



# An investigation into the current peri-operative nutritional management of oesophageal carcinoma patients in major carcinoma centres in England

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## ABSTRACT

**INTRODUCTION** Patients with oesophageal carcinoma are at high risk of malnutrition. The aim of this study was to assess current practice for the nutritional management of patients following surgery for oesophageal carcinoma.

**PATIENTS AND METHODS** A postal questionnaire was sent to 82 dietetic departments of those hospitals in England identified as major centres for upper gastrointestinal surgery.

**RESULTS** Of the 66 (80%) responses received, 22 (33%) centres routinely perform pre-operative nutritional screening/assessment on oesophageal carcinoma patients. Centres with dietetic support dedicated to these patients are more likely to perform a pre-operative nutritional assessment ( $n = 17$ ; 55%) than those without ( $n = 5$ ; 14%;  $P < 0.001$ ;  $\chi^2 = 12.17$ ). Pre-operative nutritional support is routinely provided in only 11 (17%) centres with the majority of centres ( $n = 50$ ; 75%), providing it if patients are considered malnourished only. A total of 47 (70%) centres routinely provide postoperative nutritional support with jejunal feeding being the most commonly chosen route. Dedicated dietetic support is provided at 31 (47%) centres. Those centres with a dedicated dietitian are more likely to provide early postoperative nutritional support ( $n = 27$ ; 87%) than those without ( $n = 20$ ; 57%;  $P = 0.007$ ;  $\chi^2 = 7.195$ ) and more likely to review patients routinely following discharge from hospital ( $n = 25$  [81%] with a dietitian versus  $n = 17$  [49%] without;  $P = 0.007$ ;  $\chi^2 = 7.2$ ).

**CONCLUSIONS** The nutritional management of patients following surgery for upper gastrointestinal carcinoma is not uniform with practice varying considerably between centres. Those centres with a dedicated dietitian are more likely to assess patients' nutritional status and provide nutritional support.

## KEYWORDS

Oesophageal carcinoma, nutritional management.

## CORRESPONDENCE TO

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Malnutrition is common in patients with carcinoma especially those with upper gastrointestinal (GI) carcinoma.<sup>1–4</sup> Inadequate nutrient intake coupled with cancer cachexia leads to deterioration in nutritional status which has been found to increase postoperative complications.<sup>5,6</sup> Oral intake following oesophagogastrrectomy may be restricted by anorexia, nausea, early satiety and altered intestinal motility. Results of trials have shown benefits of peri-operative nutritional support in normally nourished, mildly or moderately malnourished and more severely malnourished patients.<sup>7–9</sup> The aim of the current study was to examine current practice for the nutritional management of patients undergoing upper gastrointestinal surgery in the

designated centres in England and the extent of dietetic involvement in the management of these patients.

## Patients and Methods

A questionnaire was designed and sent (February 2004) to the dietetic departments of those hospitals in England that have been allocated by Cancer Network Boards throughout England to perform upper gastrointestinal surgery in patients with upper gastrointestinal carcinoma.

Questions were divided into three main sections relating to type of: (i) nutritional assessment; (ii) pre-operative nutritional support; and (iii) postoperative nutritional support in patients

**Table 1** Modes of pre-operative and postoperative nutritional support

	Number of centres (%)	
	Pre-operative	Postoperative
Total parenteral nutrition	17 (26)	2 (3)
Nasogastric tube feeding	38 (58)	0 (0)
Jejunal feeding	0 (0)	43 (65)
Sip feed	23 (35)	56 (85)
Food snacks	15 (23)	54 (82)
Sip feed and food snacks	48 (73)	45 (68)

with oesophageal carcinoma. The postal questionnaires were returned anonymously and the data aggregated.

### Statistical analysis

All data were entered onto a spreadsheet (Excel for Windows 2000). Comparisons between hospitals with and without dedicated dietetic support were made using the  $\chi^2$ -test or Fisher's exact test as appropriate using the Statistical Package for Social Sciences (SPSS) v. 11 (SPSS Corporation, Chicago, IL, USA). A  $P$ -value  $< 0.05$  was considered significant.

