

Oesophageal resection in the elderly

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Summary

The outcome of transthoracic resection for carcinoma of the oesophagus and cardia was compared in seventy six patients over seventy years of age with that of 179 patients under seventy. A resectability rate of 89% was achieved in the over 70 group and 91% in the under seventy group. Hospital mortality at 3 months was 21% in the elderly group and 14% in the younger age group ($P=NS$). Postoperative pulmonary infection and cardiac arrhythmias were more frequent in the elderly but postoperative hospital stay was almost identical in both groups. There were three fatal anastomotic leaks in the over seventy group and six in the under seventies. Survival figures at one and five years showed no significant difference between the groups. We conclude that age alone is not a contraindication to surgical resection of carcinoma of the oesophagus and cardia.

Introduction

The increase in life expectancy which has occurred in recent decades is likely to continue with consequent increase in the numbers of elderly patients presenting for surgery. While no established criteria exist to define the term 'elderly' 70 years is a reasonable age at which patients can be so classified and this arbitrary figure has been used in assessing the effect of age on the outcome of surgery (1,2,3).

Carcinoma of the oesophagus occurs most commonly in the seventh decade (60–69) but it is not unusual for up to 25% of a series to be over 70 years of age. Surgical resection offers the best hope for long-term survival and provides the most effective palliation in patients with carcinoma of the oesophagus and cardia but thoracotomy is poorly tolerated by the elderly (4) who are more susceptible to complications such as pulmonary embolism and myocardial infarction (5) and have a higher mortality rate after oesophagectomy (6).

Alternatives to resection such as intubation or bypass do nothing to alter the natural history of the disease. Intubation provides poor palliation (7) and bypass is associated with a significant morbidity and mortality (8). Radiotherapy is ineffective in adenocarcinomas of the

cardia and the results of irradiation for squamous cell carcinomas of the oesophagus are disappointing with a mean 1 year survival of 18% (9).

The aim of this paper was to compare the outcome of surgical resection for carcinoma of the oesophagus and cardia in a group of patients over the age of seventy with that of a group under seventy years of age. The distribution of tumours between the cardia and middle and lower thirds of the oesophagus was similar in both groups and since there is no essential difference in the technical and clinical problems involved in treating tumours of the oesophagus and cardia it was deemed appropriate to include the latter group of tumours in the study.

Patients and methods

Between 1972 and 1985 a total of 281 patients with carcinoma of the oesophagus or cardia were referred to our unit. Twenty six patients were considered unfit for major surgery because of prohibitive cardiac or respiratory problems or because of disseminated tumours and were managed by intubation or radiotherapy. Nine of these patients were over seventy and 17 were in the younger age group. One patient in the younger age group was accepted for resection but the tumour was considered unresectable at operation and a bypass procedure was carried out.

Two hundred and fifty four patients underwent resection of whom 141 were males and 113 were females. Seventy six patients over seventy underwent resection. Their ages ranged between 70 and 84 years with a mean of 74 years. One hundred and seventy eight patients under 70 had a resection. Their ages ranged between 27 and 69 years with a mean of 58 years (Table I).

Patients are referred from family doctors, gastroenterologists and surgeons from different regions throughout

TABLE I Number of patients in each group

	Over 70 Years	Under 70 Years	Total
No. seen	85	196	281
No. resected	76	178	254

the country. It is not, therefore, possible to refer to the number of patients seen as a proportion of cases occurring in a defined catchment area. Neither is it possible to exclude an element of preselection in the referral pattern although the number of patients referred with extensive tumours, significant weight loss and coexisting disorders such as chronic obstructive airways disease, and previous myocardial infarction or angina suggest that preselection is minimal.

Although all patients over 50 years are subjected to objective tests of pulmonary and cardiac function, patients are rarely rejected for surgery on the grounds of inadequate pulmonary reserve or the presence of ischaemic heart disease. However, the presence of dyspnoea at rest or a myocardial infarct occurring within the previous three months is regarded as a contraindication to resection.

OPERATIVE TECHNIQUES

Surgical resection was by the Lewis-Tanner technique for middle-third tumours ($n=171$) or via a separate midline epigastric incision and left thoracotomy for tumours of the lower-third and cardia ($n=80$). A McKeown three phase procedure with cervical anastomosis was carried out in three patients with high middle-third tumours. Pyloroplasty or pyloromyotomy was not done unless there was evidence of gastric outlet obstruction. All anastomoses were performed by hand using unabsorbable sutures. Staplers were never used. All resections were carried out by one surgeon.

Post-resection staging of the tumours was carried out using the TNM classification adopted by the American Joint Committee on Cancer (10). Since only 5% of the total number of tumours were in Stage I, both Stage I and Stage II tumours were grouped together for convenience of presentation. In the over seventy group 32% of tumours were either Stage I or II and 68% were Stage III. In the under seventy group 39% of tumours were Stage I and II and 61% were Stage III.

Results

Resectability Operability and resectability criteria were based on a pre-operative assessment of tumour size, the absence of overt metastases and a clinical assessment of pulmonary function and cardiac status. Pulmonary function was measured and stress ECG carried out in all patients over 50 years of age. The resectability rate in the elderly group was 89%. In the under 70 group the resectability rate was 91%.

Mortality Mortality figures include all patients who underwent resection and who died in hospital up to 90 days after resection (Table II). The mortality rate in the over 70 group was 21%. The mortality rate in the under 70 group was 14% ($P=NS$, χ^2 analysis). Cardiac and pulmonary complications were the most frequent causes of death in both groups. Fatal anastomotic leak occurred in three patients in the over seventy group and 6 patients in the under seventy group.

