

Multi-society consensus conference and guideline on the treatment of gastroesophageal reflux disease (GERD)

Supplement 1: GERD Consensus Conference Literature Search Summary Chart

Updated 2/21/22 to include final literature search and Covidence handsearching numbers

PICO Questions
1. Pre-op work-up
a. Should pH-probe vs no pH-probe be used during the workup before antireflux surgery?
b. Should impedance vs no impedance be used during the workup before antireflux surgery?
c. Should manometry vs no manometry be used during the workup before antireflux surgery?
d. Should endoscopy vs no endoscopy be used during the workup before antireflux surgery?
2. Surgery vs Medical – Endoscopic
a. Should antireflux surgery compared to medical treatment be used for adult patients with GERD who are otherwise candidates for surgery?
b. Should antireflux surgery compared to medical treatment be used for adult patients with nondysplastic Barrett's esophagus?
c. Should antireflux surgery versus medical treatment (PPI) be used for adult patients with dysplastic Barrett's after successful endoscopic treatment to minimize recurrence of disease?
d. Should endoscopic treatment (MSA) vs fundoplication be used for patients with GERD?
e. Should endoscopic treatment (MSA) vs medical treatment (PPI) be used for patients with GERD?
f. Should endoscopic treatment (TIF 2.0) vs fundoplication be used for patients with GERD?
g. Should endoscopic treatment with TIF 2.0 vs medical treatment (PPI) be used for patients with GERD?
h. Should endoscopic treatment with stretta vs fundoplication be used for patients with GERD?
i. Should endoscopic treatment with stretta vs medical treatment (PPI) be used for patients with GERD?
3. Surgical technique
a. Should complete fundoplication vs partial fundoplication be used in adults with GERD?
b. Should complete fundoplication vs partial fundoplication be used for adult patients with GERD who on preop manometry have esophageal dysmotility?
c. Should robotic vs laparoscopic approach be used for fundoplication in adults with GERD?
4. Concomitant disease and GERD (Obesity)
a. Should morbidly obese patients (BMI >35) with GERD undergo fundoplication vs gastric bypass for optimal control of their GERD?
b. Should adult candidate patients with GERD refractory to best medical management undergo Sleeve Gastrectomy?
c. After failed fundoplication should a redo fundoplication versus gastric bypass be performed for symptom control in adults?

Run Dates: 1/12,14/20 ; Final Run: 1/9-10/21 Search run by: Holly Ann Burt	
Additional terms (See individual PICO groups for main strategies):	
Languages: English	Ages: 18 and older
Species: Not Animals	Publication years: All
Excluded: Esophageal Achalasia	
Studies: Case reports, Clinical study, Comparative study, Evaluation study, Meta-analysis, Multicenter study, Systematic review	

Database searched (Coverage)		Additional databases used	
Systematic Reviews _X_ Cochrane Library (2009-2020)	Medicine _X_ Embase (1947-2020) _X_ PubMed (1809/1966-2020)	_X_ ICTRP (International Clinical Trials Registry Platform) _X_ Google Scholar	
Clinical Trials _X_ Clinicaltrials.gov (2000 -2020)			
TOTAL SEARCH RESULTS	Total items identified by database searches	7385	
	Additional articles located by handsearching	348	
	Total trials (subtracted before screening)	709	
	Items identified in a previous search (used to eliminate 4c duplicates)	3061	
	Combined total duplicates	3805	
	Combined items screened	3219	
	Combined studies irrelevant	2410	
	Combined Full-text studies assessed for eligibility	809	
	Combined studies excluded	531	
	Combined studies included	278	
1. Pre-op work-up			
SEARCH RESULTS	Total items identified by database searches	1069	
	Articles located by handsearching	46	
	Total trials (subtracted before screening)	517	
	Duplicates	174	
	Total items screened	424	
	Concept A	Concept B	Concept C
MESH terms	Gastroesophageal reflux	Esophageal ph monitoring Electric Impedance Manometry Endoscopy	Preoperative care Mass screening
Text words	Gerd Gord Gastro-oesophageal reflux Gastroesophageal reflux	Ph-probe OR Ph probe OR Phmetry Impedance Manometry Endoscopic surveillance	Workup OR Work-up Screening
Databases	Final search strategies		Results
PubMed Q1a	("esophageal ph monitoring"[mh] OR "ph-probe"[tw] OR "ph probe"[tw] OR pHmetry[tw]) AND ("gastroesophageal reflux"[mh] OR gerd[tw] OR Gastroesophageal Reflux[tw]) AND (workup[tiab] OR work-up[tiab] OR "mass screening"[MeSH Terms] OR "preoperative care"[mh]) AND (Case Reports[ptyp] OR Clinical Study[ptyp] OR Comparative Study[ptyp] OR Evaluation Study[ptyp] OR Meta-Analysis[ptyp] OR Multicenter Study[ptyp] OR Systematic Review[ptyp] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR "esophageal achalasia"[MeSH Terms])		28

