

Supplementary Table 1 Search strategy

Search strategy	
Pubmed	("Obesity"[Mesh] OR obes*[tiab] OR "morbid obesity"[tiab] OR "bariatric surgery"[Mesh] OR "bariatric"[tiab]) AND ("Gastroesophageal Reflux"[Mesh] OR "gastroesophageal reflux disease"[tiab] OR GERD[tiab] OR "acid reflux"[tiab]) AND ("sleeve gastrectomy"[Mesh] OR "sleeve gastrectomy"[tiab] OR SG[tiab] OR "Roux-en-Y gastric bypass"[Mesh] OR "Roux-en-Y gastric bypass"[tiab] OR RYGB[tiab] OR "one anastomosis gastric bypass"[tiab] OR "mini gastric bypass"[tiab] OR OAGB[tiab] OR MGB[tiab] OR "fundoplication"[Mesh] OR fundoplication[tiab] OR nissen[tiab] OR toupet[tiab] OR dor[tiab] OR "antireflux surgery"[tiab] OR "partial fundoplication"[tiab] OR "complete fundoplication"[tiab]) AND("randomized controlled trial"[Publication Type] OR "cohort studies")
Cochrane Library	([mh "Obesity"] OR obes* OR "morbid obesity" OR [mh "Bariatric Surgery"] OR bariatric) AND ([mh "Gastroesophageal Reflux"] OR "gastroesophageal reflux disease" OR GERD OR "acid reflux") AND ("sleeve gastrectomy" OR SG OR [mh "Gastrectomy"] OR "roux-en-y gastric bypass" OR RYGB OR "one anastomosis gastric bypass" OR "mini gastric bypass" OR OAGB OR MGB OR [mh "Fundoplication"] OR fundoplication OR nissen OR toupet OR dor OR "antireflux surgery" OR "partial fundoplication" OR "complete fundoplication") AND ([mh "Randomized Controlled Trial"] OR [mh "Cohort Studies"] OR "randomized controlled trial" OR "cohort study" OR "comparative study")
Web Science	of(obes* OR "morbid obesity" OR "bariatric" OR "bariatric surgery") AND ("gastroesophageal reflux" OR "gastroesophageal reflux disease" OR GERD OR "acid reflux") AND ("sleeve gastrectomy" OR SG OR "roux-en-y gastric bypass" OR RYGB OR "one anastomosis gastric bypass" OR "mini gastric bypass" OR OAGB OR MGB OR "fundoplication" OR nissen OR toupet OR dor OR "antireflux surgery" OR "partial fundoplication" OR "complete fundoplication") AND ("randomized controlled trial" OR "cohort study" OR "comparative study")

EMBASE ('obesity'/exp OR obes*:ti,ab OR 'morbid obesity':ti,ab OR 'bariatric surgery'/exp OR bariatric:ti,ab) AND ('gastroesophageal reflux'/exp OR 'gastroesophageal reflux disease':ti,ab OR GERD:ti,ab OR 'acid reflux':ti,ab) AND ('sleeve gastrectomy'/exp OR 'sleeve gastrectomy':ti,ab OR SG:ti,ab OR 'roux en y gastric bypass'/exp OR 'roux en y gastric bypass':ti,ab OR RYGB:ti,ab OR 'one anastomosis gastric bypass':ti,ab OR 'mini gastric bypass':ti,ab OR OAGB:ti,ab OR MGB:ti,ab OR fundoplication/exp OR fundoplication:ti,ab OR nissen:ti,ab OR toupet:ti,ab OR dor:ti,ab OR 'antireflux surgery':ti,ab OR 'partial fundoplication':ti,ab OR 'complete fundoplication':ti,ab) AND ('randomized controlled trial'/exp OR 'cohort analysis'/exp)

Supplementary Table 2 Detailed data for proton pump inhibitor usage

Ref.	Treatment	Pre	Post	Total	Diff	SE
Eskandaros <i>et al</i> [13], 2021	RYGB	28	5	40	-0.575	0.08935533
Eskandaros <i>et al</i> [13], 2021	OAGB	31	3	40	-0.7	0.078062475
Lee <i>et al</i> [17], 2025	RYGB	8	12	22	0.181818182	0.147608026
Lee <i>et al</i> [17], 2025	SG	6	13	26	0.269230769	0.128229781
Olmi <i>et al</i> [20], 2022	SG	0	23	140	0.164285714	0.031315893
Olmi <i>et al</i> [20], 2022	SGantiflux	0	6	138	0.043478261	0.01735977
Salman <i>et al</i> [21], 2023	RYGB	0	0	31	0	0
Salman <i>et al</i> [21], 2023	OAGB	0	7	31	0.225806452	0.075095186
Robert <i>et al</i> [24], 2024	RYGB	0	19	77	0.246753247	0.049130899
Robert <i>et al</i> [24], 2024	OAGB	0	29	69	0.420289855	0.059423107
Wågen Hauge <i>et al</i> [25], 2025	RYGB	17	10	54	-0.12962963	0.082394498
Wågen Hauge <i>et al</i> [25], 2025	SG	11	13	55	0.036363636	0.078681853
Salminen <i>et al</i> [26], 2022	RYGB	5	30	85	0.294117647	0.057776142
Salminen <i>et al</i> [26], 2022	SG	11	58	91	0.516483516	0.06089072

