Supplementary Table 1A Complete retrieval strategy and manual search literature catalog (PubMed)

No.	Searches	Results
#1	("Esophageal Neoplasms"[Mesh]) OR ((((((((((((((((Esophageal Neoplasm[Title/Abstract]) OR (Neoplasm, Esophageal[Title/Abstract])) OR (Esophagus Neoplasm[Title/Abstract])) OR (Esophagus Neoplasms[Title/Abstract])) OR (Neoplasm, Esophagus[Title/Abstract])) OR (Neoplasms, Esophagus[Title/Abstract])) OR (Neoplasms, Esophageal[Title/Abstract])) OR (Cancer of Esophagus[Title/Abstract])) OR (Cancer of the Esophagus[Title/Abstract])) OR (Esophagus Cancer[Title/Abstract])) OR (Cancer, Esophagus[Title/Abstract])) OR (Cancers, Esophagus[Title/Abstract])) OR (Esophagus Cancers[Title/Abstract])) OR (Esophageal Cancer[Title/Abstract])) OR (Cancer, Esophageal[Title/Abstract])) OR (Cancers, Esophageal[Title/Abstract])) OR (Esophageal Cancers[Title/Abstract]))	64,237
#2	("Stomach Neoplasms"[Mesh]) OR ((((((((((((((((((Neoplasm, Stomach[Title/Abstract]) OR (Stomach Neoplasm[Title/Abstract])) OR (Neoplasms, Stomach[Title/Abstract])) OR (Gastric Neoplasms[Title/Abstract])) OR (Gastric Neoplasm[Title/Abstract])) OR (Neoplasm, Gastric[Title/Abstract])) OR (Neoplasms, Gastric[Title/Abstract])) OR (Cancer of Stomach[Title/Abstract])) OR (Stomach Cancers[Title/Abstract])) OR (Gastric Cancer[Title/Abstract])) OR (Cancer, Gastric[Title/Abstract])) OR (Cancers, Gastric[Title/Abstract])) OR (Gastric Cancers[Title/Abstract])) OR (Stomach Cancer[Title/Abstract])) OR (Cancer, Stomach[Title/Abstract])) OR (Cancers, Stomach[Title/Abstract])) OR (Cancer of the Stomach[Title/Abstract])) OR (Gastric Cancer, Familial Diffuse[Title/Abstract]))	131,992
#3	("Duodenal Neoplasms"[Mesh]) OR (((((((Duodenal Neoplasm[Title/Abstract]) OR (Neoplasm, Duodenal[Title/Abstract])) OR (Neoplasms, Duodenal[Title/Abstract])) OR (Duodenal Cancer[Title/Abstract])) OR (Cancer, Duodenal[Title/Abstract])) OR (Cancer of Duodenum[Title/Abstract])) OR (Duodenum Cancer[Title/Abstract])) OR (Cancer of the Duodenum[Title/Abstract]))	7,534
#4	#1 AND #2 AND #3	193,648
#5	("Lymphatic Metastasis"[Mesh]) OR ((((Lymphatic Metastases[Title/Abstract]) OR (Lymph Node Metastasis[Title/Abstract])) OR (Lymph Node Metastases[Title/Abstract])) OR (Metastasis, Lymph Node[Title/Abstract]))	125,508
#6	("Lymph Nodes"[Mesh]) OR (((Lymph Node[Title/Abstract]) OR (Node, Lymph[Title/Abstract])) OR (Nodes, Lymph[Title/Abstract]))	215,541
#7	#5 AND #6	255,901
#8	("Endosonography"[Mesh]) OR ((((((((((((((Endosonographies[Title/Abstract]) OR (Endoscopy, Echo[Title/Abstract])) OR (Echo Endoscopies[Title/Abstract])) OR (Endoscopies, Echo[Title/Abstract])) OR (Ultrasonic Endoscopy[Title/Abstract])) OR (Echo-Endoscopy[Title/Abstract])) OR (Echo Endoscopy[Title/Abstract])) OR (Endoscopy, Ultrasonic[Title/Abstract])) OR (Endoscopies, Ultrasonic[Title/Abstract])) OR (Ultrasonic Endoscopies[Title/Abstract])) OR (Ultrasonography, Endoscopic[Title/Abstract])) OR (Endoscopic Ultrasonography[Title/Abstract])) OR (Endoscopic Ultrasonographies[Title/Abstract])) OR (Ultrasonographies, Endoscopic[Title/Abstract]))	45,281
#9	sensitiv*[Title/Abstract] OR sensitivity and specificity[Mesh] OR (predictive[Title/Abstract] AND value*[Title/Abstract]) OR predictive value of tests[Mesh] OR accuracy*[Title/Abstract]	2,391,600
#10	#4 AND #7 AND #8 AND #9	387

Supplementary Table 1B Complete retrieval strategy and manual search literature catalog (Embase)

