

### Supplementary material 3. Study characteristics

Ref#	Study	Comparator1	Comparator2	Country	Age	ASA	LA1	LA2	GA protocol	PO analgesia protocol	Main Outcome
20	Ure BM (1993)	Wounds/Ports infiltration	Placebo	Germany	>18	I-II	Bupivacaine 0.5% 32 ml	Saline 0,9% 32 ml	PREMEDICATION:7.5 mg midazolam INDUCTION: Thiopentone (4mg/kg),Succinylcholine,Pancuronium MAINTAINED: Isoflurane or ftuothane	Piritramid 2mg pump with 5 min refractory time(max dose 60 mg in 24h)+after 24 h, ibuprofen 500 mg orally max 3 times daily	Postoperative pain control(5h-1day-2day after surgery)
21	Elkahim M (2000)	Intraperitoneal	Placebo	Egypt	>18	I-II	Lidocaine 0,1% 200 ml	Saline 0,9% 200ml	PREMEDICATION: diazepam 10mg INDUCTION: propofol 2,5 mg/kg, nalpbuphine 0,25 mg/kg, suxamethonium 1mg/kg, MAINTAINED: enflurane (1-1,5%), nitrous oxide 60%, atracurium 0,5 mg/kg	Nalbuphine 20 mg i.m./4h or after request	Postoperative pain control (of 2, 4, 6, 12 and 24 h after surgery)
22	Hernandez Palazon J (2003)	Intraperitoneal	Placebo	Spain	26-63	I-II	Bupivacaine 0.25% 30ml	Saline 0,9% 30 ml	INDUCTION thiopental (4-5 mg/kg) Fentanyl (3mcg/kg) atracurio (0,5mg/kg) ; MAINTAINED Isoflurane in 70%NO2 in O2 +/- Fentanyl (50-100 mcg) ; Metoclopramide 20 mg	Metamizol 500 mg to 1500mg in 4h; if VAS>30 or maximum dose metamizol been administreted Meperidine 20mg to 100 mg/4h	Postoperative pain control (in the first 24h after surgery)
23	Raetzell M. (1995)	Intraperitoneal	Placebo	Germany	>18		Bupivacaine 0,125% 50ml or Bupivacaine 0,25% 50ml	Saine 0,9% 50ml	INDUCTION: Dihydrobenzperidol 2,5 mg+Fentanyl 0,05mg, 0,25mg/kg etomidate, succinylcoline 1,5 mg/kg; MAINTAINED isoflurane (0,5-1,5 vol%), O2/N2O (30%/70%) atracurium +/- Fentanyl 0,1mg	Piritramid 7,5mg + 5mg/10min with PCA	Postoperative pain control (in the first 24h-1-2-3day after surgery)
24	Ergin A (2021)	Wounds/Ports infiltration	TAP block	Turkey	18-74	I-III	Bupivacaine 0,5% 20 ml	Bupivacaine 0,25% 20 ml	INDUCTION: 2–3 mg/kg propofol, 2 µg/kg fentanyl, 0.6 mg/kg rocuronium MAINTAINED: 1.5%–2% sevoflurane, 40% oxygen and 60% air	Tenoxicam 20 mg at post-operative 8 h+VAS score of >4 were administered 50-100 mg tramadol; 25 mg of meperidine as salvage analgesic	Postoperative pain control (1-2-4-6-12-24h after surgery)
		Wounds/Ports infiltration	Intraperitoneal	Turkey	18-74	I-III	Bupivacaine 0,5% 20 ml	Bupivacaine 0,5% 20 ml	INDUCTION: 2–3 mg/kg propofol, 2 µg/kg fentanyl, 0.6 mg/kg rocuronium MAINTAINED: 1.5%–	Tenoxicam 20 mg at post-operative 8 h+VAS score of >4 were administered	Postoperative pain control (1-2-4-6-12-24h after surgery)

									2% sevoflurane, 40% oxygen and 60% air	50-100 mg tramadol; 25 mg of meperidine as salvage analgesic	
		Wounds/Ports infiltration	Placebo	Turkey	18-74	I-III	Bupivacaine 0,5% 20 ml	-	INDUCTION: 2–3 mg/kg propofol, 2 µg/kg fentanyl, 0.6 mg/kg rocuronium MAINTAINED: 1.5%–2% sevoflurane, 40% oxygen and 60% air	Tenoxicam 20 mg at post-operative 8 h+VAS score of >4 were administered 50-100 mg tramadol; 25 mg of meperidine as salvage analgesic	Postoperative pain control (1-2-4-6-12-24h after surgery)
		TAP block	Intraperitoneal	Turkey	18-74	I-III	Bupivacaine 0,25% 20 ml	Bupivacaine 0,5% 20 ml	INDUCTION: 2–3 mg/kg propofol, 2 µg/kg fentanyl, 0.6 mg/kg rocuronium MAINTAINED: 1.5%–2% sevoflurane, 40% oxygen and 60% air	Tenoxicam 20 mg at post-operative 8 h+VAS score of >4 were administered 50-100 mg tramadol; 25 mg of meperidine as salvage analgesic	Postoperative pain control (1-2-4-6-12-24h after surgery)
		TAP block	Placebo	Turkey	18-74	I-III	Bupivacaine 0,25% 20 ml	-	INDUCTION: 2–3 mg/kg propofol, 2 µg/kg fentanyl, 0.6 mg/kg rocuronium MAINTAINED: 1.5%–2% sevoflurane, 40% oxygen and 60% air	Tenoxicam 20 mg at post-operative 8 h+VAS score of >4 were administered 50-100 mg tramadol; 25 mg of meperidine as salvage analgesic	Postoperative pain control (1-2-4-6-12-24h after surgery)
		Intraperitoneal	Placebo	Turkey	18-74	I-III	Bupivacaine 0,5% 20 ml	-	INDUCTION: 2–3 mg/kg propofol, 2 µg/kg fentanyl, 0.6 mg/kg rocuronium MAINTAINED: 1.5%–2% sevoflurane, 40% oxygen and 60% air	tenoxicam 20 mg at post-operative 8 h+VAS score of >4 were administered 50-100 mg tramadol; 25 mg of meperidine as salvage analgesic	postoperative pain control (1-2-4-6-12-24h after surgery)
25	Pasqualucci A. (1996)	Intraperitoneal	Placebo	Italy	>18	I-II	Bupivacaine 0,5% 20 ml or Bupivacaine 0,5% 40 ml	-	PREMEDICATION: Diazepam 10mgxos INDUCTION: Thiopenthal 4-5 mg/kg+ Vecuronium 0,1mg/kg+Fentanyl 15mcg/kg MAINTAINED: Isoflurane 0,6-1% or N2O 50%+O2+Vecuronium	Ketorolac 30 mg if pain + other doses if necessary	Postoperative pain control (4-8-12-24h after surgery)
26	Elfberg B. (2000)	Intraperitoneal	Placebo	Sweden	>18	I-II	Bupivacaine 2mg/kg	-	-	-	Postoperative pain control (2-4-8-24 h after surgery)
27	Vrsajkov V. (2021)	ESP block	Placebo	Serbia	20-65	I-III	Levobupivacaine 0.25% 20 ml + dexamethasone 2	-	INDUCTION: propofol (2–2.5 mg/kg), fentanyl (3 µg/kg), rocuronium (0.6–0.8 mg/kg)	Acetaminophen 1 g/8 h i.v and ketorolac 30 mg/8 h; if NRS ≥ 6 tramadol 1	Postoperative pain control (10-30 min, 2-4-8-12-24h after surgery)

