

Cholecystectomy Via Laparoscopy for Acute Cholecystitis

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ABSTRACT

Objective: The purpose of this study is to determine the outcomes of laparoscopic cholecystectomy among patients of acute cholecystitis.

Study Design: Retrospective study

Place and Duration: Jinnah International Hospital, Abbottabad and DHQ Hospital Battagram From Aug, 2021 to Jan, 2022.

Methods: There were 170 cases of both genders were presented in this study. Included patients were aged between 12-70 years. Included patients had acute cholecystitis were underwent for cholecystectomy and standard open procedure. After obtaining written consent, participants' personal information was collected, including their age, sex, BMI, and geographic location. Patients were equally divided into two groups. 85 patients received LC in group I and 85 patients received open procedure in group II. Post-operative outcomes among both groups were compared in terms of complications, efficacy, surgery time and pain score. SPSS 23.0 was used to analyze all data.

Results: Among 170 included patients, majority of the patients were females 105 (61.8%) and males were 65 (38.2%). Mean age of the patients was 37.07±16.67 years. Majority of the patients 125 (73.5%) had body mass index <25kg/m² and 45 (26.5%) had BMI >25kg/m². 70 (41.2%) were from urban areas and 100 (58.8%) patients were from rural areas. Frequency of gallbladder empyema was found in 110 (64.7%) cases followed by GB phlegmon in 48 (28.2%) cases and perforation in 12 (7.1%) cases. Mean operative time in group I was significantly lower 32.12±9.81 minutes and compared to group II 51.11±11.74 minutes with p value <0.02. Successful rate of LC was 85 (100%) and none of patient had bile duct injury. Post treatment, significantly fast recovery was found in LC group as compared to open surgery with p value 0.008. Frequency of complications was higher in group II 26 (30.6%) and as compared to group I 2 (2.4%). Lower pain score was found in LC group.

Conclusion: We concluded in this study that the acute cholecystitis was successfully treated by laparoscopic cholecystectomy with faster relief and lower operative time as compared to open surgery. Except this low pain score and complication rate was minimum observed after surgery in patients underwent for LC.

Keywords: Acute Cholecystitis, Laparoscopy, Open surgery, Complications, Pain score

INTRODUCTION

Standard therapy for acute cholecystitis is laparoscopic cholecystectomy (LC) [1]. There is evidence that LC has fewer complications and a quicker recovery time than open cholecystectomy (OC) [2,3]. In patients admitted with acute cholecystitis, it is recommended that cholecystectomy be performed as soon as possible rather than waiting until the acute phase has passed [4]. This is because early cholecystectomy is associated with a shorter postoperative hospital stay and lower hospital care costs.

When it comes to the senior population, gallbladder illness is by far the most prevalent reason for abdominal surgery [5]. In cases when LC poses too many risks, the surgeon may choose for an open operation instead. Acute cholecystitis LC has a greater chance of conversion than an elective surgery [6]. Patients having LC for acute cholecystitis are more likely to convert if they are male, older, have had an ERCP before, have a non-palpable gallbladder, have a high C-reactive protein and white blood cell count, have gangrenous inflammation, or have an inexperienced surgeon [7]. The rates of conversion and complications were not affected by conservative treatment with antibiotics and postponing the surgery until after the acute period [6,7]. There have been increased difficulties for patients who have undergone conversion, leading to further surgeries and lengthier hospital stays after the first procedure [8].

Edema, exudate, adhesions with surrounding structures, distension of the gallbladder, friability of tissues, unclear and distorted ductal and arterial morphology [9], hypervascularity, congestion, and the spread of infection all make LC more difficult and complex when acute inflammation is present. These variables increase the likelihood of a less-than-ideal result and prompt a greater proportion of patients to need an open cholecystectomy. Therefore, the patient misses out on LC, which is considered the "gold standard" for treating symptomatic gallstones [10].

With the development of LC, the advantages of early surgery have been the topic of considerable debate [11]. Prior to the development of LC, early open cholecystectomy was the chosen therapy of acute cholecystitis to minimise morbidity, mortality, and total hospital stay. Earlier LC for acute cholecystitis was linked to more complications, longer operation times, and higher conversion rates (5%-35%), according to early publications [12]. Consequently, it became standard practise [13] to use conservative therapy first and then have LC, either at a later date or as an elective procedure.

If cholecystectomy is delayed, the patient may have more difficulties from gallstones [14] and need longer hospitalisation. There has been recent research showing that early LC is a safe alternative in acute cholecystitis, albeit there may be a greater likelihood of conversion to open cholecystectomy [15].

Purpose of this study is to determine the successful rate of LC and their outcomes among patients of acute cholecystitis.

