

East African Medical Journal Vol 79 No. 6 June 2002

TRANS-HIATAL OESOPHAGECTOMY AS PALLIATIVE TREATMENT FOR CARCINOMA OF THE OESOPHAGUS

V.O. Adegboye, MD, Cardiothoracic Unit, Department of Surgery, M.O. Obajimi, MD, A.O. Ogunseyinde, MD, Department of Radiology, I.A. Brimmo, MD and A.O. Adebo, MD, Cardiothoracic Unit, Department of Surgery, University College Hospital, PMB 5116, Ibadan, Nigeria

Request for reprints to: Dr. V.O. Adegboye, Department of Surgery, University College Hospital, P.M.B. 5116, Ibadan, Nigeria

TRANS-HIATAL OESOPHAGECTOMY AS PALLIATIVE TREATMENT FOR CARCINOMA OF THE OESOPHAGUS

V.O. ADEGBOYE, M.O. OBAJIMI, A.O. OGUNSEYINDE, I.A. BRIMMO and A.O. ADEBO

ABSTRACT

Objective: To determine the role of palliation with trans-hiatal oesophagectomy in Nigerian patients with carcinoma of the oesophagus.

Design: Prospective case series. The first series was from February 1986 to September 1987 (Series A) while the second series was from March 1989 to November 1996 (Series B).

Setting: Cardiothoracic Surgery Unit (CTSU) of the University College Hospital, Ibadan, Nigeria.

Subjects: First series consisted of 10 consecutive operable patients with carcinoma of oesophagus seen over the period of study. The second series consisted of 21 consecutive patients with same disease.

Intervention: All patients had transhiatal oesophagectomy by a two team approach and immediate placement of the freed stomach in the posterior mediastinum and cervical oesophagostomy.

Results: Patients in both series had a comparable age range of 43 - 80 years for series A and 40 - 82 years for Series B. The duration of symptoms were 2 - 6 months and 2 - 12 months respectively, for series A and B. In series A, nine patients had carcinoma of the middle-third (M1/3) of the thoracic oesophagus and one patient had carcinoma of lower-third (L1/3) of the thoracic oesophagus. In series B, 18 patients had M1/3 and three patients had L1/3 lesions. Average blood loss in series A was 1,067 mls, corresponding value for series B was 852 mls. Postoperatively, all cases were classified as stage III or stage IV disease. There were 18 complications in eight patients in series A and 22 complications in 10 patients in series B. The commonest complications in series A were pleural enteries in six patients, haemorrhage four patients (three intraoperative, one post-operative) and respiratory failure (two patients). The commonest in series B were pleural enteries in nine patients, anastomotic leaks and stenosis in four patients and respiratory failure in three patients. Hospital mortality was 50% in Series A and 14.3% in series B. The causes of death were haemorrhage and respiratory failure in series A, respiratory failure in series B. Survival period in series A of the five patients discharged was for a median of 8.4 months, for series B, four patients were alive at 18 months post-operative, one patient attended follow-up clinic 24 months after surgery. No other adjunctive therapy was offered to the patients.

Conclusion: Trans-hiatal oesophagectomy is a procedure suitable for patients with carcinoma of the oesophagus and affords palliation at an "acceptable price" among carefully selected patients with advanced carcinoma of the oesophagus.

INTRODUCTION

In a review of our patients with carcinoma of the oesophagus(1), we reported a hospital mortality of 31% and 22% respectively for oesophagectomy and intraluminal tube. The majority of our cases have continued to present with advanced disease and severe cachexia. Additionally, economic and local constraints

have limited patients' only therapeutic option to surgery. The reports of results by Orringer and Sloan(2) and others(3-6) suggested that trans-hiatal oesophagectomy (THE) might offer these debilitated patients palliation at a reduced morbidity and mortality. This report presents the results of two consecutive studies to evaluate THE in an "unselected" patient population.

MATERIALS AND METHODS

From February 1986 to September 1987; and March 1989 to November 1996, two different groups of patients presenting with oesophageal carcinoma underwent THE by the same group of surgeons, in the same hospital. Excluded were those with extensive cervical nodal metastasis, malignant fistula between the tracheobronchial tree and the oesophagus, and the presence of oesophageal lung (or severe aspiration pneumonitis) in which the patients have dyspnoea at rest. Age of the patient or degree of cachexia were not contraindications to surgery. All patients routinely had plain chest x-rays, barium swallow, oesophagoscopy and biopsy. Other investigations included full blood count, serum electrolytes and urea, glucose, liver and pulmonary function tests.