PubMed Q1b	(Impedance [tw] OR "Electric Impedance"[mh]) AND ("gastroesophageal reflux"[mh] OR gerd[tw] OR Gastroesophageal Reflux[tw]) AND (workup[tiab] OR work-up[tiab] OR "mass screening"[MeSH Terms] OR "preoperative care"[mh]) AND (Case Reports[ptyp] OR Clinical Study[ptyp] OR Comparative Study[ptyp] OR Evaluation Study[ptyp] OR Meta-Analysis[ptyp] OR Multicenter Study[ptyp] OR Systematic Review[ptyp] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR "esophageal achalasia"[MeSH Terms])	16
PubMed Q1c	("manometry"[mh] OR manometry[TW]) AND ("gastroesophageal reflux"[mh] OR gerd[tw] OR Gastroesophageal Reflux[tw]) AND (workup[tiab] OR work-up[tiab] OR "mass screening"[MeSH Terms] OR "preoperative care"[mh]) AND (Case Reports[ptyp] OR Clinical Study[ptyp] OR Comparative Study[ptyp] OR Evaluation Study[ptyp] OR Meta-Analysis[ptyp] OR Multicenter Study[ptyp] OR Systematic Review[ptyp] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR "esophageal achalasia"[MeSH Terms])	84
PubMed Q1d	("endoscopy"[MeSH Terms] OR "endoscopic surveillance"[tw] OR endoscopy[tw]) AND ("gastroesophageal reflux"[mh] OR gerd[tw] OR Gastroesophageal Reflux[tw]) AND (workup[tiab] OR work-up[tiab] OR "mass screening"[MeSH Terms] OR "preoperative care"[mh]) AND (Case Reports[ptyp] OR Clinical Study[ptyp] OR Comparative Study[ptyp] OR Evaluation Study[ptyp] OR Meta-Analysis[ptyp] OR Multicenter Study[ptyp] OR Systematic Review[ptyp] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR "esophageal achalasia"[MeSH Terms])	171
Embase Q1a-d	('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND ('esophageal ph monitoring'/exp OR 'esophageal ph monitoring' OR 'impedance'/exp OR impedance OR 'manometry'/exp OR manometry OR 'endoscopy'/exp OR endoscopy) AND ('preoperative care'/exp OR 'preoperative care' OR 'mass screening'/exp OR 'mass screening') AND [english]/lim AND ([systematic review]/lim OR [meta analysis]/lim OR [clinical study]/lim) NOT ([animals]/lim OR [child]/lim OR [embryo]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim)	185
Cochrane Q1a	([mh gastroesophagal reflux] OR (gastroesophageal reflux):ti,ab,kw OR 'gastroesophageal reflux' OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR 'Gastro-oesophageal Reflux') AND ([mh esophageal ph monitoring] OR ph-probe OR (ph-probe):ti,ab,kw OR (ph probe):ti,ab,kw OR 'ph probe') AND ([mh preoperative care] OR [mh mass screening] OR (workup):ti,ab,kw OR workup OR (work-up):ti,ab,kw OR work-up OR 'mass screening' OR 'preoperative care')	1