No.	Searches	Results
#1	'esophagus tumor'/exp OR 'esophageal neoplasm':ab,ti OR 'neoplasm, esophageal':ab,ti OR 'esophagus neoplasm':ab,ti OR 'esophagus neoplasms':ab,ti OR 'neoplasm, esophagus':ab,ti OR 'neoplasms, esophagus':ab,ti OR 'neoplasms, esophageal':ab,ti OR 'cancer of esophagus':ab,ti OR 'cancer of the esophagus':ab,ti OR 'esophagus cancer':ab,ti OR 'cancer, esophagus':ab,ti OR 'cancers, esophagus':ab,ti OR 'esophagus cancers':ab,ti OR 'esophageal cancer':ab,ti OR 'cancer, esophageal':ab,ti OR 'cancers, esophageal':ab,ti OR 'esophageal cancers':ab,ti	105,880
#2	'stomach neoplasms'/exp OR 'neoplasm, stomach':ab,ti OR 'stomach neoplasm':ab,ti OR 'neoplasms, stomach':ab,ti OR 'gastric neoplasms':ab,ti OR 'gastric neoplasm':ab,ti OR 'neoplasm, gastric':ab,ti OR 'neoplasms, gastric':ab,ti OR 'cancer of stomach':ab,ti OR 'stomach cancers':ab,ti OR 'gastric cancer':ab,ti OR 'cancer, gastric':ab,ti OR 'cancers, gastric':ab,ti OR 'gastric cancers':ab,ti OR 'stomach cancer':ab,ti OR 'cancer, stomach':ab,ti OR 'cancers, stomach':ab,ti OR 'cancer of the stomach':ab,ti OR 'gastric cancer, familial diffuse':ab,ti	200,317
#3	'duodenal neoplasms'/exp OR 'duodenal neoplasm':ab,ti OR 'neoplasm, duodenal':ab,ti OR 'neoplasms, duodenal':ab,ti OR 'duodenal cancer':ab,ti OR 'cancer, duodenal':ab,ti OR 'cancer of duodenum':ab,ti OR 'duodenum cancer':ab,ti OR 'cancer of the duodenum':ab,ti	18,858
#4	#1 OR #2 OR #3	301,933
#5	'lymphatic metastasis'/exp OR 'lymphatic metastases':ab,ti OR 'lymph node metastasis':ab,ti OR 'lymph node metastases':ab,ti OR 'metastasis, lymph node':ab,ti	179,460
#6	'lymph nodes'/exp OR 'lymph node':ab,ti OR 'node, lymph':ab,ti OR 'nodes, lymph':ab,ti	345,942
#7	#5 OR #6	408,271
#8	'endosonography'/exp OR 'endosonographies':ab,ti OR 'endoscopy, echo':ab,ti OR 'echo endoscopies':ab,ti OR 'endoscopies, echo':ab,ti OR 'ultrasonic endoscopy':ab,ti OR 'echo-endoscopy':ab,ti OR 'echo endoscopy':ab,ti OR 'endoscopy, ultrasonic':ab,ti OR 'endoscopies, ultrasonic':ab,ti OR 'ultrasonic endoscopies':ab,ti OR 'ultrasonography, endoscopic':ab,ti OR 'endoscopic ultrasonography':ab,ti OR 'endoscopic ultrasonographies':ab,ti OR 'ultrasonographies, endoscopic':ab,ti	37,917
#9	'sensitiv':ab,ti OR 'diagnostic accuracy':ab,ti OR 'diagnostic':ab,ti	1,177,755
#10	#4 AND #7 AND #8 AND #9	296

Supplementary Table 1C Complete retrieval strategy and manual search literature catalog (Cochrane Library)

No.	Searches	Results
#1	MeSH descriptor: [Esophageal Neoplasms] explode all trees	1856
#2	(Esophageal Neoplasm):ti,ab,kw OR (Neoplasm, Esophageal):ti,ab,kw OR (Esophagus Neoplasm):ti,ab,kw OR (Esophagus Neoplasms):ti,ab,kw OR (Neoplasm, Esophagus):ti,ab,kw OR (Neoplasms, Esophagus):ti,ab,kw OR (Neoplasms, Esophageal):ti,ab,kw OR (Cancer of the Esophagus):ti,ab,kw OR (Cancer of the Esophagus):ti,ab,kw OR (Esophagus Cancer):ti,ab,kw OR (Cancer, Esophagus):ti,ab,kw OR (Cancers, Esophagus):ti,ab,kw OR (Esophagus Cancers):ti,ab,kw OR (Esophageal Cancer):ti,ab,kw OR (Cancer, Esophageal):ti,ab,kw OR (Cancers, Esophageal):ti,ab,kw OR (Esophageal Cancers):ti,ab,kw	5950
#3	MeSH descriptor: [Stomach Neoplasms] explode all trees	2923
#4	(Neoplasm, Stomach):ti,ab,kw OR (Stomach Neoplasm):ti,ab,kw OR (Neoplasms, Stomach):ti,ab,kw OR (Gastric Neoplasms):ti,ab,kw OR (Gastric Neoplasm):ti,ab,kw OR (Neoplasm, Gastric):ti,ab,kw OR (Neoplasms, Gastric):ti,ab,kw OR (Cancer of Stomach):ti,ab,kw OR (Stomach Cancers):ti,ab,kw OR (Gastric Cancer):ti,ab,kw OR (Cancer, Gastric):ti,ab,kw OR (Cancers, Gastric):ti,ab,kw OR (Gastric Cancers):ti,ab,kw OR (Stomach Cancer):ti,ab,kw OR (Cancer, Stomach):ti,ab,kw OR (Cancers, Stomach):ti,ab,kw OR (Cancer of the Stomach):ti,ab,kw OR (Gastric Cancer, Familial Diffuse):ti,ab,kw	10787
#5	MeSH descriptor: [Duodenal Neoplasms] explode all trees	63
#6	(Duodenal Neoplasm):ti,ab,kw OR (Neoplasm, Duodenal):ti,ab,kw OR (Neoplasms, Duodenal):ti,ab,kw OR (Duodenal Cancer):ti,ab,kw OR (Cancer, Duodenal):ti,ab,kw OR (Cancer of Duodenum):ti,ab,kw OR (Duodenum Cancer):ti,ab,kw OR (Cancer of the Duodenum):ti,ab,kw	620
#7	#1 OR #2 OR #3 OR #4 OR #5 OR #6	15292
#8	MeSH descriptor: [Lymphatic Metastasis] explode all trees	1922
#9	(Lymphatic Metastases):ti,ab,kw OR (Lymph Node Metastasis):ti,ab,kw OR (Lymph Node Metastases):ti,ab,kw OR (Metastasis, Lymph Node):ti,ab,kw	5141
#10	MeSH descriptor: [Lymph Nodes] explode all trees	911
#11	(Lymph Node):ti,ab,kw OR (Node, Lymph):ti,ab,kw OR (Nodes, Lymph):ti,ab,kw	13150
#12	#8 OR #9 OR #10 OR #11	13841
#13	MeSH descriptor: [Endosonography] explode all trees	379
#14	(Endosonographies):ti,ab,kw OR (Endoscopy, Echo):ti,ab,kw OR (Echo Endoscopies):ti,ab,kw OR (Endoscopies, Echo):ti,ab,kw OR (Ultrasonic Endoscopy):ti,ab,kw OR (Echo-Endoscopy):ti,ab,kw OR (Echo Endoscopy):ti,ab,kw OR (Endoscopy, Ultrasonic):ti,ab,kw OR (Endoscopies, Ultrasonic):ti,ab,kw OR (Ultrasonic Endoscopies):ti,ab,kw OR (Ultrasonography, Endoscopic):ti,ab,kw OR (Endoscopic Ultrasonography):ti,ab,kw OR (Endoscopic Ultrasonographies):ti,ab,kw OR (Ultrasonographies, Endoscopic):ti,ab,kw	977
#15	#13 OR #14	1259
#16	#7 AND #12 AND #15	46

