TOTAL ABDOMINAL HYSSTERECTOMY WITH BILATERAL SALPINGO-OOPHORECTOMY

Review of evidence
• Eight studies have assessed the postoperative analgesic efficacy of surgical site infusion following total abdominal hysterectomy with bilateral salpingo-oophorectomy (BSO). Four were randomized, double-blind and placebo-controlled (Gupta et al. 2004, Kristensen et al. 1999, Leong et al. 2002, Zohar et al. 2001), and four were randomized and double-blind, but not placebo-controlled (Gupta et al. 2005, Hafizoglu et al. 2008, Perniola et al. 2009, Zohar et al. 2004).
• In three studies, local anaesthetic surgical site infusion was associated with a significant decrease in postoperative pain and analgesic requirements (Gupta et al. 2004, Gupta et al. 2005, Zohar et al. 2001). In one study, surgical site infusion was not associated with improved pain scores when compared with placebo (Leong et al. 2002).
• No difference in analgesic efficacy was seen between ropivacaine 0.1% and 0.2% (Zohar et al. 2004), or between levobupivacaine 7.5 mg/h, 12.5 mg/h and 17.5 mg/h (Perniola et al. 2009).
• In one study, catheter placement above the fascia appeared to be more effective than below the fascia (Hafizoglu et al. 2008).
• Overall, surgical site infusion was not associated with clinically significant complications or side effects. There was no evidence of systemic or local surgical site infection (Gupta et al. 2004, Kristensen et al. 1999, Leong et al. 2002, Zohar et al. 2001, Zohar et al. 2004), and the incidence of nausea or vomiting was either decreased or unchanged when compared with controls (Gupta et al. 2004, Zohar et al. 2001, Zohar et al. 2004).
<table>
<thead>
<tr>
<th>Publication</th>
<th>Grade* (1–13)</th>
<th>Number of patients</th>
<th>Catheter type and location</th>
<th>Preclosure bolus</th>
<th>Postoperative administration</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gupta et al. Anesth Analg 2004</td>
<td>8</td>
<td>40</td>
<td>Multiholed Supravaginal</td>
<td>20 mL (50 mg) levobupivacaine</td>
<td>Levobupivacaine 0.25% continuous infusion</td>
<td>↓ Pain  ↓ Rescue medication  ↓ Nausea</td>
</tr>
<tr>
<td>Gupta et al. Middle East J Anesth 2005</td>
<td>5</td>
<td>100</td>
<td>Multiholed (converted from epidural) Above the fascia</td>
<td>Not used</td>
<td>Bupivacaine 0.25% continuous infusion</td>
<td>↓ Nausea and vomiting  ↓ VAS pain scores</td>
</tr>
<tr>
<td>Hafizoglu et al. Anesth Analg 2008</td>
<td>5</td>
<td>62</td>
<td>Multiholed 20G epidural Above vs below the fascia</td>
<td>Not used</td>
<td>PCSSA bupivacaine 0.25%, 9 mL, 60 min lockout for 24 h</td>
<td>Above fascia:  ↓ Bupivacaine  ↓ Rescue medication  ↓ VAS pain scores  ↑ Satisfaction</td>
</tr>
<tr>
<td>Kristensen et al. Reg Anesth Pain Med 1999</td>
<td>5</td>
<td>41</td>
<td>Multiholed between the peritoneum and muscle layer</td>
<td>Not used</td>
<td>Intermittent bupivacaine 0.25%</td>
<td>No difference</td>
</tr>
</tbody>
</table>

**Table 19.** Summary of literature for total abdominal hysterectomy with bilateral salpingo-oophorectomy.
<table>
<thead>
<tr>
<th>Publication</th>
<th>Grade* (1–13)</th>
<th>Number of patients</th>
<th>Catheter type and location</th>
<th>Preclosure bolus</th>
<th>Postoperative administration</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leong et al. <em>Aust NZJ Obstet Gynaecol</em> 2002</td>
<td>3</td>
<td>52</td>
<td>Epidural Above the fascia</td>
<td>Not used</td>
<td>Bupivacaine 0.5% continuous infusion</td>
<td>No difference</td>
</tr>
<tr>
<td>Perniola et al. <em>Eur J Anaesth</em> 2009</td>
<td>10</td>
<td>59</td>
<td>Multiholed Supravaginal</td>
<td>20 mL of study solution subcutaneously, + 20 mL via catheter</td>
<td>Levobupivacaine: 7.5 mg/h (1) 12.5 mg/h (2) or 17.5 mg/h (3) continuous infusion for 48 h</td>
<td>No difference between groups</td>
</tr>
<tr>
<td>Zohar et al. <em>Anesth Analg</em> 2001</td>
<td>6</td>
<td>36</td>
<td>Epidural Above the fascia</td>
<td>Not used</td>
<td>PCSSA bupivacaine 0.25%</td>
<td>↓ Opioid medication ↓ Nausea ↑ Satisfaction</td>
</tr>
<tr>
<td>Zohar et al. <em>J Clin Anesth</em> 2004</td>
<td>6</td>
<td>40</td>
<td>Epidural Above the fascia</td>
<td>Not used</td>
<td>PCSSA ropivacaine 0.1% or 0.2%</td>
<td>No difference</td>
</tr>
</tbody>
</table>

*Table 19 cont.* Summary of literature for total abdominal hysterectomy with bilateral salpingo-oophorectomy.