							mg		MAINTAINED: sevoflurane	mg/kg	
28	Zajaczkowska R (2004)	Wounds/Ports infiltration	Placebo	Poland	>18	I-II	Bupivacaine 0.25% +/- morphine 2mg 20 ml	Saline 0,9% +/- morphine 2 mg in 20ml	PREMEDICATION: Midazolam 7.5mg INDUCTION:5 mg/kg thiopental, 0.1 mg/kg vecuronium, and 5 µg/kg fentanyl MAINTAINED: N2O/O2 (2:1) +/- Fentanyl and vecuronium	Tramadol 100 mg iv on request	Postoperative pain control (4-8-12h after surgery)
29	Lepner U. (2003)	Wounds/Ports infiltration	Placebo	Estonia	>18	I-II-III	Bupivacaine 0.125% + Phenylephrine 5mg 80ml	Nothing or saline 0,9% 80 ml	Thiopentone-N2O-Isoflurane or Halothane- Succinylcholine/Atracurium + Analgesia Fentanyl (M 264mcg +/- 7 mcg) + Diclophenac 75mg IM	Diclophenac 75 mg IM (day0) Diclophenac 100 mg x2 IM (day 1-2) + Pethidine rescue	Postoperative pain control (1-3-6-12-18-24 h after surgery)
30	Altipamark (2019)	ESP block	Subcostal TAP block	Turkey	18-70	I-II	Bupivacaine 0.375% 40ml	Bupivacaine 0.375% 40ml	INDUCTION: Propofol 2-3 mg/kg; Fentanyl 1 mcg/kg; Rocuronium 0.6 mg/kg MAINTAINED: Desflurane 4-6% ET FiO2 40%; IO analgesia: Dexketoprofen 50mg Fentanyl	PCA Tramadol 10mg/20min Morphine 4mg rescue if NRS>4	Total tramadol consumption 24h
31	Oksar (2016)	TAP block	Placebo	Turkey	18-74	I-II	Lidocaine 0,5% 20 ml	-	PREMEDICATION: h 2 mg of intravenous (IV) midazolam INDUCTION:remifentanil (IV, 0.5-1 µg kg-1 min-1) propofol (IV, 1-2 mg/kg rocuronium bromide (IV, 0.6 mg/kg) MAINTAINED:sevoflurane at 1 to 1.2MAC	PCA tramadol 14 mg/ 15 min max e 100 mg/ 4h	PCA demand (total tramadol consumption)
		Subcostal TAP block	Placebo	Turkey	18-74	I-II	Lidocaine 0,5% 20 ml	-	PREMEDICATION: h 2 mg of intravenous (IV) midazolam INDUCTION:remifentanil (IV, 0.5-1 µg kg-1 min-1) propofol (IV, 1-2 mg/kg rocuronium bromide (IV, 0.6 mg/kg) MAINTAINED:sevoflurane at 1 to 1.2MAC	PCA tramadol 14 mg/ 15 min max e 100 mg/ 4h	PCA demand (total tramadol consumption)
		TAP block	Subcostal TAP block	Turkey	18-74	I-II	Lidocaine 0,5% 20 ml	Lidocaine 0,5% 20 ml	PREMEDICATION: h 2 mg of intravenous (IV) midazolam INDUCTION:remifentanil (IV, 0.5-	PCA tramadol 14 mg/ 15 min max e 100 mg/ 4h	PCA demand (total tramadol consumption)

									1 µg kg <sup>-1</sup> min <sup>-1</sup> ) propofol (IV, 1-2 mg/kg rocuronium bromide (IV, 0.6 mg/kg) MAINTAINED: sevoflurane at 1 to 1.2MAC		
32	Rahimzadeh P. (2017)	Intraperitoneal	Placebo	Iran	20-60	I-II	Bupivacaine 0,5% 2mg/kg	-	INDUCTION: Propofol 2-2,5 mg/kg ; vecuronium 0,1 mg/kg MAINTAINED: NO2 50%; 1 MAC isoflurane	Acetaminophen 500 mg/ 20 min	Postoperative pain control (1-4-8-12-24h after surgery)
33	Scheinin B. (1995)	Intraperitoneal	Placebo	Finland	>18	I-II	Bupivacaine 0,15% 100ml	Saline 0,9% 100 ml	PREMEDICATION: diazepam 10 mg p.o. + pethidine 1 mg/kg, INDUCTION: thiopentone 3-7 mg/kg, suxamethonium 1.5 mg/kg, MAINTAINED: enflurane 1-1.5%, fentanyl 0.05 mg if ABP or HR > 30% from the previously recorded value	Oxycodone 0.05 - 0.07 mg/kg i.v.	Postoperative pain control ( every day for 7day after surgery)
34	Ali S. (2018)	Wounds/Ports infiltration	Placebo	Pakistan	20-70	I-II	Bupivacaine 0,5% 20 mL	-	INDUCTION: Nalbin 0,3 mg/kg; propofol 2,5 mg/kg atracurium 0,4 mg/kg	Ketorolac iv 30 mg three times daily and tramadol 100 mg	Postoperative pain control ( 2-6-12-24-h after surgery)
35	Yildiz (2021)	ESP block	Placebo	Turkey	18-65	I-II	Bupivacaine 0.5% 10 ml+ lidocaine 2% 5 ml + 5 ml Saline	-	PREMEDICATION: 20 mg tenoxicam and 1 g acetaminophen INDUCTION: propofol (2 mg/kg), fentanyl (0.5–1 µg/kg), rocuronium bromide (0.6 mg/kg) MAINTAINED: sevoflurane 3 L/ min, FIO2 0.5 Remifentanyl 0.01–0.1 µg/kg/min.	Acetaminophen iv 1 g and tenoxicam 20 mg rescue: for the first hour tramadol (50 mg) if NRS ≥ 4 (max every 20min) then 50 mg tramadol if NRS ≥ 4 with a maximum dose of 400 mg/day	Postoperative pain control (every hour in the first 8h after surgery)
36	Verma R (2020)	ESP block	Placebo	India	18-60	I-II	Ropivacaine 0.375% 20 ml	Saline 0,9% 20 ml	INDUCTION: propofol (1-2 mg/kg), fentanyl (2 µg/kg) vecuronium (0.1mg/kg) MAINTAINED: sevoflurane in oxygen and air mixture	Paracetamol (1gr) in every 8h; diclofenac 75 mg as rescue analgesia	Postoperative pain control ( 0-1-6-12-24-48h after surgery)
37	Papagiannopoulou P(2003)	Wounds/Ports infiltration	Placebo	Greece	18-65	I-II	Levobupivacaine 0.5% or Ropivacaine 1%	Saline 0,9%	PREMEDICATION: oral diazepam 0.1 mg/kg INDUCTION: fentanyl 3–5 µg/kg and propofol 2 mg/kg, cisatracurium 0.1 mg/kg	Diclofenac (50-100 mg) if VAS score>3	Postoperative pain control (2-4-24h after surgery)

