Laparoscopic appendectomy in pregnancy*

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Summary. Since 1982 we have operated on more than 150 patients using the laparoscopic appendectomy technique. Our complication rate was 0.75% and the patients included six pregnant women in all stages of pregnancy. There were no complications in this group of six women.

Key words: Appendicitis – Pregnancy – Laparoscopic appendectomy

The diagnosis of appendicitis is very difficult in pregnancy and the frequency of a false diagnosis is 35%–55% [8]. The rate of abortion and premature births in association with appendicitis is 5%–6% [8]. The rates of maternal and fetal mortality with appendectomy in pregnancy have fallen continuously from 1920 to 1975. Appendectomy is associated with a high risk of maternal mortality, especially in the third trimester of pregnancy (Tables 1, 2).

Materials and methods

In 1982, laparoscopic appendectomy was carried out in Germany by Schreiber [11] and Semm [12]. The technique is the same as the one we have used for years in surgical endoscopy: three or four punctures are made for the optical system and the 5-mm working trocars.

At first, a scout view of the abdominal cavity is undertaken. The appendix is then gripped at the tip and the mesoappendix is thermocoagulated and resected step by step. Sometimes it is necessary to ligate the appendicular artery with a Roeder ligature. After skeletonization, the appendix is thermocoagulated at the base and ligated proximally and distally to the endocoagulated area. The suture material, which remains in the abdominal cavity is 2/0 monofilament polyamide and it is absorbed in 1 year.

One of the 5-mm working trocars is replaced by an 11-mm trocar, together with the appendix extractor. The appendix is pulled through the extractor after resection in the thermocoagulated area. Since 1989 we use a ND:Yag laser for coagulation and resection. The operation is concluded with disinfection of the appendix stump and examination of the ileum for Meckel’s diverticulum. The stump is not buried [11]. During the first trimester of pregnancy, the stab incisions for introducing the working trocars are placed in the suprapubic region and are placed higher on the right side of the abdominal wall as the pregnancy progresses.

Case reports (Table 3)

Cases 1 and 2

Two patients, aged 20 and 27 years, were both 8 weeks pregnant and in their first pregnancy. The first patient had had Sager disease (epilepsy)
Table 3. Laparoscopic appendectomy in pregnancy (n = 6)

<table>
<thead>
<tr>
<th>Week of pregnancy</th>
<th>Hospitalization (days)</th>
<th>Hospitalization postoperatively (days)</th>
<th>Antibiotics (days)</th>
<th>Tocolytics (days)</th>
<th>Other pathology</th>
<th>Fever (days)</th>
<th>Leukocytes</th>
<th>Histomorphology</th>
</tr>
</thead>
<tbody>
<tr>
<td>8th</td>
<td>18</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>Epilepsy</td>
<td>0</td>
<td>5,800</td>
<td>Chronic recurrent appendicitis</td>
</tr>
<tr>
<td>8th</td>
<td>15</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>Rotated ovarian cyst</td>
<td>0</td>
<td>10,300</td>
<td>Cystoma; chronic recurrent appendicitis</td>
</tr>
<tr>
<td>13th/14th</td>
<td>17</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>–</td>
<td>9</td>
<td>10,400</td>
<td>Chronic appendicitis</td>
</tr>
<tr>
<td>21st</td>
<td>11</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>–</td>
<td>2</td>
<td>9,100</td>
<td>Postinflamatory appendicitis</td>
</tr>
<tr>
<td>22nd/23rd</td>
<td>15</td>
<td>13</td>
<td>0</td>
<td>6</td>
<td>–</td>
<td>3</td>
<td>6,400</td>
<td>Chronic appendicitis</td>
</tr>
<tr>
<td>25th</td>
<td>15</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>–</td>
<td>0</td>
<td>9,700</td>
<td>Postinflamatory appendicitis</td>
</tr>
</tbody>
</table>

since birth and had had her last attack in 1978. She had pain in the right lower abdomen at the McBurney's point, but there was no fever or leukocytosis.

The second patient had a leukocytosis count of 10,300, pain in the middle lower abdomen, and a large rotated ovarian cyst 85 x 112 mm on the right side. The cyst was discovered by chance during a routine gynecological examination.

The appendices in both patients appeared to be edematous, with vascular injection. The cyst was treated by puncture, ligation and extirpation before appendectomy.

It was possible to save an ovarian remnant because of good blood flow to the ovary.

Case 3

This patient was in the 13/14 week of pregnancy. This also was her first pregnancy. She was 23 years old. For 2 days she had had pain in the abdomen and nausea but no diarrhea. When admitted to hospital she had a leukocytosis count of 10,400 and fever of nearly 38°C. Gynecological examination was normal. She was observed for a night and a day and treated with application of an ice pack. A laparoscopic appendectomy was carried out the following day. There were no signs of acute inflammation of the appendix.

Case 4

This 24-year-old woman presented in the 21st week of her first pregnancy. She had acute pain at McBurney's point. Obstetrical examination and CTG (cardiotocograph) were normal. She had a leukocytosis of 9,100 and her appendix was also swollen with edema.

Case 5

A 21-year-old woman from Spain in the 22nd/23rd week of her second pregnancy was admitted with slight uterine contractions, and her family doctor suspected appendicitis. Following examination, which revealed tenderness throughout the abdomen, we treated her with fenoterol, which was continued for 6 days. She had no leukocytosis (6,400). The next day when the contractions had ceased, I carried out a laparoscopic appendectomy. The appendix appeared normal.

Case 6

This 20-year-old woman came from Lebanon. She was in the 25th week of her pregnancy and had had pain in the right mid-quadrant of the abdomen for several years. This had become very severe for 3 days with radiation posteriorly on the right side. There was no diarrhea or nausea. The obstetric and CTG examination were normal. After observation for 4 days and without change in the clinical picture (leukocytosis about 10,000), I carried out a laparoscopic appendectomy. It was somewhat difficult to place the Verres needle in position without injuring the uterus because the fundus was already above the level of the umbilicus (Fig. 1). It is important for this maneuver that the patient is not obese, so that the abdominal wall can be detached from the uterus. The appendix seemed to be swollen with vascular injection at the tip.

Case 6, 1 week after delivery