Supplementary Table I. Studies evaluating GI symptoms following mammoplasty

Author & Publication year	Study Type	Country	GI symptoms	Procedure of Surgery	Sedative agents/Anestheia	Pharmacological Drugs	Non-Pharmacological methods	No. of subjects	No. patients with symptoms	statistical significance (p-value/odds)
Enqvist et al. 1997 [18]	Prospective, Randomised and blinded controlled study	Sweden	Nausea and vomiting (PONV), Emesis/Wretching	Elective breast reduction	Midazolam/thiopentone-fenantyl-suxamethonium and isofluorane N20/02: LOCAL	**Postop:** Ketogan, Dixyracine (for PONV if needed)	Preoperative Hypnosis "audio type"	48 (50 with 2 exclusions)	**Nausea:** Control group: 20; Hypnosis group: 10 / **Vomiting:** Control group: 17; Hypnosis: 9	**Post op nausea:** p=0.009; **vomiting:** p= 0.049
White et al. 2001 [16]	Double-blind, randomized controlled trial	UK	Nausea and vomiting (PONV)	Major breast reconstructive surgery	Propofol, fentanyl, isoflurane GENERAL	Diamorphine, diclofenac, ondansetron	Saline	80	**Ondansetron grp- Nausea:** 28 patients, **Vomiting:** 19 patients (7 patients had both N&V); **Placebo- Nausea:** 31 patients, **Vomiting:** 24 patients (15 patients had both N&V).	**Ondansetron Group: p**=0.01**; Nausea severity:** p=0.013 ; Nausea: p=0.62, Vomiting p=0.37
Loewen et al. 2003 [9]	Randomized, double-blinded, prospective, parallel-group trial	Canada	Nausea and vomiting, Emesis/Wretching, Dry mouth	TRAM flap breast reconstruction surgery	Propofol, Fentanyl, Rocuronium or Succinylcholine GENERAL	Droperidol 1 mg, Dolasetron 50 mg	N/A	66 On-treatment	**Intention to treat population (ITTP): Overall: PONV:** 57 patients **Severe nausea** (SN): 29, **Emesis**(E): 33**, Severe nause OR emesis:** 40**;On Droperidol-** POVN= 27, SN=13, E= 17, SN or E= 19 **; On Dolasetron-** POVN= 30, SN= 16, E= 16, SN or E= 21	**(ITTP)-** PONV: p=0.8, Emesis: p=0.4, Sev. Nausea: p=0.8, Severe Nausea or emesis: p=0.8; **On-treatment population-** PONV: p=1.0, Emesis: p=0.5, Severe Nausea: p=0.7, Severe Nausea or emesis: p=0.9

Purhonen et al. 2005 [17]	Randomized Controlled Trial	Finland	Nausea and vomiting (PONV)	Breast surgery (Mastectomy - partial or radical, Mastectomy and breast reconstruction, Breast reconstruction)	Sevoflurane, Fentanyl, Propofol, Rocuronium GENERAL	Ondansetron, Droperidol, Dexamethasone, Neostigmine, Glycopyrrolate, Phenylephrine	Supplemental Oxygen (80% and 30%)	85	**Nausea- Group 30%**: 25 patients; **Group 80%**: 23 patients; **Group O**: 15 patients. **Vomiting: Group 30%**: 18 patients; **Group 80%**: 19 patients; **Group O**: 9 patients	**PONV in groups**: $p<0.05$ **group O** vs. **group 30**; $p < 0.01$, group O vs. group 30; $p < 0.05$, group 80 vs. group O.
Romunstad et al. 2006 [24]	Randomized, double blinded parallel group study	Norway	Nausea and Vomiting	Breast augmentation surgery	LA: Lidocaine 10 mg/mL with adrenaline; GA: Propofol/fentanyl sedation GENERAL + LOCAL	Methylprednisolone, parecoxib	N/A	204	N/A	Group with methylpred 30% only with PONV: $p<0.001$
Roth2007 et al. [10]	Prospective cohort design.	USA	Abdominal pain & tightness	Postmastectomy breast reconstruction procedures, including TRAM flap and implant surgeries	N/A	N/A	N/A	294	Unspecified	**TRAM subjects** abdominal pain more than **implant subjects**: $p<0.0001$; **2 year follow up:** 16% abdominal pain, 46% abdominal tightness.
Eldor et al. 2008 [23]	Retrospective study	Romania, Israel	Nausea and vomiting/emesis	Breast augmentation surgery	General Anesthesia (GA): Midazolam, fentanyl, propofol, rocuronium, nitrous oxide, isoflurane, neostigmine, atropine; Monitored Anesthesia Care (MAC): Midazolam, fentanyl, propofol, nitrous oxide GENERAL + LOCAL	Metoclopramide, dypirone (Optalgin) syrup, acetaminophen, diclofenac sodium, neostigmine, atropine, lidocaine, marcaine	N/A	115	Vomiting frequency in: **GA:** 18 patients (39.1%); **MAC:** 11 patients (15.9%)	Vomiting more frequent in GA group - **$p<0.01$**
Kryger et al. 2008 [19]	Prospective trial study	USA	Nausea and vomiting	Bilateral breast reduction surgery	Local anesthesia: Bupivacaine (Marcaine) LOCAL	Hydromorphone, Hydrocodone, acetaminophen, ondasetron	Pain pump (using marcaine)	98	N/A	MC grp ponv: $p<0.05$ (significant)