Supplementary Table 1D Complete retrieval strategy and manual search literature catalog (Manual Search)

1 **Bohle W**, Kasper M, Zoller WG. Different accuracy of endosonographic tumor staging after neoadjuvant chemotherapy and chemoradiotherapy in esophageal cancer. *Surg Endosc* 2016; **30**: 2922-2928 [PMID: 26487231 DOI: 10.1007/s00464-015-4578-y]

2 **Giganti F**, Orsenigo E, Arcidiacono PG, Nicoletti R, Albarello L, Ambrosi A, Salerno A, Esposito A, Petrone MC, Chiari D, Staudacher C, Del Maschio A, De Cobelli F. Preoperative locoregional staging of gastric cancer: is there a place for magnetic resonance imaging? Prospective comparison with EUS and multidetector computed tomography. *Gastric Cancer* 2016; **19**: 216–225 [PMID: 25614468 DOI: 10.1007/s10120-015-0468-1]

3 **Serrano OK**, Huang K, Ng N, Yang J, Friedmann P, Libutti SK, Kennedy TJ. Correlation between preoperative endoscopic ultrasound and surgical pathology staging of gastric adenocarcinoma: A single institution retrospective review. *J Surg Oncol 2016*; **113**: 42-45 [PMID: 26784562 DOI: 10.1002/jso.24098]

4 **Spolverato G**, Ejaz A, Kim Y, Squires MH, Poultsides GA, Fields RC, Schmidt C, Weber SM, Votanopoulos K, Maithel SK. Pawlik TM. Use of endoscopic ultrasound in the preoperative staging of gastric cancer: a multi-institutional study of the US gastric cancer collaborative. *J Am Coll Surg* 2015; **220**: 48-56 [PMID: 25283742 DOI: 10.1016/j.jamcollsurg.2014.06.023]

5 **Fairweather M**, Jajoo K, Sainani N, Bertagnolli MM, Wang J. Accuracy of EUS and CT imaging in preoperative gastric cancer staging. *J Surg Oncol* 2015; **111**: 1016-1020 [PMID: 25872753 DOI: 10.1002/jso.23919]

6 **Misra S**, Choi M, Livingstone AS, Franceschi D. The role of endoscopic ultrasound in assessing tumor response and staging after neoadjuvant chemotherapy for esophageal cancer. *Surg Endosc* 2012; **26**: 518-522 [PMID: 21938577 DOI: 10.1007/s00464-011-1911-y]

7 **Yen TJ**, Chung CS, Wu YW, Yen RF, Cheng MF, Lee JM, Hsu CH, Chang YL, Wang HP. Comparative study between endoscopic ultrasonography and positron emission tomography-computed tomography in staging patients with esophageal squamous cell carcinoma. *Dis Esophagus* 2012; **25**: 40-47 [PMID: 21595776 DOI: 10.1111/j.1442-2050.2011.01204.x]

8 **Kutup A**, Vashist YK, Groth S, Vettorazzi E, Yekebas EF, Soehendra N, Izbicki JR. Endoscopic ultrasound staging in gastric cancer: Does it help management decisions in the era of neoadjuvant treatment?. *Endoscopy* 2012; **44**: 572-576 [PMID: 22528672 DOI: 10.1055/s-0032-1308950]

9 **Bohle W**, Scheidig A, Zoller WG. Endosonographic tumor staging for treatment decision in resectable gastric cancer. *J Gastrointestin Liver Dis* 2011; **20**: 135-139 [PMID: 21725509]

10 **Hwang SW**, Lee DH, Lee SH, Park YS, Hwang JH, Kim JW, Jung SH, Kim NY, Kim YH, Lee KH, Kim HH, Park DJ, Lee HS, Jung HC, Song IS. Preoperative staging of gastric cancer by endoscopic ultrasonography and multidetector-row computed tomography. *J Gastroenterol Hepatol* 2010; **25**: 512-518 [PMID: 20370729 DOI: 10.1111/j.1440-1746.2009.06106.x]