									MAINTAINED: sevoflurane 1-2%		
38	Hasaniya NW(2001)	Wounds/Ports infiltration	Placebo	USA	>18	-	Bupivacaine 0.5%	-	-	Meperidine iv 50 mg every 4 hours as needed with 25 mg promethazine hydrochloride 25 mg every 4 hour for nausea or vomiting as needed	Postoperative pain control (4-24hafter surgery) and costs
39	Suseela I. (2018)	Wounds/Ports infiltration	Subcostal TAP block	India	20-65	I-II	Bupivacaine 0.5% 20ml	Bupivacaine 0,25% 20 ml	PREMEDICATION: ranitidine 150 mg; metoclopramide 10 mg ; midazolam 0,5 mg INDUCTION: propofol 2mg/kg fentanyl 2 mcg/kg ; succinylcholine 1,5 mg/kg MAINTAINED: nitrous oxide 66%; isoflurane 0,4% to 0,8%; atracurium 0,5 mg/kg	Paracetamol 1gr at the beginning and 1gr/8h (postoperative) ;tramadol 1mg /kg and diclofenac 1 mg/kg	Postoperative pain control (1-3-6-12-24h after surgery)
40	Beder El Baz M. (2018)	Intraperitoneal	Placebo	Egypt	21-50	I-II	Levobupivacaine 0.25% 40 mL + dexmedetomidine 1mcg/kg	Levobupivacaine 0,25% 40 mL	INDUCTION: fentanyl 1 mcg/kg; atracurium 0,5 mg/kg; propofol 2-2,5 mg/kg MAINTAINED: isoflurane MAC 1%;	Diclofenac	Postoperative pain control (1-2-4-6-12-24h after surgery)
41	Ramkiran S(2018)	Subcostal TAP block	Wounds/Ports infiltration	India	18-65	I-III	Bupivacaine 0,25% 20 mL	Bupivacaine 0,5% 10 mL	INDUCTION: fentanyl 2 mcg/kg; dexmedetomidine 0,5 mg/kg ;propofol 2 mg/kg; atracurium 0,5 mg kg MAINTAINED: sevoflurane 1,2%; fentanyl 1mcg/kg/h; dexmedetomidine 0,5 mcg/kg/h; atracurium 0,15 mg/kg/h	Tramadol 50 mg slow IV ( max dose 300 mg/24 h)	Postoperative pain control (0-2-6-12-24h after surgery)
42	Khan KK (2018)	TAP block	Subcostal TAP block	Pakistan	18-60	-	Bupivacaine 0,375% 20 mL	Bupivacaine 0,375% 20 mL	Standardized induction of general anesthesia (not specified)	Ketorolac 30 mg ; tramadol 50 mg ; paracetamol 1gr	Postoperative pain control (0-1-2-6-12-24h after surgery)
43	Dost B (2018)	TAP block	Wounds/Ports infiltration	Turkey	20-70	I-II	Levobupivacaine 0,5% 15 mL+ Saline 15 mL	Levobupivacaine 0,5% 20 mL	PREMEDICATION: Midazolam 0,03 mg/kg INDUCTION: propofol 2,5 mg/kg; fentanyl 1 mcg/kg; rocuronium 0,6 mg/kg MAINTAINED: sevoflurane 1% MAC	PCA: tramadol 5 mg/mL; 20 mg bolus infusion; lockout time 15 min; 4 hours limit of 200 mg, 5mg/h baseline infusion + meperidine 0,5 mg/kg	Postoperative pain control ( 1-2-4-8-16-24h after surgery)
		TAP block	Placebo	Turkey	20-70	I-II	Levobupivacaine 0,5% 15 mL+ saline 15 mL	-	PREMEDICATION: Midazolam 0,03 mg/kg INDUCTION: propofol 2,5 mg/kg; fentanyl 1 mcg/kg;	PCA: tramadol 5 mg/mL; 20 mg bolus infusion; lockout time 15 min; 4	Postoperative pain control 1-2-4-8-16-24h after surgery)

									rocuronium 0,6 mg/kg MAINTAINED: sevoflurane 1% MAC	hours limit of 200 mg, 5mg/h baseline infusion + meperidine 0,5 mg/kg	
		Wounds/Ports infiltration	Placebo	Turkey	20-70	I-II	Levobupivacaine 0,5% 20 mL	-	PREMEDICATION: Midazolam 0,03 mg/kg INDUCTION: propofol 2,5 mg/kg; fentanyl 1 mcg/kg; rocuronium 0,6 mg/kg MAINTAINED: sevoflurane 1% MAC	PCA: tramadol 5 mg/mL; 20 mg bolus infusion; lockout time 15 min; 4 hours limit of 200 mg, 5mg/h baseline infusion + meperidine 0,5 mg/kg	Postoperative pain control 1-2-4-8-16-24h after surgery)
44	Petersen PL(2012)	TAP block	Placebo	Denmark	18-75	I-III	Ropivacaine 0,5% 20 mL	Saline 0,9% 20 mL	INDUCTION: remifentanil 0,6 mg/mL ; propofol MAINTAINED : remifentanil 0,4 mL/kg/h; sufentanyl 0,2 mcg/kg	Oral acetaminophen 1000 mg every 6 hours and oral ibuprofen 400 mg every 6 hours; iv morphine 5+2,5 mg;oral ketobemidone 2,5 mg (patient decision)	Postoperative pain control (0-2-4-6-8-24h after surgery)
45	Mraovic B. (1997)	Intraperitoneal	Placebo	Croatia	>50	I-II	Bupivacaine 0,5% 30 ml	Saline 0,9% 30 ml	PREMEDICATION: Midazolam 7.5-15 mg per os INDUCTION: thiopentone 5 mg/kg , suxamethonium 1 mg/kg MAINTAINED: Halotane 1% N2O 66% e O2 33% and pancuronium.	Metamizol ampoules 2.5 g	postoperative pain control ( 30min-4-8-12-24h after surgery)
46	Kolsi K. (2000)	Intraperitoneal	Placebo	Tunisia	20-60	I-II	Lidocaine 1% 40 ml	Saline 0,9% 40 ml	PREMEDICATION: hydroxyzine 1 mg/kg, INDUCTION: thiopentone 6 mg/kg, fentanyl 3 mcg/kg, vecuronium 0.08 mg/kg MAINTAINED: 0.5-1% halothane in 40% O2 + 60% N2O and fentanil 1.5 mcg/kg every 40 minutes	-	Postoperative pain control (15-30-45-60-90-120min after surgery)
47	El- Labban GM(2011)	Wounds/Ports infiltration	Placebo	Egypt	25-64	I-II	Levobupivacaine 0,25% 20 ml	Saline 0,9% 20 ml	Standardized general anesthesia (not specified)	Diclofenac 75 mg im + 2x50 mg po; pethidine 10- 20 mg (recovery room)+ 50 mg im ( in the ward)	Postoperative pain control (30min, 4-8-12-24h after surgery)
		Intraperitoneal	Placebo	Egypt	25-64	I-II	Levobupivacaine 0,25% 20 mL	Saline 0,9% 20ml	Standardized general anesthesia (not specified)	diclofenac 75 mg im + 2x50 mg po; pethidine 10- 20 mg (recovery room)+ 50 mg( in the ward)	postoperative pain control (30min, 4-8-12-24h after surgery)
		Wounds/Ports infiltration	Intraperitoneal	Egypt	25-64	I-II	Levobupivacaine 0,25% 20 mL	Levobupivacaine 0,25% 20 mL	Standardized general anesthesia (not specified)	diclofenac 75 mg im + 2x50 mg po; pethidine 10-	postoperative pain control (30min, 4-8-12-24h after

										20 mg (recovery room)+ 50 mg( in the ward)	surgery)
48	Elhakim M (2000)	Intraperitoneal	Placebo	Egypt	37-51	I-II	Lidocaine 0.1% 20 ml	Saline 0,9% 20 ml	INDUCTION:propofol 2.5 mg/kg, nalbuphine 0.25 mg/kg,tenoxicam 0.1 mg/kg,suxamethonium 1 mg/kg MAINTAINED: enflurane and nitrous oxide in 40% oxygen, atracurium 0.5 mg/kg/h followed by an infusion	Nalbuphine 50 mg every 4 hours+ up to 20 mg as request	postoperative pain control ( 1-6-12-18-24h after surgery)
49	Gupta(2016)	Intraperitoneal	Placebo	India	>18	I-III	Ropivacaine 0,25% 50 mL	-	PREMEDICATION: Tramadol 100 mg; ondansetron 4 mg; glycopyrrolate 0,2 mg INDUCTION: thiopentone 5 mg/kg; succinylcholine 1-1,5 mg/kg MAINTAINED: isoflurane 0,6-1%; atracurium 25 mg bolus intermittent boluses of 5 mg	Tramadol 50mg	Postoperative pain control ( 2-4-6-12-24-48h after surgery)
		Rectus sheath block	Placebo	India	>18	I-III	Ropivacaine 0,25% 30 mL	-	PREMEDICATION: Tramadol 100 mg; ondansetron 4 mg; glycopyrrolate 0,2 mg INDUCTION: thiopentone 5 mg/kg; succinylcholine 1-1,5 mg/kg MAINTAINED: isoflurane 0,6-1%; atracurium 25 mg bolus intermittent boluses of 5 mg	Tramadol 50mg	Postoperative pain control ( 2-4-6-12-24-48h after surgery)
		Intraperitoneal	Rectus sheath block	India	>18	I-III	Ropivacaine 0,25% 50 mL	Ropivacaine 0,25% 30 mL	PREMEDICATION: Tramadol 100 mg; ondansetron 4 mg; glycopyrrolate 0,2 mg INDUCTION: thiopentone 5 mg/kg; succinylcholine 1-1,5 mg/kg MAINTAINED: isoflurane 0,6-1%; atracurium 25 mg bolus intermittent boluses of 5 mg	Tramadol 50mg	Postoperative pain control ( 2-4-6-12-24-48h after surgery)
50	Dath D(1999)	Wounds/Ports infiltration	Placebo	USA	32-58		Bupivacaine 0.5% 20 ml	-	INDUCTION:Propofol, vecuronium bromide, fentanyl MAINTAINED: nitrous oxide and isoflurane	Morphine 2-4 mg on demand, im meperidine or acetaminophen with 30 mg codeine as request 4 hour intervals	Postoperative pain control (2-6-10-24h after surgery)
51	Refaey (2016)	Subcostal TAP	Placebo	Egypt	18-40	I-II	Bupivacaine	Bupivacaine	INDUCTION: propofol 1-1,5	Boluses of morphine (0,02	Postoperative pain control