### Results

Eighty-two centres were identified and a total of 66 (80%) responses were received. One centre had two consultants with differing practices regarding postoperative nutritional support so 67 responses were considered. Thirty-one centres (47%) have a dietitian dedicated to the management of these patients.

### Pre-operative nutritional assessment

This is performed in 22 (33%) centres, with body weight, height, body mass index (BMI) and percentage weight loss the most frequently measured parameters, measured in 95%, 86%, 91% and 82% of cases, respectively. Units with a dedicated dietitian are more likely to perform a routine nutritional assessment than those without (55% [17 of 31] versus 14% [5 of 35];  $P = 0.001$ ;  $\chi^2 = 12.17$ ).

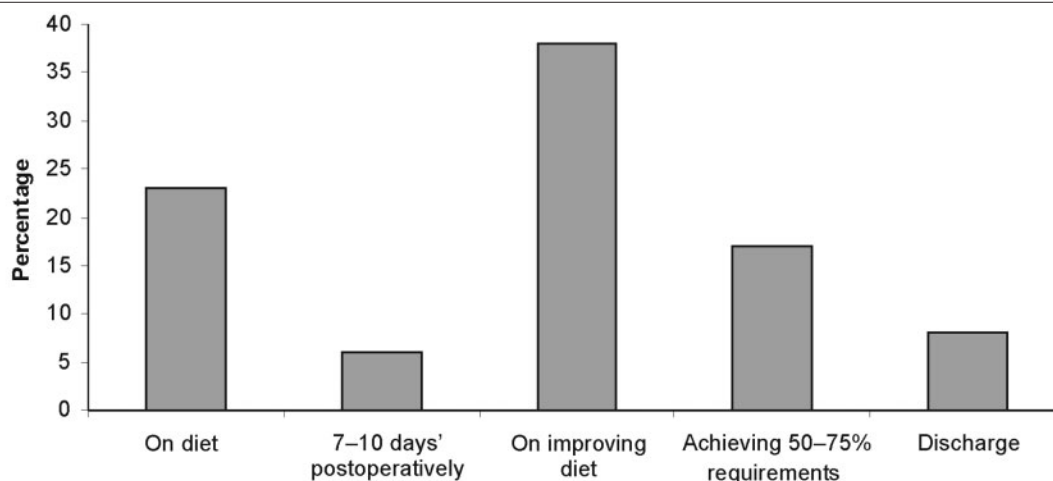
### Pre-operative nutritional support

In 11 (17%) centres, preoperative nutritional support is provided routinely. In the majority, ( $n = 50$ ; 75%), it is given only when patients are considered 'malnourished' (BMI  $< 20$  kg/m<sup>2</sup> and/or unintentional weight loss  $> 10\%$  in previous 3–6 months). The modes of pre-operative nutritional support offered are outlined in Table 1.

### Postoperative nutritional support

Early postoperative nutritional support is routine practice in 47 (70%) centres. Of these, 87% have dietetic support. Six (9%) centres initiate nutritional support only if patients are considered malnourished and three (4%) centres only if postoperative complications occur. When questioned on the mode of nutritional support chosen, 43 of 56 (77%) use the jejunal route with only two (3%) centres providing solely parenteral nutrition and 11 (20%) offering both enteral and parenteral nutrition. Those units with a dedicated dietitian are more likely to provide routine postoperative nutritional support within 24–48 h compared to those without (87% versus 57%;  $P = 0.013$ ;  $\chi^2 = 7.2$ ). The modes of postoperative nutritional support used are outlined in Table 1.

A protocol is in place for postoperative feeding in 29 (51%) centres. Feeding protocols are more likely to be used in centres with a dedicated dietitian compared to those without (62% versus 39%;  $P = 0.066$ ;  $\chi^2 = 3.38$ ). Whole protein low



