

## ASSESSMENT OF SURGICAL OUTCOME FROM LAPAROSCOPIC VERSUS OPEN CHOLECYSTECTOMY DURING 1<sup>ST</sup> WEEK OF ACUTE CHOLECYSTITIS

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### ABSTRACT:

**Background:** Acute Calcular Cholecystitis (A.C) is inflammation of the gallbladder and is the most common complication of gallstones, requiring hospital admission and prompt intervention. Its Symptoms include right upper abdominal pain, nausea, vomiting, and occasionally fever. Often gallbladder attacks (biliary colic) precede acute cholecystitis without appropriate treatment, recurrent episodes of cholecystitis are common. Complications of acute cholecystitis include gallstone pancreatitis, common bile duct stones, and inflammation of the common bile duct.

**Aim of The Work:** To assess surgical outcome from laparoscopic and open cholecystectomy in acute calcular cholecystitis by assessment and differentiate between both of them in these parameters as regards: 1-Hospital stay, 2-Wound infection, 3-Biliary fistula, 4-Missed stone, 5-intestinal injury.

**Patients and Methods:** *Type of Study:* prospective clinical trial. *Study Setting:* This study will be carried out, at Ain Shams hospitals. *Study Period:* This study will be carried out during the period between October 2018 and October 2019. *Study Population:* This study will include 30 patients with diagnosis of acute calcularcholecystitis.

**Results:** The present study was a prospective, clinical, trial that included 30 patients diagnosed with acute calcular cholecystitis attended to surgery theatre at Ain Shams hospital. The patients were divided into two groups: Group I including 15 patients underwent laparoscopic cholecystectomy during the first week of their presentation. Group II including 15 patients underwent open cholecystectomy during the first week of their presentation.

**Conclusion:** Cholecystectomy during 1st week of acute cholecystitis should be attempted by laparoscopy at first in condition that there are no complications as gangrenous gall bladder. as, post-operative morbidity and hospital stay are reduced by laparoscopic cholecystectomy. Moreover, intestinal injury and wound infection rate are reduced by laparoscopy. A positive trend exists in operating time favoring laparoscopy, however more studies are necessary. Severe hemorrhage and bile leakage rate are not influenced by the technique.

**Keywords:** Acute Cholecystitis; Acute calcular cholecystitis; Laparoscopic cholecystectomy; Laparoscopic partial cholecystectomy.

## **INTRODUCTION:**

**Acute Calcular Cholecystitis (A.C)** is inflammation of the gallbladder and is the most common complication of gallstones, requiring hospital admission and prompt intervention<sup>(1)</sup>.

Its Symptoms include right upper abdominal pain, nausea, vomiting, and occasionally fever. Often gallbladder attacks (biliary colic) precede acute cholecystitis without appropriate treatment, recurrent episodes of cholecystitis are common. Complications of acute cholecystitis include gallstone pancreatitis, common bile duct stones, and inflammation of the common bile duct<sup>(2)</sup>.

More than 90% of the time acute cholecystitis is from blockage of the cystic duct by a gallstone. Diagnosis of Cholecystitis based on symptoms and laboratory testing. Abdominal ultrasound is then typically used to confirm the diagnosis<sup>(3)</sup>.

A high recurrence rate of gallstone complications after an initial hospitalization for acute cholecystitis attack necessitates surgical removal of the gallbladder by either an early or delayed approach<sup>(1)</sup>.

However, the medical history of patients who could not undergo cholecystectomy at the time of initial presentation presents a unique set of challenges, including delayed presentation, significant comorbid illness, and increased co-morbidity associated with gallstone-related complications<sup>(4)</sup>.

Treatment options include early surgery during index admission, either by laparoscopic cholecystectomy (LC) or open cholecystectomy, or delayed cholecystectomy (surgery after a successful conservative treatment), or conservative approaches like treatment with antibiotics and percutaneous cholecystostomy (PC) for high-risk patients for surgery<sup>(5)</sup>.

Actually there are considerable data favoring early surgery instead of delayed

cholecystectomy. Hospital stay was reduced when surgery was performed early and the complication rate was the same<sup>(6)</sup>.

