

Lymph node audit on Ivor-Lewis Oesophagogastrectomy specimens - November 2013 to October 2014.

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Introduction

Ivor-Lewis oesophagogastrectomy specimens are currently reported within our department using a standardised proforma based around the TNM classification [1] and the dataset published by the the Royal College of Pathologists for the reporting of oesophageal tumours [2]. The identification of lymph node metastases and the ratio of involved to uninvolved nodes are important parameters, correlating with patient prognosis, helping direct post-operative treatment and assisting with accurate patient stratification in clinical trials. One component of the TNM system subclassifies tumours based on the absolute number of involved lymph nodes identified at histology: N0, no involved nodes; N1, 1 or 2 involved regional nodes, N2, 3-6 involved regional nodes; N3, 7+ regional nodes involved.

Many papers published in the surgical literature regard the sampling of fifteen lymph nodes to be the minimum desirable lymph node harvest in association with an oesophagogastrectomy specimen, reflecting both the adequacy of surgery and the thoroughness of pathological examination [3, 4].

This audit was undertaken in response to concerns raised by one of our surgical colleagues regarding the thoroughness of examination of one Ivor-Lewis oesophagogastrectomy specimen, specifically relating to the number of lymph nodes identified within the specimen (14 nodes were originally identified in a pT1a, pN1 carcinoma, with carcinoma measuring up to 1mm in maximum dimension, 30 additional blocks of fat were embedded with up to 3 'additional' nodes subsequently identified).

Method

A retrospective audit was conducted examining lymph node harvests in all tissue submitted at the time of Ivor-Lewis oesophagogastrectomy, using information taken from the surgical database of major oesophagogastric resection specimens (kindly supplied by Dr T Bracey, Consultant Pathologist, and Mr R Berrisford, Consultant Oesophagogastric Surgeon). All oesophagogastric resection specimens identified over the period from the start of November 2013 to the end of October 2014 were identified. A total of ninety-five cases were reviewed - seventeen of which were disregarded as they were total/subtotal gastrectomies for primary gastric adenocarcinomas or gastrointestinal stromal tumours. The final pathology reports of the remaining seventy-eight cases were scrutinised in order to identify the number of nodes sampled in each case, along with any other potentially significant factors (e.g. whether the case had received pre-operative chemotherapy etc.).

Results

A total of seventy-eight cases were identified over the study period (seventy-one adenocarcinomas and seven squamous cell carcinomas). The specimens were cut up by eight pathologists (5 consultants, 1 speciality doctor and 2 senior trainees). Eight cases (all adenocarcinomas) were identified where the number of lymph nodes harvested was less than fifteen nodes. The distribution of the cases according to reporting pathologist is outlined below:

Pathologist	Number of cases reported	Mean number of lymph nodes identified per case	Median number of lymph nodes identified	Range of nodes per case	Number of cases reported with less than 15 nodes	Pathological staging of the cases with less than 15 nodes
1	10	25.1	25	11 - 37	1	ypT0
2	32	27.9	28	12 - 61	2	pT2, ypT3
3	17	23	21	5 - 48	3	pT0, ypT1a, pT2
4	3	27	31	19 - 31	0	
5	5	22.8	20	9 - 33	1	pT2
6	6	29.7	28	18 - 46	0	
7	2	17	17	12 - 22	1	pT1b
8	3	30	31	24 - 36	0	

The departmental average lymph node harvest was 26.1 nodes per case.

The resection specimens were generated by five surgeons and the lymph node harvest per surgeon is tabulated below:

Surgeon	Number of cases	Mean number of nodes per case	Median nodes per case	Range of nodes per case	Number of cases reported with less than 15 nodes
1	14	19.2	18.5	5 - 46	6
2	14	24.4	25	12 - 41	2
3	28	30.2	32.5	15 - 61	0
4	9	20.9	20	17 - 24	0
5	13	29.8	29	17 - 45	0

The distribution of cases according to tumour characteristics are summarised below:

Criterion	Total number of cases	Number of cases with less than 15 nodes per case
Adenocarcinoma	71	8
Squamous cell carcinoma	7	0
T0	6	2
T1	11	1
T2	16	3
T3	38	1
T4	7	0
N0	26	7
N1	28	0
N2	15	1
N3	9	0
Documented preoperative chemotherapy	42	3
No preoperative chemotherapy documented	36	5

Conclusions

The departmental average lymph node harvest has increased from 20 nodes to 26 nodes since the last audit of this parameter (using 2011 data). This is clearly a positive finding indicating that, in general terms, both the surgical resections and the subsequent pathological examination of the specimens is adequate and improving, at least in regard to this parameter.

Approximately 10% of the oesophagogastrectomy specimens received during the audit period fell below the 15 lymph node target, a figure which, whilst containing some room for improvement, is significantly lower than that published in 2012 using data from the United States, where up to 44.1% of patients had at least 15 nodes identified and only 7% of institutions had a mean node harvest of at least 15 nodes [5].

Of the cases where fewer than 15 lymph nodes were identified, there is a fairly even distribution across all reporting pathologists. The distribution according to the responsible surgeon is more striking, with 75% of cases associated with an individual surgeon, representing 43% of their oesophagogastrectomy workload over the audit period. Clearly there may be a number of potential reasons for this variation (e.g pre-operative patient physiological status etc.) and these should be examined in greater detail by our surgical colleagues. I would be interested in receiving a copy of any additional follow up audit data from our surgical colleagues once they have examined pertinent factors.

The average lymph node harvest per reporting pathologist is also reassuring, with only a single pathologist reporting below 20 nodes per specimen. In this case, the pathologist concerned had only dissected two cases, one of which originated from the low yield surgeon.

Additional potential confounding factors (e.g. pre-operative treatment, tumour type etc.) do not appear to have been significant factors.

Recommendations

1. A copy of this audit should be brought to the attention of our surgical colleagues for their consideration.
2. Our surgical colleagues should be reassured that there is no evidence of underperformance of any individual pathologist currently reporting the oesophagogastrectomy specimens within the histopathological department at Derriford Hospital. In comparison to currently available data from other institutions, the service provided by this department compares favourably, at least with regard to lymph node harvest.
3. Continued diligence by pathologists in the examination of the paraoesophageal and paragastric fat for lymph nodes, with the intent of continuing the upward trend in the mean nodal yield reported.
4. Consideration should be given for the development of an indicator of the quality of the surgical resection, in much the same way as has been introduced for anterior resections and APER specimens in the large bowel. This would mainly relate to the quantity of fat associated with the specimen (as personal observation suggests that this most often correlates with the number of lymph nodes harvested) and features such as specimen weight or displacement volume may act as a quick and appropriate bench-side surrogate.
5. Repeat the audit in 12-18 months time.

References

1. TNM classification of tumours, 7th edition. Wiley-Blackwell, 2009.
2. Dataset for the histopathological reporting of oesophageal carcinoma (2nd edition). Royal College of Pathologists. London. 2007.
3. National Comprehensive Cancer Network. Guidelines in oncology: esophageal cancer, V. 2.2010.
4. Rizk NP, Ishwaran H, Rice TW, et al. Optimum lymphadenectomy for esophageal cancer. *Ann Surg.* 2010;251(1):46-50.
5. Merkow RP, Bilimoria KY, et al. Variation in Lymph Node Examination After Esophagectomy for Cancer in the United States. *Arch Surg.* 2012;147(6):505-511.