

Oesophagectomy without Thoracotomy

V. Naraynsingh, F.R.C.S., G. O. D. Busby, F.R.C.S.,
K. Fung Kee Fung, F.R.C.S. and G. C. Raju, M.R.C.Path.

Departments of Surgery and Pathology, Port-of-Spain
General Hospital, Trinidad

ABSTRACT

Oesophagectomy without thoracotomy has been recommended by some surgeons because of minimal morbidity and mortality associated with this procedure. This is the first report from the West Indies on the use of this technique. We recommend the procedure because of the numerous advantages it offers over oesophagectomy via a thoracotomy.

INTRODUCTION

Ever since Denk's description in 1913 of oesophagectomy without thoracotomy, surgeons have shown much interest in this controversial procedure. Denk experimented with avulsing the oesophagus in cadavers and animals, using a vein stripper (Denk, 1913). Although he suggested that oesophagectomy without thoracotomy may be used in the treatment of oesophageal carcinoma, it took 20 years before the first blunt transmediastinal oesophagectomy was performed (Turner, 1933). Three years later, however, the same surgeon condemned the procedure because of a high operative mortality due to haemorrhage and infection (Turner, 1936a, 1936b).

Much of the experience with blind oesophagectomy was confined to resection of a normal intrathoracic oesophagus associated with excision of carcinoma in the cervical oesophagus or pharynx (Ong and Lee, 1960). In other cases, the oesophagus was resected for benign diseases such as strictures.

In 1974, Kirk reported good results using this technique for oesophagectomy in 5 patients with incurable intrathoracic oesophageal carcinoma. Since then, other workers have recommended the procedure (Orringer and Sloan, 1978; Szentpetery et al, 1979).

We have successfully performed oesophagectomy without thoracotomy in 3 patients with carcinoma of the intrathoracic oesophagus, and we think that it is of value in selected cases.

OPERATIVE TECHNIQUE

With the patient supine and the head tilted to the left, the neck and the entire anterior trunk are included in the operative field. The stomach is mobilized via an upper midline incision by division of the gastrocolic ligament outside the gastroepiploic arch. Then the left gastroepiploic vessels, gastrohepatic ligament, left gastric artery, and the vasa brevia are divided while the right gastric and right gastroepiploic vessels are left intact. The peritoneum at the oesophageal hiatus is incised and a red rubber catheter passed around the oesophagus. By downward traction on the catheter using the left hand and by blunt dissection around the oesophagus using the fingers of the right hand, the lower part of the intrathoracic oesophagus is mobilized. The fingers are kept with the palmar aspects on the oesophagus at all times, and the plane of dissection is maintained immediately against the oesophagus throughout; this minimises the risk of damage to major blood vessels and the tracheobronchial tree. It is necessary to divide both vagus nerves to facilitate this part of the dissection.

At the same time, another surgeon is dissecting the oesophagus from above; and a transverse incision is made just anterior to the right sternomastoid muscle. By dissection medial to the sternomastoid muscle and the carotid sheath, the oesophagus is exposed. It is not usually necessary to divide the omohyoid muscle.

A red rubber catheter is passed around the cervical oesophagus. By traction on this catheter with the left hand, and by blunt dissection using the fingers of the right hand, the upper thoracic oesophagus is mobilized. The plane is often easier to establish posteriorly, and when "abdominal surgeon" and "cervical surgeon" have completed the posterior dissection, it can be taken around the oesophagus anteriorly with greater facility.

When complete mobilization of the oesophagus is achieved, a pyloromyotomy or pyloroplasty is performed before the stomach is pulled up into the neck by traction on the cervical oesophagus. Thus the entire thoracic oesophagus and the upper stomach are delivered into the cervical wound where the oesophageal resection is performed. The stomach is closed at the oesophagogastric junction and the cervical oesophagus is anastomosed, end to end, to the fundus of the stomach. The abdominal and cervical incisions are then closed. The patient has no thoracic scar (Fig. 1).

Case 1

A 66-year-old negro man presented with a two-month history of dysphagia and weight loss. He was anaemic, anicteric and cachectic but had no lymphadenopathy, ascites or hepatomegaly on clinical examination. Endoscopy and biopsy confirmed a squamous cell carcinoma which on barium swallow appeared as an irregular stenotic area in the lower part of the mid-oesophagus (Fig. 2). At laparotomy, the coeliac axis lymph nodes had metastatic deposits. This patient had oesophagectomy without thoracotomy by the technique described. During surgery, a tear was made in the right pleura where the tumour was adherent. Chest X-ray done at the end of the operation revealed a small right pneumothorax which was not treated. Apart from this, surgery was uneventful with a total blood loss of 500 ml.

