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A National Survey into referral and training in the management of oesophageal perforation in the United Kingdom

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ABSTRACT

Background: Over the last 30 years, oesophageal surgery amongst thoracic surgeons has reduced by 80%, and forms less than 1% of current thoracic practice. Oesophageal perforation has a high morbidity, and mortality rates can be as high as 30% if not treated. There are currently no guidelines regarding referral for the management of oesophageal perforation in the UK.

Methods: We designed an online survey to ascertain the current expert opinion on the management of oesophageal perforation, which was validated and approved by the society of cardiothoracic surgery of Great Britan and Ireland- SCTS. This was sent to all consultant thoracic (N=77) and cardiothoracic (N=85) surgeons identified in the SCTS registry. In total, 49 responses were received from a variety of UK regions.

Results: Many responses indicated that emergency cover for oesophageal perforation came exclusively from the upper gastrointestinal (GI) surgeons (50%)

compared to thoracic surgeons (18%). Only 37% agreed they would manage the patients themselves and a similar number were comfortable to operate alone. 46% of believed the service should be taken over exclusively by the UGI surgeons.

With regards to surgical experience: 55% agreed they could comfortably deal with complex cases, which correlated with having >16 years experience. Only 25% of consultants with 1-5 years experience felt confident to manage the condition alone.

With regards to previous training, 100% of consultants who trained >16 years ago believed they had sufficient exposure to oesophageal surgery as a trainee, compared to 50-70% for those trained <16 years ago. Only 2% believed current trainees receive sufficient exposure to oesophageal perforation nationwide, and 28% believed oesophageal surgery should be taken off the training curriculum.

Conclusion: The present study finds much heterogeneity in the way oesophageal perforation is managed nationally. The willingness of thoracic surgeons to manage the oesophagus correlates with prior exposure. We believe this has important implications for current training and a national consensus for future direction is required.

Keywords: Oesophageal Perforation, Referral, Training, United Kingdom.

Background

Oesophageal perforation is a rare but serious condition. Precise global incidence remains unknown, but a whole population study from Iceland reported an age-standardised incidence of 3.1/1 000 000 per year (1). Morbidity and mortality from the condition are high, with mortality rates of 11.9%- 30% reported (2). Causes of perforation include iatrogenic injury, malignancy, spontaneous rupture, trauma and ingestion of caustic substances and foreign bodies(3,4).

Although the surgical management of the condition is well described (5–8), treatment options for oesophageal perforation has evolved significantly over the past few years, with endoscopic stenting gaining popularity (9,10) as well as conservative management (11) over surgical management in some studies. The Treatment options

can also depend on underlying aetiology, individual patient factors and location of the perforation, with some studies advocating individualised therapy (12,13).

In current surgical practice, management of oesophageal perforation makes up a very small proportion. The European Society of Thoracic Surgeons Silver Book reported that upper gastrointestinal procedures in total made up just 0.4% of thoracic surgical activity between 2007-2015 in the 235 units contributing data (14).

Our present study aims to investigate current policies for the referral of patients presenting with oesophageal perforation for management within the UK and also of training experience in the management of this uncommon condition.

Methods

An online survey was developed consisting of fifteen questions on referral pathways and experience of training in the management of oesophageal perforations. The survey was validated by the Society of Cardiothoracic Surgery in Great Britain and Northern Ireland and then circulated to all registered thoracic (N=77) and cardiothoracic (N=85) consultants currently practicing in the UK by email. All questions were mandatory requiring completion before progression to the next questions. A section was also included to allow free text comments to be entered by respondents.

Results

Forty-nine consultants responded to the survey and of these, 42 (85.7%) completed all fifteen questions in the survey. Responses were obtained from a wide range of locations across the UK as shown in figure (1).

Respondents varied in their time in practice at consultant level with eight (18 %) having been a consultant for 1-5 years, 16 (36%) for 6-10 years, six (14%) 11-15 years, six (14%) 16-20 years and eight (18%) for greater than 20 years.

