

Permanent intubation in terminal cancer of the oesophagus and cardia

A new tube

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A new endo-oesophageal tube and its method of introduction are described. The advantages of the tube and criticisms of it are noted.

There is a small place for permanent oesophageal intubation in the palliation of terminal oesophageal carcinoma patients and in inoperable mediastinal compression of the oesophagus. It may also be useful in countries with less privileged surgical facilities.

PRINCIPLE

A pulling action may be imparted to a tube by pushing from its furthest end. This may be done from the inside of the tube and if an easy pull-type release mechanism is present at the furthest end, the pushing rod may be withdrawn without disturbing the tube (Fig. 1). If the

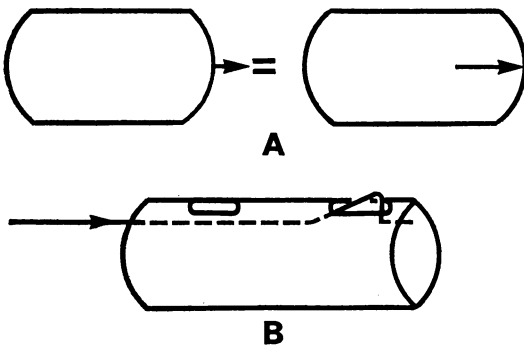


FIG. 1. (A) Diagram indicating how the principle of distal 'push' through a tube might be compared with that of distal pull (Mousseau-Barbin and Celestin tubes). (B) Diagram of introducer release mechanism which engages side holes of the new tube so that distal 'pushing' is possible and which disengages from them on being pulled.

pushing rod is hollow to accommodate a guide wire, the tube and the push rod may be made to follow a predetermined course and, when the

materials of which these are made are flexible, this predetermined path may be curved.

THE NEW TUBE

The tube is made of a soft inert plastic (medical grade PVC), is round in its various diameters, and carries a soft barrel-shaped funnel. The material resists compression of the tube but readily conforms to longitudinal curves, is easily cut with a scalpel, and is radio-opaque. The tube is 25 cm long with a lumen of 1 cm. The barrel of the funnel is 3 cm wide and 2 cm long and is joined to the tube by a smooth-cornered but squarish neck. Spiralling along the length of the tube are pairs of diametrically opposed holes which provide a means of engagement for the introducer at any length of the tube and which, *in situ* through the tumour, provide a nidus on which the tumour can grip. The introducer is a fine flexible metal tube which has an expanded end. This end houses a spring mechanism which will engage any pair of holes on the tube when the introducer is pushed but releases from them when it is pulled from the tube; the fine lumen of the introducer fits snugly over the handle of a long version Chevalier Jackson type of bougie of medium size (Fig. 2).

THE METHOD OF INTRODUCTION

The tube is cut to a suitable length just above any of the holes and its end is pared to a taper with a scalpel. The introducer is smeared at the carrying end with some sterile lubricant, and a little of this is run into its lumen. The tube is placed on the introducer to engage its two lowermost holes. Under direct vision the stricture is seen and dilated as necessary. The long-handled Chevalier Jackson bougie is piloted through the stricture to clear its distal end by 2 or 3 inches (50–76 mm); the oesophagoscope is removed and the introducer, with the tube on it, is located on the end of the handle

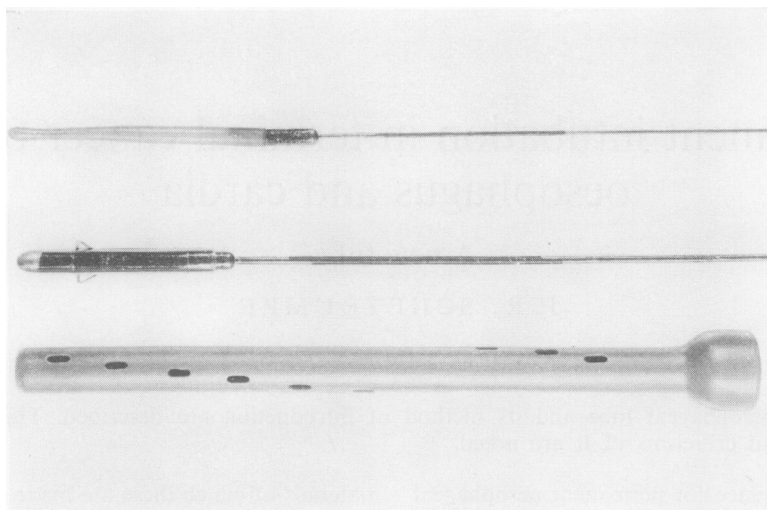


FIG. 2. Bougie, introducer, and the new tube.

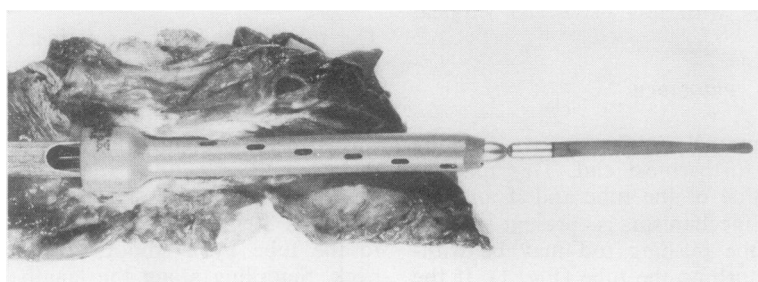


FIG. 3. After insertion of the tube an oesophagoscope is used to butt against its funnel to ensure that it is not dislodged when the introducer and bougie are withdrawn.

of the bougie and pushed over it. As the tube starts to move into the mouth, the handle of the bougie will emerge from the handle end of the introducer and this is now held firmly by an assistant; the tube and introducer are then manoeuvred down the oesophagus over the bougie until the neck of the tube is felt to engage the stricture; the bougie and introducer are then removed, leaving the tube *in situ*. As an added precaution against any tendency to dislodgement of the tube by this withdrawing action, the oesophagoscope may be passed and it is then held against the tube's funnel as the bougie and introducer are removed (Fig. 3).

The postoperative regime is as for any other tube

The advantages of this tube are seen to be: (1) no gastrotomy is required for insertion; (2) the tube follows accurately a path determined by a guide bougie put in under direct vision; (3) the tube can be readily tailored to the length of the tumour; and (4) the small side holes in the tube aid tumour grip.

Criticism of the tube, by seven surgeons who managed 10 cases in which it was used, were: (1)

there is only one size tube and barrel width available; and (2) it is insufficiently radio-opaque. There were no criticisms in respect of the method of introduction.

In the near future a size range of tubes and introducers will be available and the tubes now being produced have improved radio-opacity. Outlining of the tube is often obscured by the vertebral column. Oblique radiographs help in this respect.

I wish to thank the technical staff of the Postgraduate Medical School and Mr. D. L. Lyons of Eschmann Bros. & Walsh Ltd., for their assistance in developing the tube and Mr. G. Kent Harrison, Mr. L. C. Bromley, Mr. I. M. Hill, Mr. A. M. Desmond, Mr. C. I. Cooling, and Mr. D. Milne for their cooperation, constructive criticism, and encouragement in the initial trials of the tube which led to its present design.

The tubes and introducer sets are available from Eschmann Bros. & Walsh Ltd., Shoreham-by-Sea, Sussex.