Preoperatively, all patients were rehydrated and biochemical deficiencies corrected. Plasma and blood transfusions were given as required. The patients were fed either by the transoral route, with high calorie liquids or semisolids or by gastrostomy or jejunostomy.

Our technique of oesophagectomy essentially follows that described by Orringer and Sloan(2) and Szentpetery *et al*(4). This is essentially a two team approach. The patient was placed supine with the face turned to the right side. The neck is maintained in a light hyperextension with a sand bag between the scapulae and a roll of towel behind the neck. The head is held in a head ring at the occiput.

The cervical oesophagus is exposed through a left oblique incision along the anterior border of sternocleidomastoid muscle. A soft rubber tube passed transnasally into the oesophagus proximal to the tumour enhances the dissection of the oesophagus. The dissection is done with care to avoid injury to the recurrent laryngeal nerves. The blunt dissection of the oesophagus is carried down into the mediastinum. Care is also taken at this level not to injure the left mainstem bronchus and the arch of the aorta to which the tumour may be adherent.

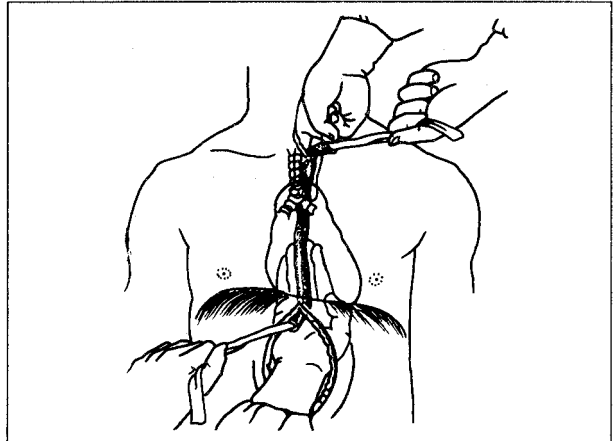
The abdomen is entered through an upper midline incision. The stomach is mobilised with a Kocher's manoeuvre performed to obtain appropriate length. The left gastric vessels and left gastroepiploic vessels are ligated and divided but the right gastric and right gastroepiploic arteries are preserved. As the short gastric vessels are ligated and divided, care is taken to avoid injury to the spleen.

The peritoneum overlying the oesophagogastric junction is encircled with a soft rubber drain (e.g. Paul's tubing). With downward traction on the rubber drain held in the left hand, the right hand is inserted through the diaphragmatic hiatus and blunt finger dissection of the oesophagus is done cephalad as far as the carina. The dissection in the mediastinum is kept close to the oesophageal wall.

Traction on the freed oesophagus at the cervical end can be applied to achieve posterior mediastinal placement of the freed stomach. Alternatively, the distal oesophagus is transected distal to a ligature at the cardia and the oesophagogastric junction is closed in two layers. A heavy linen suture is attached to the gastric fundus and used to guide the stomach through the posterior mediastinum to the neck. A two layer oesophagogastric anastomosis is done with 3/0 silk or dexon after fixation of the stomach to the prevertebral fascia. A nasogastric tube is left in-situ for a variable time (2 to 10 days) postoperatively. The mediastinal dissection is as shown in figures 1 and 2.

Figure 1

Trans-hiatal blunt oesophageal dissection – Two team approach. Encircling soft rubber drain (or soft rubber sutured to divided oesophagus) is used for traction. (copied from J. Thorac Cardiovasc. Surg. 1978; 6: 643, Published by Mosby)



A feeding jejunostomy is routinely done if not done preoperatively and the cervical wound is drained. Any clinical evidence of pleural violation is followed by a chest tube insertion into the affected hemithorax.

Postoperative care includes initiation of feeding via the jejunostomy when bowel sounds return and the patients are ambulated early. Barium study of anastomotic site is done on the tenth postoperative day. In most instances methylene blue drink is relied upon for detection of anastomotic leakages.

Cervical drain is left in-situ until satisfactory oral intake is achieved. When anastomotic leak occurs trans-oral irrigation is instituted after and in between meals. Such anastomotic leaks subside within one week of such treatment.

Anastomotic stenosis was managed initially by two weekly, bouginage and at varying intervals subsequently. Figure 3 shows pre and postoperative barium swallow of one of the patients managed.

