

Outcome of Early Laparoscopic Cholecystectomy for Acute Cholecystitis

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Abstract

Objectives: To evaluate surgical outcome of early laparoscopic cholecystectomy in acute Cholecystitis at tertiary care hospitals.

Patients and Methods: This cross-sectional study was conducted at CMH Peshawar, Social security hospital, Islamabad, Ahmed medical complex, Rawalpindi from Nov 2009 to Mar 2016. About 311 cases who underwent early cholecystectomy for acute cholecystitis were included in the study. The diagnosis of acute cholecystitis was made on clinical grounds and investigative findings available. Patients with common bile duct stones, obstructive jaundice and perforated gall bladder were excluded from the study. All data was recorded and evaluated using SPSS.

Result: Out of 311 patients with acute cholecystitis who underwent early laparoscopic cholecystectomy, female to male ratio was 2.4:1. The mean age was 46.6years \pm 14.2 SD. The mean operative time was 49.12 min \pm 22.70 SD. Mean hospital stay was 1.37 \pm 1.66 days (range 1 - 20 days). Conversion rate to open surgery was 3.2%. The operative complications included cystic artery bleeding in 0.3% patient, and common hepatic duct injury in 0.3% patient. Postoperative complications were bleeding in 0.96% patients, sub phrenic collection 0.64% patient, abscess around drain site 0.32%, port site infection in 1.61% patients, and umbilical port hematoma in 0.32% patient.

Conclusion: Early laparoscopic cholecystectomy is a reliable, safe and cost effective treatment modality

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Introduction

Surgery for Acute Cholecystitis (AC), either open or laparoscopic, has always been a challenge and surgeons have therefore, a divided opinion to operate early or treat conservatively.^{1,2} AC was initially thought to be a contraindication for laparoscopic cholecystectomy (LC). Now as the experience is increasing laparoscopic surgeons are gradually overtaking open cholecystectomy as the preferred procedure even in an acute setting.³ In America and Europe, more than 90% of cholecystectomies are performed laparoscopically and about 10–30% of cholecystectomies are performed for acute cholecystitis.⁴⁻⁶ The optimal timing of surgical treatment of acute cholecystitis remains controversial and has been debated extensively with many units favoring an early intervention within the first week, whereas others suggest that a delayed approach is preferable. Early cholecystectomy is defined as a surgery within 4 to 7 days after onset of admission. Delayed cholecystectomy is defined as a delay of treatment for 6 to 12 weeks after the index admission. About 17.5 % (range 13.9–25 %) of patients in which surgery is delayed require urgent surgery during the interval period, for failure of conservative treatment or recurrent symptoms after discharge, and in this subset the conversion rate is 45%.⁷ Early surgery has been evaluated to cause less surgical trauma, lesser hospital stay, cheaper and productive of better quality of life as compared to delayed treatment.⁸⁻¹⁰ The European Association for Endoscopic Sugary (EAES) Consensus Conference statements also assert early laparoscopic cholecystectomy to be the treatment of choice for AC. Furthermore, several reports show that early cholecystectomy is safe and effective even in the severe forms of the disease such as gangrenous, perforated or emphysematous gallbladder or in the elderly population.¹¹⁻¹⁴ There is clearly a higher rate of conversion in the setting of AC. It is lowest (9.5 %) if surgery is performed within 2

days from the onset of symptoms, rises to 16 % if surgery is done within 4 days. Thereafter the conversion rate is similar to that of delayed surgery (38.9 %).¹⁵ The present study was conducted to assess outcome of early LC for AC in our settings.