When asked if their hospital provides a service for the treatment or management of oesophageal perforations, the majority of respondents (67%, 32/48) reported this was 'always' available, with six (12%) reporting it was available 'the majority of the time'. Seven (15%) reported this was 'occasionally' available and three (6%) respondents were unsure if their hospital provided this service.

In order to find out about the extent of local referral policies for the management of oesophageal perforation, respondents were asked if local policies for referral in their hospital existed for thoracic surgery and for upper gastrointestinal surgery. Fifteen respondents (31%) reported that a policy existed for referral for thoracic surgery while 21 (44%) reported that there was no referral policy for thoracic surgery in their hospital. The remainder reported that policies 'possibly' existed (8%, 4/48), were 'unlikely' to exist (6%, 3/48) or were 'unsure' (10%, 5/48). For upper gastrointestinal surgery, 22 respondents (46%) reported local referral policies existed while nine (19%) reported that there was no local referral policy. Six (12%) reported there was 'possibly' a local policy, seven (15%) were 'unsure' and four (8%) reported this was 'unlikely'.

When asked about which teams provided cover for emergency or urgent referrals for oesophageal perforation, 24 respondents (50%) reported that these were covered by the upper gastrointestinal surgical team in their hospital, while nine (19%) reported the thoracic team provided this cover. In seven (15%) cases both thoracic and upper gastrointestinal teams covered this service, in two cases (4%) upper gastrointestinal, thoracic and ear, nose and throat surgical teams all covered this service. Three (6%) respondents reported their hospital does not provide this service. The remainder reported they were unsure who provided this cover (one respondent, 2%) or that cover was 'random' (two respondents, 4%).

55% (25/46) respondents reported that they felt comfortable managing complex cases of oesophageal perforation and its complications, while 39% (18/46) did not. The percentage of respondents who reported feeling comfortable in the management

of complex oesophageal perforations increased from 25% of those who had been consultants for 1-5 years to 100% of those who had been consultants from 16-20 years (figure 2).

50% of respondents (23/46) either agreed or strongly agreed that the upper gastrointestinal surgeons in their hospital were comfortable dealing with complex cases of oesophageal perforation and its complications compared with 35% (16/46) who disagreed or strongly disagreed with this statement.

In regards to their own time in training, 73% (32/44) of respondents felt that they had received sufficient exposure to the operative and non-operative treatment of oesophageal perforation, compared with 14% (6/44) of respondents who disagreed or strongly disagreed with this statement. The percentage of respondents who felt they received sufficient exposure to the treatment of oesophageal perforation during their training grouped by number of years of experience as a consultant are shown below (figure 3).

When asked if they felt current trainees received sufficient exposure to the management of oesophageal perforations within their own hospital, 18% (8/44) agreed or strongly agreed that they did, while 75% (33/44) disagreed or strongly disagreed. When applied to their local region 9 (20%) respondents felt trainees gained sufficient exposure, while 29 (66%) did not. Regarding exposure for current trainees on a national level only one (2%) respondent felt sufficient exposure to management of the condition was received, while 31 (70%) did not.

When asked if they felt patients at their hospital received a consistent and satisfactory service when presenting with oesophageal perforations, 23 respondents of the 44 who answered this question (52%) reported that they agreed or strongly agreed while 11 (25%) disagreed or strongly disagreed with this statement. In hospitals where a thoracic referral pathway existed for oesophageal perforations 77% (10/13) of respondents felt that the service was consistent and satisfactory while 23% (3/13) did not. 19 (43%) respondents felt the service provided was dependent on the individual

on-call on a particular day, while 17 (39%) disagreed or strongly disagreed with this statement. In hospitals where a thoracic referral protocol exists, five respondents (38%) felt that the service provided depended on the individual on-call and seven (54%) felt that it did not.