Cochrane Q1b	((([mh gastroesophageal reflux] OR (gastroesophageal reflux):ti,ab,kw OR 'gastroesophageal reflux' OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR 'Gastro-oesophageal Reflux') AND ([mh electrical impedance] OR (impedance):ti,ab,kw) AND ([mh preoperative care] OR [mh mass screening] OR (workup):ti,ab,kw OR workup OR (work-up):ti,ab,kw OR work-up OR 'mass screening' OR 'preoperative care'))	5
Cochrane Q1c	((([mh gastroesophageal reflux] OR (gastroesophageal reflux):ti,ab,kw OR 'gastroesophageal reflux' OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR 'Gastro-oesophageal Reflux') AND ([mh manometry] OR (manometry):ti,ab,kw OR manometry) AND ([mh preoperative care] OR [mh mass screening] OR (workup):ti,ab,kw OR workup OR (work-up):ti,ab,kw OR work-up OR 'mass screening' OR 'preoperative care'))	18
Cochrane Q1d	((([mh gastroesophageal reflux] OR (gastroesophageal reflux):ti,ab,kw OR 'gastroesophageal reflux' OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR 'Gastro-oesophageal Reflux') AND (([mh endoscopy] OR (endoscopy):ti,ab,kw OR endoscopy) AND surgery) AND ([mh preoperative care] OR [mh mass screening] OR (workup):ti,ab,kw OR workup OR (work-up):ti,ab,kw OR work-up OR 'mass screening' OR 'preoperative care')) NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw))	1
ClinicalTrials 1a	(pH-probe OR "ph monitoring") AND (Reflux OR GERD OR gastroesophageal reflux OR Gastro-oesophageal reflux) AND (Adult OR Older Adult)	106
ClinicalTrials 1b	(impedance OR "electrical impedance") AND (Reflux OR GERD OR gastroesophageal reflux OR Gastro-oesophageal reflux) AND (Adult OR Older Adult)	82
ClinicalTrials 1c	(manometry) AND (Reflux OR GERD OR gastroesophageal reflux OR Gastro-oesophageal reflux) AND (Adult OR Older Adult)	64
ClinicalTrials 1d	(endoscopy) AND (Reflux OR GERD OR gastroesophageal reflux OR Gastro-oesophageal reflux) AND (Adult OR Older Adult)	252
Q1a	PubMed: Above AND 2020:2021[dp]	2
Q1b	PubMed: Above AND 2020:2021[dp]	3
Q1c	PubMed: Above AND 2020:2021[dp]	6
Q1d	PubMed: Above AND 2020:2021[dp]	4
Q1a-d	Embase: Above AND [2020-2021]/py	13
Q1a	Cochrane: Above AND 2020-2021	1
Q1b	Cochrane: Above AND 2020-2021	0
Q1c	Cochrane: Above AND 2020-2021	2
Q1d	Cochrane: Above AND 2020-2021	0
2. Surgery vs Medical – Endoscopic		
SEARCH RESULTS	Total items identified by database searches	2516
	Articles located by handsearching	113
	Total trials (subtracted before screening)	137
	Duplicates	1285

	Total items screened (990: a-f / 22: g / 195: h-i)	1207	
	Combined studies irrelevant	943	
	Combined Full-text studies assessed for eligibility	264	
	Combined studies excluded	151	
	Combined studies included	113	
	Concept A	Concept B	Concept C
MESH terms (a,b,c,d,f,h)	Gastroesophageal reflux Barrett esophagus	Drug therapy Therapeutic use NOT Adverse Effects Esophageal Sphincter, Lower Proton pump inhibitors	Surgery Fundoplication
Text words (a,b,c,d,f,h)	Gerd Gord Gastro-oesophageal reflux Gastroesophageal reflux (Barret OR Barret's) AND esophagus	Medical treatment Standard care PPI NOT protein Proton pump Magnetic sphincter augmentation Magnetic AND MSA TIF AND 2.0 Transoral AND incisionless Stretta	Surgery Dysplasia NOT (nondysplastic OR non- dysplastic) Fundoplication
MESH terms (e,g,i)	Gastroesophageal reflux	Proton pump inhibitors	Esophageal Sphincter, Lower
Text words (e,g,i)	Gerd Gord Gastro-oesophageal reflux Gastroesophageal reflux (Barret OR Barret's) AND esophagus	PPI NOT protein Proton pump	Stretta TIF AND 2.0 Transoral AND incisionless Magnetic sphincter augmentation Magnetic AND MSA
Databases	Final search strategies	Results	
PubMed Q2a	("gastroesophageal reflux/surgery"[Mesh Terms] AND ("medical treatment"[tw] OR "drug therapy"[sh] OR ("therapeutic use"[sh] NOT "adverse effects"[sh])) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang]) NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[MeSH Terms])	304	
PubMed Q2b	("Barrett Esophagus"[mh] OR (Barrett[tiab] OR Barrett[OT] OR Barrett's[tw] AND Esophagus[tw])) AND ("medical treatment"[tw] OR "drug therapy"[sh] OR "therapeutic use"[sh]) AND (surgery [tiab] OR Surgery[sh]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR	131	