11 **Machlenkin S**, Melzer E, Idelevich E, Ziv-Sokolovsky N, Klein Y, Kashtan H. Endoscopic ultrasound: doubtful accuracy for restaging esophageal cancer after preoperative chemotherapy. *Isr Med Assoc J* 2009; **11**: 166-169 [PMID: 19544707]

12 **Ahn HS**, Lee HJ, Yoo MW, Kim SG, Im JP, Kim SH, Kim WH, Lee KU, Yang HK. Diagnostic accuracy of T and N stages with endoscopy, stomach protocol CT, and endoscopic ultrasonography in early gastric cancer. *J Surg Oncol* 2009; **99**: 20–27 [PMID: 18937292 DOI: 10.1002/jso.21170]

13 **Mennigen R**, Tuebergen D, Koehler G, Sauerland C, Senninger N, Bruewer M. Endoscopic ultrasound with conventional probe and miniprobe in preoperative staging of esophageal cancer. *J Gastrointest Surg* 2008; **12**: 256-262 [PMID: 17823841 DOI: 10.1007/s11605-007-0300-2]

14 **Blackshaw G**, Lewis WG, Hopper AN, Morgan MA, Al-Khyatt W, Edwards P, Roberts SA. Prospective comparison of endosonography, computed tomography, and histopathological stage of junctional oesophagogastric cancer. *Clin Radiol* 2008; **63**: 1092–1098 [PMID: 18774355 DOI: 10.1016/j.crad.2008.04.006]

15 **Lok KH**, Lee CK, Yiu HL, Lai L, Szeto ML, Leung SK. Current utilization and performance status of endoscopic ultrasound in a community hospital. *J Dig Dis* 2008; **9**: 41–47 [PMID: 18251793 DOI: 10.1111/j.1443-9573.2007.00318.x]

16 **Park SR**, Lee JS, Kim CG, Kim HK, Kook MC, Kim YW, Ryu KW, Lee JH, Bae JM, Choi IJ. Endoscopic ultrasound and computed tomography in restaging and predicting prognosis after neoadjuvant chemotherapy in patients with locally advanced gastric cancer. *Cancer* 2008; **112**: 2368–2376 [PMID: 18404697 DOI: 10.1002/cncr.23483]

17 **Barbour AP** , Rizk NP , Gerdes H, Bains MS, Rusch VW, Brennan MF, Coit DG. Endoscopic ultrasound predicts outcomes for patients with adenocarcinoma of the gastroesophageal junction. *J Am Coll Surg* 2007; **205**: 593–601 [PMID: 17903735 DOI: 10.1016/j.jamcollsurg.2007.05.010]

18 **Gheorghe C**, Stanescu C, Gheorghe L, Bancila I, Herlea V, Becheanu G, Voinea D, Iacob R, Lupescu I, Anghel R, Croitoru A, Popescu I. Preoperative noninva-sive EUS evaluation in patients with esophageal cancer considered for esophagectomy. *J Gastrointestin Liver Dis* 2006; **15**: 137–141 [PMID: 16802008]

19 **Ang TL**, Ng TM, Fock KM, Teo EK. Accuracy of endoscopic ultrasound staging of gastric cancer in routine clinical practice in Singapore. *Chin J Dig Dis* 2006; **7**: 191–196 [PMID: 17054580 DOI: 10.1111/j.1443-9573.2006.00270.x]

20 **DeWitt J**, Kesler K, Brooks JA, LeBlanc J, McHenry L, McGreevy K, Sherman S. Endoscopic ultrasound for esophageal and gastroesophageal junction cancer: Impact of increased use of primary neoadjuvant therapy on preoperative locoregional staging accuracy. *Dis Esophagus* 2005; **18**: 21-27 [PMID: 15773837 DOI: 10.1111/j.1442-2050.2005.00444.x]

21 **Wakelin SJ**, Deans C, Crofts TJ, Allan PL, Plevris JN, Paterson-Brown S. A comparison of computer-ised tomography, laparoscopic ultrasound and endoscopic ultrasound in the preoperative staging of oesophago-gastric carcinoma. *Eur J Radiol* 2002; **41**: 161–167 [PMID: 11809546 DOI: 10.1016/s0720-048x(01)00418-1]

22 **Richards DG**, Brown TH, Manson JM. Endoscopic ultrasound in the staging of tumours of the oesophagus and gastro-oesophageal junction. *Ann R Coll Surg Engl* 2000; **82**: 311-317 [PMID: 11041028]

