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# Early experience of laparoscopic cholecystectomy in the acutely inflamed gallbladder

**Rami Sabah Abood[1], Ali Abdul Huss,ein Handoz[1]**
[1]*Department of Sthe urgery, College of Medicine, University of Al-Qadisiyah, Iraq.*

**Abstract**

**Background:** Gallstones are now among the most important disease in the era of surgery. Definitive treatment of gallstone disease remains cholecystectomy. One of the common causes of emergency surgical referral is acute cholecystitis of which 50-70% cases are seen in the elderly patients.

**Aims:** This study was as aimed to evaluate the role of early laparoscopic cholecystectomy in patients suffering from acute cholecystitis.

**Patients and methods**: Total of 50 patients were treated with laparoscopic cholecystectomy from October 2013 to October 2015. The patient's age was the om 20 to 65 years old with a mean age of 34 ±3 years old. The patients received in the emergency unit and their attack, not more than 72 hrs. of acuate gallstone inflammation were included in this study.

**Results:** From the 50 patients, 15 were male es (34%), and females were 35 (74%) so the ratio of 1:2of male to female. Problems and complications that are facing in this study at the time of laparoscopy were mainly adhesions to the adjacent structures like stomach, colon, and omentum. Adhesion into CBD also considered.

**Conclusion:** Early intervention for acute cholecystitis of calculus type by laparoscopy now regarding safe and gold standard approach that should be kept in mind when dealing with such cases.

**Keywords**: laparoscopic cholecystectomy; inflamed gallbladder

## INTRODUCTION

Gallstones regarding as a common surgical problem that presenting as acute emergent or cold cases. Its incidence and distribution show that gallstones occur in 10–20 percent in western peoples. In the majority of cases, there are no symptoms regarding as silent gall stones (>85 percent). Those cases that develop symptoms which need surgical intervention may reach, 2–4 percent in the year, and this lead that cholecystectomy now regarding as popular operation that done in surgical units [1,2]. Complications of gallstones may be fatal like empyema, gangrene, perforation, acute pancreatitis, obstructive jaundice or fistula formation [2,3]. One of the common causes of emergency surgical referral is acute cholecystitis of which 50-70% cases are seen in the elderly patients [4].

Cholecystectomy is considered as standard procedure for acute cholecystitis, but in high-risk patients, since its morbidity and mortality rates are high, conservative management is an option. Although the technique of laparoscopic cholecystectomy is associated with less pulmonary dysfunction and complication, that may result in conversion to open cholecystectomy [6]. Patients that presented as an emergent case like biliary colic or cholecystitis, surgery may be considered as the treatment of choice when there is no any contraindication. Evidence and longtime observations in gallstone problems show that in 80 % of cases and more, the condition of the patient in acute status can be controlled with conservative steps. The principles for conservative measures include: Nothing orally, maintain fluid requirements, control pain with analgesia, choice of proper antibiotics, continuous monitoring with the recording of vital signs [7,19]. The decision for surgical in acute cholecystitis still has multiple opinions, some medical schools favoring the early and emergent intervention when there is no longer time for complications to develop and this may within time not more than a week, whereas in other units may prefer to delay the surgery until the condition of patient become stable in order to decrease risk of surgical complications. Early surgical intervention at the time of acute attacks has now be accepted as safe and good option with less complication rate and shortens the time of hospital admission. Last year's where the laparoscopy become standard in surgery, there is a great development in the management of gallstone manly symptomatic one making cholecystectomy as an early and first choice in treatment [9,10]. Empyema gallbladder is more common males and in elderly patients. As initial management, the percutaneous drainage of the gallbladder has often been recommended [11]. Early and due to the lack of experience, gallbladder with empyema and signs of gangrene may regard as a risk for cholecystectomy by laparoscopy. As experience has been gained with laparoscopic cholecystectomy, the number of contraindications has progressively diminished. Absolute contraindications to laparoscopic cholecystectomy include suspicion of gallbladder cancer, inability to identify relevant anatomical structures, and uncontrolled bleeding disorders [14,15]. As a result of new technologies, dealing with gallstones have changed. The introduction of ultrasound, endoscopic retrograde cholangiopancreaticography (ERCP), magnetic resonant cholangiopancreatography (MRCP) and laparoscopic surgery has a great change in common surgical procedures. Laparoscopic emergency cholecystectomy has a higher rate of complications, the incidence of conversion to open surgery in emergency cases of acute gall balder inflammation is more than well prepared elective cases in addition to the higher rate of injuries of biliary structures. In spite of that, some surgeons have recommended laparoscopic cholecystectomy is the safe intervention for most of the patients with acute cholecystitis. [17]. In patients not responding to conservative treatment percutaneous cholecystostomy (PC) is a treatment option. The technique is effective, minimally invasive and allows gallbladder decompression and resolution of inflammation. The indications for PC are acalculous and calculus cholecystitis, perforated gallbladder, biliary obstruction, etc. [18]