		block					0,25% 20 ml or Bupivacaine 0,25% 20 mL + 0,5 gr magnesium sulfate	0,25% 20 mL	mg/kg; fentanyl 1mcg/kg; atracurium 0,5 mg/kg MAINTAINED: sevoflurane	mg/kg)	(0-1- 2-6-12-24 h after surgery)
52	Brezau (2016)	Placebo	Subcostal TAP block	România	>18	I-II	Saline 20 mL	Bupivacaine 0,25% 20 mL	PREMEDICATION: midazolam 7,5 mg INDUCTION: propofol 2mg/kg fentanyl 2 mcg/kg; rocuronium 0,6 mg/kg or atracurium 0,5 mg/kg MAINTAINED:: sevoflurane 1-2 MAC fentanyl 100 mcg when needed	Acetaminofen 15-20 mg/kg and 1gr iv at 8 h, pethidine 20-40 mg boluses and 20-40 mg iv every 3 hours	Postoperative pain control ( 0-2-4-6-12- 24h after surgery)
53	Khurana (2016)	Intraperitoneal	Placebo	India	22-65	I-II	Bupivacaine 0,25% 25 ml	Bupivacaine 0,25% 25 ml	INDUCTION: thiopentone sodium 2,5 % 4-6 mg/kg; fentanyl 1,5 mcg/kg ; suxamethonium 1,5 mg/kg MAINTAINED: halothane 0,5-1,5% ; nitrous oxide 66%	Tramadol and diclofenac sodium	Postoperative pain control ( 0-1-2-3-4-8-12-24h after surgery)
54	Shu Liu (2015)	Wounds/Ports infiltration	Placebo	China	18-65	I-II	Intraperitoneal 10 ml saline 0,9%+ Incisional Ropivacain 0,75% 10 ml	Intraperitoneal Saline 0,9% 10 ml + Incisional Saline 0,9%10 ml	INDUCTION: propofol 2 mg/kg; fentanyl 6 mcg/kg ; midazolam 0,05 mg/kg; cisatracurium 0,15 mg/kg MAINTAINED: sevoflurane 1,5 - 2,5 %	Morphine 3 mg bolus + PCA: morphine 1 mg bolus; lock out time 15 min	Postoperative pain control ( 2-6-24-48h after surgery)
		Intraperitoneal	Placebo	China	18-65	I-II	Intraperitoneal Ropivacaine 0,75% 10 ml + Incisional Saline 0,9% 10 ml	Intraperitoneal Saline 0,9% 10 ml + incisional Saline 0,9% 10 ml	INDUCTION: propofol 2 mg/kg; fentanyl 6 mcg/kg ; midazolam 0,05 mg/kg; cisatracurium 0,15 mg/kg MAINTAINED: sevoflurane 1,5 - 2,5 %	Morphine 3 mg bolus + PCA: morphine 1 mg bolus; lock out time 15 min	Postoperative pain control ( 2-6-24-48h after surgery)
		Wounds/Ports infiltration	Intraperitoneal	China	18-65	I-II	Intraperitoneal 10 ml saline 0,9%+ Incisional Ropivacain 0,75% 10 ml	Intraperitoneal 10 ml saline 0,9%+ Incisional Ropivacain 0,75% 10 ml	INDUCTION: propofol 2 mg/kg; fentanyl 6 mcg/kg ; midazolam 0,05 mg/kg; cisatracurium 0,15 mg/kg MAINTAINED: sevoflurane 1,5 - 2,5 %	Morphine 3 mg bolus + PCA: morphine 1 mg bolus; lock out time 15 min	Postoperative pain control ( 2-6-24-48h after surgery)
55	Lin (2015)	Wounds/Ports infiltration	Placebo	China	18-80	I-II	Bupivacaine 0,5% 10 ml+ Saline 0,9% 10 ml	-	-	Pethidine 100 mg im ( when needed)	Postoperative pain control ( 1-2-4-8-12-24h after surgery)
56	Ahmad (2015)	Intraperitoneal	Placebo	Pakistan	>18	I-II	Bupivacaine 0,5% 20 ml intraperitoneal +	Saline 0,9% 20 ml + Bupivacaine 0,5 % 2 mg/kg port	Standardized general anesthesia (not specified)	Ketorolac 30 mg iv 8 hours intervals	Postoperative pain control (4-12-24h after surgery)



							Bupivacaine 0,5 % 2 mg/kg port infiltration	infiltration			
57	Saliminia (2015)	TAP block	Placebo	Iran	>18	-	Bupivacaine 0,5 % 30 ml + Saline 0,9% 2ml or Bupivacaine 0,5% 30 ml + sufentanil 2ml( 10 mcg)	Saline 0,9% 32 ml	INDUCTION: propofol 2 mg/kg, fentanyl 3 mcg/kg, atracurium 0,6 mg/kg MAINTAINED: propofol 80- 100 mcg/kg/min, fentanyl 1 mcg/kg/ 30 min, atracurium 0,3 mg/kg/30 min	PCA: fentanyl 50 mcg bolus ; lockout time 8 min	Postoperative opioid consumption
58	Chavarria- Perez (2014)	Wounds/Ports infiltration	Placebo	Mexico	18-80	I-II	Ropivacaine 0,75% 6 ml port infiltration 20 ml gallbladder fossa	-	INDUCTION: fentanyl 3mcg/kg; propofol 2 mg/kg ; cisatracurium 100 mcg/kg MAINTAINED: sevoflurane 1 MAC	Tramadol 100 mg	Postoperative pain control (0-6-12-24h)
59	Basaran (2015)	Subcostal TAP block	Placebo	Turkey	18-65	I-II	Bupivacaine 0,25% 20 ml		PREMEDICATION: diazepam 10 mg INDUCTION: propofol 1-1,5 mg/kg; fentanyl 2 mcg/kg; rocuronium 0,6 mg/kg MAINTAINED: sevoflurane 1 MAC ; remifentanil 0,1 mcg/kg/min	Meperidine 0,5 mg/kg; paracetamol 500 mg po every 6 hours; tenoxicam 20 mg; tramadol 50 mg+ 50 mg (when needed)(max dose 500 mg/24h)	Postoperative pain control (0-2-24h after surgery)
60	Tulgar S. (2018)	ESP block	Placebo	Turkey	18-65	I-II	Bupivacaine 0.375% 20ml	-	PREMEDICATION: Midazolam 1- 2 mg; INDUCTION: Propofol 2-3 mg/kg/h + fentanyl 100 mcg+ Rocuronium 0,6 mg/kg; MAINTAINED: Sevoflurane MAC 0,6 + Remifentanil 0,08-2 mcg/kg/min+ Paracetamol 1g + Tenoxicam 20 mg	PCA: tramadol 10mg/20 min + Paracetamol 1g/8h if NRS>2; RESCUE: NRS >= 4 in the 1 h fentanyl 25 mcg - in the 1-24 h diclofenac 75/mg IM and if the pain remained at same level in following 1 h +meperidine 50mg IV	Postoperative pain control ( 20-40 min, 1-3-6-9-12-15- 18-21-24 h after surgery)
61	Vijayaraghavalu (2020)	Intraperitoneal	Placebo	India	18-50	I-II	Bupivacaine 0.5% 30 ml	Saline 0,9% 30 ml	INDUCTION: propofol 2mg/kg + fentanyl 2 mcg/kg + vecuronium 0.1 mg/kg MAINTAINED: 50%oxygen,50%air with 1% isoflurane	Rescue analgesia as 100 mg tramadol	Postoperative pain control (0-2-4-6-12-24 h after surgery)
62	Baytar Ç (2019)	Subcostal TAP block	Anterior QL block	Turkey	18-75	I-III	Bupivacaine 0.25% 0.3 ml/kg (max. 20 ml)	Bupivacaine 0.25%0.3 ml/kg (max. 20 ml)	PREMEDICATION (0.01–0.02 mg/kg IV midazolam;), INDUCTION 1-2 mcg/kg fentanyl, 2-3 mg/kg propofol, and 0.6 mg/kg rocuronium MAINTAINED: Low-	54 ml Saline + 6 ml tramadol (300 mg) , bolus dose was set to 5 ml, with a lock-out time of 30 min and no basal infusion, first	Postoperative pain control (0-1-6-12-24h after surgery)