	"child"[mh] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[MeSH Terms] OR dysplasia [tiab] OR adenocarcinoma[tiab] OR Adenocarcinoma[mh])	
PubMed Q2c	("Barrett Esophagus"[mh] OR Barrett[tiab] OR Barrett[OT] OR Barrett's[tw]) AND (dysplastic[tw] OR dysplasia[tiab] NOT (nondysplastic[tw] OR "non-dysplastic"[tw])) AND ("proton pump inhibitors"[mh] OR PPI[tiab] NOT protien[tw]) OR "Proton Pump"[tiab]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[MeSH Terms])	88
PubMed Q2d	("Esophageal Sphincter, Lower/surgery"[MeSH Terms] OR "Magnetic sphincter augmentation"[tiab] OR (Magnetic[tiab] AND MSA[tiab])) AND ("gastroesophageal reflux"[MeSH Terms] OR gerd[tw] OR Gastroesophageal Reflux[tw]) AND (fundoplication [mh] OR fundoplication [tw]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[MeSH Terms])	43
PubMed Q2e	("Esophageal Sphincter, Lower/surgery"[MeSH Terms] OR "Magnetic sphincter augmentation"[tiab] OR (Magnetic[tiab] AND MSA[tiab])) AND ("gastroesophageal reflux"[MeSH Terms] OR gerd[tw] OR Gastroesophageal Reflux[tw]) AND ("medical treatment"[tw] OR "drug therapy"[sh] OR "therapeutic use"[sh]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[MeSH Terms])	42
PubMed Q2f	((TIF [tw] AND 2.0[tiab]) OR (transoral [tiab] AND incisionless [tiab])) AND ("gastroesophageal reflux"[mh] OR gerd[tw] OR "Gastroesophageal Reflux"[tw]) AND (fundoplication [mh] OR fundoplication [tw]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[mh]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[mh])	54
PubMed Q2g	((TIF [tw] AND 2.0[tiab]) OR (transoral [tiab] AND incisionless [tiab])) AND ("gastroesophageal reflux"[MeSH] OR gerd[tw] OR	45

	"Gastroesophageal Reflux"[tw]) AND ("proton pump inhibitors"[MeSH] OR (PPI[tiab] NOT protien[tw]) OR "Proton Pump"[tiab]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[Mesh]) OR rat[tiab] OR rats[tiab] OR "infant"[MeSH] OR "child"[MeSH] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[MeSH])	
PubMed Q2h	("Esophageal Sphincter, Lower/surgery"[MeSH Terms] OR "stretta"[tiab]) AND ("gastroesophageal reflux"[MeSH] OR gerd[tw] OR "Gastroesophageal Reflux"[tw]) AND (fundoplication [mesh] OR fundoplication [tw]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[MeSH] OR "child"[MeSH] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[MeSH Terms])	77
PubMed Q2i	("Esophageal Sphincter, Lower/surgery"[MeSH Terms] OR "stretta"[tiab]) AND ("gastroesophageal reflux"[MeSH] OR gerd[tw] OR "Gastroesophageal Reflux"[tw]) AND ("proton pump inhibitors"[MeSH] OR (PPI[tiab] NOT protien[tw]) OR "Proton Pump"[tiab]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[MeSH] OR "child"[MeSH] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[MeSH Terms])	87
Embase Q2a	((('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND (('medical treatment' OR 'standard care') AND ('surgery' OR 'antireflux operation'))) AND [english]/lim AND ([systematic review]/lim OR [meta analysis]/lim OR [clinical study]/lim)) NOT ([animals]/lim OR [child]/lim OR [embryo]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim OR 'esophagus achalasia'/exp OR 'esophagus achalasia')	233
Embase Q2b	('barrett esophagus'/exp OR 'barrett esophagus') AND ('medical treatment' OR 'standard care') AND ('surgery' OR 'antireflux operation') AND [english]/lim AND ([systematic review]/lim OR [meta analysis]/lim OR [clinical study]/lim) NOT ([animals]/lim OR [child]/lim OR [embryo]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim)	43
Embase Q2c	('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND ('barrett esophagus'/exp OR 'barrett esophagus') AND dysplastic AND ('proton pump inhibitor'/exp OR 'proton pump inhibitor') AND ([systematic review]/lim OR [meta analysis]/lim OR [clinical study]/lim)	32

