5mm laparoscopic cholecystectomy, an alternative?

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Objective

The aim of the study was to assess an alternative method to the Multiport (MP), SILS- and NOTES-cholecystectomy. So far, the laparoscopic cholecystectomy was usually conducted using a 5mm 25 degree angeld optic and 5mm clips. Until 2009 for the removal of the gallbladder from the abdominal cavity a periumbilical right 12mm trocar was introduced. After the introduction of SILS an NOTES we looked for an alternative solution to the cosmetically unfavourable 12mm periumbilical trocar incision. The new method had also to maintain the good results achieved so far with the MP cholecystectomy.

Methods

Between July 2009 and December 2013 we prospectively collected all data related to elective and acute laparoscopic cholecystectomies conduced with the modified 5mm trocar technique. After establishing the pneumoperitoneum with the Veres-needle periumbilical right, three 5mm trocars, periumbilical right, in the upper median- and in the right middle abdomen were introduced (Fig. 1).

After preparation of the cysticus duct and the cysticus artery both of them are sectioned after double 5mm clipping (Fig. 2).

Following mobilisation of the gallbladder antegrade with the scissors under continues hemostasis, the gallbladder is removed from the abdominal cavity in an Endobag®, by introducing a 10mm trocar through a transverse suprapubic incision (Fig. 3).

The anterior layer of rectus sheath fascia is closed by 2-0 resorbable single suture (Fig. 4). The 5mm incisions are closed by Steri Strip® or nonresorbabel intracutaneous suture which are removed on third postoperative day.

Table 1

<table>
<thead>
<tr>
<th>Inflammation Type</th>
<th>n</th>
<th>Mean Time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>without inflammation</td>
<td>36</td>
<td>37.1</td>
</tr>
<tr>
<td>chronic, scarred</td>
<td>44</td>
<td>48.4</td>
</tr>
<tr>
<td>acute, oedematous</td>
<td>7</td>
<td>52.9</td>
</tr>
<tr>
<td>acute necrotic, ulcerated</td>
<td>15</td>
<td>72.7</td>
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</tbody>
</table>

One patient with acute cholecystitis needed a temporary three months stenting of the extrahepatic bile duct, due to a leakage of the double clipped cysticus stump. The reason for the leakage was unclear. It could have been due to the inflammation, as the ERC showed a correct position of the clips.

Complications in using the 5mm trocars did not occur. We could observe no complications like bleeding or wound infection on the suprapubic trocar site. No patient had clinical signs of a trocar incisional hernia.

Conclusion

The 5mm trocar technique is safe and feasible.

The 5mm incisions on the upper and middle abdomen are almost invisible and free of complications (Fig. 5).

The extraction of the gallbladder through a suprapubic incision can often be made through a former Pfannenstiel incision.

The suprapubic 10mm incision is less painful, has no complications and is cosmetically favourable.

Especially female patients prefer the 5mm technique to the SILS- and NOTES- cholecystectomy.