									flow sevoflurane	bolus dose when VAS >3.	
63	Aygun H (2019)	ESP block	Posterior QL block	Turkey	18-70	I-II	Bupivacaine 0.5% 30 ml + Lidocaine 2% 10 ml	Bupivacaine 0.5% 30 ml + Lidocaine 2% 10 ml	INDUCTION fentanyl 1-1.5 mcg/kg, propofol 2-3 mg/kg, rocuronium 0.6 mg/kg MAINTAINED: 0.6-1 Sevoflurane	PCA: 0.5 mg/ml Morphine, no basal infusion, 1 mg bolus 20 min lock out time	Postoperative pain control (1-6-12-18-24h after surgery)
64	Wamnes (2021)	Anterior QL block	Placebo	Norway	>18	I-II	Ropivacaine 0.375%	-	INDUCTION and MAINTAINED: target controlled infusion of propofol and remifentanyl	Paracetamol/codeine fixed combination(1000mg/60mg) every 6h; rescue analgesia: oxycodone 1-5mg iv to achieve a NRS<4	Postoperative opioid consumption in the first 48h after surgery
65	Ozdemir H (2021)	ESP block	Subcostal TAP block	Turkey	18-64	I-III	Bupivacaine 0.25% 10 ml+Prilocaine 2% 10 ml	Bupivacaine 0.25% 10ml +Prilocaine 2% 10ml	PREMEDICATION: 1-2 mg midazolam INDUCTION: propofol 2 mg/kg+fentanyl 0.5-1 mcg/kg+rocuronium 0.6 mg/kg MAINTAINED:: sevoflurane with 40-60% O2-air mix+ remifentanyl 0.125 mcg/kg/min	Paracetamol 15 mg/kg iv every 6h, fentanyl PCA(bolus dose of 25 mcg without basal inf) ; if NRS>3 rescue analgesia of iv 25 mg meperidine	Postoperative pain control (2-4-6-12h after surgery)
66	Szem JW	Intraperitoneal	Placebo	USA	18-80	-	Bupivacaine 0.1% 50 ml	Saline 0,9% 50 ml	Standardized general anesthesia (not specified)	None	Postoperative pain control (0-6-12-24h after surgery)
67	Kamei (2015)	Rectus sheath block	Placebo	Japan	>18	I-III	Ropivacaine 0,375% 10 mL	-	-	Patients received pain medications only on demand, and these were administered in incremental strength, beginning with peripheral analgesics.	Postoperative pain control (2-6-12-24 h after surgery)
68	Honca (2014)	Intraperitoneal	Placebo	Turkey	20-60	I-II	Levobupivacaine 0,125% 80 ml or Bupivacaine 0,125% 80 ml	Saline 0,9% 80 ml	PREMEDICATION: diazepam 5 mg INDUCTION: propofol 2mg/kg ; fentanyl 1 mcg/kg; vecuronium 0,1 mg/kg MAINTAINED: sevoflurane 2%; nitrous oxide 50%	Tenoxicam 20 mg; PCA: tramadol 20 mg bolus; lockout time 12 min	Postoperative pain control ( 30 mi- 1-2-4-6-12-24h after surgery)
69	Kaushal-Deep SM (2018)	Intraperitoneal	Placebo	India	16-80	I-II	Intraperitoneal Ropivacaine 0,2% 20 ml+	Saline 0,9% 23 ml	INDUCTION: propofol 2mg/kg; fentanyl 1,5 mcg/kg; atracurium 0,6 mg/kg MAINTAINED:: nitrous	Diclofenac 75 mg; tramadol 100 mg (rescue)	Postoperative pain control (30 mi- 1-2-4-6-12-24h after surgery)

							intraincisional 3 ml Saline 0,9%		oxide 60%; isoflurane 1 MAC ; Fentanyl 50 mcg		
		Wounds/Ports infiltration	Placebo	India	16-80	I-II	Intraperitoneal saline 20 ml+ intraincisional Ropivacaine 0,2% 3 ml	Intraperitoneal+ intraincisional Saline 0,9% 23 ml	INDUCTION: propofol 2mg/kg; fentanyl 1,5 mcg/kg; atracurium 0,6 mg/kg MAINTAINED:: nitrous oxide 60%; isoflurane 1 MAC ; Fentanyl 50 mcg	Diclofenac 75 mg; tramadol 100 mg (rescue)	Postoperative pain control (30 mi- 1-2-4-6-12-24h after surgery)
		Intraperitoneal	Wounds/Ports infiltration	India	16-80	I-II	Intraperitoneal Ropivacaine 0,2% 20 ml+ intraincisional 3 ml Saline 0,9%	Intraperitoneal saline 20 ml+ intraincisional Ropivacaine 0,2% 3 ml	INDUCTION: propofol 2mg/kg; fentanyl 1,5 mcg/kg; atracurium 0,6 mg/kg MAINTAINED:: nitrous oxide 60%; isoflurane 1 MAC ; Fentanyl 50 mcg	Diclofenac 75 mg; tramadol 100 mg (rescue)	Postoperative pain control (30 mi- 1-2-4-6-12-24h after surgery)
70	Swati S. (2021)	Subcostal TAP block	Placebo	India	18-60	I-II	Bupivacaine 0.25% 20 ml	-	INDUCTION: midazolam 1 mg; fentanyl 2 mcg/kg; propofol 2 mg/kg; vecuronium bromide 0.1mg/kg MAINTENANCE: nitrous oxide 60%; oxygen 33%+ isoflurane 0.5-1.2%	Rescue analgesia was Diclofenac 75 mg intramuscular if VRS >3. If that did not relieve pain, i.v. tramadol 100 mg. Maximum dose for the first 24h: Diclofenac 150 mg; Tramadol 400 mg. If analgesia was still inadequate, injection morphine, 0.1 mg.kg-1 i.v..	Postoperative pain control (0-15-30-60min; 6-12-24h after surgery)
71	Kitamura (2021)	Rectus Sheath Block	Wounds/Ports infiltration	Japan	>20	-	Ropivacaine 0.375% 10 ml	Ropivacaine 0.75% 10ml	-	-	Postoperative pain control (0-1-2-3 day after surgery)
72	Sandya (2021)	Intraperitoneal	Placebo	India	20-65	I-II	Ropivacaine 0.75% 4ml	Saline 0,9% 4ml	INDUCTION: propofol 2-3mg/kg; fentanyl 2 mcg/kg; atracurium 0.5 mg/kg MAINTAINED: 33% oxygen:air + sevoflurane + fentanyl boluses of 20 mcg	Paracetamol 1 g every 8h; if NRS>3 rescue analgesia of 50 mg tramadol	Postoperative pain control ( 2-4-6-24h after surgery)
73	Gündost L. (2021)	Paravertebral	Placebo	Turkey	18-70	I-III	Bupivacaine 0.5% 20 ml	-	INDUCTION: 0.03–0.05 mg/kg midazolam, 2 mcg/kg fentanyl, 2 mg/kg propofol ve 0.6 mg/kg rocuronium; MAINTENANCE: sevoflurane O2 40%; air 60%	Tramadol PCA (0.1mg/kg bolus dose; 3 mg baseline inf.); rescue analgesia as if VAS>4 50 mg tramadol	Postoperative pain control (30 min, 1-4-6-12-18-24h after surgery)
74	Ali L. (2018)	TAP block	Wounds/Ports infiltration	Pakistan	20-60	I-II	0.5% Bupivacaine (1mg/kg).	0.5% Bupivacaine (1mg/kg).	INDUCTION:iv Nalbuphine 0.1mg/kg,propofol 2-2.5mg/kg iv	Nalbuphine 2 mg iv	Postoperative pain control ( 0-2-4-6-8-10-12 h after