Rawlani et al. 2008 [20]	Randomized Controlled Trial	USA	Nausea and Vomiting	Bilateral breast reduction surgery	Local anesthesia: Bupivacaine (Marcaine) LOCAL	Hydromorphone, Hydrocodone, acetaminophen, ondasetron	Pain pump (using marcaine)	31	N/A	MC grp ponv: $p<0.05$ (significant)
Tan et al. 2009 [11]	Retrospective Review (Clinical Study)	Australia	Nausea, vomiting (abdominal pain from procedure)	TRAM flap breast reconstruction surgery	ropivacaine LOCAL	3mg Oxycodone, 12.5mg stemetil, Morphine	N/A	46	N/A	N/A
Wheble et al. 2013 [12]	Retrospective analysis	UK	Nausea, vomiting, constipation	autologous breast reconstruction - DIEP	Morphine (TAP block) LOCAL	Morphine IV	N/A	27	**TAP block grp**: 8 patients; non-TAP block: 15	PONV episodes between 2 groups - $p=0.03$
Fahy et al. 2014 [25]	Retrospective cohort study	USA	Nausea and Vomiting	Uni/bilateral Mastectomy with or without PVB	midazolam, fentanyl for sedation GENERAL + bupivacaine (for bilateral plus epinephrine) SPINAL REGIONAL PVB	iv morphine, fentanyl, meperidine, oral oxycodone, morphine, antiemetics (unspecified)	N/A	526	**Non-PVB**: approx. 168 patients; PVB: approx. 91 patients	Non-PVB vs PVB: $p<0.0001$
Manahan et al. 2014 [14]	Retrospective chart review	USA	Nausea and Emesis	DIEP flap breast Reconstruction	IV propofol GENERAL	dexamethosone, droperidol, promethazine, transdermal scopolamine (investigated, not necessarily used)	N/A	29	**Nausea:** 22 patients; **Emesis:** 19 patients; **75% of patients experienced PONV**	Risk factors inrelation to outcomes and PONV: $p<0.05$ (Significant)
Lou et al. 2016 [13]	Retrospective chart review	China, USA	Nausea and vomiting (PONV)	DIEP flap breast Reconstruction	GENERAL Anesthesia: Propofol, Sufentanil, Rocuronium**;** EPIDURAL anesthesia: 0.25% ropivacaine	Dexamethasone, Granisetron, Sufentanil (Post op pain), Ephedrine, phenylephrine	N/A	95	**Nausea (0-2h, 2-6h, 6-24hr, 0-24h): EA/GA group**: 19, 25, 7, 25 patients; **GA group**: 33, 33, 21, 35 patients; **Vomiting (0-2h, 2-6h, 6-24hr, 0-24h)**: **EA/GA group:** 7, 10, 3, 14 patients. **GA:** 19, 26, 9, 28 patients	**Nausea 0-24hrs**: $p=0.005$; **Vomiting 0-24**: $p=0.001$