**Figure 1** Timing of discontinuing postoperative nutritional support.

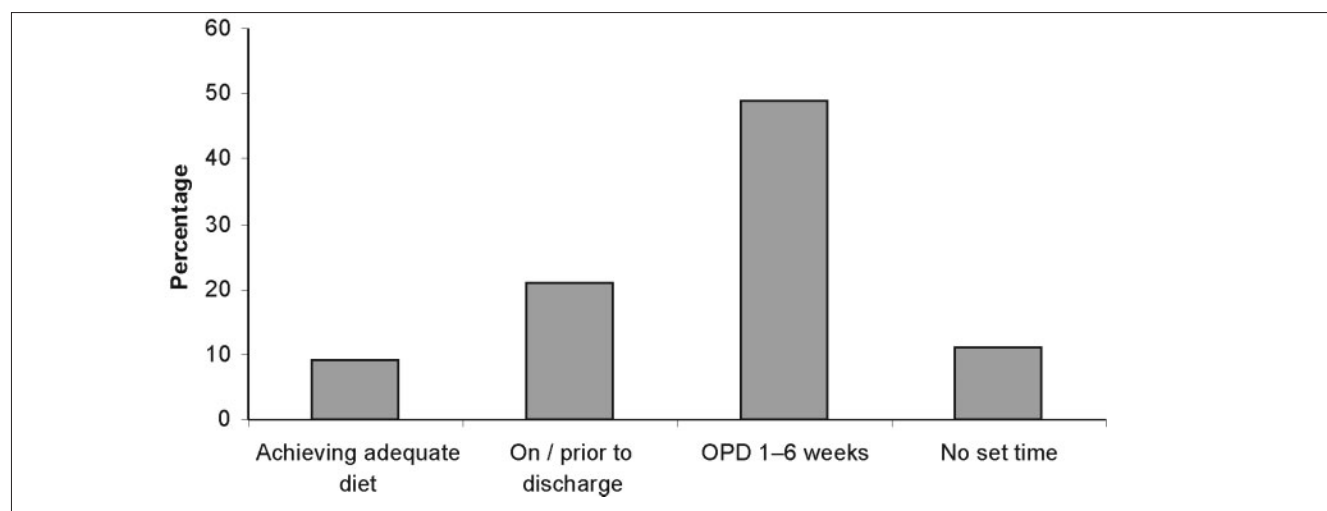


Figure 2 Timing of jejunostomy tube removal.

residue feeds are the most frequently used enteral feeds (61%). Whole protein fibre containing feeds are used in 21% of cases and high energy feeds in 13%.

Dietetic input into the decision to continue/discontinue enteral feeding is reported in 42 (74%), centres. Timing of discontinuing feeding and tube removal varies considerably between centres (Figs 1 and 2).

### Oral nutritional support

Oral nutritional supplements/sip feeds are offered routinely on the introduction of oral fluids in 26 (39%) centres and later in the postoperative course in 30 (45%). In the majority of centres, ( $n = 44$ ; 71%), supplements are continued for an undetermined length of time following discharge. Food snacks (*e.g.* yoghurt, biscuits, milk) are available and offered in addition to sip feeds in 54 (81%) of centres.

### Follow-up after hospital discharge

Patients receive dietetic review following discharge from hospital in 42 (64%) centres. Twenty-five centres (38%) routinely review patients following discharge from hospital (all with dedicated dietetic support). Hospitals without dedicated dietetic support review patients on consultant or GP referral ( $n = 17$ ; 26%). This review is by a non-specialist dietitian. Centres with a dietitian dedicated for upper GI carcinoma patients were found to be more likely to review patients following discharge ( $P = 0.007$ ;  $\chi^2 = 7.31$ ).

## Discussion

It is well documented that many patients with carcinoma are malnourished. A particularly high incidence has been reported amongst patients with upper gastrointestinal carcinoma.<sup>1-4</sup>

We have shown in this study that 66% of specialist centres for the management of patients with upper gastrointestinal carcinoma do not perform nutritional screening or assessment pre-operatively. This is essential for the identification of those already malnourished or with significant risk of nutritional problems. The situation is considerably better in those centres with a dedicated dietitian. This is not surprising as dietitians are trained to perform nutritional assessments on patients and to advise on the most appropriate feeding options.

