Follow-Up Practices of Surgeons and Medical Oncologists in Australia and New Zealand Following Resection of Esophagogastric Cancers

Tim Chew, MBBS,1 Tim Bright, MBBS, MS, FRACS,2 Timothy J Price, MBBS, DHlthSc (Medicine), FRACP,3 David I Watson, MBBS, MD, PhD, FRACS, FAHMS,2 and Peter G Devitt MBBS, FRCS(Eng), MS(Lond), FRACS1

Purpose: Follow-up practices for patients who have undergone surgical resection of esophagogastric malignancies are variable and poorly documented. To better understand practice, a questionnaire was used to survey surgeons and medical oncologists to determine whether any consensus exists.

Methods: An opt-in online questionnaire was sent to esophagogastric surgeons and medical oncologists via the membership lists for the Australian and New Zealand Gastric and Oesophageal Surgery Association (ANZGOSA), the Australian Gastro-Intestinal Trials Groups (AGITG), and the Medical Oncology Group of Australia (MOGA). The questionnaire proposed five clinical scenarios and provided a range of follow-up options for each scenario. Clinicians were asked to indicate which best matched their clinical practice.

Results: Most clinicians follow patients for at least 3–5 years following resection of gastric or esophageal cancer. In total, 52% perform routine surveillance imaging, with individual scenarios not altering this. Tumor markers are infrequently used. Endoscopy and routine blood tests are used by around half the respondents.

Conclusion: There was little consensus about the use of investigations to monitor patients following esophagogastric cancer surgery. Choices do not follow guidelines or evidence. The identified patterns of postoperative surveillance practice appear not to be evidence based, and generally do not match recently published Australian guidelines.

Keywords: esophageal neoplasms, gastric neoplasms, follow-up studies

Introduction

Esophageal and gastric cancers are important causes of cancer-related death. Five-year survival in Australia for people diagnosed with gastric and esophageal cancers are now 27% and 16%, respectively.1 Resection is the mainstay of potentially curative therapy, and advances in treatment have generated some improvements in survival.

Follow-up practices around the world vary widely, with a paucity of data to define appropriate follow-up.2–4 Thus, follow-up protocols tend to reflect institutional or
individual preferences. Several published guidelines have been developed around the world, including the Scottish Intercollegiate Guidelines Network (SIGN), the British Society of Gastroenterology 2011, the European Society of Medical Oncology, the National Comprehensive Cancer Network (NCCN) 2009, and in Australia, the “Optimal Care Pathway for People with Oesophagogastric Cancer” has recently been published and endorsed by Government Health Departments. In regard to recommendations for follow-up, all these guidelines agree that evidence in this area is lacking, in particular due to a lack of evidence for any associated survival advantage with radiological or endoscopic surveillance.

The purpose of this study was to identify the views of surgeons and oncologists in Australia and New Zealand about follow-up practices after esophagogastrectomy cancer resection, and to determine whether any consensus currently exists.

Materials and Methods

An online GoogleForm questionnaire was developed for completion by surgeons and medical oncologists. The questionnaire consisted of three sections: i) demographic data including number of cases seen, clinical experience, and country of practice, ii) clinical scenarios encompassing a spectrum of different stages and types of esophagogastrectomy cancer, and iii) questions relating to general follow-up practices for each clinician.

The clinical scenarios were as follows:

Scenario 1: A 47-year-old male on a Barrett’s esophagus surveillance program found to have a stage T1N0M0 adenocarcinoma treated by esophagectomy alone.

Scenario 2: A 75-year-old female treated with neoadjuvant chemotherapy and then esophagectomy for stage III (T3N1M0) esophageal adenocarcinoma.

Scenario 3: An 80-year-old male managed with distal gastrectomy alone for stage II adenocarcinoma (T2N1M0).

Scenario 4: A 56-year-old male who had undergone perioperative MAGIC-style (perioperative epirubicin, cisplatin, and 5-FU) chemotherapy and a total gastrectomy for stage III (T3N2M0) proximal gastric adenocarcinoma.

Scenario 5: A 46-year-old female treated with a laparoscopic gastric wedge resection for a 45 mm gastrointestinal stromal tumor (GIST) with mitosis count of <5/50 high-power field (HPF).

For each scenario, clinicians were asked to indicate whether and/or how they would use routine blood tests, endoscopy, imaging, and tumor markers in their follow-up of each patient. They were also asked to indicate how long they would follow each patient up in the absence of recurrent disease. Respondents were then asked general details about their follow-up practices in the absence of clinical information.

The questionnaire was mailed out to members of the Australia and New Zealand Gastric Oesophageal Surgery Association (ANZGOSA), the Australian Gastro-Intestinal Trials Groups (AGITG), and the Medical Oncology Group of Australia (MOGA) as an “opt-in” survey. The survey was sent twice to increase response rates. No reimbursement was provided for response to the survey. Ethics approval was obtained from Southern Adelaide Clinical Human Research Ethics Committee (Ref: 512.13).