Supplementary Table 2 Detailed characteristics of the included studies

No.	First author	Publication year	Time span	Country	Study design	Center	EUS model	EUS scan type	EUS examination method
1	Jeong	2018	2010-2016	Korea	Retrospective	1	Olympus GIF-2T240/ GIF-2TQ260M/ UM-2R/ UM-3R	Radial	Conventional
2	Shi	2017	2015-2016	China	Retrospective	1	Pentax EG-3670 URK/ Hitachi HI VISION Avius	Radial	Conventional
3	Shan	2015	2013-2014	China	Prospective	1	Olympus EU2000	Radial	Conventional
4	Lee	2014	2012-2013	Korea	Retrospective	1	Olympus GF-UM2000/ UM-DP20–25R	Radial	Conventional
5	Meister	2013	2002-2009	Germany	Retrospective	5	Olympus GIF 165/ H180/ UMR-2/ UMR-3	Radial	Conventional
6	Yen	2012	2005-2008	China	Retrospective	1	Olympus GIF-2T200/ GIF-240/ GIF-260/ GIF-H260Z/ UM-DP12-25R/ UM-DP20-25R	Radial	Conventional
7	Pech	2010	2003-2007	Germany	Retrospective	1	Pentax EG-3630/ Hitachi 6500	Radial	Conventional
8	Machlenkin	2009	2003-2006	Israel	Retrospective	1	Olympus EU-M30	Radial	Conventional
9	Mennigen	2008	2001-2004	Germany	Retrospective	1	Pentax FG 38-UX, Fujinon PL 222 6–15	NR	Conventional
10	Shimpi	2007	1999-2004	USA	Retrospective	1	Olympus GF-UM30/ UM-3R, Pentax EG-3630UR	Radial	Conventional
11	Shinkai	2000	1988-1997	Japan	Retrospective	1	Olympus GF-UM2/ GF-UM20/ GF-UM200/ UM-2R/ UM-3R, MP-PN15–08M	Radial	Conventional
12	Richards	2000	1995-1997	UK	Retrospective	1	Olympus UM 20	Radial	Conventional
13	Li	2017	2010-2013	China	Retrospective	1	Fujinon EG-530UR	Radial	Conventional
14	Serrano	2016	2005-2014	USA	Retrospective	1	EG-3870UTK/ EG-3670URK, Fujinon SP-711	Radial	Conventional
15	Spolverato	2015	2000-2012	USA	Retrospective	7	NR	NR	Conventional
16	Fairweather	2015	2001-2013	USA	Retrospective	1	Olympus GF-UE160-AL5	Radial	Conventional
17	Feng	2013	2006-2011	China	Retrospective	1	Olympus AUM-2000/ UM-2R	NR	Conventional
18	Kutup	2012	1993-2008	Germany	Retrospective	1	NR	Radial	Conventional
19	Zheng	2011	2007-2009	China	Retrospective	1	Olympus EU-M20	Radial	Conventional
20	Bohle	2011	NR	Germany	Retrospective	1	Olympus GIF-UM 160	Radial	Conventional
21	Hwang	2010	2006-2008	Korea	Retrospective	1	Olympus GF-UM2000	Radial	Conventional
22	Bentrem	2007	1993-2003	USA	Retrospective	1	NR	NR	Conventional

No.	EUS scan frequency (MHz)	EUS diagnostic criteria	Type and number of image interpretation experts
1	12/20	Hypoechoic, round, well-defined margin, ≥10 mm in any axis	Two physicians with endoscopic experience of 10 and 9 years, respectively
2	NR	Hypoechoic, round, well-defined margin, short-axis diameter≥10mm	NR
3	7.5	Hypoechoic, round, well-defined margin, an obliterated hilar architecture,maximum axis diameter≥10mm or short axis/long axis＞1/2	NR
4	7.5/12/20	NR	NR
5	20	Hypoechoic, round, well-defined margin, diameter≥10mm	Six endoscopists with at least 4 years of experience, with EUS case volume greater than 200 per year
6	12/20	Hypoechoic, round, well-defined margin, short-axis diameter≥5mm	One experienced endosonographer who had performed at least 300 examinations of esophageal cancer using EUS
7	7.5-10	Hypoechoic, round, well-defined margin, diameter≥10mm	Two experienced endosonographers with experience averaging more than 1000 EUS procedures in total and more than 100 esophageal cancer staging procedures each per year
8	7.5-12	Hypoechoic, round, well-defined margin, diameter≥10mm	One gastroenterologist
9	7.5/15	Hypoechoic, round, well-defined margin, diameter≥10mm	One endoscopist
10	20	Hypoechoic, round, well-defined margin, diameter≥10mm	Four endosonographers. one with more than 400 EUS cases per year, three received advanced EUS training
11	7.5/12/15/20	Hypoechoic, round, well-defined margin, diameter≥10mm	NR
12	7.5/12	Hypoechoic, round, well-defined margin, diameter≥10mm	NR
13	5/7.5/10/12	Hypoechoic, round, well-defined margin	NR
14	7.5/10	NR	NR
15	NR	NR	NR
16	5-10	Short-axis diameter≥8mm	One experienced gastroenterologist
17	5/7.5/12/15/20	Hypoechoic, round, well-defined margin, diameter≥5mm	NR
18	7.5/10/12	Hypoechoic, round, well-defined margin, diameter≥5mm	Six experienced endoscopists who had performed at least 300 gastrointestinal endosonographies
19	7.5/12	According to EUS criteria	Two experienced gastroenterologists
20	5-20	Hypoechoic, round, well-defined margin, diameter≥10mm	Four endoscopist with several years experience
21	5/7.5/12/20	Diameter≥8mm	Two experienced endoscopists
22	7.5-12	Hypoechoic, round, well-defined margin	One gastroenterologist