									MAINTAINED: isoflurane in 50% oxygen with air		surgery)
75	Ng A. (2004)	Intraperitoneal	Placebo	UK	>20	I-II	Levobupivacaine 0.25% 30 ml	Saline 0,9% 30 ml	INDUCTION: Propofol 2-4 mg/kg, Fentanyl 2 mcg/kg, atracurium 0.5 mg/kg, MAINTAINED: isoflurane 1-1.5%	iv morphine 2 mg	Postoperative pain control (1-2-3-4 h after surgery)
76	Ortiz J. (2012)	TAP block	Wounds/Ports infiltration	USA	18-64	I-III	Ropivacaine 0.5% 15 ml	Ropivacaine 0.5% 20 ml	PREMEDICATION: Midazolam 1-2 mg,INDUCTION: fentanyl 2 mcg/kg and propofol 2.5 mg/kg, succinylcholine 1- 2 mg/kg or rocuronium 0.6 -1 mg/kg, MAINTAINED: sevoflurane, additional boluses of fentanyl 50 mcg	Hydrocodone 5 mg, acetaminophen 500-mg tablets, 2 tablets for mild pain (NRS 3-5), and morphine 4 mg iv for severe pain (NRS 6-10)	Postoperative pain control ( 1-2-4-8-12-24h after surgery)
77	Bhatia N. (2013)	Placebo	TAP block	India	18-60	I-II	-	Ropivacaine 0.375% 30 ml	PREMEDICATION: alprazolam 0.25mg + ranitidine 250mg; INDUCTION: morphine 0.1mg/kg Propofol 2-3 mg/kg Vecuronium 0.1 mg/kg; MAINTAINED: N2O 66% +/- Isoflurane 1-2%	Paracetamol 1g/6h+ if VAS>4 tramadol 2mg/kg initial bolus then 1mg/kg	Postoperative pain control ( 0-2-4-8-12-24h after surgery)
		Placebo	Subcostal TAP block	India	18-60	I-II	-	Ropivacaine 0.375% 30 ml	PREMEDICATION: alprazolam 0.25mg + ranitidine 250mg; INDUCTION: morphine 0.1mg/kg Propofol 2-3 mg/kg Vecuronium 0.1 mg/kg; MAINTAINED: N2O 66% +/- Isoflurane 1-2%	Paracetamol 1g/6h+ if VAS>4 tramadol 2mg/kg initial bolus then 1mg/kg	Postoperative pain control ( 0-2-4-8-12-24h after surgery)
		TAP block	Subcostal TAP block	India	18-60	I-II	Ropivacaine 0.375% 30 ml	Ropivacaine 0.375% 30 ml	PREMEDICATION: alprazolam 0.25mg + ranitidine 250mg; INDUCTION: morphine 0.1mg/kg Propofol 2-3 mg/kg Vecuronium 0.1 mg/kg; MAINTAINED: N2O 66% +/- Isoflurane 1-2%	Paracetamol 1g/6h+ if VAS>4 tramadol 2mg/kg initial bolus then 1mg/kg	Postoperative pain control ( 0-2-4-8-12-24h after surgery)
78	Arik E. (2020)	Subcostal TAP block	Placebo	Turkey	18-80	I-III	Bupivacaine 0.25% 20 ml	-	INDUCTION: propofol rocuronium fentanyl; MAINTAINED: Sevoflurane (1-1.5%) + Remifentanil ic+ Paracetamol 1g + Tramadol 1mg/kg	PCA tramadol 20mg/20 min max 400mg/4h + Dexketoprofen 50 mg IV if NRS>4	Postoperative pain control (1-3-6-12-24h after surgery)
		Wounds/Ports infiltration	Placebo	Turkey	18-80	I-III	Bupivacaine 0.25% 20 ml	-	INDUCTION: propofol rocuronium fentanyl; MAINTAINED:	PCA tramadol 20mg/20 min max 400mg/4h +	Postoperative pain control (1-3-6-12-24h after surgery)

									Sevoflurane (1-1.5%) + Remifentanyl ic+ Paracetamol 1g + Tramadol 1mg/kg	Dexketoprofen 50 mg IV if NRS>4	
		Subcostal TAP block	Wounds/Ports infiltration	Turkey	18-80	I-III	Bupivacaine 0.25% 20 ml	Bupivacaine 0.25% 20 ml	INDUCTION: propofol rocuronium fentanyl; MAINTAINED: Sevoflurane (1-1.5%) + Remifentanyl ic+ Paracetamol 1g + Tramadol 1mg/kg	PCA tramadol 20mg/20 min max 400mg/4h + Dexketoprofen 50 mg IV if NRS>4	Postoperative pain control (1-3-6-12-24h after surgery)
79	Khandelwal (2019)	Subcostal TAP block	Intraperitoneal	India	20-60	I-II	Levobupivacaine 0.25% 40ml	Levobupivacaine 0.25% 40 ml	INDUCTION: propofol 2–3 mg/kg, fentanyl 2 µg/kg, and vecuronium 0.1 mg/kg MAINTAINED: 70% nitrous oxide, 30% oxygen, and 1% isoflurane	Bolus of 1 mg/kg of tramadol	Postoperative pain control (0-1-2-4-6-12-24 h after surgery)
80	Zayas-González H (2019)	Wounds/Ports infiltration	Placebo	Mexico	>18	I-II	Lidocaine 1% (4ml each surgical site)	-	INDUCTION: midazolam 0.05 mg/kg, fentanyl 0.004mg/kg, propofol 2 mg/kg, rocuronium 0.6 mg/kg MAINTAINED: oxygen (97%) and sevoflurane (2.5%)	Morphine 0.05 mg/kg as a rescue; ketorolac 60 mg/8hr; if VAS>5 salvage 50 mg tramadol	Antinociceptive and analgesic effect
81	Pasqualucci A.(1994)	Wounds/Ports infiltration	Placebo	Italy	33-65	I-II	Bupivacaine 0.5% 40 ml	Saline 0.9% 40ml	PREMEDICATION: diazepam 10 mg INDUCTION: thiopental(4-5 mg/kg iv) + vecuronium bromide (0.1 mg/kg iv) + fentanyl (5 µg/kg iv) MAINTAINED: isoflurane %0.6-1 + nitrous oxide with oxygen 50%	Ketorolac 30 mg iv	Postoperative pain control (0-4-8-12-24h after surgery)
82	Rademaker BM (1994)	Intraperitoneal	Placebo	Netherland	23-69	I-II	Bupivacaine 0.25% 20ml, Lidocaine 0.5% 20 ml	-	PREMEDICATION : diazepam 10 mg INDUCTION: propofol 2-3 mg/kg + fentanyl 5 µg/kg + vecuronium 0.1 mg/kg MAINTAINED: propofol inf 6-10 ög/kg	Nicomorphine 10 mg iv	Postoperative pain control (0-2-24-48h after surgery) and analgesic requirements
83	Houben AM (2019)	Subcostal TAP block	Placebo	Belgium	18-75	I-II	Levobupivacaine 0.375% 20ml	Saline 0,9% 20ml	INDUCTION: propofol 2 mg/kg, sufentanyl 0.1mcg/kg, rocuronium 0.6 mg/kg MAINTAINED: sevoflurane 1.0-2.0%, air/oxygen mix.	Paracetamol 2 g/6h, morphine 2 mg to obtain VAS<3; oral oxycodone 5 mg q 4h if needed	Postoperative pain control (1-2-4-24h after surgery)
84	Ra YS (2010)	TAP block	Placebo	Korea	20-65	I-II	Bupivacaine 0.25% 30ml or Bupivacaine 0.5%	-	PREMEDICATION: None. INDUCTION: glycopyrrolate 0.2 mg and midazolam 0.05 mg/kg,	VNRS >6 and the patient wanted an analgesics in the recovery room,	Postoperative pain control (20-30-60min, 6-12-24h after surgery)