Results

In total, 89 responses were received: 46 surgeons from 182 ANZGOSA members (25% response rate), and 43 oncologists from 1377 members of AGITG/MOGA (3% response rate). As not all ANZGOSA, AGITG, MOGA members treat esophageal cancer, low response rates were expected and for the surgical group, the response rate is likely to exceed 50% of the active esophageal surgeons in Australia and New Zealand.

Demographics

Of the surgeons, 27 were consultants of >10 years of experience, 10 had 5–10 years of experience, 5 had <5 years of experience, and 5 were surgical fellows. Most indicated that their primary location of practice was a public tertiary referral center or university teaching hospital (n = 34, 74%). Of the oncologists, 24 were consultants of >10 years of experience, 8 had 5–10 years of experience, 10 had <5 years of experience and 1 was a fellow. Again most indicated that their primary location of practice was a public tertiary referral center or university teaching hospital (n = 34, 79%).

Caseloads among the surgeons tended to be higher, with 23 seeing >20 cases of esophageal and gastric cancer a year compared to only three medical oncologists seeing this volume.

Questionnaire responses

Duration of follow-up:

In all scenarios, the most popular duration of follow-up was 3–5 years. All surgeons chose to follow-up their patients for at least 1 year; with the exception of scenario.
5 where one surgeon chose to discharge the patient after 12 months (Fig. 1).

Oncologists were more likely to elect no follow-up than surgeons and this occurred most frequently in scenario 1. Overall, 74% of oncologists chose to follow their patients up for at least 1 year.

When asked in absence of clinical information, all surgeons chose to follow-up their patients for at least 3–5 years. Seven (19%) of the oncologists indicated they would discharge the patient back to the surgeons for follow-up. In all, 63% of all respondents chose to follow their patients for 3–5 years, with 29% indicating they would routinely follow the patient for >5 years.

Imaging:

A higher proportion of the oncologists electing for follow-up compared to surgeons performed imaging although the difference was not statistically significant (Fig. 2). In the absence of clinical information, it was shown that 52% (n = 46) of the respondents would perform imaging in routine follow-up, with the most common modality (n = 38) computed tomography (CT) scan although one chose positron emission tomography (PET) scanning. Clinical information did affect results, with respondents least likely to use imaging in scenario 1 (37%) and most likely in scenario 5 (65%).

Endoscopy:

Surgeons were less likely than oncologists to indicate endoscopy in routine follow-up of patients, with the exception of scenario 5 (Fig. 3). In the absence of clinical information, only five elected to use routine endoscopy. Surgeons and oncologists were most likely to use endoscopy in scenario 1 (73%) and least likely to use endoscopy in scenario 4 (44%).

Tumor markers:

In general, a higher proportion of oncologists chose to use tumor markers in follow-up, with the exception of scenario 5 (the GIST patient) where an overwhelming majority (98%) indicated that tumor markers were inappropriate (Fig. 4).

In the absence of clinical information, 26% indicated that they would use tumor markers for routine follow-up (most commonly carcinoembryonic antigen [CEA] and carbohydrate antigen [CA] 19.9), increasing to 58% if the patient had elevated tumor markers preoperatively. It was found that clinical information changed respondents’ choices, with people less likely to choose to use
tumor markers in scenarios 1 and 5, and more likely in scenarios 2, 3, and 4.

Blood tests:

In the absence of clinical information, 52% of respondents indicated routine blood tests would be a part of their follow-up. Clinical information had a minimal effect on decision-making with the exception of scenario 5, in which 75% felt blood tests were not required (Fig. 5). Oncologists were more likely to perform blood tests in scenarios 3 and 4, which involved a partial and total gastrectomy, respectively. Surgeons were slightly less likely to perform blood tests in scenarios 1, 2, and 3, but again more likely to perform blood tests in scenario 4.

The most commonly used blood tests were complete blood exam (98%) then electrolytes, urea nitrogen, and liver function tests (96%); this was followed by iron studies (59%) and vitamin B12 (59%).

Discussion

Practice appears to vary widely in Australia and New Zealand in the follow-up of esophageal and gastric cancer patients after surgical resection. This variation is seen both within and between surgeons and medical oncologists. Whether this relates to a lack of an accepted Australasian guideline for follow-up or disparate views on what the role of follow-up is, remains unclear. What is clear, however, is that the general views expressed by respondents to this survey are not evidence based, and they are not consistent with follow-up recommendations in the recently endorsed Australian guidelines for the management of esophageal and gastric cancer.7 These guidelines recommend clinical and dietetics follow-up for 5 years following surgical resection, with investigations (radiology and endoscopy) limited to clinical indications only. The guidelines do not support routine radiology or endoscopy follow-up following surgery, reflecting the poor options currently available for individuals who do develop recurrent cancer and the fact that surveillance endoscopy so rarely detects subclinical recurrence.9 The guidelines also do not recommend the use of routine blood tests or tumor markers for follow-up directed at detection of cancer recurrence.