	AND [english]/lim NOT ([animals]/lim OR [child]/lim OR [embryo]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim)	
Embase Q2de	"magnetic sphincter augmentation'/exp AND ('fundoplication'/exp OR fundoplication OR 'proton pump inhibitor'/exp OR 'proton pump inhibitor') AND [english]/lim AND ([systematic review]/lim OR [meta analysis]/lim OR [clinical study]/lim) NOT ([animals]/lim OR [child]/lim OR [embryo]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim)	22
Embase Q2f	'transoral incisionless fundoplication' AND ('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND 2.0 AND [english]/lim NOT ([animals]/lim OR [child]/lim OR [school]/lim)	16
Embase Q2g	transoral incisionless fundoplication' AND ('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND 2.0 AND [english]/lim NOT ([animals]/lim OR [child]/lim OR [school]/lim)	19
Embase Q2h	('stretta'/exp OR stretta OR 'stretta procedure'/exp OR 'stretta procedure') AND ('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND ('stomach fundoplication'/exp OR 'stomach fundoplication') AND [english]/lim NOT ([animals]/lim OR [child]/lim OR [school]/lim)	115
Embase Q2i	('stretta'/exp OR stretta OR 'stretta procedure'/exp OR 'stretta procedure') AND ('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND ('proton pump inhibitor'/exp OR 'proton pump inhibitor') AND [english]/lim NOT ([animals]/lim OR [child]/lim OR [school]/lim)	135
Cochrane Q2a	((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND ((Surgery):ti,ab,kw OR [mh /SU]) OR [mh gastroesophageal reflux/SU]) AND ((medical treatment):ti,ab,kw OR [mh /DH] OR [mh /TU] OR [mh /DT])) NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw OR [mh esophageal achalasia])	225
Cochrane Q2b	(Barrett):ti,ab,kw AND ((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND ((Surgery):ti,ab,kw OR [mh /SU])) OR [mh gastroesophageal reflux/SU] OR ((antiflux):ti,ab,kw AND ((Surgery):ti,ab,kw OR [mh /SU])) AND ((medical treatment):ti,ab,kw OR [mh /DH] OR [mh /TU] OR [mh /DT])) NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw OR [mh esophageal achalasia])	23
Cochrane Q2c	(Barrett):ti,ab,kw AND ((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND ((Surgery):ti,ab,kw OR [mh /SU])) OR [mh gastroesophageal reflux/SU] OR ((antiflux):ti,ab,kw AND ((Surgery):ti,ab,kw OR [mh /SU])) AND ((PPI):ti,ab,kw OR [mh Proton Pump inhibitors] OR ' Proton Pump inhibitor' OR ' Proton Pump	21

	inhibitors')) NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw OR [mh esophageal achalasia])	
Cochrane Q2de	((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND ((PPI):ti,ab,kw OR [mh Proton Pump inhibitors] OR ' Proton Pump inhibitor' OR ' Proton Pump inhibitors' OR (fundoplication):ti,ab,kw OR fundoplication) AND ((Magnetic sphincter augmentation):ti,ab,kw OR ((MSA):ti,ab,kw AND mangnetic))) NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw OR [mh esophageal achalasia])	10
Cochrane Q2f	((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND ((transoral incisionless):ti,ab,kw OR (TIF AND ((fundoplication):ti,ab,kw OR fundoplication))))	18
Cochrane Q2g	((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND (transoral incisionless):ti,ab,kw OR (TIF AND ((PPI):ti,ab,kw OR [mh Proton Pump inhibitors] OR 'Proton Pump inhibitor' OR 'Proton Pump inhibitors'))	20
Cochrane Q2hi	"Stretta procedure" OR Stretta	12
ClinicalTrials 2a	"Antireflux surgery" Reflux OR GERD OR gastroesophageal reflux OR Gastro-oesophageal reflux Adult, Older Adult	37
ClinicalTrials 2b	"Antireflux surgery" OR Surgery Barrett Esophagus Adult, Older Adult	30
ClinicalTrials 2c	(PPI OR "Proton pump inhibitor") AND (endoscopic OR endoscopy) Barrett's Esophagus Adult, Older Adult	18
ClinicalTrials 2de	"Magnetic sphincter augmentation"	3
ClinicalTrials 2f	"TIF 2.0" Reflux OR GERD OR gastroesophageal reflux OR Gastro-oesophageal reflux Adult, Older Adult	4
Q2a	PubMed: Above AND 2020:2021[dp]	3
Q2b	PubMed: Above AND 2020:2021[dp]	0
Q2c	PubMed: Above AND 2020:2021[dp]	5
Q2d	PubMed: Above AND 2020:2021[dp]	12
Q2e	PubMed: Above AND 2020:2021[dp]	14
Q2f	PubMed: Above AND 2020:2021[dp]	5
Q2g	PubMed: Above AND 2020:2021[dp]	4
Q2h	PubMed: Above AND 2020:2021[dp]	3
Q2i	PubMed: Above AND 2020:2021[dp]	0
Q2a	Embase: Above AND [2020-2021]/py	17
Q2b	Embase: Above AND [2020-2021]/py	0
Q2c	Embase: Above AND [2020-2021]/py	3