When referred a patient with an oesophageal perforation, 37% (16/43) of respondents agreed or strongly agreed that they would choose to manage the patient themselves, while 60% (26/43) disagreed or strongly disagreed with this statement. 23% (10/43) would consult a more experienced colleague, while 56% (24/43) would not. 28 (65%) would refer the patient to an upper gastrointestinal surgical colleague and 13 (30%) would not. Three (7%) would refer the patient to a thoracic surgical colleague and 38 (88%) would not.

When it came to operating on a patient with an oesophageal perforation, 16 (37%) respondents agreed or strongly agreed they would operate on the case themselves with a registrar assisting, while 24 (56%) disagreed or strongly disagreed. Three (7%) would chose to operate with a more experienced consultant colleague, while 31 (72%) would not. 12 (28%) would supervise a registrar operating while 27 (63%) would not.

With regards to the inclusion of oesophageal surgery in the syllabus for thoracic surgical trainees, 12 (28%) respondents agreed or strongly agreed that it should be removed from the training syllabus, while 20 (47%) disagreed or strongly disagreed with this statement.

When asked whether the management of oesophageal perforation should be taken over by upper gastrointestinal surgical teams, 20 (46%) respondents agreed or strongly agreed, while 12 (28%) disagreed or strongly disagreed with this statement. 20 respondents (47%) felt upper gastrointestinal surgeons were better placed to manage oesophageal perforations due to more exposure and better training, while 17 (40%) disagreed or strongly disagreed with this. 13 (30%) felt upper gastrointestinal surgeons possessed better knowledge and experience of the condition, while 19

(44%) did not. 22 (51%) felt the condition was more commonly seen by upper gastrointestinal surgeons and therefore they were better placed to manage it, while 15 (35%) disagreed (figure. 4).

Comment

Our study centred on a thorough questionnaire study designed to obtain valuable information on the current status of the referral and management of oesophageal perforation by thoracic and cardiothoracic consultant in the UK. We feel the results show that the specialty's management of oesophageal perforation is under threat.

Although oesophageal perforation is a rare condition, 93.8% of respondents to the survey reported that their unit provided services to manage this condition at least 'occasionally'. According to respondents to this survey, the team most frequently responsible for the management of these cases was upper gastrointestinal surgery, providing the service in 50% of respondents' hospitals. 65% of respondents reported that if presented with a patient with oesophageal perforation they would refer them on to an upper gastrointestinal surgical colleague and 47% of respondents felt that upper gastrointestinal teams should take over the management of oesophageal perforations.

However, thoracic surgical teams were also involved in 37.5% of respondents' hospitals and exclusively responsible for the management of oesophageal perforations in 18.8%, suggesting that this condition does still provide some contribution to thoracic surgical practice in the UK. One respondent commented that "We work together with our upper GI surgeons in these cases. Patients are primarily under their care with close liaison with thoracic when necessary."

With regards to the referral system, 31% of respondents reported the existence of a thoracic surgical referral pathway for this condition in their hospital and 46% reported one for upper gastrointestinal surgery. The percentage of respondents reporting a satisfactory and consistent service for patients presenting with

oesophageal perforation increased from 52% overall, to 77% where a thoracic referral pathway existed. This could suggest that having a structured referral pathway, where patients come under an appropriate team in a timely fashion, could offer more streamlined and consistent management. This is particularly in important in oesophageal perforation, where patient outcomes are improved in those receiving treatment within 24 hours of presentation compared with those treated later (15,16,13). Indeed, studies have shown that the early management provides an optimal window of opportunity for surgical intervention. A potential strategy for improving the service and training is to formalise a shared rota for oesophageal perforation between the upper GI and thoracic surgical teams.

The uncommon nature of oesophageal perforations also makes gaining sufficient experience of its management a challenge for surgeons in training. A meta-analysis of 75 studies found an average of just 3.9 cases a year treated in individual institutions (2). This correlates with our study where only 18% of respondents felt that trainees received enough exposure to the condition in their hospital and only 2% felt that current trainees nationally receive sufficient exposure. It is not possible from the current study to identify a cause for this change. However, it may be related to the movement of elective oesophageal surgery to upper gastrointestinal teams in many areas of the country. Several respondents commented that oesophageal surgery had now been completely transferred to upper gastrointestinal surgery teams in their regions. Similarly, other questionnaire studies have identified a number of areas of the thoracic curriculum which can often suffer (17,18).

