Laparoscopic cholecystectomy in the obese patient

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Summary. Between September 1990 and September 1991 laparoscopic cholecystectomy (LC) was performed in 310 patients with symptomatic cholelithiasis by using a four-cannula technique. Of this group, 282 were normal or overweight (group A) and 28 were obese (group B) according to classification using the Body Mass Index. Forty-one patients had cholecystitis of varying degree. There were no deaths in this series. The conversion rate to laparotomy was 2.9% and the morbidity was 5.4%. There was no statistical difference between groups A and B in relation to the length of procedure, conversion rate, or morbidity. This small series suggests that laparoscopic access is still feasible, if at times difficult, in obese patients. Specific surgical techniques concerning instrument length and cannula placement that may be useful in obese patients are described.

Key words: Laparoscopic cholecystectomy – Laparoscopy – Cholecystectomy – Obesity

The laparoscopic technique for cholecystectomy is associated with markedly improved postoperative comfort and a clearly shortened convalescence, as has been shown in a number of large cases [1–3, 5–9, 11, 12]. Hospitalization lasts a few days, and patients return to normal activity including sports at the end of the first postoperative week. We thought it would be interesting to establish whether obesity posed any impediment to laparoscopic surgery and whether obese patients derived the same benefit from this technique as the nonobese.

Patients and methods

Between September 1990 and September 1991, 310 laparoscopic cholecystectomies (LCs) were performed for symptomatic cholelithiasis by three surgeons trained in laparoscopic surgery. The laparoscopic technique was used routinely in all patients in whom there was no contraindication to pneumoperitoneum. Over this period a conservative policy was maintained by our anesthetists in patients with cardiovascular disease considered at risk of cardiac decompensation during pneumoperitoneum. Thus 10 open cholecystectomies were performed electively. Neither obesity nor cholecystitis was a contraindication to the laparoscopic technique.

As prophylaxis against thromboembolism, all patients received subcutaneous low-molecular-weight heparin (Enoxaparine), 20 mg daily, regardless of weight, and were fitted with above-knee compression stockings.

The body mass index (BMI) of patients was calculated in the following way: weight (kg)/height²(m²) (Fig. 1) and then grouped according to a classification currently used by medical nutritionists [4]. There were 282 normal or overweight patients (group A) and 28 obese patients (group B) of which two were morbidly obese (Table 1).

The four-cannula technique described by Dubois and Perissat was used [3, 5]. The position of these cannulae was varied according to the patient’s body habitus. Operative cholangiography was performed in selected cases. Calculi too large to remove through the umbilical orifice were pulverized with intracorporeal ultrasonic lithotripsy.

Statistical method

Comparison of qualitative criteria was performed by using a chi-square test and of quantitative criteria using Student’s t-test. A value of P < 0.05 was considered significant.

Results

There were 41 cases of acute cholecystitis, 37 from group A (13.1%) and 4 from group B (14.3%).

The mean length of each procedure when conversion to laparotomy was not required was 84 ± 33 min. For LC in group A patients this was 82 ± 31 min and for group B patients 89 ± 32 min (Table 2). This difference was not statistically significant. There were 9 conversions to laparotomy (2.9%), 8 in group A, and 1 in group B (Table 3). Suction drainage was employed in 119 patients in group A (42%) and 11 patients in group B (39%).

There were no deaths in this series. Seventeen postoperative complications (5.4%) were recorded (Table 4) requiring reoperation on four occasions: three bile...
leaks and one stenosis of the common bile duct. Sixteen occurred in group A (5.6%), 5 (13.5%) of which came from the 37 patients in this group with acute cholecystitis. In group B, the one complication (3.5%) was an acute ascites in a 47-year-old woman with chronic liver disease unrecognized preoperatively who did not have acute cholecystitis. There were no thromboembolic complications. Postoperative hospitalization in uncomplicated cases was 3.5 ± 1.1 days in group A and 3.3 ± 0.8 days in group B (not significant). In those patients who suffered a complication, their postoperative stay was 12.3 ± 7.0 days in group A and 3.0 days in group B (one complication only).

Discussion

Obesity typically imposes unfavorable operating conditions. Abundant abdominal wall and intraabdominal fat makes exposure and dissection laborious. In the postoperative period, obesity hinders early mobilization. Thromboembolic and wound complications are more frequent. In these patients, true minilaparotomy is rarely possible.

It appears from this small series that for appropriately trained surgeons, obesity does not substantially increase the difficulty of the procedure: the operation is not significantly prolonged, nor is the rate of conversion to laparotomy increased. Laparoscopic access through a fatty abdominal wall avoids one factor related to obesity, as the view of the operative field by video camera is unchanged. Special techniques are necessary in the obese patient. The regular 120-mm cannula may be too short, necessitating one 150 mm in length. Having pierced the skin, the track through the abdominal wall should lead directly toward the operative site along an oblique path which should still be short enough to allow the tip of the cannula to extend beyond the peritoneal puncture and not slip back into the extraperitoneal plane. This reduces the amount of lateral force required to maneuver the laparoscope or tip of the operative instrument, reducing the annoying leak of gas which occurs when the cannula seal is distorted. This technique does not increase the apparent wound complications. If the laparoscope is too short to give an adequate view of the biliary pedicle, it should be introduced 4–5 cm above the umbilicus. It may be necessary to introduce a supplementary cannula into the right hypochondrium for a palpator used to retract the hepatic flexure of the colon or the greater omentum, which have a tendency to drape themselves over the region of the gallbladder. Lastly, a thickened falciform

Table 1. Grouping of patients according to body mass index

<table>
<thead>
<tr>
<th>Group</th>
<th>BMI</th>
<th>Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Normal &gt;25</td>
<td>207</td>
<td>66.0</td>
</tr>
<tr>
<td></td>
<td>Overweight ≥25 and &lt;29.9</td>
<td>75</td>
<td>24.0</td>
</tr>
<tr>
<td></td>
<td>Conventional obese ≥30 and &lt;40</td>
<td>26</td>
<td>8.4</td>
</tr>
<tr>
<td>B</td>
<td>Morbidly obese ≥40</td>
<td>2</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Table 2. Length of procedure as a function of obesity

<table>
<thead>
<tr>
<th>Group</th>
<th>BMI</th>
<th>Ave. Length</th>
<th>Range</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&lt;30</td>
<td>83 min</td>
<td>15–240</td>
<td>282</td>
</tr>
<tr>
<td>B</td>
<td>≥30</td>
<td>89 min</td>
<td>40–150</td>
<td>28</td>
</tr>
</tbody>
</table>

* The difference in time between groups was not significant