RESULTS

Series A consisted of 10 patients managed between February 1986 and September 1987. Series B consisted of 21 patients managed between March 1989 and November 1996. Table 1 summarises the clinical data that the groups were comparable with respect to age, sex and location of the disease.

Table 2, summarises the outcome of surgery. There was a general improvement in the outcome of surgery in series B over series A. The complications of THE for series A and B (Table 3) shows pleural entry as the most common complication in both series. Haemorrhage which was prominent in series A did not feature in series B. In three of the four patients, there was massive intraoperative haemorrhage involving the aorta and/or pulmonary artery. In the 4th patient, the haemorrhage was due to splenic injury. Anastomotic leak and anastomotic stenosis were

Figure 2

Left: Dissection in the mediastinum is performed intermittently to prevent intraoperative hypotension. Dissection is done close to the wall of oesophagus

Right: Complete oesophagectomy. The gastric fundus is sutured to the cervical prevertebral fascia. Cervical en-to-side oesogastrostomy is completed

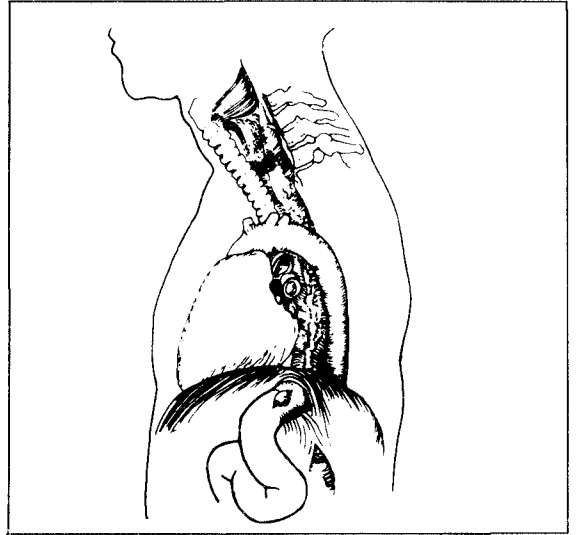
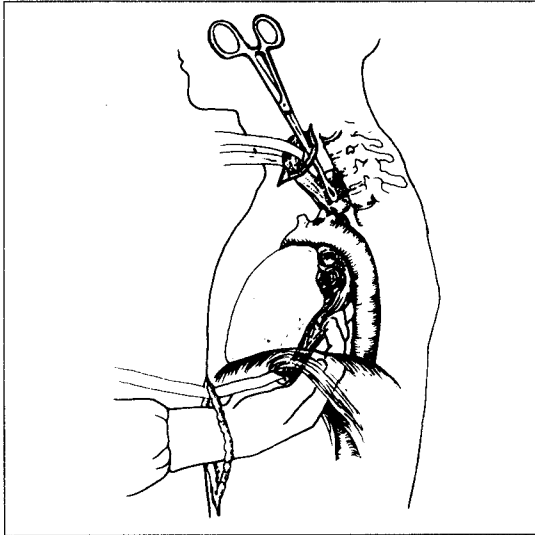


Figure 3

Left: Preoperative barium swallow showing the entire oesophagus. There is proximal dilatation, narrowing of the distal 1/3 with shouldering defect and irregularity of the mucosa in keeping with carcinoma of the oesophagus

Right: Post operative barium swallow showing stomach in the posterior mediastinum and oesophago gastric anastomosis at the thoracic inlet



prominent morbidities in series B but were less prominent in series A. The commonest cause of death in series A were massive haemorrhage (three patients) and respiratory failure (two patients). Respiratory failure accounted for the hospital mortality in the three patients of series B. In two patients, one from each

series the respiratory failure was due to intentional drowning effected by the co-operation of the patients with their relatives. The remaining cases of respiratory failure were confirmed at autopsy to be due to massive pulmonary embolism.

Table 1*Summary of clinical data*

No. of patients	Sex		Age (years)	Duration of dysphagia (months)	Location of disease		
	M	F			U ^{1/3}	M ^{1/3}	L ^{1/3}
Series A 10	6	4	43 - 80	2 - 6	-	9	1
Series B 21	15	6	40 - 82	2 - 12	-	18	3

Table 2*Outcome of surgery*

	Duration of Procedure (hours)	Mean of Estimated Blood Loss (mls)	No. of Complication	Morbidity (%)	Hospital Mortality (%)	Mean post Operative Hospital stay (days)
Series A	3 - 6 (mean 3.7)	* 1,067	18(8) ⁺	80	5(50)	28.5
Series A	2 - 4.25 (mean 2.8)	852	22(10) ⁺	47.6	3(14.3)	18.8

