ENDOSCOPIC OESOPHAGECTOMY – A CASE REPORT

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ABSTRACT

Endoscopic oesophagectomy was first successfully performed in Singapore for a 64-year-old Chinese patient who had a 6cm mid-oesophageal tumour. The postoperative recovery was very remarkable. He was extubated at the end of the surgical procedure, stayed in the intensive care unit for only one day and was quite mobile by the end of the week. The surgical techniques are described in this case-report.

Keywords: *Oesophagectomy, oesophageal cancer, thoracoscopy, laparoscopy, endoscopy.*

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INTRODUCTION

Endoscopic oesophagectomy is fast emerging as a viable surgical procedure for oesophageal carcinoma. It has been shown that the oesophagus can be safely and effectively mobilised under thoracoscopic visualisation[1,2]. Preliminary thoracoscopy allows the endoscopic surgeon to evaluate the local extent and resectability of the diseased oesophagus without having to subject the patient to a fruitless exploratory thoracotomy. The results of endoscopic oesophagectomy have been so remarkable that it is predicted to supplant the blunt transhiatal oesophagectomy and possibly even all other surgical approaches[1].

We report the first case of endoscopic oesophagectomy done successfully in Singapore.

CASE REPORT

The 64-year-old male patient (weighing 65 kg) had dysphagia for three weeks and was operated on 28 Feb 1994. Endoscopy showed a stenosing lesion at 33 cm from the incisors and tissue biopsy confirmed moderately differentiated squamous cell carcinoma. Computerised axial tomography (CT) demonstrated a 3cm stricture of the oesophagus, starting 4cm from the level of the carina. The wall of the oesophagus was thickened and no adjacent lymphadenopathy was detectable by CT.

Surgical Technique

Thoracoscopic Stage

Under general anaesthesia, a double-lumen endotracheal tube was inserted to permit collapse of the right lung for endoscopic dissection. The patient was turned to the right lateral position with the arm abducted to produce maximum displacement of the scapula. Two thoracic trocars with round-tip obturators (Endopath 10/11 mm, Ethicon) were inserted at the 5th intercostal space anterior and posterior to the inferior scapula angle. Two other similar trocars were positioned at the 7th intercostal spaces and these were used for insertion of chest-tubes at the end of the procedure. The flexible gastroscope (Olympus GIF PQ 20) was introduced to permit rapid identification of the oesophagus and the location of the tumour (Fig 1).

Fig 1 – Gastroscopic illumination as seen by thoracoscopy (light located between azygous vein and tumour)

The first step was identification of structures and the local extent of the tumour was noted. Next, the mediastinal pleura above and below the azygous vein was divided with coagulation endoshears (Fig 2). The azygous vein was dissected with the use of a rotating 10-mm right-angled dissector (Ethicon, BRK 10). Thereafter, the vein was transected after applying three large endoclips (Ethicon ER 420) on each side (Fig 3).

The mediastinal pleura over the entire oesophagus up to the thoracic inlet was divided with endoshears. The inferior pulmonary ligament was also divided as in the open method.

The oesophagus was mobilised below the tumour and encircled with a vascular loop which was then utilised for traction. Using a combination of blunt and sharp dissection and alternating use of endoscopic finger dissector (Fig 4), blunt cherry dissector (Ethicon BCD 10), suction/irrigation probe and endoshears, the entire oesophagus was mobilised. Large direct arterioles were clipped while smaller vessels were electrocoagulated. Care was taken to avoid injury to the right pulmonary vein, trachea, recurrent laryngeal nerve and the great vessels at the thoracic inlet. Because of the desmoplastic reaction, the tumour was slightly adherent to the vertebral body posteriorly and so it took some time for the dissection to free the tumour.

At the end of the dissection, two large-bore chest tubes were inserted through the thoracic trocars and secured in

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Fig 2 – Mobilisation of azygous vein