Despite this, it is the opinion of the authors that the management of oesophageal perforation should remain in the thoracic training curriculum. 72% of respondents of our questionnaire felt that oesophageal surgery should remain in the thoracic specialist registrar training syllabus. One respondent commented that “it cannot be denied that the oesophagus is an intrathoracic organ. It would be nonsense to remove this from the training of thoracic surgeons...It should not be removed from the

curriculum but perhaps the knowledge expected should be tailored to that needed by the majority of thoracic surgeons." The finding that 37.5% of respondents still reported thoracic involvement in the management of oesophageal perforations in their hospitals potentially supports the importance of maintaining some experience in oesophageal surgery in thoracic training.

A recent national study by Markar and colleagues (3) looked at 2,654 patients, finding that outcomes were better in centres that had a higher volume of patient throughput. It may be deciphered that centralising the oesophageal perforations service to tertiary centres will allow for the improvement of focused training for future thoracic surgeons.

This study has a few limitations that we acknowledge. As it is a survey design it can only provide a snapshot view of reported practice and opinions at the time it was undertaken and it is not possible to ascertain cause and effect. Although a national survey, the total number of respondents was fairly small and not all respondents completed the entire survey. However, our results are able to provide an indication of current UK practice in the referral of this uncommon condition and of current opinions on training in the management of this problem.

Disclosure statement

The authors have no conflicts of interest to declare.

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Appendix:

Figures and Tables

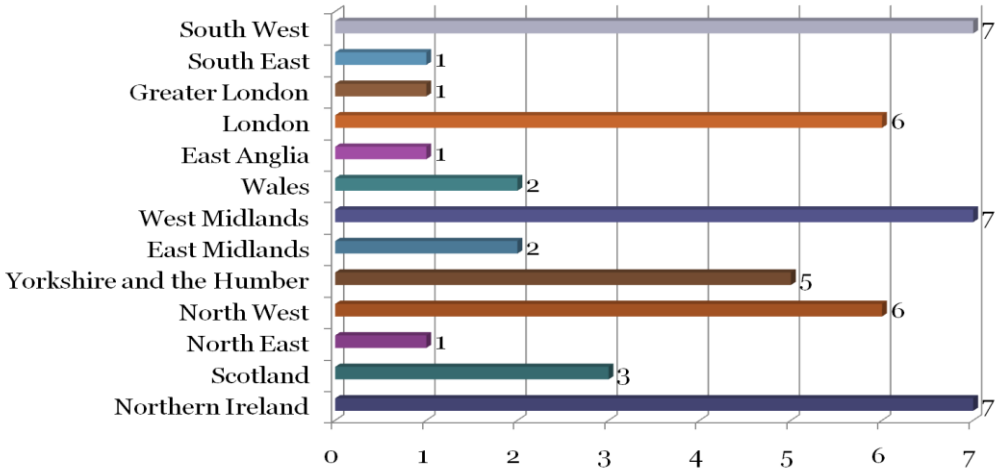

Figure 1: Distribution of consultant thoracic surgeons responding to survey by region