*Excluding three massive intra operative haemorrhage

⁺No of patients with complications

Table 3*Complications of THE for series A and B*

Complication	Series A No. (%)	Series B No. (%)
Pleural entry	6(60)	9(42.9)
Anastomotic leak	1(10)	4(19.0)
Anastomotic stenosis	1(10)	4(19.0)
Haemorrhage	4(40)	0(0.0)
Respiratory failure	2(20)	3(14.3)
Chylothorax	1(10)	0(0.0)
Subphrenic abscess	1(10)	0(0.0)
Regurgitation	1(10)	0(0.0)
Postprandial diarrhoea	1(10)	2(9.5)
Total	18	22

Postoperative pathological staging in both series indicate stage III disease in three patients of series A and II of series B while stage IV disease was the finding in seven and 10 patients of series A and B respectively. They were all histologically reported as squamous cell carcinoma.

The survival period in series A of the five discharged patients ranged from 4 - 12 months (median 8.4 months). In series B, the 18 discharged patients (85.7%) were alive at six months, 10(47.5%) were alive at nine months, seven (33.3%) at one year and four (19.0%) at 18 months post discharge from hospital. One patient attended the follow up clinic, 24 months after discharge from hospital. No adjunctive therapy was offered to the patients.

DISCUSSION

The dismal condition of patients presenting with oesophageal carcinoma is exemplified by the observed mean weight loss of 10 kg(8). Apart from this weight loss, there is the advanced stage of the disease indicated by the presence of stage III or stage IV neoplasm in all our patients. Though cure is a remote expectation in such a setting, a meaningful palliation, namely, "restoring the illusion of health and well being for the duration of attainable survival" (9), is a worthwhile quest. Currently, the only statistics ever reported on the results of surgical treatment of oesophageal carcinoma are operative mortality and the duration of survival(8,10-

13). With an overall mortality rate up to 30% and a mean five year survival rate not exceeding 15 - 20%, the prognosis of oesophageal cancer remains poor(8,11,13). Radiotherapy has failed to eliminate tumour extension to vital structures and chemotherapy has failed to control distant metastasis(14-17). In the majority of cases therefore, surgical treatment of oesophageal carcinoma can only be regarded as palliative. To the often palliatively treated patient, however, the quality of survival is of much greater importance than duration(18). The aim of every treatment should therefore be; (i) reduction of the high mortality rate, the complication, and the duration of postoperative hospitalisation; (ii) ability to remain at home in comfort without major complaints, restoring physical performance, and, ultimately, the opportunity to die with dignity(18).

The fundamental question is "what price for palliation"(19). The mortality for resection is between 17 to 45%(8,12,20); 21 to 42% for oesophageal bypass procedures(12,19,21) and 16 to 45% for oesophageal intubation(22,23). A careful assessment of the palliative procedures is therefore essential for the selection of treatment applicable to the majority of patients.

In our previous report (1) 35% were considered inoperable, hence no palliation was offered. Similarly, others(24,25,26) reporting from Nigeria found that 38 to 75% of patients were inoperable. In a review of world literature, 42% of 83, 783 cases of carcinoma of oesophagus were inoperable(8). Despite the obvious need for selection, an overtly rigid criteria would deny the majority of patients the benefits of palliation while committing them to miserable deaths. No patients seen during the period of this study was considered inoperable. However, patients with extensive cervical nodal metastasis, malignant fistula between the tracheobronchial tree and the oesophagus, and those with oesophageal lung or severe aspiration pneumonitis with dyspnoea at rest were not offered THE.

Our hospital mortality of 50% for series A and 14.3% for series B clearly varies from 2 - 6% currently reported(6,28,29). Firstly, "a learning curve" is expected with any new surgical procedure. Orringer reported a hospital mortality of 23% with his initial series of 26 cases(2) while this has now reduced to 12%(5). Secondly, comparisons of results are hampered by the omission of a clearly defined selection criteria from most reports. In some series good results from THE were attributed to avoidance of cases with advanced local extension(28), dissection under direct vision(23). Some operators(27) aborted THE in 25% of their cases because of tumour fixation. Viewed against the background of liberal selection of cases, our mortality rate approximates the 43% obtained in a series with 97% respectability(30).