No.	Blinding	Specify the interval between EUS and surgery	Gold standard	Analysis unit	Tumor type	Tumor location	Tumor stage	Tumor histological type	Neoadjuvant therapy
1	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	Any	pTis-T2	SCC	No
2	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	Any	Any	NR	No
3	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	Thoracic	Any	SCC	No
4	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	Any	Any	SCC	No
5	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	Any	Any	Any	No
6	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	No gastroesophageal junction	Any	SCC	No
7	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	Any	Any	Any	No
8	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	No gastroesophageal junction	Any	Any	No
9	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	Any	Any	Any	No
10	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	Any	Any	Any	No
11	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	Any	Any	SCC	No
12	Yes	No	Postoperative pathology	Per-patient	Esophageal cancer	Any	Any	Any	No
13	Yes	No	Postoperative pathology	Per-patient	Gastric cancer	Any	Any	NR	No
14	Yes	No	Postoperative pathology	Per-patient	Gastric cancer	Any	Any	AC	No
15	Yes	No	Postoperative pathology	Per-patient	Gastric cancer	Any	Any	AC	No
16	Yes	No	Postoperative pathology	Per-patient	Gastric cancer	Any	Any	AC	No
17	Yes	No	Postoperative pathology	Per-patient	Gastric cancer	Any	Any	NR	No
18	Yes	No	Postoperative pathology	Per-patient	Gastric cancer	Any	Any	NR	No
19	Yes	No	Postoperative pathology	Per-patient	Gastric cancer	Any	Any	NR	No
20	Yes	No	Postoperative pathology	Per-patient	Gastric cancer	Any	Any	NR	No
21	Yes	No	Postoperative pathology	Per-patient	Gastric cancer	Any	Any	NR	No
22	Yes	No	Postoperative pathology	Per-patient	Gastric cancer	Any	Any	AC	No

No.	Location of metastatic lymph nodes	Age (years)	Sex (male/female)	Sample size (cases)	TP	FP	FN	TN	Sensitivity	Specificity	PPV	NPV	Accuracy
1	Regional lymph nodes	64 ± NR (31-90)	403/32	435	57	31	80	267	41.61%	89.60%	64.77%	76.95%	74.48%
2	Regional lymph nodes	59.31 ± NR (43-79)	59/27	86	28	5	8	45	77.78%	90.00%	84.85%	84.91%	84.88%
3	Pararecurrent laryngeal nerve lymph nodes	NR ± NR (≥44)	NR/NR	94	11	5	23	55	32.35%	91.67%	68.75%	70.51%	70.21%
4	Regional lymph nodes	69.08 ± 6.95 (57-78)	12/0	12	2	0	3	7	40.00%	100.00%	100.00%	70.00%	75.00%
5	Regional lymph nodes	NR ± NR (≥34)	NR/NR	93	39	12	12	30	76.47%	71.43%	76.47%	71.43%	74.19%
6	Regional lymph nodes	NR ± NR (≥43)	NR/NR	27	5	12	0	10	100.00%	45.45%	29.41%	100.00%	55.56%
7	Regional lymph nodes	64.4 ± 9.5	142/37	179	48	29	20	82	70.59%	73.87%	62.34%	80.39%	72.63%
8	Regional lymph nodes	NR ± NR (≥28)	NR/NR	13	2	0	2	9	50.00%	100.00%	100.00%	81.82%	84.62%
9	Regional lymph nodes	64.7 ± 10.7 (30-83)	NR/NR	97	49	15	10	23	83.05%	60.53%	76.56%	69.70%	74.23%
10	Regional lymph nodes	NR ± NR	NR/NR	37	9	1	3	24	75.00%	96.00%	90.00%	88.89%	89.19%
11	Paraesophageal lymph nodes	NR ± NR (≥42)	NR/NR	102	41	20	13	28	75.93%	58.33%	67.21%	68.29%	67.65%
12	Regional lymph nodes	NR ± NR (≥35)	NR/NR	69	19	9	23	18	45.24%	66.67%	67.86%	43.90%	53.62%
13	Regional lymph nodes	56.80 ± 11.51	58/23	81	48	4	3	26	94.12%	86.67%	92.31%	89.66%	91.36%
14	Regional lymph nodes	NR ± NR (≥42)	NR/NR	46	8	6	8	24	50.00%	80.00%	57.14%	75.00%	69.57%
15	Regional lymph nodes	NR ± NR	NR/NR	144	34	12	36	62	48.57%	83.78%	73.91%	63.27%	66.67%
16	Regional lymph nodes	67 ± NR (31-90)	31/18	49	2	3	25	19	7.41%	86.36%	40.00%	43.18%	42.86%
17	Regional lymph nodes	57 ± NR (22-84)	482/128	610	307	45	118	140	72.24%	75.68%	87.22%	54.26%	73.28%
18	Regional lymph nodes	61.4±7.6 (28-84)	78/45	123	64	18	17	24	79.01%	57.14%	78.05%	58.54%	71.54%
19	Regional lymph nodes	58.27 ± 11.33 (35-86)	127/35	162	48	20	49	45	49.48%	69.23%	70.59%	47.87%	57.41%
20	Regional lymph nodes	63 ± NR	48/13*	62	30	5	9	18	76.92%	78.26%	85.71%	66.67%	77.42%
21	Regional lymph nodes	NR ± NR (≥49)	NR/NR	247	16	6	67	158	19.28%	96.34%	72.73%	70.22%	70.45%
22	Regional lymph nodes	NR ± NR	NR/NR	218	81	39	27	71	75.00%	64.55%	67.50%	72.45%	69.72%

EUS: Endoscopic ultrasound; NR: Not reported; SCC: Squamous cell carcinoma; AC: Adenocarcinoma; TP: True positives; FP: False positives; FN: False negatives; TN: True negatives; PPV: Positive predictive value; NPV: Negative predictive value; * One patient had two tumors, one in the body of the stomach and one in the antrum.