Patients and Methods

This descriptive study was conducted from November 2009 till March 2016 at CMH Peshawar, Ahmed Medical Complex Rawalpindi and Social security hospital Islamabad. Out of 1230 patients with gall bladder disease 730 underwent laparoscopic cholecystectomy. Amongst these 730 patients, 311 who were suffering from acute cholecystitis were included in the study for evaluation. Patient selection for the study was based upon clinical diagnosis, findings of ultrasound examination, laboratory investigations and laparoscopic findings. All patients with acute calculous cholecystitis, acute acalculous cholecystitis and empyema gallbladder were included in the study. If LC was done within seven days of onset of symptoms, it was labelled early LC. It was considered delayed LC if it was done later on and was excluded from the study. Other exclusion criteria included patients with gallstones undergoing LC in which there was no evidence of gallbladder inflammation by clinical, radiological or laparoscopic findings and patients with choledocholithiasis and perforated gall bladder. Co-morbidities were noted. Pre-anaesthesia assessment was made in all cases and an informed written consent was taken from each patient prior to surgery. Pneumoperitonium was established by closed method using Veress needle in 70% cases and open technique in 30% cases. Laparoscopic cholecystectomy was started with a three port technique and 4th port was inserted whenever there was difficulty and need for additional support required. In cases of empyema gallbladder with thick pus the gallbladder was incised and contents sucked out and LC procedure carried onto completion. In case of spillage of stones or pus during laparoscopic surgery, all the stones were retrieved, thorough peritoneal lavage with 1 – 2 L of normal saline and drain was placed wherever necessary. The collected data included age, sex, diagnosis, co-morbidities, associated pathologies, conversion to open surgery and its reasons, operative time, post-operative hospital stay and complications. Follow up was done at out-patient department on 5th, 10th and 30th day. All the patients were asked to report to the consultant’s OPD in case of any late complications after 30th day of operation. Data was collected and entered on SPSS 15, for analysis. Descriptive statistics were used to describe the results.

Results

From November 2009 and March 2016, 311 cases of acute cholecystitis underwent early laparoscopic cholecystectomy with us. The age range was 15-90 years with mean age of 46.6 years \pm 14.2 SD. The female to male ratio was 2.4: 1.

The spectrum of patients depending upon the preoperative diagnosis and laparoscopic findings is given in Fig 1.

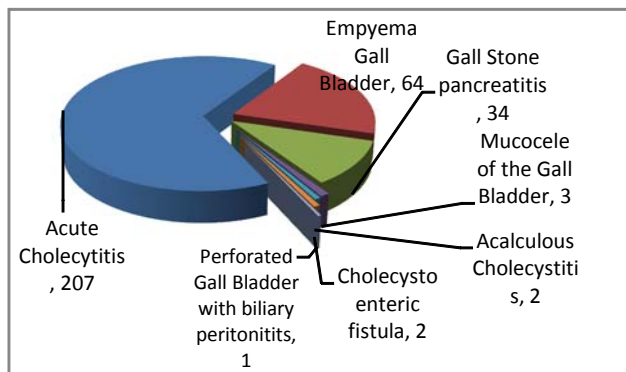


Figure 1: The spectrum of patients depending upon the preoperative diagnosis and laparoscopic findings.

Co-morbidities were diabetes mellitus (4.4%), HTN (20.2%) and both HTN and diabetes mellitus (7.9%) and 67.5% patients had no comorbidity. About 6 (1.9%) patients had small Para umbilical hernias in which umbilical port was placed by open technique after dealing with hernia. Six (1.9%) patients had cirrhosis of liver due to hepatitis C infection. Pneumoperitonium was established by closed method using Veress needle in 70% cases and open method in 30% patients. Laparoscopic cholecystectomy was done by using three port technique in 241 (77.5 %) patients and 4th port was used in 70 (22.5%), whenever its need was considered mandatory. Drain was used in 15(4.8%) patients. The operating time from skin incision for open technique or insertion of Veress needle for establishing Pneumoperitonium and closure of skin wound, ranged from 15 to 150 minutes (mean time 49.1 \pm 22.7 min). About 10 cases ended up with Open Cholecystectomy (OC). The reason of conversion to open is given in Table 1.

	No	Percentage
Common Hepatic Duct injury	1	0.32
Cystic artery bleeding	1	0.32
Cholecystoduodenal fistula	2	0.64
Choledocholithiasis	1	0.32
Difficult anatomy	5	1.61
Total	10	3.21

Gallbladder perforation during laparoscopic surgery was seen in 149 (47.9%) patients and this was not considered a complication. A meticulous effort was made to retrieve all spilled stones and no complication due to spilled stones was seen later on. Majority of patients 262 (84.2%) had multiple stones and single stone was seen in 49 (15.8%) of gallbladder specimens. The complications are listed in table no. 2. Length of postoperative hospital stay ranged from 1

day to 20 days. Average postoperative hospital stay was 1.37 ± 1.66 days.

