### Reference

<table>
<thead>
<tr>
<th>Article</th>
<th>Title and Details</th>
</tr>
</thead>
</table>

### Inclusion criteria

**Elhakim et al. 2010**
- Age 40-60 yrs
- ASA physical status II-III
- BMI >30 kg/m²
- Age >60 yrs
- Allergy to bupivacaine or any other anaesthetic drugs
- Renal or hepatic insufficiency
- Neurological or psychiatric diseases
- Therapy with sedative drugs affecting EEG activity

**Lee et al. 2012**
- Age 18-65 yrs
- ASA physical status I-III
- Any communicative or psychiatric disorders
- Hepatic, renal, or cardiovascular dysfunction
- Allergies to local anaesthetics or magnesium sulphate
- Active infection at the injection site
- Coagulopathy
- History of drug abuse
- Pre-existing motor or sensory deficits
- Patient refusal

### Exclusion criteria

**Elhakim et al. 2010**
- Patient refusal
- Pre-existing drug abuse
- Coagulopathy
- Active infection at the injection site
- Hepatic, renal, or cardiovascular dysfunction
- Allergy to bupivacaine or any other anaesthetic drugs
- BMI >30 kg/m²
- ASA physical status II
- Existing motor or sensory deficits
- Therapy with sedative drugs affecting EEG activity
- Renal or hepatic insufficiency
- Allergy to bupivacaine or any other anaesthetic drugs
- BMI >30 kg/m²
- ASA physical status III

**Lee et al. 2012**
- Patient refusal
- History of drug abuse
- Pre-existing motor or sensory deficits
- Patient refusal

### Demographic data

<table>
<thead>
<tr>
<th>Group</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elhakim et al. 2010</td>
<td></td>
</tr>
<tr>
<td>Group D</td>
<td>Group B</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>52 (44-54)</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>80 (59-81)</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>168 (164-170)</td>
</tr>
<tr>
<td>ASA physical status</td>
<td>II 12 (48%)</td>
</tr>
<tr>
<td>III</td>
<td>13 (52%)</td>
</tr>
</tbody>
</table>

### Patient flow and follow-up

**Elhakim et al. 2010**
- Total patient number included: 50
- Randomised in: Group D: 25, Group B: 25
- Excluded: Group D: 5, Group B: 5
- Analysed: 50
- Follow-up: every 6 h for 1 day

**Lee et al. 2012**
- Total patient number included: 100
- Randomised in: Group C: 50, Group M: 50
- Excluded: Group C: 5, Group M: 5
- Analysed: 50
- Follow-up: every 6 h for 1 day

### Intervention group/ control group

**Elhakim et al. 2010**
- Intervention prior to anaesthesia
  - Group D: 1 mg/kg epidural dexmedetomidine with 0.5% bupivacaine
  - Group B: 0.5% bupivacaine alone after induction
- Mode of anaesthesia
  - TEA started before surgery, titration according to the initial dose and weight of the patient
- Surgical approach
  - Open thoracotomy for lung surgery and OLV
- Postoperative analgesia
  - TEA: 0.25% bupivacaine 6-8 mL/h with or without 0.2 µg/kg/h dexmedetomidine
  - IV paracetamol 1 g/6 h
  - Epidural administration of 0.25% bupivacaine 6-8 mL/h with or without 0.2 µg/kg/h dexmedetomidine in groups D and B respectively.

**Lee et al. 2012**
- Intervention prior to anaesthesia
  - Group C: 5 mL normal saline
  - Group M: 100 mg magnesium sulphate
- Mode of anaesthesia
  - Both epidurally
- Surgical approach
  - Elective unilateral VATS at the end of surgery
- Postoperative analgesia
  - TEA: 0.375% ropivacaine 10 mL through the epidural catheter
  - Group C: Cl of 0.2% ropivacaine 226 mL
  - Supplementation 1200 µg
  - Group M: magnesium sulphate 500 mg

