

## Management of malignant dysphagia by intubation at endoscopy<sup>1</sup>

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### Introduction

Advanced carcinoma of the oesophagus or cardia of the stomach causes relentless dysphagia which rapidly results in malnutrition and often in aspiration pneumonia. Dysphagia may be relieved by the insertion of a prosthetic tube through the neoplastic stricture, but the usual method of laparotomy and pull-through causes a high immediate mortality (Johnson *et al.* 1976). In recent years methods of intubation utilizing fiberoptic endoscopy have been devised (Tytgat *et al.* 1976, Atkinson & Ferguson 1977).

In this paper we report the outcome of intubation using the Nottingham tube introducer (Atkinson *et al.* 1978) in 60 patients with inoperable neoplastic strictures of the oesophagus or cardia.

### Methods

Intubation was done under general anaesthesia after a previous endoscopic examination to obtain histological confirmation of the diagnosis of neoplasm and its histological type. The procedure was carried out in four stages.

- (1) A stainless steel Puestow guidewire was inserted through the neoplastic stricture under direct endoscopic vision and if necessary with radiological screening.
- (2) After removal of the endoscope the stricture was dilated by sliding olive (Eder Puestow) dilators along the wire.
- (3) The endoscope was reinserted and passed through the dilated stricture to assess its extent and so enable the selection of a tube of appropriate size.
- (4) A radio-opaque latex rubber tube of 10 mm bore, with a nylon spiral incorporated in its wall to prevent kinking, was mounted on the Nottingham introducer with a rammer tube behind it (Figure 1) and slid along the guidewire under radiological control until it was in a satisfactory position. The introducer wire was then removed holding the tube in position with the rammer which was itself finally withdrawn.

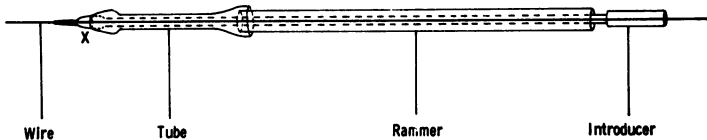


Figure 1. Diagrammatic representation of Nottingham tube introducer assembly

On the first or second day after intubation, tube function was checked radiologically by a barium swallow examination and, if satisfactory, the patient was given a light diet with instruction to masticate thoroughly and to wash it down with frequent drinks. Most were able to return home on the third to the fifth day after intubation. Thereafter patients were kept

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under regular review in the outpatient clinic, except when they came from a distance or were too ill to attend hospital in which case contact was maintained through the patients' general practitioner.

In the three years from the beginning of 1976 to the end of 1978 intubation was attempted in 63 patients (36 men, 27 women). The growth was a squamous carcinoma of the oesophagus in 27, an adenocarcinoma of the cardia or of a gastric epithelial-lined oesophagus in 32, a bronchial carcinoma invading the oesophagus in 2, and in the 2 remaining patients the oesophagus was compressed by neoplastic mediastinal lymph glands from a primary carcinoma of the breast. Three patients had a tracheo-oesophageal fistula.

**Results**

Three patients could not be intubated because the stricture was too tight to permit the passing of the guidewire and each died, within 4 days, of aspiration pneumonia, cachexia and perforation of the growth at endoscopy respectively. The remaining 60 patients were successfully intubated. Because tube dysfunction necessitated extubation and reintubation on 16 occasions, the 60 patients underwent a total of 76 intubations.

Before intubation the majority of patients would swallow liquids only and these often in such small amounts that intravenous fluids were required to restore fluid balance. Intubation promptly alleviated dysphagia and enabled most patients to take an adequate diet, although certain foods such as steak, raw apple and hard bread crusts were avoided. Reinstitution of deglutition often resulted in improvement in nutritional status as reflected by increase in body weight. Intubation gave good symptomatic relief in 3 patients with tracheo-oesophageal fistula (Table 1).

*Table 1. Patients' ability to swallow*

Grade of dysphagia	Before intubation	After intubation
Difficulty with certain solids	0	33
Soft diet only	2	17
Liquids only	24	4
Intravenous fluids needed	34	6●
	<hr/> 60	<hr/> 60

● All died within a week of intubation

Proximal displacement of the tube occurred in 6 patients after an interval ranging from 1 day to 6 months after its insertion. The attachment of a shoulder to the tube near its distal end reduced the incidence of proximal displacement; it occurred in 5 of the 23 patients who had a tube without a shoulder inserted, but in only one of the 37 patients in the latter part of the series in whom a shouldered tube was used. The displaced tubes were easily removed by reversing the procedure for introduction and were replaced by shouldered tubes. In 2 patients, each lost to follow up for periods of over a year, endoscopy for recurrence of dysphagia revealed the tube was no longer present in the oesophagus and had presumably disintegrated and passed distally although in neither could any trace of it be found on radiographs of the abdomen.

Occlusion of the tube lumen by food material caused acute dysphagia in 6 patients, all of whom had inadequate dentition. The obstruction was cleared at a further endoscopy by irrigation and breaking up the food mass with the biopsy forceps or by passing the Olympus P2 scope (8 mm diameter) through the tube to push the food mass into the stomach. In 2 patients the food material could not be dislodged by this means and the tube was extracted and replaced. In a seventh patient blockage was caused by extension of the growth to occlude the funnel of a tube inserted eight months previously.

