while the tube proper is 25 cms. long, has a lumen of 30 F. and can be cut easily at any desired length in spite of its fairly firm though flexible walls, 1 mm. in thickness.

The pilot-bougie, 60 cms. long, size 14 F., is made of solid polythene and has the consistence of gum elastic. It carries an inverted conical end which plugs into the tube and can be secured to it by a length of silk threaded through the holes provided. The silk should be left some 50 cms. long in case the tube has to be pulled up if insertion fails.

Method of use

Under direct vision, with the use of a small size oesophagoscope, the bougie is piloted through the stricture, which may sometimes require dilatation beforehand. A sufficient length is passed down the oesophagus

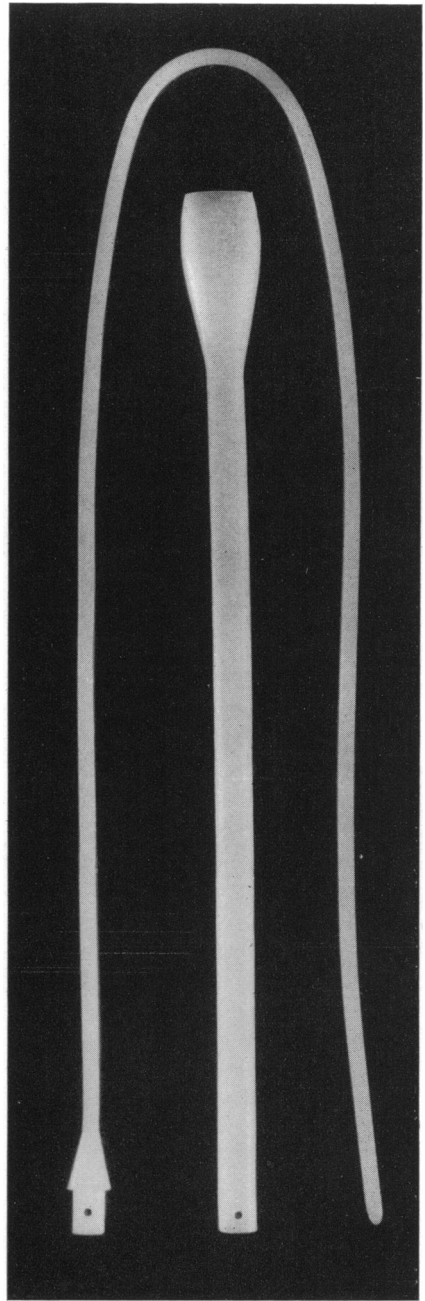
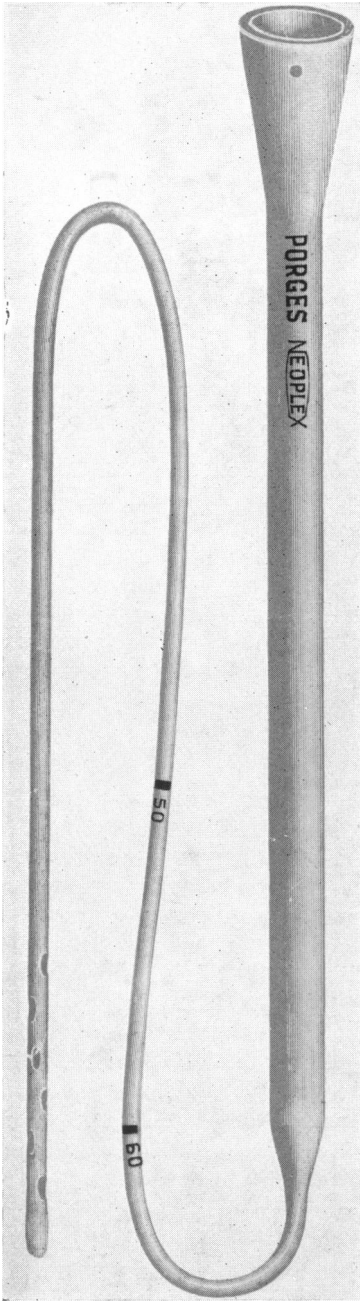


Fig. 2. The Mousseau-Barbin tube.

Fig. 3. The new tube.

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so that the bougie reaches the stomach. The oesophagoscope is then withdrawn over the bougie. The tube is then plugged on to it and made secure, the length of silk hanging loosely outside. A high gastrotomy is made and the lower end of the bougie is recovered. It is gently pulled down. The cone will be felt engaging the stricture. At this stage traction must be steady and very gentle until the entire tube has traversed the stricture and a resistance is met as the funnel reaches the growth and is held back by it. Intubation is then complete. The silk thread is cut and the bougie is disengaged from the tube. If the latter is held tightly by the growth it can be made to descend slightly further into the stomach by over traction, to be then cut flush with the cardia and allowed to retract up into the oesophagus. When the malignant stricture does not appear to grip the funnel tightly enough, or in carcinoma of the cardia, the lower end of the tube should be bevelled generously and then anchored to the lip of the gastrotomy by a through-and-through braided nylon suture. The gastrotomy is then closed by two inverting layers of sutures. By means of this simple procedure the tube is prevented from slipping down and being passed. It is advisable for the patient to sleep with the head and shoulders elevated.

Patients with such tubes can eat anything provided they masticate their food thoroughly. Tablets and capsules should be avoided. Sips of water taken now and then during a meal assist the passage of solids. Before and after meals the tube is cleansed by drinking soda water or any "fizzy" drink.

Results so far are gratifying in as much as the patients are not aware of the presence of the tube, can enjoy the normal pleasures of taste, and do not feel they are dying of inanition. But, as already pointed out by Professor Lortat-Jacob, these tubes must not be used as a short-cut to surgery. They are essentially meant for the inoperable, and should not be misused.

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