							30ml		2% propofol TCI 3.0 µg/m and remifentanil TCI 2.5 ng/ml, rocuronium 0.6 mg/kg. MAINTAINED: nitrous oxide 50% and propofol at 2 µg/ml,	ketorolac 30 mg. Rescue: fentanyl 20 µg. Ketorolac 30 mg x8 prime 24 ore	
85	Garcia JB (2007)	Intraperitoneal	Placebo	Brazil	>18	I-II	Bupivacaine 0,125% 80ml	-	PREMEDICATION: Midazolam 1mg. INDUCTION: Propofol (2,5 mg.kg-1) Alfentanil (da 30 a 50 µg.kg-1) cisatracurio (0,15 mg.kg-1)	Tramadol if NRS>3 (maximum dose 100mg/4h)	Postoperative pain control (2-4-8-12-24h after surgery)
86	Kucuk C (2007)	Intraperitoneal	Placebo	Turkey	20-77	I-II	Bupivacaine 0,5% 20 ml or Ropivacaine 1% 10ml or Ropivacaine 1% 15ml	Saline 0,9% 21ml	PREMEDICATION: 0.07 mg kg <sup>-1</sup> midazolam INDUCTION: fentanyl (1.5 µg kg <sup>-1</sup> ), thiopental (5–7 mg kg <sup>-1</sup> ), and vecuronium (0.1 mg kg <sup>-1</sup> ) MAINTAINED: sevoflurane in 70% N2O and 30% O2	PCA was programmed to deliver an intravenous morphine bolus 1 mg and 5 min lock-out interval, with no background infusion.	Postoperative pain control (0-1- 2-4-8-12-24 h after surgery)
87	Govil N (2017)	Placebo	Intraperitoneal	India	18-60	I-III	Saline 0,9% 20ml	Levobupivacaine 0.5% 20ml	PREMEDICATION: 1-2 mg midazolam INDUCTION: propofol 2–3 mg/kg + fentanyl 2 µg/kg + rocuronium 1 mg/kg MAINTAINED: 60:40 N2O:O2 + propofol at 4–6 mg/kg/h + fentanyl bolus of 1–2 µg/kg	Acetaminophen 15 mg/kg intravenous (IV) 6 hourly for 24 h and as per need+ if VAS >40 bolus of 75 mg diclofenac sodium iv	Postoperative pain control (2-4-8-12-24 h after surgery)
88	Altunas (2016)	Wounds/Ports infiltration	Intraperitoneal	Turkey	20-70	I-III	Bupivacaine 0.5% 20ml	Bupivacaine 0.5% 20ml	INDUCTION: 1 µg/kg fentanyl + 2-3 mg/ kg propofol + 0.5–0.6 mg/kg rocuronium IV MAINTAINED: sevoflurane (1.5–2 MAC) + remifentanil 0.05–0.2 µg/kg/min	Morphine through PCA (loading dose of 1 mg, lock-out time 10 min and bolus dose of 1 mg)+ Dexketoprofen as resque analgesia if VAS>5	Postoperative pain control ( 1-2-4-8-12-24h after surgery)
		Wounds/Ports infiltration	Placebo	Turkey	20-70	I-III	Bupivacaine 0.5% 20ml	Saline 0,9% 20ml	INDUCTION: 1 µg/kg fentanyl + 2-3 mg/ kg propofol + 0.5–0.6 mg/kg rocuronium IV MAINTAINED: sevoflurane (1.5–2 MAC) + remifentanil 0.05–0.2 µg/kg/min	Morphine sulphate through PCA (loading dose of 1 mg, lock-out time 10 min and bolus dose of 1 mg)+ Dexketoprofen as resque analgesia if VAS>5	Postoperative pain control ( 1-2-4-8-12-24h after surgery)
		Intraperitoneal	Placebo	Turkey	20-70	I-III	Bupivacaine 0.5% 20ml	Saline 0,9% 20ml	INDUCTION: 1 µg/kg fentanyl + 2-3 mg/ kg propofol + 0.5–0.6 mg/kg rocuronium IV MAINTAINED:	Morphine sulphate through PCA (loading dose of 1 mg, lock-out	Postoperative pain control ( 1-2-4-8-12-24h after surgery)

									sevoflurane (1.5–2 MAC) + remifentanil 0.05–0.2 µg/kg/min	time 10 min and bolus dose of 1 mg)+ Dexketoprofen as rescue analgesia if VAS>5	
89	Karaman (2014)	Wound/Intraperitoneal	Placebo	Turkey	37-66	I-II	Levobupivacaine 0.25 % 45ml	Saline 0,9% 45ml	PREMEDICATION: 2 mg midazolam INDUCTION: Propofol 2-2,5 mg/kg + fentanyl 2 µg/kg + rocuronium 0,6 mg/kg	Pethidine HCl 1 mg/kg + additional im analgesic if VAS>4	Postoperative pain control (1-2-4-8-12-24h after surgery)
90	Park J. (2015)	TAP block	Wounds/Ports infiltration	Korea	20-75	I-II	Ropivacaine 0.25% 40 ml	Ropivacaine 0.25% 40 ml	INDUCTION: Rocuronium 0.4 mg/jg+ Remifentanil 0.1 mcg/kg/min + Propofol 1-2 mg/kg; MAINTAINED: Desflurane + remifentanil + rocuronium	PCA: morphine (bolus injection of 1 mg/mL with a lockout interval of 5 min) Rescue: Tramadol 50mg	Postoperative pain control (2-6-24-48h after surgery)
91	Bava (2016)	TAP block	Wounds/Ports infiltration	India	18–65	I-II	Ropivacaine 0.375% 30 ml	Bupivacaine 0.25% 10ml	INDUCTION:propofol 2 mg/kg + fentanyl 2 µg/kg + atracurium 0.5 mg/kg MAINTAINED: isoflurane	Morphine 0.05 mg/kg boluses given until the VAS score <4 + PCA (1 mg bolus) + as rescue analgesia if VAS>3 0.1 mg/kg of morphine IV	Postoperative pain control (0-1-2-4-8-16-24h after surgery)
92	Agarwal (2012)	Placebo	Paravertebral	India	27-47	I-II	-	Bupivacaine 0.25% (0,3ml/kg)	PREMEDICATION:diazepam 0.2 mg/kg INDUCTION:fentanyl (2 µg/kg, IV) + propofol (2.5 mg/kg, IV) + vecuronium bromide (0.1 mg/kg) MAINTAINED: oxygen and nitrous oxide(33%: 66%) isoflurane and vecuronium + fentanyl 0.5 µg/kg	PCA morphine(1 mg IV bolus with a lockout period of 10 minutes)	Postoperative pain control (2-6-12-24h after surgery)
93	Ingelmo (2013)	Intraperitoneal	Placebo	Italy	25-70	I-III	Ropivacaine 1% 3ml + Saline 0,9% 3ml	Saline 0,9% 6ml	PREMEDICATION: diazepam 5–7 mg + INDUCTION: propofol 2–3 mg/kg + cisatracurium 0.15 mg/kg MAINTAINED: sevoflurane 1.5–2.5% + fentanyl boluses 1–2 mg kg	Paracetamol 15 mg/kg every 6 h + morphine 3 mg i.v. boluses until the (VAS) score was <30 mm + PCA morphine 1 mg kg	Postoperative pain control (0-6-24-48 h after surgery)
94	Castillo-Garza (2012)	Wounds/Ports infiltration	Placebo	Italy	15-60	-	Bupivacaine 0.5% 20	Saline 0,9% 20	INDUCTION:cisatracurium or vecuronium, propofol, and fentanyl (customized for each patient)	Different IV analgesics were used	Postoperative pain control (30-60min, 6-12-24 h after surgery)
95	Verma GR (2006)	Wounds/Ports	Placebo	India	>18	I-II	Bupivacaine 0,5%	Saline 0,9% (equal	PREMEDICATION: 5 mg of	Tramadol 100 mg im	Postoperative pain control