After the tube had been in position for more than six months, the latex of the tube often became denatured resulting in it becoming soft and disintegrating to release the nylon spiral

in its wall. In one patient the distal 3 cm of the tube became detached and passed on down the alimentary tract. When check endoscopy revealed evidence of denaturation of the rubber of the tube it was replaced by a new tube and this gave the opportunity to inspect the growth and assess its response to any treatment that may have been given.

The growth was perforated during the intubation procedure in 6 patients and in one of the 3 in whom intubation failed. In spite of the tear, the intubation procedure was completed and the patient given antibiotics and continued on intravenous fluids for a week. Three patients survived and were discharged home but the other 4 died of mediastinitis. Late perforation occurred in 3 patients after intervals from intubation of 1 month to 13 months and all were fatal.

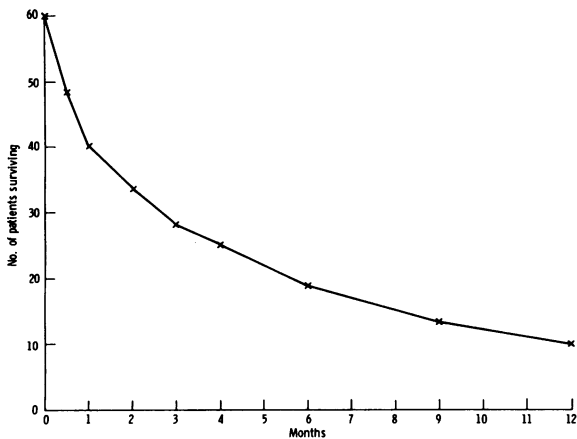


Figure 2. Survival of 60 patients undergoing palliative intubation for inoperable oesophagogastric neoplasm. The median survival time was just under three months and 10 patients survived for a year or more

#### *Prognosis after intubation (Figure 2)*

**Immediate:** Twelve patients died in hospital within a week of intubation or attempted intubation. The cause of death was perforation and mediastinitis in 4, respiratory complications in 4 including one following general anaesthesia, cachexia in 2, cardiac infarction in 1 and stroke in 1.

Of the 63 patients, 51 (80%) were able to return home swallowing adequately, usually on the second or third day after intubation. Thirteen patients with squamous growths were subsequently treated with megavoltage radiotherapy.

**Long term:** The median survival time after intubation was 3 months, during which time satisfactory swallowing was maintained in the majority who were able to remain at home during most of this period. Ten patients survived for a year or more after intubation and in 2 of these, after radiotherapy for a squamous carcinoma, the tube was removed and the growth has not recurred one year and two years after commencement of treatment.

#### **Discussion**

Palliative intubation is primarily a means of relieving the intense discomfort of severe dysphagia and additionally of permitting home management in the terminal stages of malignant disease of the upper alimentary tract. These aims were achieved in 80% of patients in the present series and the advantages of endoscopic as opposed to operative intubation are the lower immediate mortality and the much shorter stay in hospital. The mortality from the procedure itself is difficult to assess because many deaths after intubation result from pre-existing aspiration pneumonia and cachexia, and comparisons between different series are often invalidated by differing policies for selection of patients. In view of the distress caused

by dysphagia, we did not reject any patients as being unfit for intubation. To the 4 deaths caused by perforation must be added a death after anaesthesia in a patient who already had cardiorespiratory insufficiency; thus a total of 5 deaths were caused by the procedure. In such a debilitated group of patients this seems an acceptable risk to balance against the prospect of providing relief of symptoms.

Since tubes inserted endoscopically cannot be sutured in position, there is a risk of proximal displacement which in this series was largely overcome by the use of a tube with a shoulder near its distal end. If necessary such tubes were removed without undue difficulty perhaps because their presence served to dilate the lumen of the neoplastic stricture.

Structural deterioration of the latex of Celestin tubes left in position through a benign oesophageal stricture for 2 years has been reported by Mackenzie *et al.* (1976). We found softening of the latex wall of the tube on occasions only six months after insertion and in one patient the distal part of the tube became detached. It is advisable to make an endoscopic examination of all tubes six months after insertion, using a paediatric instrument which will pass down the tube lumen, and to replace those showing signs of deterioration. The majority of those patients in our series in whom structural deterioration of the tube occurred suffered from squamous growths which had been treated by radiotherapy. However, survival was longer in this group of patients and it was not possible to determine whether radiotherapy accelerates denaturation of the latex of the tube.

Nutritional support may be beneficial in enabling patients better to withstand active treatment of the carcinoma (Copeland *et al.* 1975, Deitel *et al.* 1976). In these circumstances, intubation may be used as a temporary supportive measure; in 2 of our patients, who were initially cachectic and fluid-depleted as a result of dysphagia, the tube was eventually removed after satisfactory response to radiotherapy.

### Summary

A method of relieving dysphagia in inoperable oesophagogastric neoplasms by per oral intubation using the Nottingham tube introducer was attempted in 63 patients with 3 failures. Twelve patients died within 10 days of intubation, including 4 from a perforation of the growth sustained during the procedure, and 51 patients left hospital swallowing satisfactorily. The average period of survival was 3 months and 10 patients survived for a year or more, including 2 in whom the tube was removed after regression of a squamous carcinoma following radiotherapy.

Endoscopic per oral intubation is a simple and relatively safe procedure which when used in patients with oesophagogastric neoplasms gives adequate symptomatic relief and allows home management in the terminal stages of the illness.

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