### Outcomes

**Elhakim et al. 2010**
- Postoperative pain during the first 24 h (VRS): median (IQR)
  - Group D: 1 (0.9-1.6)
  - Group B: 1.3 (1.1-1.6)
  - Group M: 1.5 (1.0-1.6)
  - Group D: 1.5 (1.0-1.6)
  - Group B: 1.8 (1.2-1.9)
  - Group M: 2.1 (1.8-3.3)

**Lee et al. 2012**
- Postoperative pain (VAS: median (interquartile range))
  - Group C: 10 (0.0-4.0)
  - Group M: 10 (0.0-4.0)
  - Group C: 10 (0.0-4.0)
  - Group M: 10 (0.0-4.0)

### Adverse effects/ events

**Elhakim et al. 2010**
- Adverse effects/ events:
  - Group D: 0
  - Group B: 12

**Lee et al. 2012**
- Supplementary paracetamol consumption, full dose,
  - Group D: 0
  - Group B: 12

### Methodological shortcomings

**Elhakim et al. 2010**
- Primary and secondary outcome measures not clearly defined
- Sample size was determined and no explanation of any interim analyses and/or stopping rules
- Method used to generate the random allocation sequence, including details of any restriction not reported
- Method used to implement the random allocation sequence not reported
- Whether the sequence was adequately concealed until interventions were assigned
- Whether the allocation sequence was reported
- Whether the sequence was adequately concealed until interventions were assigned
- Method used to implement the random allocation sequence not reported
- Level of evidence: 1

**Lee et al. 2012**
- Sample size was determined and no explanation of any interim analyses and/or stopping rules
- Whether the sequence was adequately concealed until interventions were assigned
- Method used to implement the random allocation sequence not reported
- Level of evidence: 1

### Authors’ conclusion

**Elhakim et al. 2010**
"In thoracic surgery with one-lung ventilation (OLV), the use of epidural dexmedetomidine decreases anaesthetic requirements significantly, prevents awareness during anaesthesia and improves intraoperative oxygenation and post-operative analgesia"

**Lee et al. 2012**
"The use of epidural magnesium decreases analgesic requirements significantly, reduces the incidence of chronic postoperative pain, and improves patient comfort and satisfaction."

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*Note: The above text is a natural language representation of the provided document.*
Mohammad et al. 2015
A randomized double blind study to evaluate efficacy and safety of epidural magnesium sulphate and clonidine as adjuvants to bupivacaine for postthoracotomy pain relief. Anesth Essays Res. 2015 am(3):15-20

Reference

<table>
<thead>
<tr>
<th>participants' characteristics</th>
<th>intervention group/ control group</th>
<th>outcomes</th>
<th>critical appraisal/ conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>age (yrs)</td>
<td>P&lt;0.001</td>
<td>postoperative pain: mean cumulative 24 h VAS (±SD) after surgery:</td>
<td>&quot;The epidural administration of magnesium from before the induction of anaesthesia to 48 h postop in patients undergoing VATS did not decrease significantly the incidence or severity of CPOP. However, magnesium administration resulted in better pain relief at 12 and 24 h postop compared with the control group.&quot;</td>
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<td>B</td>
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<td>1, 12, 24, 48</td>
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Inclusion criteria
- age 20–60 yrs
- ASA physical status I–III
- exclusion criteria
- ASA physical status > IV
- BMI >30 kg/m²
- hypersensitivity to drugs in the study
- severe renal, hepatic, or neurologic disease
- patients using opioid or systemic analgesic pre intervention
- timing defining the period of recruitment and follow-up not reported
- did not report 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 or not participants, those administering the interventions, and those assessing the outcomes were aware of group assignment
- level of evidence: 1
- authors' conclusion
"Thoracic epidural analgesia using bupivacaine with clonidine is an efficient therapeutic modality for post-thoracotomy pain. Magnesium as an adjuvant provided postoperative analgesia, decreasing the need for postoperative rescue analgesia and incidence of postoperative shivering without causing sedation"
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<tbody>
<tr>
<td></td>
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<td>C 30 210 165±49.15 B&amp;C  p=0.0.57</td>
<td>adverse effects/ events: n</td>
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<td>*p&lt;0.05</td>
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