Supplementary Table 3 Detailed quality assessment information of the included studies (QUADAS-2)

No.	Study	Domain1 Patient Selection					Domain2 Index Test(s)				Domain3 Reference Standard			
		Risk of Bias					Risk of Bias				Risk of Bias			
		Was a consecutive or random sample of patients enrolled	Was a case-control design avoided	Did the study avoid inappropriate exclusions	**Risk Level**	**Concerns Regarding Applicability**	Were the index test results interpreted without knowledge of the results of reference standard	If a threshold was used, was it pre-specified	**Risk Level**	**Concerns Regarding Applicability**	Is the reference standard likely to correctly classify the target condition	Were the reference standard results interpreted without knowledge of the results of index test	**Risk Level**	**Concerns Regarding Applicability**
1	Jeong 2018	Yes	Yes	No	High	High	Yes	Yes	Low	Low	Yes	Yes	Low	Low
2	Shi 2017	Unclear	Yes	Yes	Unclear	Low	Yes	Yes	Low	High	Yes	Yes	Low	Low
3	Shan 2015	Unclear	Yes	No	High	High	Yes	Yes	Low	Low	Yes	Yes	Low	Low
4	Lee 2014	Yes	Yes	Yes	Low	Low	Yes	Unclear	Unclear	Unclear	Yes	Yes	Low	Low
5	Meister 2013	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	Low	Yes	Yes	Low	Low
6	Yen 2012	Yes	Yes	No	High	High	Yes	Yes	Low	High	Yes	Yes	Low	Low
7	Pech 2010	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	Low	Yes	Yes	Low	Low
8	Machlenkin 2009	Yes	Yes	No	High	High	Yes	Yes	Low	Low	Yes	Yes	Low	Low
9	Mennigen 2008	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	Low	Yes	Yes	Low	Low
10	Shimpi 2007	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	Low	Yes	Yes	Low	Low
11	Shinkai 2000	Unclear	Yes	No	High	High	Yes	Yes	Low	Low	Yes	Yes	Low	Low
12	Richards 2000	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	Low	Yes	Yes	Low	Low
13	Li 2017	Unclear	Yes	Yes	Unclear	Low	Yes	Yes	Low	High	Yes	Yes	Low	Low
14	Serrano 2016	Yes	Yes	Yes	Low	Low	Yes	Unclear	Unclear	Unclear	Yes	Yes	Low	Low
15	Spolverato 2015	Yes	Yes	Yes	Low	Low	Yes	Unclear	Unclear	Unclear	Yes	Yes	Low	Low
16	Fairweather 2015	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	High	Yes	Yes	Low	Low
17	Feng 2013	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	High	Yes	Yes	Low	Low
18	Kutup 2012	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	High	Yes	Yes	Low	Low
19	Zheng 2011	Yes	Yes	Yes	Low	Low	Yes	Unclear	Unclear	Unclear	Yes	Yes	Low	Low
20	Bohle 2011	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	Low	Yes	Yes	Low	Low
21	Hwang 2010	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	High	Yes	Yes	Low	Low
22	Bentrem 2007	Yes	Yes	Yes	Low	Low	Yes	Yes	Low	High	Yes	Yes	Low	Low

No.	Study	Domain4 Flow and Timing					Overall Risk of Bias	Overall Concerns Regarding Applicability
		Risk of Bias						
		Was there an appropriate interval between index test and reference standard	Did all patients receive a reference standard	Did patients receive the same reference standard	Were all patients included in the analysis	Risk Level		
1	Jeong 2018	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
2	Shi 2017	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
3	Shan 2015	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
4	Lee 2014	Yes	Yes	Yes	Yes	Low	at risk of bias	having concerns regarding applicability
5	Meister 2013	Yes	Yes	Yes	Yes	Low	low risk of bias	low concern regarding applicability
6	Yen 2012	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
7	Pech 2010	Yes	Yes	Yes	Yes	Low	low risk of bias	low concern regarding applicability
8	Machlenkin 2009	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
9	Mennigen 2008	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	low concern regarding applicability
10	Shimpi 2007	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	low concern regarding applicability
11	Shinkai 2000	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
12	Richards 2000	Yes	Yes	Yes	Yes	Low	at risk of bias	low concern regarding applicability
13	Li 2017	Yes	Yes	Yes	Yes	Low	at risk of bias	having concerns regarding applicability
14	Serrano 2016	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
15	Spolverato 2015	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
16	Fairweather 2015	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
17	Feng 2013	Yes	Yes	Yes	Yes	Low	low risk of bias	having concerns regarding applicability
18	Kutup 2012	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
19	Zheng 2011	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability
20	Bohle 2011	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	low concern regarding applicability
21	Hwang 2010	Yes	Yes	Yes	Yes	Low	low risk of bias	having concerns regarding applicability
22	Bentrem 2007	Unclear	Yes	Yes	Yes	Unclear	at risk of bias	having concerns regarding applicability