Pre-operatively, CT scan has proven valuable for the selection of patients(28) and Kron *et al*(32) noted that in only one out of 13 patients so selected was the neoplasm not confined entirely to oesophageal wall. We

observed mediastinal widening on the chest x-ray in three patients of series A, all of whom had substantial intra-operative bleeding resulting in their death. This radiological sign correlates with extensive mediastinal spread. We suggest exclusion of patients with such radiological features from having THE.

Exsanguinating haemorrhage occurred in three of our patients. Similar intraoperative misadventures have been reported by Steward *et al*(28) who encountered one patient requiring 44 units of blood and Hankins *et al*(6) who had four patients with blood loss of 3,700 to 4,500 mls. The sources of these bleeding have included torn azygos vein, aberrant aortic branch vessel and peri-oesophageal venous plexus. Post-mortem examinations of our cases have revealed torn tumour infiltrated aortic arch or pulmonary artery as the cause of these massive intraoperative haemorrhage. Dissections close to the wall of the oesophagus has prevented this accident in our more recent series.

In selected patients, THE is attended by a morbidity rate of between 40%(31) and 60%(5), but their relative significance are trifling and are easily managed(18). THE without thoracotomy has been shown to carry less morbidity and mortality than transpleural oesophagectomy(2-6,14,22,31). At the University College Hospital, Ibadan after the series A experience, THE has been increasingly performed in patients with oesophageal carcinoma because palliative treatment of advanced tumours is possible at an acceptable price. However, patients with extensive mediastinal spread should be excluded by non-invasive diagnostic studies. Alternatively during the procedures, cautious transmediastinal exploration is advised. Timely abandonment when mediastinal fixation is encountered and judicious conversion to substernal bypass may be indicated. In the appropriate patient, an excellent palliation can be expected with THE.

REFERENCES

1. Adebajo, S.A., Grillo, I.A., Osinowo, O.O.A. and Abikoye, E.O. Carcinoma of the Oesophagus: A current review. *W. Afr. J. Med.* 1984; **3**: 127-138.
2. Orringer, M.B. and Sloan, H. Oesophagectomy without thoracotomy. *J. Thorac. cardiovasc. Surg.* 1978; **76**: 643 - 654.
3. Kirk, R.M. Palliative resection of oesophageal carcinoma without formal thoracotomy. *Brit. J. Surg.* 1974; **61**: 689 - 690.
4. Szentpetery, S., Woffigang, T. and Lower, R.R. Pull - through oesophagectomy without thoracotomy for oesophageal carcinoma. *Ann Thorac. Surg.* 1979; **27**: 399 - 403.
5. Orringer, M.B. and Orringer, J.S. Oesophagectomy without thoracotomy: A dangerous operation? *J. Thorac. Cardiovasc. Surg.* 1983; **85**: 72 - 80.
6. Hankings, J.R., Miller, J.E., Attar, S. and McLanghlin, J.S. Transhiatal oesophagectomy for carcinoma of the oesophagus: experience with 26 patients. *Ann. Thorac. Surg.* 1987; **44**: 123 - 127.
7. King, R.M., Pairolo, P.C., Transteck, V.T., Payne, W.S. and Bernatz, P.E. Tror Lewis oesophagogastrrectomy for