		infiltration					(2mg/kg)	volume)	diazepam and 10 mg of metoclopramide the morning of surgery. Intramuscular morphine (0.1 mg/ kg) and promethazine (0.5 mg/kg). INDUCTION: Thiopentone MAINTAINED: with oxygen, nitrous oxide, and 0.5% halothane.		(4-8-24h after surgery)
		Intraperitoneal	Placebo	India		I-II	Bupivacaine 0,5% (2mg/kg)	Saline 0,9% (equal volume)	PREMEDICATION: 5 mg of diazepam and 10 mg of metoclopramide the morning of surgery. Intramuscular morphine (0.1 mg/ kg) and promethazine (0.5 mg/kg). INDUCTION: Thiopentone MAINTAINED:: with oxygen, nitrous oxide, and 0.5% halothane.	Tramadol 100 mg im	Postoperative pain control (4-8-24h after surgery)
		Intraperitoneal	Wounds/Ports infiltration	India		I-II	Bupivacaine 0,5% (2mg/kg)	Saline 0,9% (equal volume)	PREMEDICATION: 5 mg of diazepam and 10 mg of metoclopramide the morning of surgery. Intramuscular morphine (0.1 mg/ kg) and promethazine (0.5 mg/kg). INDUCTION: Thiopentone MAINTAINED: with oxygen, nitrous oxide, and 0.5% halothane.	Tramadol 100 mg im	Postoperative pain control (4-8-24h after surgery)
96	Okmen K. (2018)	Posterior QL block	Placebo	Turkey	20-70	I-III	Levobupivacaine 0,25% 0.3 ml/kg	Saline 0,9% 0.3ml/kg	INDUCTION: Propofol, Rocuronium MAINTAINED: Sevoflurane 1-2.5%	PCA 4 mg/ml tramadol-saline solution, bolus dose 0.3 mg/kg, lockout interval 20 mins, demand dose 10 mg. IF VAS > 5, Paracetamol 1 g	Postoperative pain control ( 30 min, 2-6-12-24h after surgery)
97	Berven (1995)	Intraperitoneal	Placebo	USA	>18	-	Bupivacaine 0,5% 33 ml	-	PREMEDICATION: midazolam, fentanyl INDUCTION:- MAINTAINED: nitrous oxygen	Different analgesics administered	Postoperative pain control (1-2-3-4-8-12-24-36h after surgery)l
98	Labaille (2002)	Intraperitoneal	Placebo	France	>18	I-II	Ropivacaina 20ml 0,25% - 0,75 %	Saline 0,9% 20 ml	PREMEDICATION: 100 mg hydroxyzine INDUCTION: 4-5 mg / kg thiopental, 0,3 mcg / kg IV	PCA (bolus 1 mg; lockout interval 7 min; maximum dose, 20 mg/4 h).	Postoperative pain (30min, 1-2-4-8-12-20h after surgery)



									sufentanil 0,6 mg kg rocuronium. MAINTAINED: 1%-1.2% isoflurane and 50% NO		
99	Vindal A (2021)	TAP block	Wounds/Ports infiltration	India	18-65	I-II	Bupivacaine 0.25% 40ml	Bupivacaine 0.25% 40ml	-	Diclofenac sodium 50 mg iv/per oral if VAS>4	Postoperative pain control (3-6-24h after surgery)
100	Manan A (2020)	Intraperitoneal	Placebo	Pakistan	18-60	I-II	Bupivacaine 0.5% 20ml + Saline 0,9% 480 ml	Saline 0,9% 500ml	-	Tramadol 2 mg/kg as rescue if NRS>3	Postoperative pain control (1-3-6-12-24h)
101	Louizos AA (2005)	Wounds/Ports infiltration	Placebo	Greece	25-70	I-II	Levobupivacaine 0.25% 20 ml	Saline 0,9% 20ml	PREMEDICATION:midazolam 0.03 mg/kg intravenously (i.v.) INDUCTION: remifentanil (1 lg/kg, i.v.) andpropofol (2 mg/kg, i.v.). Cis-atracurium (0.2 mg/kg, i.v.) MAINTAINED: sevoflurane (end-tidal concentration) 1–1.5%, a continuous infusion of remifentanil (0.2–0.5 lg/kg/min), oxygen/nitrous oxide (1:2)	Dextropropoxyphene 75 mg i.m. if VAS>40	Postoperative pain control (30min, 4-8-12-24h after surgery)
		Intraperitoneal	Placebo	Greece	25-70	I-II	Levobupivacaine 0.25% 20 ml	Saline 0,9% 20ml	PREMEDICATION:midazolam 0.03 mg/kg intravenously (i.v.) INDUCTION: remifentanil (1 lg/kg, i.v.) andpropofol (2 mg/kg, i.v.). Cis-atracurium (0.2 mg/kg, i.v.) MAINTAINED: sevoflurane (end-tidal concentration) 1–1.5%, a continuous infusion of remifentanil (0.2–0.5 lg/kg/min), oxygen/nitrous oxide (1:2)	Dextropropoxyphene 75 mg i.m. if VAS>40	Postoperative pain control (30min, 4-8-12-24h after surgery)
		Wounds/Ports infiltration	Intraperitoneal	Greece	25-70	I-II	Levobupivacaine 0.25% 20ml	Levobupivacaine 0.25% 20 ml	PREMEDICATION:midazolam 0.03 mg/kg intravenously (i.v.) INDUCTION: remifentanil (1 lg/kg, i.v.) andpropofol (2 mg/kg, i.v.). Cis-atracurium (0.2 mg/kg, i.v.) MAINTANENCE: sevoflurane (end-tidal concentration) 1–1.5%, a continuous infusion of remifentanyl (0.2–0.5 lg/kg/min), oxygen/nitrous oxide (1:2)	Dextropropoxyphene 75 mg i.m. if VAS>40	Postoperative pain control (30min, 4-8-12-24h after surgery)
102	Jabbour-Khoury SI	Intraperitoneal	Placebo	Lebanon	20-60	I-II	Bupivacaine	Saline 0,9% 40ml	PREMEDICATION: diazepam 5	In case of a pain score 5:	Postoperative pain control

	(2005)						0.25% 40ml		mg orally, glycopyrrolate 0.2 mg intramuscularly, and ranitidine 50 mg intravenously. INDUCTION: propofol 2.0 mg/kg, fentanyl 2 g/kg, and rocuronium 0.6 mg/kg. MAINTAINED: sevoflurane 1.5% to 2.5% in oxygen/air mixture (1/2).	ketoprofen 100mg suppository was given and repeated every 6 hours for the first 24 hours	(0-1-2-6-12-24h after surgery)
103	Papaziogas (2000)	Wounds/Ports infiltration	Placebo	Greece	18-75	I-III	Ropivacaine 1% 20ml	Saline 0,9% 20ml	PREMEDICATION:diazepam0.15 mg/kg 1 hr prior + midazolam 2 mg, Ondansetron 4 mg INDUCTION: fentanyl 3-5 mcg/kg + propofol 2-3 mg/kg, cisatracurium 0.1 mg/kg MAINTAINED:sevoflurane1-2% + intermittent doses of cisatracurium	Diclofenac 50-100 mg +dextropropoxyphene (75 mg) +meperidine 50 mg IM	Postoperative pain control (0-3-6-12-24-48h after surgery)