Supplementary Table 4 Results of sensitivity analysis

No. of excluded study	Sensitivity								Specificity							
	Overall SEN	New SEN	DV SEN	Change rate	Overall I2	New I2	DV I2	Change rate	Overall SPE	New SPE	DV SPE	Change rate	Overall I2	New I2	DV I2	Change rate
1	0.62	0.63	0.01	1.61%	91.50	91.07	-0.43	-0.47%	0.80	0.80	0.00	0.00%	86.10	83.14	-2.96	-3.44%
2	0.62	0.61	-0.01	-1.61%	91.50	91.75	0.25	0.27%	0.80	0.80	0.00	0.00%	86.10	86.12	0.02	0.02%
3	0.62	0.64	0.02	3.23%	91.50	91.50	0.00	0.00%	0.80	0.80	0.00	0.00%	86.10	86.03	-0.07	-0.08%
4	0.62	0.63	0.01	1.61%	91.50	91.88	0.38	0.42%	0.80	0.80	0.00	0.00%	86.10	86.54	0.44	0.51%
5	0.62	0.61	-0.01	-1.61%	91.50	91.73	0.23	0.25%	0.80	0.81	0.01	1.25%	86.10	86.72	0.62	0.72%
6	0.62	0.60	-0.02	-3.23%	91.50	91.84	0.34	0.37%	0.80	0.81	0.01	1.25%	86.10	85.63	-0.47	-0.55%
7	0.62	0.62	0.00	0.00%	91.50	91.82	0.32	0.35%	0.80	0.81	0.01	1.25%	86.10	86.84	0.74	0.86%
8	0.62	0.63	0.01	1.61%	91.50	91.89	0.39	0.43%	0.80	0.80	0.00	0.00%	86.10	86.39	0.29	0.34%
9	0.62	0.61	-0.01	-1.61%	91.50	91.47	-0.03	-0.03%	0.80	0.81	0.01	1.25%	86.10	86.15	0.05	0.06%
10	0.62	0.62	0.00	0.00%	91.50	91.86	0.36	0.39%	0.80	0.80	0.00	0.00%	86.10	86.01	-0.09	-0.10%
11	0.62	0.61	-0.01	-1.61%	91.50	91.73	0.23	0.25%	0.80	0.81	0.01	1.25%	86.10	85.84	-0.26	-0.30%
12	0.62	0.63	0.01	1.61%	91.50	91.78	0.28	0.31%	0.80	0.81	0.01	1.25%	86.10	86.80	0.70	0.81%
13	0.62	0.59	-0.03	-4.84%	91.50	91.02	-0.48	-0.52%	0.80	0.80	0.00	0.00%	86.10	86.17	0.07	0.08%
14	0.62	0.63	0.01	1.61%	91.50	91.89	0.39	0.43%	0.80	0.80	0.00	0.00%	86.10	86.83	0.73	0.85%
15	0.62	0.63	0.01	1.61%	91.50	91.76	0.26	0.28%	0.80	0.80	0.00	0.00%	86.10	86.61	0.51	0.59%
16	0.62	0.65	0.03	4.84%	91.50	90.68	-0.82	-0.90%	0.80	0.80	0.00	0.00%	86.10	86.87	0.77	0.89%
17	0.62	0.61	-0.01	-1.61%	91.50	90.97	-0.53	-0.58%	0.80	0.81	0.01	1.25%	86.10	87.24	1.14	1.32%
18	0.62	0.61	-0.01	-1.61%	91.50	91.51	0.01	0.01%	0.80	0.81	0.01	1.25%	86.10	85.78	-0.32	-0.37%
19	0.62	0.63	0.01	1.61%	91.50	91.71	0.21	0.23%	0.80	0.81	0.01	1.25%	86.10	86.60	0.50	0.58%
20	0.62	0.61	-0.01	-1.61%	91.50	91.76	0.26	0.28%	0.80	0.80	0.00	0.00%	86.10	86.66	0.56	0.65%
21	0.62	0.65	0.03	4.84%	91.50	88.98	-2.52	-2.75%	0.80	0.78	-0.02	-2.50%	86.10	81.76	-4.34	-5.04%
22	0.62	0.61	-0.01	-1.61%	91.50	91.58	0.08	0.09%	0.80	0.81	0.01	1.25%	86.10	85.81	-0.29	-0.34%

SEN: Sensitivity; SPE: Specificity; DV: Difference value.

Supplementary Table 5 Covariates and assignment instructions included in meta-regression and subgroup analysis

No.	Author	TP	FP	FN	TN	Year	Tumtype	Stuarea	Pubyear	Ssize100	Diacriteria
1	Jeong	57	31	80	267	2018	1	1	1	1	1
2	Shi	28	5	8	45	2017	1	1	1	0	0
3	Shan	11	5	23	55	2015	1	1	1	0	1
4	Lee	2	0	3	7	2014	1	1	1	0	0
5	Meister	39	12	12	30	2013	1	0	1	0	1
6	Yen	5	12	0	10	2012	1	1	1	0	0
7	Pech	48	29	20	82	2010	1	0	1	1	1
8	Machlenkin	2	0	2	9	2009	1	0	0	0	1
9	Mennigen	49	15	10	23	2008	1	0	0	0	1
10	Shimpi	9	1	3	24	2007	1	0	0	0	1
11	Shinkai	41	20	13	28	2000	1	1	0	1	1
12	Richards	19	9	23	18	2000	1	0	0	0	1
13	Li	48	4	3	26	2017	0	1	1	0	0
14	Serrano	8	6	8	24	2016	0	0	1	0	0
15	Spolverato	34	12	36	62	2015	0	0	1	1	0
16	Fairweather	2	3	25	19	2015	0	0	1	0	0
17	Feng	307	45	118	140	2013	0	1	1	1	0
18	Kutup	64	18	17	24	2012	0	0	1	1	0
19	Zheng	48	20	49	45	2011	0	1	1	1	0
20	Bohle	30	5	9	18	2011	0	0	1	0	1
21	Hwang	16	6	67	158	2010	0	1	1	1	0
22	Bentrem	81	39	27	71	2007	0	0	0	1	0

TP: True positives; FP: False positives; FN: False negatives; TN: True negatives; Tumtype: Tumor type (1 = esophageal cancer; 0 = gastric cancer); Stuarea: Study area (1 = eastern countries; 0 = western countries); Pubyear: Publication year (1 = 2010-2018; 0 = 2000-2009); Ssize: Sample size (1 = at least 100 cases; 0 = less than 100 cases); Diacriteria: Diagnostic criteria (1 = hypoechoic, round, well-defined margin, diameter≥10mm; 0 = others).