- carcinoma of the oesophagus: Early and late functional results. *Ann. Thorac. Surg.* 1987; **44**: 119 - 122.
8. Earlam, R. and Canha-Melo, J.R. Oesophageal cell carcinoma. A critical review of surgery. *Brit. J. Surg.* 1980; **67**: 381 - 390.
 9. Payne, W.S. Palliation of Oesophageal carcinoma. *Ann. Thorac. Surg.* 1979; **28**: 208 - 209.
 10. Launors, B., Paul, J.L., Lygidakis, N.J., Campion, J.P., Malledant, Y., Grossetti, D. and Delarne, D. Result of the Surgical treatment of carcinoma of the Oesophagus. *Surg. Gynaecol. Obstet.* 1983; **156**: 753 - 759.
 11. Giuli, R, Gignoux, M: Treatment of carcinoma of the oesophagus. *Ann. surg.* 1980; **192**: 44 - 48.
 12. Postlethwait, R.W. Complications and death after operations for oesophageal carcinoma. *J. Thorac. Cardiovasc. Surg.* 1983; **85**: 827 - 831.
 13. Skinner, D.B. En bloc resection for neoplasms of the oesophagus and cardia. *J. Thorac. Cardiovasc. Surg.* 1983; **85**: 59 - 71.
 14. Earlam, R. and Cunha-Melo, J.R. Oesophageal squamous cell carcinoma: A critical review of radiotherapy. *Brit. J. Surg.* 1980; **67**: 457 - 461.
 15. Pearson, J.G. Radiotherapy for Oesophageal Carcinoma. *World J. Surg.* 1981; **5**: 489 - 493.
 16. Appelqvist, P., Silvo, J. and Rissanen, P. The result of Surgery and radiotherapy in the treatment of squamous cell carcinoma of the thoracic oesophagus. *Ann. Clin. Rad.* 1979; **11**: 184 - 190.
 17. Ezdinl, E.Z., Gelber, R., Desai, D.V., Falkson, G., Moertel, C.G., Hahn, R.G. Chemotherapy of advanced Oesophageal carcinoma: Eastern cooperative oncology group experience. *Cancer.* 1980; **46**: 2149 - 2153.
 18. Barbier, P.A., Luder, P.J., Schupfer, G. and Becker, C.D. Quality of life and patterns of Recurrence following Transhiatal Oesophagectomy for cancer; Results of a Prospective follow-up in 50 patients. *World J. of Surg.* 1988; **12**: 270 - 276.
 19. Orringer, M.B. Oesophageal Carcinoma; what price palliation: *Ann. Thorac. Surg.* 1983; **36**: 377 - 379.
 20. Ong, G.B. and Lam, K.H. Factors influencing morbidity and mortality in oesophageal carcinoma. *J. Thoracic. Cardiovasc. Surg.* 1978; **78**: 745 - 754.
 21. Conlan, A.A., Nicolaou, N., Hammond, C.A., Pool, R., de Nobrega, C. and Mistry, B.D. Retrosrenal gastric bypass for in opeable oesophageal cancer. *Ann. Thorac. Surg.* 1983; **36**: 396 - 402.
 22. Kairaluoma, M.L., Jokiene, K., Karkola, P. and Larmi, T.K.I. Celestin tube palliation of Unrectable oesophageal carcinoma. *J. Thorac. Cardiovasc. Surg.* 1977; **73**: 783 - 785.
 23. Hankins, J.R. Cole, F.N., Attar, S., Satterfield, J.R. and McLaughlin, J.S. Palliation of oesophageal Carcinoma with intraluminal tubes: experience with 30 patients. *Ann. Thorac. Surg.* 1979; **28**: 224 - 229.
 24. Nwafo, D.C. Malignant obstruction of the oesophagus in Eastern Nigeria. *Ghana Med. J.* 1977; **16**: 151 - 153.
 25. Ajao, O.G. and Solanke, T.F. Carcinoma of the oesophagus. *J. Nat. Med. Assoc.* 1979; **71**: 703 - 705.
 26. Ihekwa, F.N. and Solanke, T.F. Carcinoma of the oesophagus. *Brit. J. Surg.* 1984; **71**: 116 - 118.
 27. Shahian, D., Neptune, W.B., Wilis, T.H., Watkin, S.E.. Trans thoracic Versus Extrathoracic Oesophagectomy: Mortality, Morbidity and long term survival. *Ann. Thorac. Surg.* 1986; **41**: 237 - 246.
 28. Stewart, J.R., Sarr, M.G., Sharp, K.W., Efron, G., Juanteguy, J. and Gadacz, T.R. Transhiatal (Blunt) Oesophagectomy for malignant and benign Oesophageal disease: Clinical experience and technique. *Ann. Thoracic. Surg.* 1985; **40**: 343 - 348.
 29. Goldfaden, D., Orringer, M.B., Appelman, H.D. and Kalish, R., Adenocarcinoma of the distal oesophagus and gastric cardia. *J. Thorac. Cardiovasc. Surg.* 1986; **91**: 242 - 247.
 30. Belsey, R. and Hiebert, C.A. An exclusive right thoracic approach for cancer of the middle third of the oesophagus. *Ann. Thorac Surg.* 1974; **18**: 1 - 15.
 31. Barbier, P.A., Becker, C.D. and Wagner, H.E. Oesophageal carcinoma: Patient selection for Transhiatal Oesophagectomy. A prospective analysis of 50 consecutive cases. *World J. of Surg.* 1988; **12**: 263 - 269.
 32. Kron, I.L., Cantrell, R.W., Johns, M.E., Joob, A. and Minor, G. Computerised axial tomography of the oesophagus to determine the suitability for blunt oesophagectomy. *Ann. Surg.* 1984; **200**: 173 - 174.