Surgical techniques in laparoscopic cholecystectomy: effect on postoperative pain

Background

- PROSPECT is a new initiative in the management of postoperative pain, which provides procedure-specific and evidence-based recommendations formulated by an international working group of expert surgeons and anesthesiologists.
- Laparoscopic cholecystectomy has become the gold standard for the treatment of symptomatic gallstones, and different operative techniques have been developed to improve the safety and effectiveness of this procedure.

Methods

- A systematic review of the literature was performed according to the protocol of the Cochrane Collaboration. MEDLINE and EMBASE were searched from 1966–June 2003 using predefined search terms. Reference lists of identified studies were also searched for further references.

Study inclusion criteria:
- Randomised clinical trials of operative techniques in laparoscopic cholecystectomy:
  - pain scores measured using a visual analogue scale (VAS) or verbal rating scale (VRS) (converted to VAS 1–10 cm)
- Where possible, meta-analyses were conducted on mean differences in postoperative VAS scores, grouped by time.

Results

- A total of twenty-four studies compared different operative techniques in laparoscopic cholecystectomy and reported postoperative pain scores. The following operative techniques were evaluated in more than one study and outcomes are summarized in Table 1:

<table>
<thead>
<tr>
<th>Technique</th>
<th>Outcomes reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasless technique versus conventional CO₂ pneumoperitoneum</td>
<td>Pain scores and analgesic use to the conventional CO₂ pneumoperitoneum technique in two studies.</td>
</tr>
<tr>
<td>Microscopic cholecystectomy versus conventional laparoscopic cholecystectomy</td>
<td>In three of six studies, microscopic cholecystectomy was associated with reduced overall pain scores compared with the conventional laparoscopic technique.</td>
</tr>
</tbody>
</table>
  | Low pressure CO₂ pneumoperitoneum | Low pressure CO₂ pneumoperitoneum was also associated with benefits, including the duration of hospital stay, and improvement of postoperative physical functioning, compared with conventional pressure.

Conclusions

- The postoperative analgesic effects of a number of other operative techniques were compared with standard laparoscopic cholecystectomy, but results were only available from single studies (Table 2).

Table 1. Effects of different operative techniques on postoperative analgesia: Techniques assessed in more than one study

<table>
<thead>
<tr>
<th>Technique</th>
<th>Outcomes reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasless technique versus conventional CO₂ pneumoperitoneum</td>
<td>Pain scores and analgesic use to the conventional CO₂ pneumoperitoneum technique in two studies.</td>
</tr>
<tr>
<td>Microscopic cholecystectomy versus conventional laparoscopic cholecystectomy</td>
<td>In three of six studies, microscopic cholecystectomy was associated with reduced overall pain scores compared with the conventional laparoscopic technique.</td>
</tr>
<tr>
<td>Low pressure CO₂ pneumoperitoneum</td>
<td>Low pressure CO₂ pneumoperitoneum was also associated with benefits, including the duration of hospital stay, and improvement of postoperative physical functioning, compared with conventional pressure.</td>
</tr>
</tbody>
</table>

Table 2. Effects of different operative techniques on postoperative analgesia: Techniques assessed in single studies

<table>
<thead>
<tr>
<th>Technique</th>
<th>Outcomes reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasless technique versus conventional CO₂ pneumoperitoneum</td>
<td>Pain scores and analgesic use to the conventional CO₂ pneumoperitoneum technique in two studies.</td>
</tr>
<tr>
<td>Microscopic cholecystectomy versus conventional laparoscopic cholecystectomy</td>
<td>In three of six studies, microscopic cholecystectomy was associated with reduced overall pain scores compared with the conventional laparoscopic technique.</td>
</tr>
<tr>
<td>Low pressure CO₂ pneumoperitoneum</td>
<td>Low pressure CO₂ pneumoperitoneum was also associated with benefits, including the duration of hospital stay, and improvement of postoperative physical functioning, compared with conventional pressure.</td>
</tr>
</tbody>
</table>

References