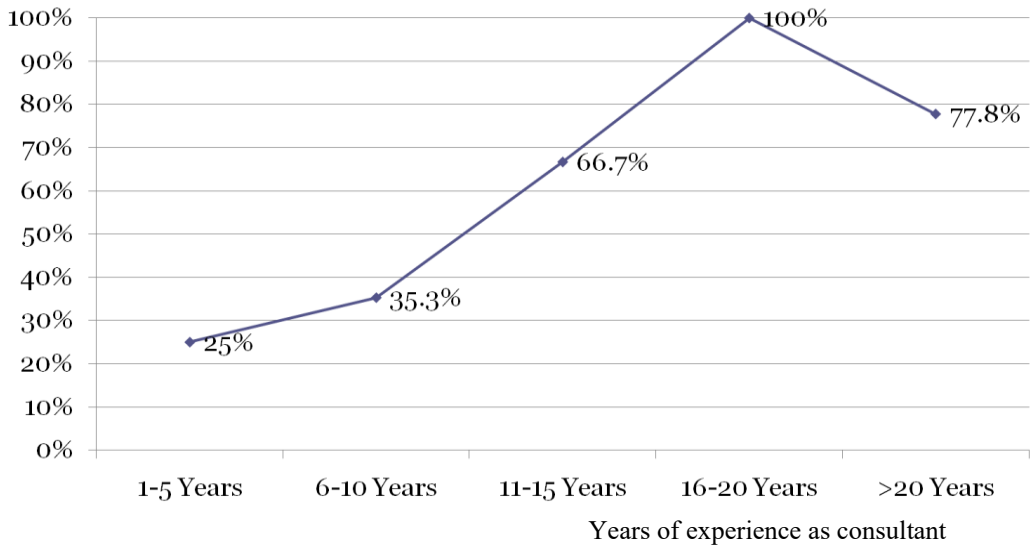

Figure 2: The percentage of respondents who reported feeling comfortable in the management of complex oesophageal perforations 16-20 years

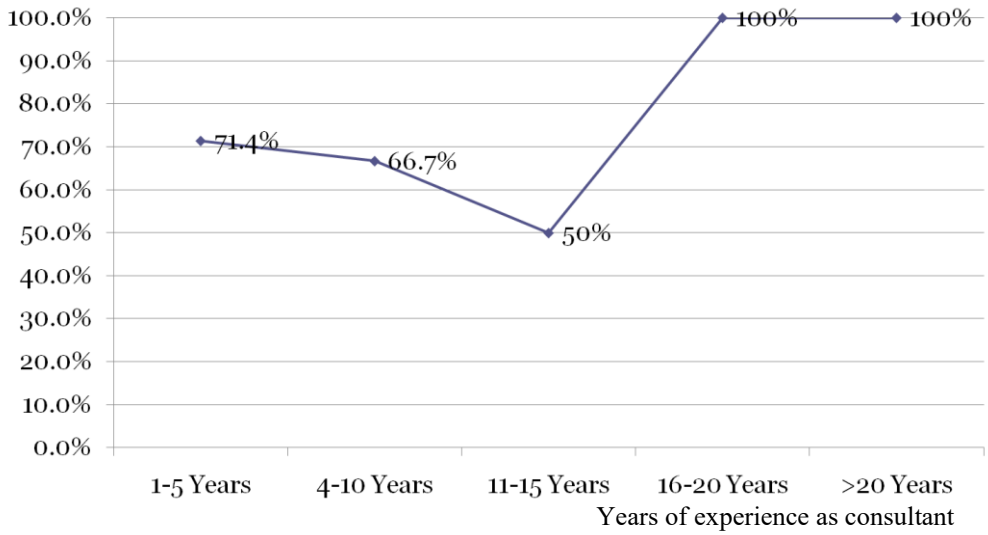

Figure 3: The percentage of responding thoracic surgeons who felt they received sufficient exposure to the treatment of oesophageal perforation during their training (grouped by number of years of experience as a consultant)