The data in our study did suggest some consensus among respondents in terms of length of follow-up, with the majority of respondents indicating at least 3 years of follow-up was required. Appropriate intervals for follow-up are difficult to define, as there are no randomized control trials to support any particular duration or intensity of follow-up.2 However, it has been found in studies that recurrence tends to occur early.2,3,10 Depending on the type, stage, and treatment, at least 80% of recurrences have occurred by 21–38 months postoperatively.2,5,10 In a 2010 review article, most centers supported an initial 4- to 6-week postoperative review, with follow-up 3 monthly in the first year, 6 monthly in the second year, and annually thereafter.2 Length of follow-up in published guidelines and literature is poorly defined, but most support follow-up for at least 5 years.2,3,5 The Australian guidelines recommend 3 monthly follow-up for 2 years and then 6 monthly clinical follow-up to 5 years, with scope for longer follow-up if clinically indicated.7 Although clinical information in our survey did have some impact on views regarding imaging, none of the scenarios showed clear consensus on whether routine imaging was appropriate or not. The authors found it surprising the amount of imaging that was being used. This is inconsistent with local and other guidelines which all fail to recommend routine imaging or blood tests for follow-up of esophagogastric cancers due to the lack of supporting evidence for their use.3,4,7 Although a single center retrospective review of patients suggested that CT scan was the most useful for identifying recurrent disease, the clinical significance is questionable as good treatment options for recurrence are not available.5 Some publications continue to recommend CT and/or CT-PET scanning over and above clinical alone surveillance11 although they acknowledge that a survival advantage from performing imaging has not been demonstrated. We are unaware of any evidence supporting a survival advantage for postoperative routine surveillance CT scanning of patients with esophagogastric adenocarcinoma or squamous cell carcinoma, unlike the situation of colorectal cancer where resection of liver metastases may be indicated. The evidence regarding routine surveillance would suggest that it serves only to increase
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In an era of increasing demands on radiology resources, routine scans for follow-up of esophagogastric cancer appear difficult to justify, and it is likely that current practices in this area are wasting significant amounts of money.

In contrast, there is evidence to support CT surveillance following GIST resection. Detection of low volume recurrent disease offers the possibility of re-resection with potential curative intent. Even with unresectable GIST recurrence, a lower tumor burden appears to provide a longer time to disease progression when imatinib therapy is instituted. A recent study has shown evidence to optimize a schedule of follow-up CT scans for GIST which allows less radiation to the patient but does not delay tumor detection. Unfortunately, the results from the scenario-based questions demonstrated the use of CT surveillance for the GIST patient was no different from that of the other scenarios.

Our data suggest oncologists were more likely to use tumor markers for routine follow-up. The exceptions were in scenarios 1 and 5, where there was a consensus from both groups that tumor markers were inappropriate. In regard to using routine tumor markers, it was found that a significantly higher proportion of respondents would use tumor markers in routine follow-up if the patient’s tumor markers were elevated preoperatively. Due to the study design, this option was not included in the scenario section and it would have been interesting to see how the responses would have changed if this was the case.

Routine blood testing was used by approximately half of respondents in the absence of clinical information. Respondents were more likely to use blood tests if a gastrectomy had been performed, possibly due to risks of anemia, and dietary deficiencies such as iron deficiency, hypocalcemia, and B12 deficiency. This makes clinical sense. However, blood tests to identify cancer recurrence are not evidence based.

It is difficult to determine the significance of the data on a bi-national level, due to the low response rates from both surgeons and medical oncologists. Our data imply that among our respondents there is little consensus for follow-up of these cancers, but it is unclear how much our results reflect practice nationwide. Due to the nature of the questionnaire as an “opt-in” survey, it is possible that the respondents have more of an interest in esophagogastric cancer leading to sampling bias. The survey also required respondents to select answers outside of a clinical setting, and therefore may not necessarily reflect their practice due to limited clinical data. While other clinicians who did not respond to the survey may have different views on patient follow-up, very few esophagogastric cancer patients are operated on by surgeons outside the ANZGOSA membership and the self-reported annual caseloads would suggest the survey respondents are managing a very substantial proportion of esophageal and gastric cancer in Australia and New Zealand.

**Conclusion**

Our survey suggests little consensus in follow-up practices in our respondents. Whilst evidence in this area is lacking, even where it does exist and guidelines have been published, its uptake is not universal. Consensus-based guidelines have now been developed in Australia. Current clinical practice is generally not consistent with these guidelines, and appears wasteful. The challenge is to implement these consensus-based guidelines to improve consistency of care among patients, and to redirect resources to areas where they will make a difference. Standardizing practice to guidelines should reduce superfluous investigations and reduce costs without adversely impacting the outcomes for patients with esophagogastric cancer.

**Disclosure Statement**

The authors have no conflicts of interest.

**References**