The patient recovered uneventfully. He pulled out his nasogastric tube on the first post-operative day, was tolerating sips of fluid by the fourth day, and had his cervical drain out on the fifth day. Gastrograffin swallow done on the 16th post-operative day showed an intact cervical anastomosis with free flow of dye from oesophagus to intrathoracic stomach (Fig. 3).

Case 2

A 63-year-old East Indian man presented with a ten-week history of dysphagia. Though showing evidence of weight loss, no obvious secondaries could be found on clinical examination. Barium swallow showed an irregular filling defect at the junction of middle and lower thirds of the oesophagus which, on endoscopy and biopsy, revealed squamous cell carcinoma. He had oesophagectomy without thoracotomy. Estimated blood loss was 800 ml. He tolerated sips of fluids on the fourth day, when the nasogastric tube was removed, and the cervical drain was taken out on the fifth day. By the twelfth post-operative day, he was tolerating a normal diet, and was discharged on day 16. While still on the ward and packing to go home, he had sudden severe chest pain and died within half-an-hour. Post-mortem examination confirmed death from myocardial infarction with an intact oesophagogastric anastomosis, normal lungs, mediastinum and abdomen.

Case 3

A 70-year-old Negro man presented with a two-month history of dysphagia. Clinically he had no lymphadenopathy, hepatomegaly or ascites. Endoscopy and biopsy showed a squamous cell carcinoma of the lower third of the oesophagus. He had oesophagectomy without thoracotomy by the technique described. Estimated blood loss was 600 ml. The post-operative course was uneventful, and he was discharged on the 16th post-operative day.

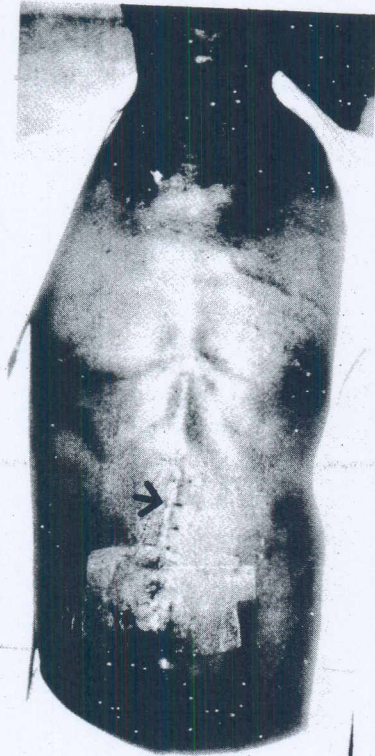


Fig. 1. Patient 16 days post-oesophagectomy without thoracotomy showing abdominal and cervical scars (arrows)



Fig. 2. Barium swallow showing carcinoma at junction of middle and lower third of oesophagus

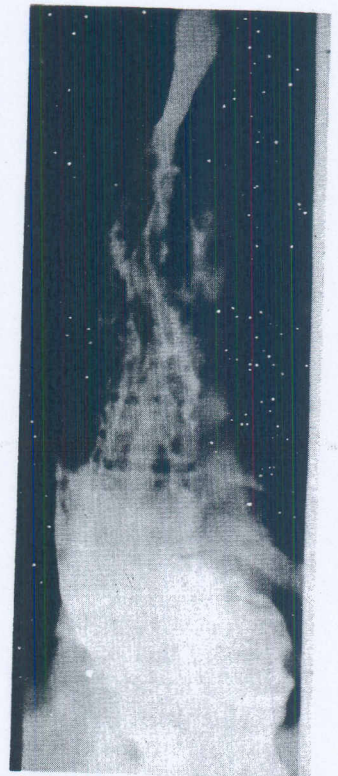


Fig. 3. Barium swallow 16 days post-oesophagectomy without thoracotomy showing intact cervical oesophago-gastric anastomosis (arrow)

DISCUSSION

There is little doubt that this technique transgresses several of the well-accepted practices of tumour surgery. At times, the access is poor and some of the procedure is performed blindly and there is little opportunity for careful haemostasis and wide excision of the tumour and regional lymph nodes. However, it is also well-recognised that radical operation or combined radiotherapy and surgery produce significant morbidity and mortality and, in spite of this, only short-term palliation and little hope for cure (Skinner, 1976; Parker and Gregorie, 1976). With such poor results, it seems appealing to use a technique that, theoretically at least, offers an alternative which may decrease the operative morbidity and mortality in selected cases. Oesophagectomy without thoracotomy by the technique described offers the following advantages:

1. Less pain since there is no thoracic incision.
2. Less respiratory complications as patients breathe and cough more comfortably, and accept chest physiotherapy more readily.
3. Less anastomotic complications since there is no intrathoracic anastomosis, and leakage from a cervical anastomosis is associated with a much lower morbidity and mortality than leakage from an intrathoracic anastomosis (Ong and Kwong, 1969).
4. Less blood loss if the technique is carefully executed as described. In our three cases, blood loss has been minimal.
5. Less operating time as there is no need for thoracotomy, and a synchronous combined technique can be employed.
6. No need to change the position of the patient. The entire procedure is done with the patient supine.

In spite of these advantages, some surgeons openly condemn the procedure (Orringer and Sloan, 1978). However, there is no doubt that almost all surgeons who have reported on the technique and who have direct experience with it insist that it has a definite place in the treatment of oesophageal cancer (Kirk, 1974; Orringer and Sloan, 1978; Szentpetery et al, 1979). Our own view is that it has definite advantages and can be safely and successfully used in many cases. It is essential that the surgeon be prepared to abandon the procedure and resort to a thoracotomy or a bypass if the tumour is adherent, and if a dissection plane cannot be defined by the dissecting fingers. It is also essential that routine chest X-ray be performed at the end of the procedure, since the incidence of pneumothorax can be as high as 30% (Orringer and Sloan, 1978) and haemothorax 59% (Szentpetery et al, 1979). In spite of this relatively high complication rate, pulmonary complications such as pneumonia and atelectasis were not encountered (Szentpetery et al, 1979).

In his lecture "Management of Carcinoma of the Oesophagus: Art or Science?", John Wong (1981) described oesophageal cancer as "a highly lethal condition, for which even the most optimistic of oesophageal surgeons would agree that adequate palliation is the most realistic objective". It is not yet known if long-term survival of patients with "blind oesophagectomy" is any worse than that of patients having resection via a formal thoracotomy. However, it is our experience that post-operative morbidity is much less in these patients and, in palliative oesophageal surgery, it offers numerous advantages.

REFERENCES

- Denk, W. (1913) Zur Radikaloperation des Oesophaguskarzinoms *Zentralbl. Chir.* **40**: 1065.
- Kirk, R. M. (1974) Palliative resection of oesophageal carcinoma without formal thoracotomy. *Brit. J. Surg.* **61**: 689-690.
- Ong, G. B. and Lee, T. C. (1960) Pharyngogastric anastomosis after oesophagopharyngectomy for carcinoma of the hypopharynx and cervical oesophagus. *Brit. J. Surg.* **48**: 193-200.
- Ong, G. B. and Kwong, K. H. (1969) The Lewis-Tanner operation for cancer of the esophagus. *J. Roy. Coll. Surg. (Edin.)* **14**: 3-19.
- Orringer, B. and Sloan, H. (1978) Esophagectomy without thoracotomy *J. Thorac. Cardiovasc. Surg.* **76**: 643-654.
- Parker, E. F. and Gregorie, H. B. (1976) Carcinoma of the esophagus: long-term results. *J.A.M.A.* **235**: 1018-1020.
- Skinner, D. B. (1976) Esophageal malignancies: experience with 110 cases. *Surg. Clin. N. Amer.* **56**: 137-147.
- Szentpetery, S., Wolfgang, T. and Lower, R. R. (1979) Pull-through esophagectomy without thoracotomy for esophageal carcinoma. *Ann. Thorac. Surg.* **27**: 399-403.
- Turner, G. G. (1933) Excision of the thoracic oesophagus for carcinoma with construction of an extra thoracic gullet. *Lancet*, **2**: 1315-1316.
- Turner, G. G. (1936a) Carcinoma of the oesophagus: the question of its treatment by surgery. *Lancet*, **1**: 67-72.
- Turner, G. G. (1936b) Carcinoma of the oesophagus: the question of its treatment by surgery. *Lancet*, **1**: 130-134.
- Wong, J. (1981) Management of carcinoma of the oesophagus: art or science? *J. Roy. Coll. Surg. (Edin.)* **26**: 138-149.