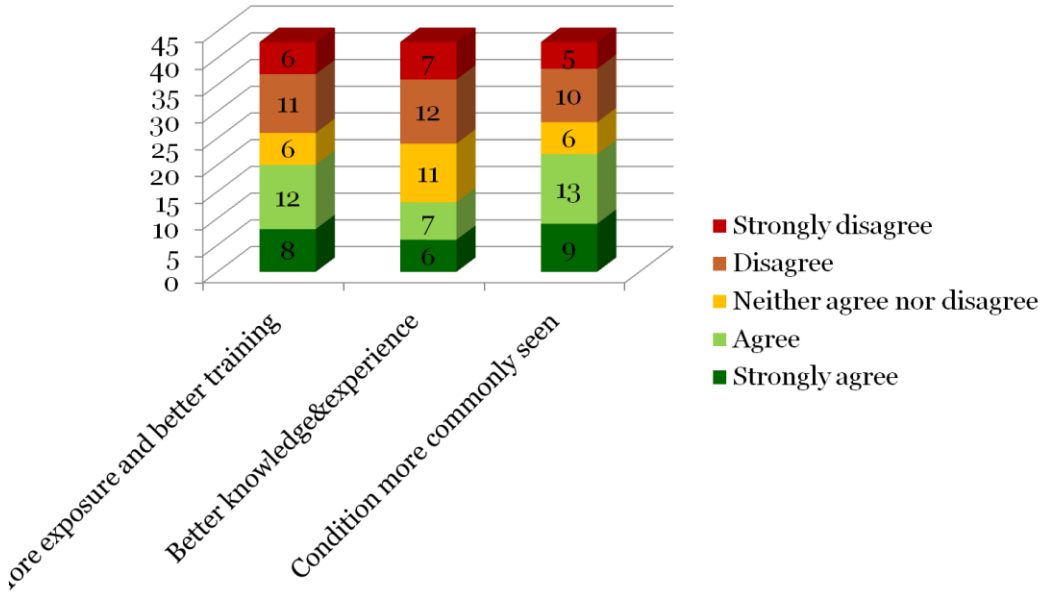

Figure 4: Distribution of opinions about the management of oesophageal perforation over by upper gastrointestinal surgical teams

Figure 5: thoracic consultant comments

Comment 1	In my hospital all Oesophageal surgery is done by upper GI surgeons, however, when there are serious complications such as broncho-pleural fistula and severe mediastinitis the cases are referred to thoracic to deal with. I think therefore thoracic surgeons are better placed to deal with oesophageal cases."
Comment 2	"The Oesophageal elective practice has been completely taken over by Upper GI with worse leak rates and mortality than when we operated on the elective Oesophagus. Without being exposed to the elective Oesophagus day in and day out it is not in the patient's best interests for us to deal with the emergency perforated Oesophagus."
Comment 3	"We work together with our upper GI surgeons in these cases. Patients are primarily under their care with close liaison with thoracics when necessary."
Comment 4	"We have let down our oesophageal patients. Hopefully a future generation of surgeons will learn that managing the oesophagus requires extensive thoracic surgical experience."
Comment 5	"Whilst I understand the point that is being made here, I think it cannot be denied that the oesophagus is an intrathoracic organ. It would be nonsense to remove this from the training of thoracic surgeons. A thoracic surgeon may well be working alongside the oesophagus and should know how to deal with it and complications resulting from operating on it or nearby. It should not be removed from the curriculum but perhaps the knowledge expected should be tailored to that needed by the majority of thoracic surgeons. However, in the same light thoracic surgeons should not need to learn anything about paediatric cardiac, cardiac or transplant surgery."
Comment 6	"Upper GI surgeons should deal with perforated oesophagus if they are the primary surgeons dealing with oesophageal cancer in any particular hospital."
Comment 7	"Currently the service is managed within the dept of thoracic surgery in Liverpool, but this is not sustainable in the long term, mainly as oesophageal cancer services will be part of UGI rather than thoracic surgery, and I anticipate that they will be moved to a different hospital before the end of 2015. When this happens CT trainees will have no experience in managing the condition. There will however be a need for thoracic surgeons to provide external advice to UGI surgeons in some, although not the majority of situations."
Comment 8	"This surgery has effectively now moved into upper GI surgery across all UK nations- very few thoracic units now do oesophageal surgery and even fewer could now successfully train an oesophageal surgeon (including MIS surgery, etc). Our local upper GI surgeons provide an excellent service and we enjoy a cooperative relationship. Our role is to support them with complex decortication/bronchopleural fistulae and particularly airway/oesophageal fistulae, not to compete for oesophageal practice at which we are not expert."