MATERIAL AND METHODS

This retrospective study was conducted at Jinnah International Hospital, Abbottabad and Ayub Medical College Abbottabad and comprised of 170 patients. After obtaining written consent, participants' personal information was collected, including their age, sex, BMI, and geographic location. Patients with acalculous cholecystitis, those did not provide any written consent were excluded.

Clinical symptoms (right upper quadrant pain, Murphy's sign, fever) and laboratory results (increased CRP and white blood cell count) led to the preoperative diagnosis of acute cholecystitis, which was confirmed by imaging findings (thickened gallbladder wall, stones, enlarged gallbladder, edoema, abscess). There was a tally of co-morbidities. Each patient had a preoperative evaluation and provided written permission before undergoing anaesthesia for surgery. 85 patients of group I received LC and group II received open surgery among 85 cases. The first stages of a laparoscopic

cholecystectomy were performed using a three-port approach, with the inclusion of a fourth port to facilitate the procedure if complications arose. The gallbladder was incised, the contents were sucked out, and the LC treatment was completed in instances with empyema gallbladder with thick pus. All stones were extracted, peritoneal lavage with 1–2 L of normal saline was performed, and a drain was implanted in areas where there had been pus or stone leakage during laparoscopic surgery. Age, sex, diagnosis, co-morbidities, related pathologies, conversion to open surgery and its causes, operational time, post-surgical hospital stay, and complications were all recorded. SPSS 23.0 was used to analyze all data.

RESULTS

Among 170 included patients, majority of the patients were females 105 (61.8%) and males were 65 (38.2%). Mean age of the patients was 37.07±16.67 years. Majority of the patients 125 (73.5%) had body mass index <25kg/m² and 45 (26.5%) had BMI >25kg/m². 70 (41.2%) were from urban areas and 100 (58.8%) patients were from rural areas.(table 1)

Table-1: Included patients with details demographics

Variables	Frequency	Percentage
Mean age (years)	37.07±16.67	
BMI		
<25kg/m ²	125	73.5
>25kg/m ²	45	26.5
Gender		
Male	105	61.8
Female	65	38.2
Residency		
Urban	70	41.2
Rural	100	58.8

Frequency of gallbladder empyema was found in 110 (64.7%) cases followed by GB phlegmon in 48 (28.2%) cases and perforation in 12 (7.1%) cases.(figure 1)

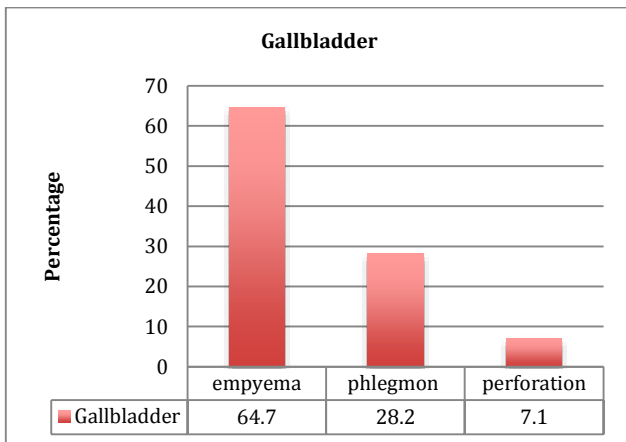


Figure-1: Association of different types of gallbladder

Mean operative time in group I was significantly lower 32.12±9.81 minutes and compared to group II 51.11±11.74 minutes with p value <0.02. (table 2)

Table-2: Surgery time among both groups

Variables	Group I	Group II	P value
Mean Operative time (mins)	32.12±9.81	51.11±11.74	0.02

Successful rate of LC was 82 (96.5%) and 3 (3.5%) cases were converted to open process because of bile duct injury.(figure 2)

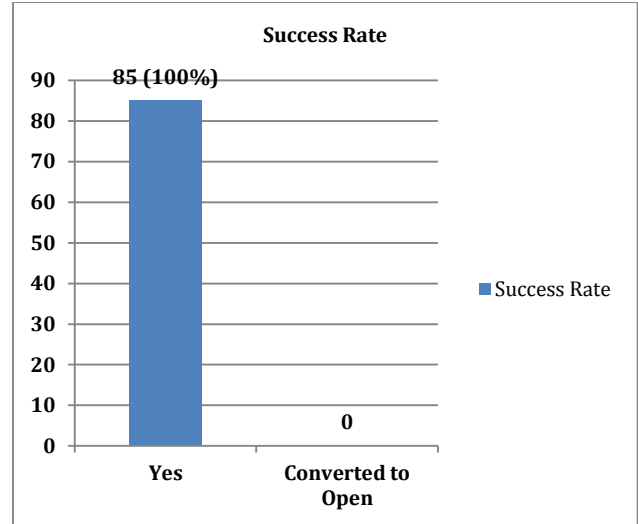


Figure-2: Frequency of success among LC group

Post treatment, significantly fast recovery was found in LC group as compared to open surgery with p value 0.008. Frequency of complications was higher in group II 26 (30.6%) and as compared to group I 2 (2.4%). Lower pain score was found in LC group.(table 3)

