

Outcome of laparoscopic cholecystectomy in acute and chronic cholecystitis

Omar S. Khattab* MBChB, HDS, HDLM, DMAS, FICMS, CABS

Summary:

Background: laparoscopic cholecystectomy is standard treatment in gallbladder disease. Acute cholecystitis has been relative contraindication of laparoscopic cholecystectomy. With the accumulation of experience in laparoscopic surgery, laparoscopic cholecystectomy is being gradually applied for the treatment of acute cholecystitis

Objective: to evaluate and compare the outcome of laparoscopic cholecystectomy in acute and chronic cholecystitis in terms of complications, conversion rates, reason of conversion, need for special modifications of the operative technique, and hospital stay.

Methods: A prospective study done Between April 2007 and January 2010, in the department of general surgery, medical city teaching hospital, Baghdad. Evaluation of all patients admitted with symptomatic gall bladder disease, who underwent laparoscopic cholecystectomy were included in this study. They were classified as group A (having acute cholecystitis) and group B (having chronic cholecystitis), The diagnosis of AC was based on clinical, ultrasonographic, and operative finding; also histological diagnosis.

Results: A total of 197 patients. 46 (23%) had acute cholecystitis (group A) while 151 patients (76.6%) had chronic cholecystitis (group B). In group A, Gall bladder decompression was required in 4 (8.7%) patients. One patient (2.2%) had wound infection, and one patient (2.2%) developed a subhepatic biliary collection. While epigastric port hernia occurs in one patient (2.2%). In group B, One patient (0.7%) had wound infection, and one patient (0.7%) had umbilical port hernia. Conversion rate was 3(6.5%) for group A and 0% for group B. There was no procedure related mortality in either group. The hospital stay (6-24 hours) was the same for both groups (group A; mean 9.13±6.89 hours, group B; mean 15.77±8.99 hours).

Conclusion: laparoscopic cholecystectomy is safe in all patients presented with symptomatic gall bladder disease.

Key words: laparoscopic cholecystectomy, acute cholecystitis, chronic cholecystitis, conversion.

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Introduction:

Laparoscopic cholecystectomy (LC) has become the first line surgical treatment of symptomatic gallbladder disease and the benefits over open cholecystectomy (OC) are well known (1,2,3,4). It is widely believed that laparoscopic cholecystectomy for acute cholecystitis (AC) is associated with technical difficulties resulting in higher conversion and complication rates, Despite recent reports on the safety and efficacy of LC in treating acute cholecystitis, its role in the management of this condition remained controversial because of the potential hazard of severe complications and the high incidence of conversion to open surgery (5,6,7,8). This conversion may result in loss of all the economic advantages of this minimally invasive procedure.

The present prospective study was conducted to assess the feasibility and outcome of LC in patients with AC as compared to those with chronic cholecystitis (CC) in terms of complications, conversion rates, reason of conversion, need for special modifications of the operative technique and hospital stay.

Method:

A prospective study done Between April 2007 and January 2010, in the department of general surgery, medical city teaching hospital, Baghdad. Evaluation of all patients admitted with symptomatic gall bladder disease, who underwent LC were included in this study. They were classified as group A (having AC) and group B (having CC), The diagnosis of AC was based on the following diagnostic criteria; acute upper abdominal pain with tenderness under the right costal margin, fever above 37.5°C and/or leukocytosis more than 10,000 / m m³, and ultrasonographic evidence, (thickened or edematous gall bladder wall, presence of gall stones, ultrasonographic Murphy's sign, and pericholecystic fluid collection). In addition, the diagnosis of AC or CC was confirmed by the operative finding, and histopathologic examination after surgery. Cases in which clinical, biochemical, and radiological investigations suggested common bile duct stones, or malignancy or those unfit for general anesthesia were excluded from the study. Previous abdominal surgery was not considered a contraindication to LC. All patients received 2 doses of third generation, cephalosporin (1gm), and one dose of gentamycin (80mg) as prophylactic antibiotic, then oral antibiotics including ciprofloxacin (500mg, twice/d)

* Dept. Of Surgery, College of medicine, Baghdad University.

and Trimethoprim (500mg, 2 tab.twice/d) for 5 days.

Laparoscopic cholecystectomy was carried out by 3 ports technique in 107 (54.3%) patients, and 4 ports technique in 90 (45.7%) patients. Gall bladder was extracted through epigastric port. Drain was used for all patients, removed after 6-24 hours.

Patients operated by 3 ports were discharged after 6 hours, while patients operated by 4 ports were discharged after 24 hours. They were advised to come for follow up after 7 days, one month, and 3 months after discharge. A thorough history and physical examination, with particular attention to the operative site, presence of jaundice and abdominal distension were undertaken on every visit. Liver function test, and abdominal ultrasound were carried out after one month. The data collected were regarding demographic information, histological diagnosis, conversion rate, reason for conversion, hospital stay, early (hemorrhage, wound infection, iatrogenic injuries) and late complications (biliary stricture, incisional hernia). The data were analyzed by computer, using SPSS (version 10) for statistical analysis. categorical data comparison was made by Chi-square and Fischer exact tests. Numerical variable comparison was made by student T test. A p value < 0.05 was considered statistically significant.