## PATIENTS AND METHODS

This study was done at Al-Diwaniyah Teaching Hospital, Department of surgery. Iraq. Total of 50 patients was treated with laparoscopic cholecystectomy from October 2013 to October 2015. All investigations were done routinely for those patients with fitness for anesthesia. The patient's age was from 20 to 65 years old with a mean age of 34 ±3 years old. The patients were received within 72 hours of starting acute symptoms of cholecystitis diagnosis of them included clinical pictures with blood tests and ultrasound examination. After diagnosis, patients with acute calculus cholecystitis included in this study and decided on laparoscopic emergency intervention.

After informed consent, all the patients underwent early laparoscopic cholecystectomy. Under GA anesthesia, patient in supine position, Veress needle inserted below the umbilicus, insufflation of CO2, pressure around 12mmhg, four ports then inserted, camera pass through 10mm port in sub umbilical incision, other three ports for laparoscopic instruments. The follow-up period was after one week, 4$^{th}$ week and then after two

months. All patients' notices, clinical pictures, details of surgery, complications in per and postoperative period and follow up checking for all patients were reordered in a detailed way.

## RESULTS

From the total of fifty cases, males were 10 (20%) while females were 40 (80%). According to the duration of starting symptoms, 27 of patients had received within 24 hours, 13 between 24-48 hours and ten patients within 48-72 hours. The findings of ultrasound had shown that in 25 patients they had edematous gallbladder wall, ten patients there was mucocele, nine patients with empyema gallbladder and six patients contracted gallbladder. (Table 2)

Problems that occurred during laparoscopy were gallbladder adhesions into nearby structures, which included gastric adhesion in 1 patient, adhesions with a transverse colon in 7 cases, omental adhesion in 23cases and pressure with adhesion into CBD in 5 cases. Other complications include bleeding during dissection of Calot triangle, during the release of adhesion and from gallbladder bed was seen in 10 cases. Minor tears of the liver occurred in 5 cases (Table I). The time of the procedure in normal and not complicated cases was about 50 min while in complicated cases the time reaches about 2 hours. So, the average time taken was 1 hour 10 minutes. The conversion into open surgery occurred in 7 cases only (14%).

The causes for conversion were mainly due to the obscured anatomy of Calot triangles with adhesion into CBD, in two cases only severe bleeding was the cause that blurred the vision of the camera. Regarding the post-operative complications in our study, there was paralytic ileus in 10 patients and leakage of bile that shown 3 cases while surgical site infection was seen in 7 cases; and mainly involves the epigastric port (used for gallbladder extraction). (Table3). The hospital stays postoperatively in most of the patients (45) was two days and in 5 patients only was 3-5 days.

Table 1: Intraoperative complications

| Complications | No. |
|---|---|
| Adhesions with the stomach in | 1 |
| Adhesions with colon | 7 |
| Adhesions with omentum | 23 |
| Adhesions with common bile duct | 5 |
| Bleeding | 10 |
| Minor injury of the liver | 5 |

Table 2: Ultrasound findings

| Finding | No. |
|---|---|
| Oedematous gallbladder | 25 |
| mucocele | 10 |
| contracted | 6 |
| empyema | 9 |

Table 3: Postoperative complications

| Complications | No. |
|---|---|
| paralytic ileus | **10** |
| biliary leakage | **3** |
| wound infection | **7** |

## DISCUSSION

In last years the surgery for gallstone show a change from classical one by open technique into the more advance using the laparoscopy and be the gold standard measure for cholecystectomy [10, 11]. Gallstone with symptoms now become the most important indication for lap.chole.With increasing the experience of the surgeon and well trained in laparoscopic surgery, there are many attempts to deal with complicated gallstone cases by laparoscopy. The numbers of contraindications to laparoscopic cholecystectomy now become few and limited only to the poor patient general condition that not withstand general anesthesia, bleeding tendency, and cases of liver failure or cirrhosis [6, 20]. Laparoscopic surgery became a safe option in a situation of acutely inflamed gallbladder e ven with some increase in the rate of conversion and the operative time is longer than in open cholecystectomy. The rate of conversion into open surgery is needed in about 5% of cases in an elective situation while it reaches 30% in a patient with an attack of acute cholecystitis. However, when compared to the delayed operation, early operation carries a similar complication rate [6,24]. The developing in techniques and increase experience in the last twenty years the use of laparoscopic cholecystectomy in gallstone surgery has been change to be an an emergency situation as in elective one. Recently large number of specialized centers around the world now a day many centers all over the world the laparoscopic surgery regarding as gold standard in the treatment of acute cholecystitis within a period of 72 hrs. of disease [11,12].