Q2de	'magnetic sphincter augmentation'/exp AND ('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND ([systematic review]/lim OR [meta analysis]/lim OR [clinical study]/lim) AND [english]/lim AND [2020-2021]/py NOT ([animals]/lim OR [child]/lim OR [embryo]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim)	14	
Q2f	Embase: Above AND [2020-2021]/py	2	
Q2g	Embase: Above AND Post 1/9/21	1	
Q2h	Embase: Above AND Post 1/9/21	1	
Q2i	Embase: Above AND Post 1/9/21	0	
Q2a	Cochrane: Above AND 2020-2021	10	
Q2b	Cochrane: Above AND 2020-2021	2	
Q2c	Cochrane: Above AND 2020-2021	18	
Q2de	Cochrane: Above AND 2020-2021	1	
Q2f	Cochrane: Above AND 2020-2021	5	
3. Surgical technique			
SEARCH RESULTS	Total items identified by database searches	779	
	Articles located by handsearching	60	
	Total trials (subtracted before screening)	26	
	Duplicates	272	
	Total items screened	541	
	Concept A	Concept B	Concept C
MESH terms	Gastroesophageal reflux	Fundoplication	Robotic Surgical Procedures
Text words	Gerd Gord Gastro-oesophageal reflux Gastroesophageal reflux	Stomach fundoplication	Partial Robotic
Databases	Final search strategies		Results
PubMed Q3a-c	("Gastroesophageal Reflux"[mh] OR gerd[tw] OR "Gastroesophageal Reflux"[tw]) AND ("fundoplication"[MeSH Terms] OR fundoplication[tw]) AND (partial[tiab] OR Robotic[tw] OR Robotic Surgical Procedures[mh]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[mh])		259
Embase Q3ab	('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND Partial AND 'stomach fundoplication' AND ([systematic review]/lim OR [meta analysis]/lim OR [clinical study]/lim) AND [english]/lim NOT ([animals]/lim OR [child]/lim OR [embryo]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim)		344

Embase Q3c	'robot assisted surgery'/exp AND 'stomach fundoplication' AND ('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND [english]/lim NOT ([animals]/lim OR [child]/lim OR [embryo]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim)	19	
Cochrane Q3ab	((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND (fundoplication NEAR partial)) NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw OR [mh esophageal achalasia]))	94	
Cochrane Q3c	((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (GORD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND ((fundoplication):ti,ab,kw OR fundoplication OR [mh fundoplication]) AND ([mh Laparoscopy] OR (laparoscop*):ti,ab,kw) AND (robot*):ti,ab,kw) NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw OR [mh esophageal achalasia]))	16	
ClinicalTrials 3ab	fundoplication AND partial Reflux OR GERD OR gastroesophageal reflux OR Gastro-oesophageal reflux	10	
ClinicalTrials 3c	fundoplication AND (robotic OR robot) Reflux OR GERD OR gastroesophageal reflux OR Gastro-oesophageal reflux	0	
Q3a-c	PubMed: Above AND 2020:2021[dp]	13	
Q3ab	Embase: Above AND [2020-2021]/py	12	
Q3c	Embase: Above AND [2020-2021]/py	5	
Q3ab	Cochrane: Above AND 2020-2021	7	
Q3c	Cochrane: Above AND 2020-2021	0	
4. Concomitant disease and GERD (Obesity)			
SEARCH RESULTS	Total items identified by database searches	3021	
	Articles located by handsearching	129	
	Total trials (subtracted before screening)	29	
	Duplicates	2074	
	Total items screened	1047	
	Concept A	Concept B	Concept C
MESH terms (4ab)	Gastroesophageal reflux	Fundoplication Gastric bypass surgery Gastrectomy AND Sleeve	Obesity
Text words (4ab)	Gerd Gord Gastro-oesophageal reflux Antireflux operation Gastroesophageal reflux	Stomach fundoplication Gastric bypass Gastrectomy AND Sleeve	Obese Refractory Intractable
MESH terms (4c)	Gastroesophageal reflux Treatment failure AND gastroesophageal	Fundoplication Gastric bypass Reoperation Second-look surgery	Heartburn Patient reported outcome measures Quality of life