Supplementary Table 3 Detailed data for esophagitis

Ref.	Treatment	Pre	Post	Total	Mean	Std.dev
Musella <i>et al</i> [19], 2021	OAGB	8	3	28	-0.178571429	0.103465815

Musella <i>et al</i> [19], 2021	SG	7	15	30	0.266666667	0.11956712
Olmi <i>et al</i> [20], 2022	SG	0	11	47	0.234042553	0.061759078
Olmi <i>et al</i> [20], 2022	SGantiflux	0	1	50	0.02	0.01979899
Wågen Hauge <i>et al</i> [25], 2025	RYGB	30	17	54	-0.240740741	0.092558293
Wågen Hauge <i>et al</i> [25], 2025	SG	31	20	55	-0.2	0.093162163

Supplementary Table 4 Results for inconsistency testing

BMI											
t1	t2	direct_pe	direct_ci_l	direct_ci_u	indirect_pe_l	indirect_ci_u	indirect_ci_pe	consistency_ci_l	consistency_ci_u	consistency_p_value	
OAGB	RYGB	-0.115215029	-2.243168564	2.7424785	1.392639275	-	6.580534924	0.06997483	-1.691978216	2.52853682	0.55745
OAGB	SG	0.309660715	-4.283697748	4.8874380	-	-	2.492979456	-	-3.050935668	1.993125579	0.555175
RYGB	SG	-1.08930668	-3.390341545	1.0739666	0.426414097	-	5.393089521	-0.92648317	-2.86096565	0.929134119	0.5365
%EWL											
t1	t2	direct_pe	direct_ci_l	direct_ci_u	indirect_pe_l	indirect_ci_u	indirect_ci_pe	consistency_ci_l	consistency_ci_u	consistency_p_value	
OAGB	RYGB	-4.410880633	-11.02199122	0.6960267	-	-	14.2435271	-	-9.239297605	0.539533379	0.497625
OAGB	SG	-5.251789995	-17.39844736	6.9187106	-	-	0.447107458	-	-14.99877058	-1.095669729	0.4766
RYGB	SG	-5.206121381	-13.56428462	3.6426725	-	-	13.26834608	-	-10.02168897	2.75497086	0.477425

38 0.866675394 13.24010221 3.939537573

GERD onset

t1	t2	direct_pe	direct_ci_l	direct_ci_indirect_pe	indirect_ci_indirect_ci_consistency	consistency_consistency_ci	consistency_ci_p_value				
				u	l	u	_pe	ci_l	_u		
OAGB	RYGB	-1.627135148	-4.438225779	0.5381393	-	-	4.106410237	-	-3.580206852	0.296290513	0.683525
				93	0.773327741	5.480372626		1.434895975			
OAGB	SG	0.497283352	-3.477182779	4.5672722	-0.30782399	-	2.883875958	0.082099555	-2.455644011	2.213419456	0.69355
				92		4.375047261					
RYGB	SG	1.308670624	-1.443616537	3.8089735	2.158098559	-	7.152442629	1.518222001	-0.509972901	3.511673487	0.688725
				74		2.255906854					

Complication

t1	t2	direct_pe	direct_ci_l	direct_ci_u	indirect_pe_l	indirect_ci_u	consistency_pe	consistency_ci_l	consistency_ci_u	p_value	
OAGB	RYGB	-0.495075466	-1.745633684	0.7074060	0.342434069	-	2.244507779	-	-1.244169875	0.737729618	0.39175
				62		1.550997964		0.236656925			
OAGB	SG	0.213011357	-1.44908406	1.8649478	-	-	0.811502913	-0.26139669	-1.354363704	0.796823941	0.3797
				1	0.634334018	2.136711568					

RYGB	SG	-0.149427176	-1.001293423	0.7039240	0.695325761	-	2.774996488	-	-0.793910413	0.749863522	0.3882
				45		1.323931363			0.022926587		