Oesophagogastrectomy performed for the treatment of oesophageal carcinoma is a major surgical procedure whose outcome may be significantly influenced by patients' nutritional status. Weight loss during hospitalisation and on discharge home following upper GI surgery is well documented.<sup>10-15</sup>

Traditionally, parenteral nutrition was the chosen route for the peri-operative nutritional support of upper GI surgical patients. It is now accepted that enteral nutritional support is safer and more efficacious than parenteral.<sup>14,15</sup> We have shown in this study that jejunal feeding is the most frequently used mode of delivery of postoperative nutritional support with 77% of centres choosing this route and only 3.5% choosing to use parenteral nutrition. However, 16% of centres provide no postoperative nutritional support and 9% provide nutritional support only if complications occur.

There is evidence that early postoperative enteral feeding is of benefit to this patient group who, in the absence of nutritional support, are subjected to a prolonged period of 'nil by mouth' postoperatively. In a series of studies from Italy, pre-operative oral feeding with an immune-enhancing formula combined with postoperative jejunal feeding with the same formula in patients with GI cancer resulted in a significantly reduced incidence of postoperative infectious

complications.<sup>16,17</sup> Further studies have been conducted in malnourished and well-nourished patients. In malnourished patients, the greatest benefit on the reduction of complications was achieved with an immune-enhancing formula given peri-operatively.<sup>18</sup> In well-nourished patients, the provision of an immune-enhancing formula pre-operatively alone was sufficient to reduce infectious complications and length of postoperative stay significantly.<sup>11</sup> This highlights the importance of a nutritional assessment to identify patients who are malnourished pre-operatively.

In searching the literature, one study was identified which found immediate postoperative enteral feeding to have a negative effect.<sup>19</sup> Most of the study patients were well nourished pre-operatively (as determined by Subjective Global Assessment). Vital capacity, which in part reflects the strength of the respiratory muscles, was significantly lower in the fed group compared to the unfed group throughout the postoperative period of study. This impairment is most likely due to the abdominal distension experienced with the enteral feed, which would influence diaphragm function. Abdominal distension was experienced in 62% of cases. This may be related to aggressive feeding regimen, a maximum of 2500 ml/day to be achieved by the second postoperative morning. Daily postoperative maximal activity levels were higher ( $P < 0.01$ ) and tended to recover more rapidly in the unfed group. The reason for this is unclear but total post-operative lengths of stay did not differ between the groups.

Several studies have found evidence of clinical benefits of supplementation of ward diet with oral nutritional supplements following surgery irrespective of pre-operative nutritional status.<sup>20,21</sup> Yet this study shows that only 46% (26 of 56) of centres routinely provide oral nutritional supplements on commencing oral fluids. These may be a useful means of boosting oral nutritional intake in a patient group where postoperative problems of nausea and early satiety are frequent.

A high proportion of centres (53%) lack formal dietetic input into the management of their upper GI carcinoma patients. This may have a deleterious impact on the patients' postoperative course and also outcome following discharge from hospital given the high reported incidence of ongoing nutritional problems following discharge.<sup>22,25</sup> Our questionnaire shows that centres with dedicated support are more likely to perform a pre-operative nutritional assessment and more likely to formally review patients following discharge home where continued nutritional problems are frequently encountered.

Patients with upper GI carcinoma are at high risk of being malnourished and are likely to benefit from intensive dietetic monitoring and support through the hospital course and following discharge home. With the establishment of fewer centres doing a greater volume of cases, it would seem appropriate that dedicated dietitians be employed in these centres and strict protocols established.

The questionnaire also highlights that, even in those centres with a dedicated dietitian, the nutritional management of these patients is not uniform. This reflects the lack of clear guidelines as to what constitutes best practice in the postoperative nutritional management of these patients.

As part of the Action Plan for improving outcomes guidance for upper GI cancers, surgery for upper GI cancer is increasingly being performed at a small number of specialist centres. It is recognised that, at the time of sending out the questionnaires, the selection of specialist centres was not finalised; consequently, a small number of centres have been included in the study that may not in the future be conducting this type of surgery.

## Conclusions

Patients with oesophageal carcinoma are frequently malnourished at presentation but even if well nourished are at high risk of becoming malnourished postoperatively and require intensive dietetic support and monitoring to avoid the morbidity associated with the malnourished state.

The nutritional management of patients following surgery for upper GI carcinoma is not uniform with practice varying considerably between centres. Those centres with a dedicated dietitian are more likely to assess patients' nutritional status and provide peri-operative nutritional support.

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