			Symptom assessment Patient satisfaction
Text words (4c)	Gerd Gord Gastro-oesophageal reflux Gastroesophageal reflux Failed Fundoplication Fundoplication failure Recurrent reflux Treatment failure AND gastroesophageal	Fundoplication Gastric bypass Revisional antireflux surgery Reoperation Reoperative Redo fundoplication Roux-en-y	Heartburn Patient outcomes Patient satisfaction Good symptomatic outcomes Quality of life
Databases	Final search strategies		Results
PubMed Q4a	("gastroesophageal reflux"[MeSH Terms] OR gerd[tw] OR "Gastroesophageal Reflux"[tw]) AND (("fundoplication"[MeSH Terms] OR fundoplication[tw]) OR ("gastric bypass"[MeSH Terms] OR "Gastric bypass"[tw])) AND ("Obesity"[mh] OR obese[tw]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[mh])		279
PubMed Q4b	("gastroesophageal reflux"[mh] OR "gastroesophageal reflux"[tw] OR "gerd"[tw]) AND (refractory[tw] OR intractable [tw]) AND (Sleeve[tw] AND ("gastrectomy"[MeSH Terms] OR gastrectomy[tw])) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang] NOT (("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[mh])		20
PubMed Q4c	(("Revisional antireflux surgery"[tw] OR "fundoplication"[mh] OR "fundoplication"[tw] OR "second-look surgery"[mh] OR "reoperation"[MeSH Terms] OR reoperation[tw] OR reoperative[tw] OR "redo fundoplication"[tw] OR "roux-en-y"[tw] OR "gastric bypass"[mh] OR "gastric bypass"[tw]) AND ("gastroesophageal reflux"[MeSH Terms] OR "gastroesophageal reflux"[tw] OR "gerd"[tw] OR "Failed Fundoplication"[tw] OR "Fundoplication failure"[tw] OR "Recurrent reflux"[tw] OR ("treatment failure"[tw] OR "treatment failure"[mh]) AND gastroesophageal [tw])) AND ("heartburn"[mh] OR "heartburn"[tw] OR "patient reported outcome measures"[mh] OR "quality of life"[mh] OR "quality of life"[tw] OR "patient outcomes"[tw] OR "symptom assessment"[mh] OR "patient satisfaction"[mh] OR "patient satisfaction"[tw]) AND (Case Reports[pt] OR Clinical Study[pt] OR Comparative Study[pt] OR Evaluation Study[pt] OR Meta-Analysis[pt] OR Multicenter Study[pt] OR Systematic Review[pt] OR randomized[tiab] OR study[tiab]) AND English[lang]) NOT		764