Table-3: Outcomes among both groups

Variables	Group I (85)	Group II (85)
Mean recovery time (days)	5.9±7.47	15.9±6.25
Complications		
Yes	2 (2.4%)	26 (30.6%)
No	83 (97.6%)	59 (69.4%)
Mean Pain score	1.6±5.13	5.25±11.62

DISCUSSION

About 3- 10% of all people experiencing abdominal discomfort have AC, and gallstones account for over 90% of the cases of acute cholecystitis. [16,17] The condition may vary from a minor, self-limiting sickness to a serious, possibly life-threatening illness, such as gangrenous, perforated, emphysematous, or empyemic gallbladder or empyema of gallbladder. Both the Tokyo Consensus Meeting Recommendations and the EAES guidelines of 2006 recommend using a mix of local clinical characteristics, systemic symptoms of inflammation, and imaging findings as diagnostic criteria for acute cholecystitis. When it comes to AC, there is some debate regarding whether or not surgery should be performed immediately. The benefits and statistical advantages of early laparoscopic cholecystectomy have been highlighted by Dr. Lo et al. and numerous other studies; they propose surgery within the first 48 hours following the beginning of symptoms. [18]

In current study 170 cases of AC were included. Among 170 included patients, majority of the patients were females 105 (61.8%) and males were 65 (38.2%). Mean age of the patients was 37.07±16.67 years. Majority of the patients 125 (73.5%) had body mass index <25kg/m² and 45 (26.5%) had BMI >25kg/m². 70 (41.2%) were from urban areas and 100 (58.8%) patients were from rural areas. These results were comparable to the studies conducted in past.[19,20] 85 cases received LC in group I and 85cases received standard open method in group II. Mean operative time in group I was significantly lower 32.12±9.81 minutes and compared to group II 51.11±11.74 minutes with p value <0.02. When compared to other investigations, the operating times reported in a prior study—which varied from 25 minutes to 150 minutes and had a mean operation duration of 49 minutes and 22.7 seconds—were quite short. [21] Successful LC has been documented in instances of acute inflammation by many authors, but at a greater conversion rate than in elective LC. [22,23] It is not

a sign of failure to have to switch to an open cholecystectomy. Conversion to open cholecystectomy was found in 5.06% of patients with chronic cholecystitis and 24.39% of patients with acute cholecystitis in a research by Shamim et al. [24] In our study successful rate of LC was 82 (96.5%) and 3 (3.5%) cases were converted to open process because of bile duct injury.

Post treatment, significantly fast recovery was found in LC group as compared to open surgery with p value 0.008. Frequency of complications was higher in group II 26 (30.6%) and as compared to group I 2 (2.4%). Lower pain score was found in LC group. However, complications and conversion rates are vary, some recent findings [25,26] have revealed that LC is viable and safe technique for acute cholecystitis as well. However, further research is necessary to draw any firm conclusions. A growing number of surgeons now believe that the timing of cholecystectomy is crucial to patient outcomes in cases of acute cholecystitis. As soon as possible after admission is when surgery should be conducted. Although it has been recommended that patients have surgery within the "golden 72 hours" after the beginning of symptoms, this is not always practicable in clinical practise due to logistical challenges in operating such patients in an emergency setting. The patient from the early group will have surgery in the next available OT (elective list). In our institution, more than 90% of patients who required surgery did so within 24 hours of arrival. [27]

Under stringent circumstances, patients with acute cholecystitis are considered suitable candidates for LC, as indicated by the 2018 Tokyo guidelines [28]. Evidence from many studies [28,29] shows that early cholecystectomy is preferable to open surgery because it results in shorter hospital stays, less postoperative problems, and a lower LC completion rate. The detection of an ectopic biliary system is crucial in the emergency scenario, and preventing biliary duct damage (BDI) is a major issue during cholecystectomy. Recognizing Calot's triangle is a critical step in preventing BDI. According to the LSG theory, BDI results from an abnormality in which the cystic duct develops from the left hepatic duct.

DISCUSSION

We concluded in this study that the acute cholecystitis was successfully treated by laparoscopic cholecystectomy with faster relief and lower operative time as compared to open surgery. Except this low pain score and complication rate was minimum observed after surgery in patients underwent for LC.

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