In recent years early laparoscopic cholecystectomy has been a safe and good, option even in complicated cases. This opinion was also advocated by Hunter "Get it while it's Hot" in the early period of laparoscopic chole the cystectomy [13].

In this study, we explore the outcome of laparoscopic cholecystectomy for acute calculus cholecystitis in our patients and compare our results to those mentioned in other studies. In cases of the acutely inflamed gallbladder, the acute cholecystitis cases were found in (75%). Remaining patients undergoing operations had gallbladder empyema (20%) or gangrenous gall bladders (5%). The gangrenous gallbladder may be difficult to diagnose preoperatively; it is usually suspected in male, old age patients with increased WBC count and picture of sepsis [14,15]. The gallbladder empyema may be suspected from the clinical picture of patients with palpable gallbladder on examination, developing sepsis and by the use of ultrasound examination [7]. The conversion rate in this study was (11.20%) which is greatly low in comparison to what we expect and to what mention in other studies and literature [10-12,16]. This low conversion rate in our study may be because well-trained surgeons in our center. During surgery they care of dissection especially when dealing with Calot triangle, good anatomical identification all these factors lead into the best outcome. In a study by Eldar and his coworkers have shown that history of biliary diseases, age (>60year), impalpable gallbladder, elevated WBC count of (>14,000/cc) and gallbladder gangrene are less accompanied by more conversion rate [17]. Many studies and literature explain that patient with gallstone complications like wall necrosis and gangrene, cases of gallbladder empyema and those with recurrent acute attacks of gallbladder inflammation and their surgery were delayed had more risk to develop surgical complications and have more conversion rate[15,18]. The operative time had no significant prolong and the results regarding hospital stay and complications was significantly well in patients undergoing laparoscopic cholecystectomy [16,18]. In cases of gallbladder empyema which can be develop a a complication of acute attacks of inflammation specially in an elderly and immunocompromised patient or as a consequence of mucocele that become infected. Pus here filling the gallbladder which becomes distended. The best treatment here in many centers and due to the obscure anatomy in these hot conditions is the temporary drainage by cholecystostomy tube, and then on the second session and after improve patient condition, cholecystectomy [7,8]. In our study, the rate of conversion is 29% in cases of gallbladder gangrene and 53% in empyema gallbladder which is relatively best than many series in the literature [16].

All the complications that occurred in our study were dealt with successfully due to the team approach and well-trained staff. No,

any mortality was observed in our study. We have noted that some difficulties we facing during dissection in Calot's triangle, gallbladder bed, a variation of biliary anatomy and adhesion bands, they are the same or less than that reported in the literature [11,12]. The procedure of laparoscopic cholecystectomy includes grasping of the gallbladder at the level of the infundibulum and retract it anterolaterally to the right this will expose the area of Calot's triangle. Careful dissection at this level by incising the peritoneum layers in the anterior and posterior of the triangle. Meticulous identification of cystic duct and artery with clipping of them. Lastly, the gallbladder is dissected out of liver bed, and detailed anatomy should be checked before complete removal of gallbladder. The time to decide for conversion is a crucial point that will decrease the risk of laparoscopic that may develop especially in hot and difficult surgical field. Many studies and literature show the main causes that may be implicated in increasing the risk of complications in laparoscopic surgery which include male sex, gall stones with large size, an elevated level of serum bilirubin (> 0.9 mg/dl) and high levels of white blood cells (>14,000/cc) [17]. In difficult gall blabbers, many surgeons prefer subtotal cholecystectomy as a safe procedure and avoid dissection in hot Calot's triangle with blurred anatomy and risk of serious injuries into surrounding structures [20]. The laparoscopic cholecystectomy, as shown by many types of research, is a good and appropriate treatment for acute cholecystitis with less risk of post-operative complications and less admission rate. In our review, we show the benefit of early intervention by laparoscopic cholecystectomy with few mortality rate of less than 1%, low accidental injuries. Moreover, LC could lead to a reduced treatment cost, due to decrease hospital stay, short rehabilitation time and sick leave required by the patients [25].

## CONCLUSION

Early laparoscopic Cholecystectomy in acute cholecystitis is the first option to think about due to its safety and feasibility and should be considered in patients rather than interval cholecystectomy that may carry more complication and cost-effective.

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