Rivedal et al. 2018 [21]	Retrospective study	USA	Nausea and vomiting (PONV)	Reduction mammoplasty	(PVB - REGIONAL) paravertebral block: Bupivacine, epinephrine (GENERAL)	Postop: Tylenol, morphine, oxycodone	saline	264	**GA+PVB**: 14.55%; **GA alone**: 33.01%	p=0.07
Mulier et al. 2020 [15]	Retrospective Cohort study	Belgium	Nausea and vomiting (PONV)	DIEP flap breast Reconstruction	GENERAL Anesthesia: Sevoflurane, propofol, remifentanil, rocuronium	Dexmedetomidine, ketamine, lidocaine, Sufetanil, Paracetmaol, ketorolac	N/A	204	**Nausea**: Opioid free anesthesia: 12.7%; Opioid Anesthesia: 43.6%; **Vomiting:** OFA: 1.8%; OA: 6.7%	P<0.05 for PONV
Wang et al. 2020 [27]	Prospective cohort design.	China	Nausea and Vomiting	Breast cancer surgery w/o reconstruction	GENERAL: Sufentanil, propofol, cis-atracurium, sevoflurane	Ondansetron, dexamethasone, flurbiprofen axetil, Tramadol	Mechanical ventilation - 2 L/min 60% Oxygen.	115	**SNVP** grp: 14 (51.9%); **MNVP** group: 19 (21.6%)	**PONV** in study groups vs. control group: p=0.002
Moon et al. 2021 [26]	Retrospective study	South korea	Nausea and vomiting (PONV)	Robotic/non-robotic Nipple sparring mastectomy	GENERAL: glycopyrrolate, propofol rocuronium, remifentanil; maintenance: sevoflurane/desflurane	Postop: Fentanyl, ramosetron, paracetamol, Mypol (Codeine phosphate and ibuprofen), Antiemetics: Metoclopramide, ramosetron	Mechanical ventilation (I:E) ratio of 1:2, positive end-expiratory pressure of 5 cmH2O)	81	**Nausea (PACU, 0-6hrs, 6-24hrs):** RNSM: 8, 14, 15**;** CNSM: 7, 19, 12 **Vomiting (PACU, 0-6hrs, 6-24hrs):** RNSM: 2, 6, 2**;** CNSM: 3, 12, 6	p>0.05
Salviz et al. 2023 [22]	Historical Cohort study	Turkey, USA	Nausea and vomiting (PONV)	Bilateral breast reduction mammaplasty	**GENERAL anesthesia**: Fentanyl, propofol, rocuronium, sevoflurane; **Sedation**: Midazolam IV, fentanyl IV; **TPVB (regional)**: bupivacaine	Atropine, Ephedrine, paracetamol, neostigmine, tramadol	N/A	79	**PONV:** Group NO: 6 patients (21%); Group Ob: 12(24%) patients	p=0.735

N/A: not applicable; GI: gastrointestinal; PONV: post-operative nausea and vomiting; N: nausea; V: vomiting; SN: severe nausea; E: emesis; LA: local anesthesia; GA: general anesthesia; MAC: monitored anesthesia care; TAP: transversus abdominis plane; IV: intravenous; PVB: paravertebral block; TPVB: thoracic paravertebral block; Post-op: post operative; TRAM: transverse rectus abdominus myocutaneous; DIEP: deep inferior epigastric perforator; MC group: marcaine group; RNSM: robotic nipple sparing mastectomy; CNSM: conventional nipple-sparing mastectomy; I:E ratio: inspiration:expiration ratio; grp: group; ITTP: intention to treat population; PACU: Post anesthesia care unit; SNVP: severe nausea and vomiting during pregnancy; MNVP: mild nausea and vomiting during pregnancy; group O: group with oxygen; Group NO: patients with no obesity; Group Ob: patients with obesity.

Supplementary Table II. Cochrane Risk of Bias Tool for RCTs

Domain	Enqvist et al. 1997 [18]	White et al. 2001 [16]	Loewen et al. 2003 [9]	Purhonen et al. 2005 [17]	Kryger et al. 2008 [19]	Rawlani et al. 2008 [20]	Romunstad et al. 2006 [24]
Selection bias – Random sequence generation	-	-	-	-	?	-	-
Selection bias – Allocation concealment	-	-	-	?	?	-	-
Performance bias – Blinding (participants and personnel)	-	-	-	-	?	-	-
Detection bias – Blinding (outcome assessment)	?	-	-	-	?	-	-
Attrition bias – Incomplete outcome data	-	?	-	-	-	-	-
Reporting bias – Selective reporting	-	-	-	-	-	-	-
Other bias – Other sources of bias	?	+ ;1 randomization broken	?	+ (extra patients enrolled, small discrepancies present due to small trials, study underpowered)	?	+ (small sample size)	+ (problem with interpreting pain intensity data)

+,:high risk; **-:** low risk; **?:** unclear risk of bias.

Supplementary Table III. The Newcastle-Ottawa Scale (NOS) for assessing the quality of cross-sectional studies

Study	Selection				Comparability	Outcome		Score
	Sample representativeness	Sample size	Non-Respondents	Ascertainment of the exposure (risk factor)	Comparability	Assessment of the outcome	Statistical test	
Roth et al. 2007 [10]	*	*	*	**	**	*	*	9
Tan et al. 2009 [11]	*	*	*	**	**	**	*	10
Wheble et al. 2013 [12]	*	*	*	**	**	**	*	10
Lou et al. 2016 [13]	*	*	*	**	**	**	*	10
Manahan et al. 2014 [14]	*	*	*	**	**	**	*	10
Mulier et al. 2020 [15]	*	*	*	**	**	**	*	10
Rivedal et al. 2018 [21]	*	*	*	**	**	**	*	10
Salviz et al. 2023 [22]	*	*	*	**	**	**	*	10
Eldor et al. 2008 [23]	*	*	*	**	**	**	*	10
Fahy et al. 2014 [25]	*	*	*	**	*	**	*	9
Moon et al. 2021 [26]	*	*	*	**	**	**	*	10
Wang et al. 2020 [27]	*	*	*	**	**	**	*	10