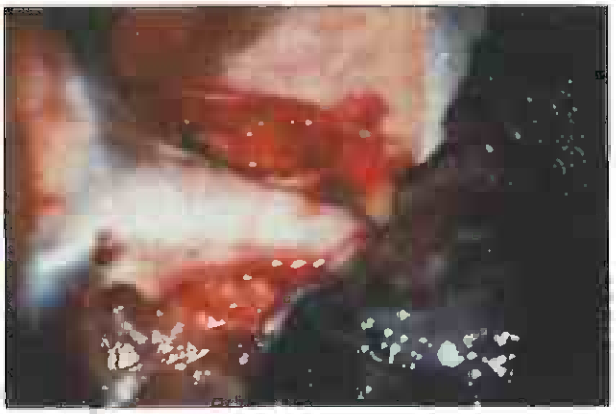
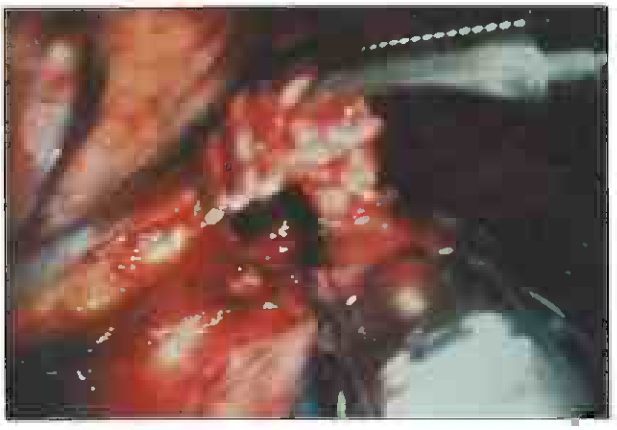


Fig 3 – Endoclips applied on azygous vein



position. The patient was then turned to the supine position for the next steps.

Abdominal and Cervical Stage

The open mobilisation of the stomach and abdominal oesophagus followed the standard technique of preserving the right gastro-epiploic arch and the right gastric blood vessels. The duodenum was mobilised laterally and a Heineke-Mickulicz pyloroplasty performed. The oesophago-gastric junction was transected with a stapling device.

The cervical oesophagus was next approached via a neck incision along the anterior border of the right sternomastoid. By means of a Foley's catheter attached to the lower end of the oesophagus and the stomach fundus, the entire oesophagus (with tumour) and stomach were rail-roaded up to the neck. Here the end-to-side oesophago-gastric anastomosis was performed with a single-layer interrupted 3-0 polydiaxanone sutures. A Redivac drain leading to the cervical anastomosis was inserted and the cervical and abdominal wounds closed.

Patient Outcome

The endoscopic part of the oesophagectomy took two hours while the entire three-stage oesophagectomy was completed in six hours and ten minutes. The thoracic oesophagus with a 6-cm tumour and five adjacent lymph nodes were removed. Histology showed moderately differentiated squamous cell carcinoma with desmoplastic response and involving the entire wall. Only one lymph node showed metastasis. The margins were clear of tumour.

The patient (Fig 5) tolerated the procedure so well that he was extubated immediately after operation. He stayed in the intensive care unit (ICU) for only one day and was in the high dependency area for three days. A contrast swallow performed on the 10th postoperative day showed an intact anastomosis. He went home two weeks after the operation at request (as he wanted to prolong his stay). When reviewed at the sixth week following surgery, he was very pleased to

Fig 4 – Endoscopic finger dissector used for holding oesophagus

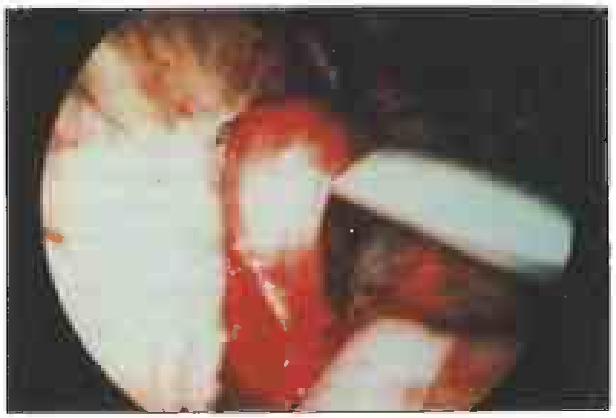


Fig 5 – Patient fully ambulant and well on tenth postoperative day

be able to 'eat anything'. By the third month, his weight increased by 2.2 kg.

DISCUSSION

Currently the major problem with the Lewis-Tanner partial oesophagectomy and the three-stage total oesophagectomy popularised by McKeown is postoperative respiratory complication [3]. Thoracotomy itself causes morbidity such as pain, scapular fixation and frozen shoulder [1]. Blunt transhiatal oesophagectomy is an attempt to overcome the thoracic problems but the procedure carries the risk of injury to the azygous vein, bronchus and recurrent laryngeal nerve[4,5]. A recent prospective randomised trial comparing transhiatal approach and thoracotomy shows no difference in hospital stay, morbidity or survival [6].

Endoscopic oesophagectomy has the promise of minimising surgical trauma and proponents are impressed by the improved visualisation of structures. Increasingly, it is shown that resection can be safely and effectively done in a closed thorax. Initial experiences show that this approach allows adequate oncological clearance comparable to other approaches [1,2].

With further surgical experience and development of better endoscopic instrumentation, the procedure will be technically easier and the operative time should be correspondingly reduced. However, it is not suitable for large bulky tumours that are stuck to adjacent structures.

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