	Number	Percentage
Reactionary bleeding	3	0.96
Subphrenic collection	2	0.64
Haemoperitoneum	1	0.32
ARDS	1	0.32
Abscess around drain site	1	0.32
Umbilical port infection	5	1.61
Umbilical port haematoma	1	0.32
Mortality	1	0.32

Discussion

AC is found in 3-10% of all the patients with abdominal pain and gallstones accounts for more than 90 % of causes of acute cholecystitis.^{16,17} The severity of the disease may range from a mild, self-limited illness to a severe, potentially life-threatening illness such as gangrenous, perforated or emphysematous gallbladder and empyema of gallbladder. Diagnostic criteria of acute cholecystitis depends upon a combination of local clinical features, systemic signs of inflammation, and imaging findings as suggested in the Tokyo Consensus Meeting Guidelines and the EAES guidelines of 2006 which can be used in the clinical practice with 100% specificity.^{18,19} However, in a number of cases, diagnosis of AC is only confirmed by laparoscopic findings. Since the introduction of LC by Muhe in Germany in 1985, laparoscopic cholecystectomy is the commonest operation performed for the gallbladder disease world-wide. It is estimated that 80 to 90% of cholecystectomies are performed by the laparoscopic approach.²⁰ Controversy exists about timing of early or delayed surgical intervention for AC. Dr Lo et al and several other studies have outlined benefits and statistical advantages for early laparoscopic cholecystectomy and they recommended surgery in first 48 hours after the onset of symptoms.²¹⁻²³

In this study, the 3 port technique has been used in more than two third of cases (66.7 %) and 4th port was used in 33.3 % patients whenever its need was warranted. Employing three port technique has also been evaluated to be safe.²⁴ The procedure is more tedious and takes longer in emergent cases than in the elective cases. The operative time ranged from 25 minutes to 150 minutes with mean operation time of 49.1 ± 22.7 min, which is quite less as compared to other studies.²⁴ Several authors have reported performing LC in cases of acute inflammation with success but with a higher conversion rate than for elective LC.^{25, 26} Conversion to open cholecystectomy should not be considered a failure. A study done by Shamim et al has reported conversion to open cholecystectomy in 5.06% patients with chronic cholecystitis and 24.39 % patients with acute cholecystitis.²⁷ In our series, only 10 cases (3.2%) were converted to open

cholecystectomy which is much lower than reported in other studies.

Laparoscopic cholecystectomy is associated with certain complications in 1 to 5% patients, either due to laparoscopy itself or cholecystectomy operation.²⁸ Our complication rate was 4.5 %. In the current case series major postoperative complications occurred in 7 patients (2.25 %) out of which 5 patients (1.61 %) underwent laparotomy. Bleeding is a known complication of laparoscopic cholecystectomy with incidence up to 10% as reported in different series.^{24,25} Primary bleeding occurred in one case due to avulsion of cystic artery which required conversion to open cholecystectomy. Reactionary haemorrhage occurred in three patients (0.96 %) from divided omental adhesions. Haemoperitoneum (0.32%) was diagnosed during second postoperative week due to oozing of blood from liver bed due to underlying coagulopathy. Mortality of 0.32% was seen in one patient of empyema gallbladder due to septicemia.

An average hospital stay after surgery was 1.37 ± 1.66 days which ranged from 1 to 20 days. Our study clearly showed laparoscopic cholecystectomy can be performed safely and effectively which reduces hospital stay significantly and early LC should be preferred. Moreover, all cases of acutely inflamed gallbladder either complicated or not can be treated laparoscopically early in acute setting, and complication rate can be further reduced by the increased skills and experience of the surgeon.

Conclusion

Early laparoscopic cholecystectomy can be performed for all forms, mild to severe, of acutely inflamed gallbladder safely. It is a cost effective modality of treatment for Acute Cholecystitis with acceptable hospital stay.

Conflict of Interest

This study has no conflict as declared by any author.

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