ABSTRACT

The objective of this study was to demonstrate the safety and feasibility of laparoscopic cholecystectomy in empyematous or gangrenous cholecystitis. During the period from August 1998 to April 2000, we operated laparoscopically on 64 patients, without any selection, in which we established, preoperatively or intraoperatively, the diagnosis of empyematous or gangrenous cholecystitis using clinical criteria (fever, leukocytosis, persistent pain, abdominal tenderness or guarding), echographic findings and intraoperative or pathological aspects of the gallbladder. The operations were performed by experienced surgeons skillful in advanced laparoscopic procedure. We concluded successfully 59 operations. The five conversions were due to dense adhesions because of previous gastric surgery in 3 cases, to the lack of recognizing the anatomy of the biliary tree in one case and to a choledoco-duodenal fistula in the last case. No mortality and a very low morbidity with a short hospital stay, were noted in our study. We consider patients with very acute cholecystitis to be candidates for a laparoscopic approach.

Key Words: Laparoscopic cholecystectomy, Acute cholecystitis.

INTRODUCTION

Laparoscopic cholecystectomy has become the standard treatment for symptomatic gallbladder disease. Its role in the surgical treatment of acute cholecystitis has recently been defined as the preferred approach.1 The gross pathological appearance of the gallbladder is categorized as acute inflammation, chronic inflammation, or no inflammation. In cases of very acute inflammation, there is an edematous gallbladder with or without a mucocele. In our surgical experience, we have not encountered more operative difficulty with very acute cholecystitis than in the other cases of gallbladder disease (Table 1). In cases of empyemic or gangrenous cholecystitis, the conversion rate to an open procedure as reported in the literature2 is very high, and some authors3 consider the very acute setting a contraindication to performing laparoscopic cholecystectomy. Other surgeons4 suggest that once this diagnosis is made, excessive time should not be dedicated to laparoscopic dissection before converting to an open operation.

In our experience, the most important element in laparoscopic surgery for very acute cholecystitis is to recognize the anatomy of the biliary tree. At present, acute cholecystitis has not been shown to be a significant risk factor for common bile duct injury.5 However, when such injury occurs, it tends to be more severe in patients with acute cholecystitis. Of course, biliary anatomy may be more difficult to identify in the presence of inflammation; this may lead to more extensive injury.6

Our surgical team has an extensive laparoscopic experience in biliary and advanced abdominal operations. We encounter a high incidence of acute inflammatory cases of gallbladder disease because of the location of our hospital with district, peripheral, and suburban referrals. Because of these factors, we tried to clearly define the feasibility and safety of a laparoscopic procedure in acute cholecystitis.

PATIENTS AND METHODS

From August 1998 to April 2000, 330 patients underwent laparoscopic cholecystectomy (Figure 1) in our surgical department. The only patients who were not offered...
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laparoscopic cholecystectomy were those who had a contraindication to general anesthesia or to the laparoscopic procedure. In this group, 64 patients were diagnosed with very acute cholecystitis (empyemic or gangrenous) based on preoperative clinical criteria, intraoperative findings, and pathological examination of the specimen.

The clinical criteria were leukocytosis, fever, vomiting, persistent typical pain, abdominal tenderness or guarding (both localized and generalized), echographic findings (increased thickness of the gallbladder wall, surrounding edema, localized abscess). Intraoperative findings were an acute edematous gallbladder, a gangrenous gallbladder (black-violet and fragile wall, sometimes perforated with a subhepatic abscess or a diffuse or localized peritonitis), or an empyemic gallbladder (full of purulent fluid). Finally, the postoperative pathological findings were acute, chronic, or gangrenous cholecystitis.

The 64 patients consisted of 47 males and 17 females. The mean age was 59 years (range 30 to 80 years). Five patients had previously undergone a subtotal gastrectomy, and one had surgery for a perforated duodenal ulcer (simple closure and vagotomy).

Because of the potential for developing adhesions around a very inflamed gallbladder, we elected to operate on our patients 1 to 3 days after hospital admission, to avoid encountering dense adhesions. This required many unscheduled emergency operations. Experienced surgeons performed all of the procedures.