Morbidity Pulmonary infection was the most frequent cause of postoperative morbidity in both groups but was more frequently seen in the elderly in whom 38% had a serious postoperative pulmonary infection. Postoperative cardiac arrhythmias were also proportionally more fre-

TABLE II Operative mortality (3 months) in 254 oesophageal resections

	178 Patients <70	76 Patients ≥70	Total
Pneumonia	7	5	12
Myocardial infarction	7	4	11
Anastomotic leak	6	3	9
Pulmonary embolism	3	1	4
Pneumothorax	—	1	1
CVA	1	—	1
Haemorrhage	1	1	2
Sepsis	—	1	1
($P=NS$, χ^2 analysis)	($n=25$)	($n=16$)	($n=41$)

quent in the elderly. The incidence of wound infection was low and was not significantly different between the two groups. Mean postoperative stay was similar in both groups with a mean of 21 days for the elderly group and 20 days for the under seventy group. Adequate oral nutrition was slowly achieved in a proportion of elderly patients who required additional nutritional support by enteral feeding for a week or two before being discharged. The incidence of complications such as non-fatal leak, benign stricture, and local recurrence, were not significantly greater in the elderly (Table III).

Survival Survival was calculated by actuarial methods. All patients undergoing resection are included in the figures and all patients ($n=15$) lost to follow-up are presumed to have died and are included in the figures. One year survival was 40% in the elderly group and 41% in the under seventy group ($P=NS$). Five year survival was 22% in the elderly and 19% in the under seventy group ($P=NS$) (Table IV).

TABLE III Postoperative non-fatal complications

	<70 ($n=178$)	≥70 ($n=76$)
Non-fatal Leaks	3	3
Wound infections	2	3
Cardiac arrhythmia	4	5
Myocardial infarction	1	1
Subphrenic abscess	2	1
Pulmonary infection	40 (22%)	29 (38%)
Pulmonary embolus	3	1
Deep venous thrombosis	2	1
Gastric stasis	4	3
Benign stricture	11	7
Local recurrence	8	4
Total	80 (45%)	58 (77%)

TABLE IV Survival actuarial method

	Over Seventy Years	Under Seventy Years
1 year	40%	41%
5 years	22%	19%

Discussion

In this series of 254 resections for carcinoma of the oesophagus and cardia 30% of patients were over seventy years of age and were classified as elderly. In these patients tumour staging was similar to patients in the younger age group. Although the frequency of significant preoperative pulmonary and cardiac problems was greater in the elderly group, the number of patients in whom these conditions prohibited surgery was no greater in the over seventy group. Since resectability criteria were met with equal frequency in both groups, resectability rates were similar. However, these high resectability rates were reflected in relatively high mortality rates in both groups and although there was no statistical difference between the mortality rates in the two groups there was a higher mortality rate in the over seventy group. It has been suggested that transhiatal oesophagectomy is a more appropriate technique in elderly patients with oesophageal cancer because it avoids the hazards of thoracotomy (4). Transhiatal resection, however, can be accompanied by complications not easily withstood by elderly patients, such as, severe cardiac arrhythmias, hypotension, bronchial or tracheal damage and significant bleeding (11). Proportionally, the incidence of fatal anastomotic leak was no greater in elderly patients.

Although pulmonary infection was seen more frequently after resection in the elderly group, this did not contribute significantly to the mortality rate. Similarly the proportionally greater frequency of cardiac arrhythmias in the over seventy group did not increase mortality. These problems occurred mainly in the first post-operative week and were readily controlled and did not prolong hospital stay. The comparable survival figures suggest that resection is equally worthwhile in both groups of patients. Alternatives to resection, such as, intubation and bypass do not greatly improve survival, provide poor palliation and have a significant morbidity

and mortality. We believe that the results presented above support the view that patients over the age of seventy can undergo transthoracic resection for carcinoma of the oesophagus and cardia with no greater risk than patients of a younger age group and have an equal chance of long-term survival.

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Critical Comment

This interesting report portrays the considerable experience of Professor Hennessy's team in the management of carcinoma of the oesophagus and cardia over a fourteen year period. The article addresses the dilemma faced by many surgeons, with increasing life expectancy and an increasing proportion of patients over 70 in their practices, as to whether major resectional and reconstructive surgery, known to carry a relatively high mortality, is justifiable in elderly patients. The conclusion at first sight would tend to suggest that the answer is yes. However, careful consideration of the data presented and of alternative approaches to the problem is necessary before such a firm conclusion may be drawn.

Although the authors claim no statistically significant difference in hospital mortality between the elderly and non-elderly groups, the raw figure of 21% for the former is 50% higher than the 14% for the latter, and is considerably higher than that of many current series with overall hospital mortality of around 10% (1-3). Such figures, however, often reflect careful preselection and treatment by other means of patients considered unlikely to survive resection. It is well known that opera-

tive mortality increases with increasing resectability rate (4), and the mortality in the Dublin series presumably relates to the high resectability rate of around 90%.

It is well recognised that surgery usually restores normal swallowing better than many palliative modalities (5), and many oesophageal surgeons feel that a high resectability rate, despite a higher operative mortality, is justified even when a cure seems unlikely. This philosophy can, of course, be extrapolated to elderly patients, where prolonged survival is less likely.

Our philosophy is different to the Dublin practice, and tends towards a more conservative approach. Whilst in Dublin, age, inadequate pulmonary reserve or ischaemic heart disease are not contraindications to resection, our experience is similar to that of Wong (6) in that hospital mortality increases with age and with progressive degrees of intercurrent disease, particularly in the cardiorespiratory systems. Consequently, we resect relatively few patients over 70, and palliate those patients with significant cardiorespiratory problems likely to prejudice their chance of surviving a major thoracoabdominal procedure. We feel also that the presence of distant