reference	participants' characteristics	intervention group/ control group	outcomes	critical appraisal/ conclusion
Zeid et al. 2012 Comparison between intrathecal morphine with paravertebral patient controlled analgesia using bupivacaine for intraoperative and post-thoracotomy pain relief. Saudi J Anaesth. 2012;6(3):201-6.	**inclusion criteria** - age 18–72 yrs - ASA physical status I–III **exclusion criteria** - cardiac disease, hepatic insufficiency, renal failure - infection at surgical site - coagulation disorders, and - use of any analgesics 48 h prior to surgery - history of chronic pain - psychiatric disease - allergy to local anaesthetics, morphine or study drugs **demographic data**: group I group II p age (yrs) 38.1±15.2 38.5±12.1 0.426 sex (m/f) 16/4 14/6 0.157 weight (kg) 76.3±16.6 74.6±13.0 0.174 height (cm) 171.1±8.44 169.4±5.12 0.098 operative time (min) 156.75±40.23 161.25±31.49 0.333 **patient flow and follow up:** total patient number included: 40 randomised in: group I: 20 group II: 20 excluded: 0 analysed: 40 follow-up: 24 and 48 h	**intervention prior to anaesthesia** - group I: 0.3 mg morphine in 3 mL normal saline intrathecally + paravertebral catheter - group II: 4 paravertebral injections (5 mL each of 0.25% bupivacaine) + catheter was inserted into the paravertebral space of T5 **mode of anaesthesia** - fentanyl **surgical approach** - thoracotomy **postoperative analgesia** - BPV PCA: 5 mL bolus of 0.25% bupivacaine; lo 10 min, max 20 mL/4 h **supplemental analgesia** - IV paracetamol 1 g/6 h for first 24 h **rescue analgesia** - if VAS >4 on coughing, IV pethidine 0.5 mg/kg was given	**postoperative pain [VAS]: mean (95% CI)** - from arrival in recovery until 18 h postop, there were no statistical differences in the visual analogue score (VAS) at rest or on coughing between the groups. - at 24 h, the VAS was significantly higher in group I at rest and on coughing (p<0.001) respectively. **total bupivacaine consumption: mg (mean±SD)** - group I: bupivacaine dose consumption in the 1st 24 h was 86±28 mg and in next 24 h, 103±41 mg (S) - group II (PPCA): bupivacaine dose consumption was 438±78 mg in the 1st 24 h and (493±69 mg) in the next 24 h . (S) group I group II 1st 24 h 86±28 438±78 2nd 24 h 104±32 493±69 p<0.01 **rescue analgesia** - in the first 24 hd, two patients in group I required rescue pethidine vs. only 1 patient in group II (p>0.05) - in the second 24 h, six patients from group I required pethidine, vs. two patients from group II (p>0.05) - not significant **adverse effects/ events: n (%)** - there was no significant difference in incidence of side effects between groups	**methodological shortcomings** - not reported who generated the allocation sequence, who enrolled participants, and who assigned the participants to their groups - method used to implement the random allocation sequence not reported - not reported whether the sequence was adequately concealed until interventions were assigned - participant flow through each stage was not reported **level of evidence: 1** **authors' conclusion** "Intrathecal morphine 0.3 mg is safe and effective way to improve pain control after thoracic surgery, and was comparable to paravertebral patient control analgesia (PPCA) with bupivacaine for the 1st 48 h post-thoracotomy."
Dango et al. 2013 Combined paravertebral and intrathecal vs thoracic epidural analgesia for post-thoracotomy pain relief. Br J Anaesth. 2013 Mar;110(3):443-9	**inclusion criteria** - age 18-75 yrs **exclusion criteria** - additional chest wall resection, - emergency surgery - pregnancy - contraindications to regional techniques **demographic data**: TEA PVB+ITO	**intervention prior to anaesthesia** - group TEA: slow injection of 0.2% ropivacaine 10 mL and sufentanil (0.2–0.3 µg/kg), then continuous epidural infusion of ropivacaine 0.2% and sufentanil 0.5 µg/mL at 8 mL/h during surgery up to 72 h - group PVB +ITO (sufentanil + morphine 5 µg/kg): bolus 0.5% ropivacaine 30 mL with epinephrine (5 mg/mL), then continuous	**postoperative pain [VAS]: median (25/75th/75/95th percentiles)** - on the day of surgery (T0) and on postop days 2 (T24) and 3 (T48), pain scores in the TEA group were lower at rest (p=0.026) and during coughing/movement (p=0.021) than in the PVB+ITO group - group PBV+ITO: mean VAS scores never exceeded 1.9 at rest, and 3.5 during coughing/movement	**methodological shortcomings** - not reported who generated the allocation sequence, who enrolled participants, and who assigned the participants to their groups - method used to implement the random allocation sequence not reported - not reported whether the sequence was adequately concealed until interventions were assigned

reference	participants' characteristics	intervention group/ control group	outcomes	critical appraisal/ conclusion
	sex (n, (%)) f 16 (37.2) 8 (21.6) m 27 (62.8) 29 (78.4) age (median/range) (yr) 64 (39–82) 68 (38–82) height (median/range) (cm) 170 (168–176) 174 (170–178) weight (median/range) (kg) 82 (68–90) 76 (69–84) ASA physical status (n) I 0 1 II 18 15 III 25 21 **patient flow and follow up:** total patient number included: 84 randomised in: group TEA: 43 group PVO: 37 excluded: 4 analysed: 80 follow-up: 1, 2, 4, 8, 12, 24, 48, and 72 h	paravertebral infusion of 0.2% ropivacaine at 8 mL/h until 72 h postop **mode of anaesthesia** - sufentanil - TEA and PBV (+ITO) started intraop, continued to 72 h **surgical approach** - lung resection via open thoracotomy **postoperative analgesia** - PCA piritramide bolus 1.5 mg, lo 5 min, max 40 mg/4 h **supplemental analgesia** - IV paracetamol - IV metamizol (15 mg/kg) every 6 h for 3 days **rescue analgesia** - if VAS score >30 mm, IV piritramide titration 3 mg (equivalent to 2 mg morphine)	- the differences in the mean VAS scores between groups varied by only 0.1–0.8 at rest and 0.4–1.3 during coughing/movement - the maximal differences in the maximal VAS scores between the TEA and the PVB+ITO groups were only 1.2 (3.4 vs 4.6) at rest, and 1.3 (4.4 vs 5.7) during coughing/movement - there was no significant difference between the groups in any of the secondary outcome measures **total IV piritramide at 72 h [mean (SD)]** group TEA: 52±39 group PVB +ITO: 60±47 (p=0.36) **adverse effects/ events: n** - postoperative nausea and/or vomiting group TEA: 2 group PVB +ITO: 2 (p=0.63)	**level of evidence: 1** **authors' conclusion** "Although VAS scores were statistically lower in the TEA compared with the PVB+ITO group at some observation points, the differences were small and of questionable clinical relevance. Thus, combined PVB and ITO can be considered a satisfactory alternative to TEA for post-thoracotomy pain relief."