All patients were operated on while in the French position (surgeon between the legs). Four ports were used, the first one inserted in the umbilicus employing an open technique. The pneumoperitoneum was maintained at 12 mm Hg. Antibiotic prophylaxis with 2 g of cefazolin was administered at the induction of anesthesia and 2 times a day for 24 hours. Anticoagulant therapy was administered only in patients with a high risk of deep venous thrombosis or pulmonary embolism. The median operative time was 90 minutes (range 60 to 180). An intraoperative cholangiogram was obtained in 2 cases. In those cases that presented with a possibility of common bile duct stones, preoperative ERCP was obtained. A subhep-

Table 1.
Laparoscopic Cholecystectomy for Acute Cholecystitis (all types). Modified with permission, Bender and Zenilma. *Surg Endosc.* 1995;9:1081-1084 (reference n. 2, 3, 4, 5, 6, 7, 9)

| Author    | Conversion % | Morbidity % |
|-----------|--------------|-------------|
| Rattner   | 35           | 10          |
| Cox       | 35           | 12          |
| Zucker    | 26.5         | 16.9        |
| Fried     | 20.6         | 10.4        |
| Orlando   | 15           | ns          |
| Miller    | 13.8         | 10.3        |
| Bender    | 7.7          | 3.8         |

ns=not significant

Figure 1. Personal experience. August 1998 through April 2000.
atic drain was left in place for 1 or 2 days in 15 cases. All patients were discharged 2 or 3 days postoperatively.

We successfully performed 59 operations laparoscopically and converted 5 cases to an open procedure. Four of the 5 conversions were due to dense adhesions (2 patients had previously undergone subtotal gastrectomy) that made it impossible to safely free the colon from the gallbladder and dissect Calot’s triangle. The fifth conversion was due to a cholecysto-duodenal fistula with a large stone in the ileum. In this case the gallbladder was empty at the time of operation and we converted to an open procedure to find the stone in the small bowel.

The mortality rate for this series was 0% and the major morbidity (CBD lesion, subphrenic abscess, etc.) rate was also 0%. The minor morbidity rate was 5% (2 umbilical infections, 1 mild pulmonary infection).

SURGICAL PROCEDURE

The first trocar is inserted through the umbilicus under direct vision. After the remaining trocars are inserted, the gallbladder is aspirated grasping it firmly at the fundus and near the cystic duct. Adhesions are divided utilizing sharp and blunt dissection. An aspirator is essential and suctioning is performed as necessary to avoid any blind maneuvers. In case of gallbladder rupture, immediately aspirate the contents and close the gallbladder opening with clips, stitches, or forceps. An important step to aid in identifying the cystic duct and artery in these cases of very acute cholecystitis is to avoid a retrograde dissection of the gallbladder. Dissection of the gallbladder in this manner can elicit continuous bleeding from the hepatic bed that may impair vision. A posterior dissection of Calot’s triangle is safe and feasible in most cases. Gentle traction of the infundibulum forward and laterally is useful. Identify the CBD before securing the cystic duct with clips or endoloops. It is sometimes useful to divide the cystic duct in order to identify the cystic artery. Avoid a blind retrocystic dissection that may damage the artery itself. Place the gallbladder in an endo retrieval bag in order to avoid port-site infection or loss of stones. Irrigate the field and install a drain in cases that involved difficult hemostasis or purulent discharge from the gallbladder.

Essentials for performing a laparoscopic cholecystectomy for very acute situations are: (1) operate less than 72 hours from the onset of the acute attack, (2) an experienced surgeon (more than 200 cholecystectomies), (3) nurses well trained in advanced laparoscopic procedures, and (4) good instrumentation (particularly a good CCD camera, 30° optics, and a aspiration-irrigation device).

RESULTS

A retrospective comparison of open cholecystectomy versus a laparoscopic approach in cases of very acute cholecystitis operated in our hospital, shows some clear advantages. There was less postoperative pain in the laparoscopic group (no major anti-dolorific agents in laparoscopic procedure). Morbidity and mortality was lower. Postoperative hospital stay was shorter for the laparoscopic group (3 days vs. 8 days), and patients returned to social activity sooner (10 days vs. 30 days).

CONCLUSIONS

Laparoscopic cholecystectomy in a very acute, septic setting is effective and safe in well-trained surgical hands with all the advantages that a laparoscopic procedure can currently offer.

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