*see page 15 for grading of publications.
Practical details for total abdominal hysterectomy with BSO

Catheter type
• Three studies used a standard epidural catheter (Leong et al. 2002, Zohar et al. 2001, Zohar et al. 2004), one converted a standard epidural catheter into a multiholed catheter by piercing the catheter wall with a 26G needle (Gupta et al. 2005), and four used a multiholed catheter (Gupta et al. 2004, Hafizoglu et al. 2008, Kristensen et al. 1999, Perniola et al. 2009).
• Both epidural and multiholed catheters were associated with improved postoperative analgesia.

Expert opinion
A multiholed catheter placed along the entire length of the wound is suggested, because intuitively this seems likely to produce better results than a standard epidural catheter. However, there are no double-blind, randomized studies comparing the efficacy of different catheter types.
Evidence grade: Moderate

Catheter placement
• In four studies, the catheter was placed above the fascia (Gupta et al. 2005, Leong et al. 2002, Zohar et al. 2001, Zohar et al. 2004). In two studies the catheter was placed supravaginally (Gupta et al. 2004; Perniola et al. 2009) and in another between the peritoneum and muscle layer (Kristensen et al. 1999).
• Catheter placements above the fascia and supravaginally were both associated with improved postoperative analgesia (Gupta et al. 2004, Zohar et al. 2001), but placement between the peritoneum and muscle layer (with bupivacaine 15 mL, 2.5 mg/mL) was not associated with improved pain scores, compared with placebo (Kristensen et al. 1999).
• In the study comparing catheter placements, catheters placed above the fascia were associated with reduced postoperative pain, decreased opioid requirement, and increased patient satisfaction compared with catheters placed below the fascia (Hafizoglu et al. 2008).
**Expert opinion**
Catheter placement above the fascia is suggested, although further studies are needed to confirm optimal catheter placement.
Evidence grade: **Moderate**

**Preclosure bolus administration**
- In two studies, 20 mL levobupivacaine was infiltrated subcutaneously before skin closure (Gupta et al. 2004; Perniola et al. 2009).

**Expert opinion**
Surgical site infiltration with levobupivacaine prior to wound closure is suggested, although further studies are needed to confirm the benefit of preclosure bolus infiltration. Since all patients received surgical site infiltration (levobupivacaine) prior to local anaesthetic administration, it is not possible to determine the relative contribution of the infiltration process to the overall outcomes. There are no double-blind, randomized studies assessing the efficacy of preclosure bolus infiltration.
Grading of evidence: **Moderate**

**Drug and dosing regimen**
- Bupivacaine 0.25% (Gupta et al. 2005, Hafizoglu et al. 2008, Kristensen et al. 1999, Zohar et al. 2001), bupivacaine 0.5% (Leong et al. 2002), ropivacaine 0.1% or 0.2% (Zohar et al. 2004), levobupivacaine 0.25% (Gupta et al. 2004) and levobupivacaine up to 17.5 mg/h (Perniola et al. 2009) have all been used.
- For total abdominal hysterectomy with BSO, ropivacaine 0.1% was associated with similar postoperative analgesia to ropivacaine 0.2% (Zohar et al. 2004). In a similar study, levobupivacaine 7.5 mg/h was associated with similar analgesia to levobupivacaine 12.5 mg/h and 17.5 mg/h (Perniola et al. 2009). These results suggest that there are no additive analgesic effects when higher dosages of local anaesthesia are administered.
Expert opinion
Bupivacaine 0.25–0.5%, ropivacaine 0.1–0.2% or levobupivacaine 0.25% or 7.5 mg/h are suggested. There are no comparative studies designed to determine the ideal drug, drug concentration or dosing regimen. Although not examined using a rigorous investigational technique, continuous infusion is likely to provide improved baseline analgesia and prevent breakthrough pain.
Grading of evidence: Moderate

Duration of infusion
• Durations of infusion of 24 h (Gupta et al. 2004, Gupta et al. 2005, Zohar et al. 2001, Zohar et al. 2004), 48 h (Leong et al. 2002, Perniola et al. 2009) and 52 h (Kristensen et al. 1999) have all been used.

Expert opinion
Up to 52 h infusion duration is suggested, but duration should be tailored to the patient’s needs.
Grading of evidence: Moderate

Key messages for total abdominal hysterectomy with BSO
• Surgical site infusion decreases postoperative pain and opioid requirements.
• Surgical site infusion is a useful alternative to patient-controlled, intravenous morphine.

References
For a list of additional references and suggestions for further reading, see Appendix 4.