Results:

A total of 197 patients were admitted with symptomatic cholelithiasis over the study period. 46 patients (23%) had AC (group A) while 151 patients (76.6%) had CC (group B). The gall bladders of patients with AC were more often tensely distended and filled with turbid bile or pus. Severe adhesions

were also seen more frequently among patients with AC (45.7%) than among those with CC (6%). 38 patients (19.3%) had previous abdominal operations, 5(2.5%) of them with history of gastric surgery and the visiport was used. In group A there were 31 female (67.4%) and 15 (32.6%) male patients. Age range 16-66 years (mean 46.56 years \pm 12.49), the commonest age group was between 31-40 years (**figure 1**). 9 (19.6%) had complicated disease; empyema gall bladder 6 (13%), gangrenous gall bladder 2 (4.3%), and mucocele 1 (2.2%). Gall bladder decompression by needle aspiration was required in 4 (8.7%) patients. One patient (2.2%) had wound infection, and one patient (2.2%) developed a subhepatic biliary collection, presented with sudden onset severe abdominal pain one week post operatively, diagnosed by abdominal ultrasonography as subhepatic biliary collection, which was managed by laparoscopic tube drain insertion and antibiotics. While epigastric port hernia occurs in one patient (2.2%), (**table 1 and 2**). In group B there were 136 female (90.1%) and 15 (9.9%) male patients. Age range 15-83 years (mean 40.86years \pm 12.50), the commonest age group was between 31-40 years (**figure 1**). One patient (0.7%) had wound infection, and one patient (0.7%) had umbilical port hernia, (**table 1 and 2**).

Conversion rate was 3(6.5%) for group A and 0% for group B. difficult dissection at calot's triangle due to dense adhesions was the most common indication for conversion. There was no procedure related mortality in either group. The hospital stay (6-24 hours) was the same for both groups (group A; mean 9.13 \pm 6.89 hours, group B; mean 15.77 \pm 8.99 hours).



Figure 1: age distribution in both groups

Table 1: Demographic and Laboratory findings

	Group A Acute Cholecystitis	Group B Chronic Cholecystitis
Age*	46.56	40.86
Sex (male/female)	15/31	15/136
White blood cell count (/ml)*	11727.7	6763.5
Aspartate aminotransferase (U/L)*	18	15
Alanine aminotransferase (U/L)*	20	14
Alkaline Phosphatase (U/L)*	100	40
s.- bilirubine (mg/dl)*	1.3	1.2
* = Mean		

Table 2: Operative findings, modifications, conversion rate, complications.

	Group A Acute Cholecystitis n (%)	Group B Chronic Cholecystitis n (%)	p Value
Operative Findings:			
empyema gall bladder	6 (13%)	0 (0%)	< 0.05
gangrenous gall bladder	2 (4.3%) 1 (2.2%)	0 (0%) 0 (0%)	NS NS
pericholecystic abscess	1 (2.2%) 20 (43%)	0 (0%) 0 (0%)	NS NS
mucocele	8 (17.4)	2 (1.3%)	< 0.05
Tensely distended GB	21(45.7%)	9 (6%)	< 0.05
Turbid bile/pus in GB			
Severe adhesions			
Modifications of Technique:			
GB decompression	4 (8.7%)	0 (0%)	< 0.05
Sutures for cystic duct	1 (2.2)	0 (0%)	NS
Conversion Rate	3(6.5%)	0 (0%)	NS
Complications			
Bile leak	1 (2.2)	0 (0%)	NS
Hemorrhage	0 (0%)	0 (0%)	NS
Wound infection	1 (2.2)		NS
Port hernia	1 (2.2)	1 (0.7%)	NS
Mortality	0 (0%)	0 (0%)	NS
Hospital stay	9.13±6.89 hours	15.77±8.99 hours	NS
NS = not significant			

Discussion

Since its introduction in the late 1980s, laparoscopic cholecystectomy has rapidly gained acceptance as the gold standard treatment for symptomatic gall bladder disease (9). Until recently, AC was considered a relative contraindication to LC due to higher incidence of complications, including bile duct transection (10,11,12). With improvements in instruments and technique, the number of reports on LC for AC has increased, with conversion rates ranging from 6.5% to 35% (13,14,15).

Its well recognized, that in AC there is an increased rate of conversion to open procedure when compared to CC (16,17). In the present study, the conversion rate was higher in AC (6.5%).

conversion should not be regarded as failure or complication rather an attempt to avoid major life threatening complications. There is a significant variation in the published conversion rates (0.7-32%) (7, 17, 18). This is probably due to the difference in patient selection as well as difference in practice and individual experience. With experience, patience, careful dissection, and identification of vital structures, the surgeon can safely complete a LC for AC in almost all cases. Adoption of an initial conservative approach in patients with AC does not seem to improve the success rate of LC. In fact, the conversion rate for delayed (interval) LC proved to be higher than that for early surgery in AC (19).

However, performing LC during the acute phase requires more frequent modifications in operative technique and thus a longer operative time. In some cases, decompression of a tensely distended gall bladder by needle aspiration is necessary. In case of AC, the gall bladder may contain turbid bile or even pus. Thus, the surgeon must take extra precautions, including the use of suction drains, in some cases, to avoid bile collection with its potential risk of infection.

The most debatable issue in LC is the fear of having bile duct injury (BDI), AC is considered as a risk factor for BDI and the reported incidence varies from 0.2-2% (7,20). In this study there is no reported BDI in both groups, such low incidence is also published in other studies (20,21).

One patient (2.2%) in group A developed a subhepatic biliary collection, which was managed by laparoscopic tube drain insertion and antibiotics. This is comparable to other studies (12,17,22).

One patient (2.2%) in group A, and One patient (0.7%) in group B had wound infection, while this prevalence is 1-5% in other studies (22,23).

The hospital stay was the same in both groups. Laparoscopic cholecystectomy is now performed as an outpatient procedure; this decreases the hospital cost significantly and is also acceptable to the majority of patients (24).

In conclusion laparoscopic cholecystectomy is safe in all patients presented with symptomatic gall bladder disease.

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