	((("animals"[MH:noexp] NOT "humans"[MH]) OR rat[tiab] OR rats[tiab] OR "infant"[mh] OR "child"[mh] OR children[title] OR infants[title] OR pediatric[tiab] OR "esophageal achalasia"[mh]))	
Embase Q4a	'obesity' AND 'gastric bypass surgery' AND 'stomach fundoplication' AND ('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND ([systematic review]/lim OR [meta analysis]/lim OR [clinical study]/lim) AND [english]/lim	33
Embase Q4b	'sleeve gastrectomy' AND refractory AND ('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND [english]/lim NOT ([animals]/lim OR [child]/lim OR [embryo]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim)	68
Embase Q4c	('gastroesophageal reflux'/exp OR 'gastroesophageal reflux' OR GERD:ti,ab,kw OR ('failed fundoplication' OR 'fundoplication failure' OR (('fundoplication'/exp OR fundoplication) AND (failure OR failed))) AND ('stomach fundoplication'/exp OR 'stomach fundoplication' OR 'second look surgery'/exp OR 'second look surgery' OR 'gastric bypass surgery'/exp OR 'gastric bypass surgery' OR 'roux e y' OR 'redo fundoplication' OR (redo NEAR/3fundoplication) OR 'revisional antireflux sugery') AND ('heartburn'/exp OR heartburn OR 'patient satisfaction'/exp OR 'patient satisfaction' OR 'patient-reported outcome'/exp OR 'patient-reported outcome' OR 'symptom assessment'/exp OR 'symptom assessment' OR 'quality of life'/exp OR 'quality of life') AND [english]/lim AND ([systematic review]/lim OR [meta analysis]/lim OR [clinical study]/lim) NOT ([animals]/lim OR [child]/lim OR [embryo]/lim OR [fetus]/lim OR [infant]/lim OR [newborn]/lim OR [preschool]/lim OR [school]/lim OR 'esophagus achalasia'/exp OR 'esophagus achalasia')	1392
Cochrane Q4a	((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND (fundoplication):ti,ab,kw OR fundoplication) AND ([mh gastric bypass] OR (gastric bypass):ti,ab,kw OR (Roux-en-Y):ti,ab,kw OR (lap-band):ti,ab,kw OR (sleeve):ti,ab,kw)) NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw)	8
Cochrane Q4b	((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND ((refactory): ti,ab,kw OR refractory) AND (sleeve): ti,ab,kw) NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw	1
Cochrane Q4c	((((fundoplication failure):ti,ab,kw OR (failed fundoplication):ti,ab,kw OR ((failure or failed OR reporerative OR revisional OR reoperation OR redo) AND (fundoplication OR (fundoplication):ti,ab,kw OR [mh fundoplication]))) AND ((recurrent reflux):ti,ab,kw OR (heartburn): ti,ab,kw OR [mh Patient Reported Outcome Measures] OR [mh quality of life] OR (quality of life):ti,ab,kw OR (Patient Outcomes):ti,ab,kw OR Patient NEAR Outcomes OR [mh symptom assessment] OR patient NEAR satisfaction OR (patient satisfaction):ti.ab.kw OR [mh patient	108

	satisfaction]) NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw)	
ClinicalTrials 4ab	bypass AND fundoplication Reflux OR GERD OR gastroesophageal reflux OR Gastro-oesophageal reflux Adult, Older Adult	1
ClinicalTrials 4c	fundoplication AND (failed OR repoerative OR revisional OR redo OR failure) Adult, Older Adult	22
Q4a	PubMed: Above AND 2020:2021[dp]	20
Q4b	PubMed: Above AND 2020:2021[dp]	7
Q4c	PubMed: Above AND 2020:2021[dp]	46
Embase Q4a	'obesity' AND ('gastric bypass surgery' OR 'stomach fundoplication') AND ('gastroesophageal reflux'/exp OR 'gastroesophageal reflux') AND ([systematic review]/lim OR [meta analysis]/lim OR [clinical study]/lim) AND [english]/lim AND [2020-2021]/py	46
Q4b	Embase: Above AND [2020-2021]/py	7
Q4c	Embase: Above AND [2020-2021]/py	133
Cochrane Q4a	((([mh gastroesophageal reflux] OR (GERD):ti,ab,kw OR (Gastroesophageal Reflux):ti,ab,kw OR 'Gastroesophageal Reflux' OR 'Gastro-oesophageal Reflux') AND (fundoplication):ti,ab,kw OR [mh gastric bypass] OR (gastric bypass):ti,ab,kw OR (Roux-en-Y):ti,ab,kw OR (lap-band):ti,ab,kw OR (sleeve):ti,ab,kw)) AND 2020 NOT ((infant):ti,ab,kw OR (infants):ti,ab,kw OR (child):ti,ab,kw OR (children):ti,ab,kw)	28
Q4b	Cochrane: Above AND 2020	0
Q4c	Cochrane: Above AND 2020	8