Moreover many of the patients who underwent delayed procedures in the randomized trials had persistent or recurrent symptoms requiring intervention before their planned operation<sup>(7)</sup>.

Comparing laparoscopic to open surgery, laparoscopic cholecystectomy (LC) has become the approach of choice for elective cholecystectomy, half of cases still operated with the open technique. Some authors consider the presence of inflammation, edema, and necrosis as unfavorable conditions for safe dissection. As a consequence, they postpone laparoscopic cholecystitis after resolution of acute inflammation<sup>(7)</sup>.

In 2013 a new edition of the Tokyo Guidelines (TG 2013) has been produced with the aim to define the best surgical treatment for acute cholecystitis according to the grade of severity, the timing, and the procedure<sup>(8)</sup>.

Acute cholecystitis has been classified as mild, moderate and severe based principally on the grade of inflammation of the gallbladder rather than on the patients' conditions which leads to different treatment options for the three grades of acute cholecystitis and into each class. The TG 2013 in some aspects, shows concerns about supposedly higher morbidity rates in laparoscopic cholecystitis performed as an emergency procedure and the higher conversion rate to open procedure during the acute phase<sup>(9)</sup>.

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## **AIM OF THE WORK:**

To assess surgical outcome from laparoscopic and open cholecystectomy in acute calcular cholecystitis by assessment and differentiate between both of them in these parameters as regards:

1. Hospital stay
  2. Wound infection
  3. Biliary fistula
  4. Missed stone
  5. intestinal injury
2. Obstructive jaundice.
  3. Patients who are suspected of having malignancy.
  4. Chronic cholecystitis.
  5. patients who converted from laparoscopic to open cholecystectomy.

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## **PATIENTS AND METHODS**

- **Type of Study:** prospective clinical trial
- **Study Setting:** This study will be carried out, at Ain Shams hospitals.
- **Study Period:** This study will be carried out during the period between October 2018 and October 2019
- **Study Population:** This study will include 30 patients with diagnosis of acute calculous cholecystitis, distributed as following:

**Group A:** (15 patients) includes patients who will have open cholecystectomy

**Group B;** (15 patients) includes patients who will have laparoscopic cholecystectomy

### **Inclusion Criteria:**

1. Patients have positive Murphy sign.
2. Patients will have procedure during 1<sup>st</sup> week.
3. Patient will undergo U/S shows:-
  - Thick wall
  - Gall bladder stones
  - Pericholecystic fluid.

The medical and demographic information will be obtained from the medical records.

### **Exclusion Criteria**

1. Exclusion of gangrenous gall bladder .

- **Sampling Method:** Simple random sample.
- **Sample Size:** As regards patients' satisfaction, the sample size needed from each group was calculated to be 15 patients (total study patients = 30).
- **Ethical Considerations:** This study was approved by the ethical committee and we will fulfill the local ethics at surgical department
- **Study Procedures:** Surgical management under general anesthesia in both open and laparoscopic procedures
- Statistical analysis data collected will be score tabulated and statistical analyzed.

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## **RESULTS:**

The present study was a prospective, clinical, trial that included 30 patients diagnosed with acute calculous cholecystitis attended to surgery theatre at Ain Shams hospital. The patients were divided into two groups:

- Group I including 15 patients underwent laparoscopic cholecystectomy during the first week of their presentation
- Group II including 15 patients underwent open cholecystectomy during the first week of their presentation

Table 1: The demographic characteristics of the included patients

Variables	Lap group (N =15)	Open group (N =15)	P-value
Age in years			
- Mean $\pm$ SD	50.47 $\pm$ 8.2	52 $\pm$ 6.1	0.57
- Median (range)	52 (39 -62)	51 (41 -62)	
Gender, No. (%)			
- Male	5 (33.3%)	4 (36.4%)	0.81
- Female	10 (66.7%)	11 (63.6%)	

- Data are presented as mean  $\pm$ SD, median (Range), or number (%)

The mean age of the included patients in group I was 50.5  $\pm$ 10.7years and the majority of patients were females (66.7%). While the mean age of the included patients in group II was 52  $\pm$ 6.1 years and the

majority of patients were females (63.6%). There were no statistically significant differences between both groups in terms of age (p =0.57) or gender (p =0.81).

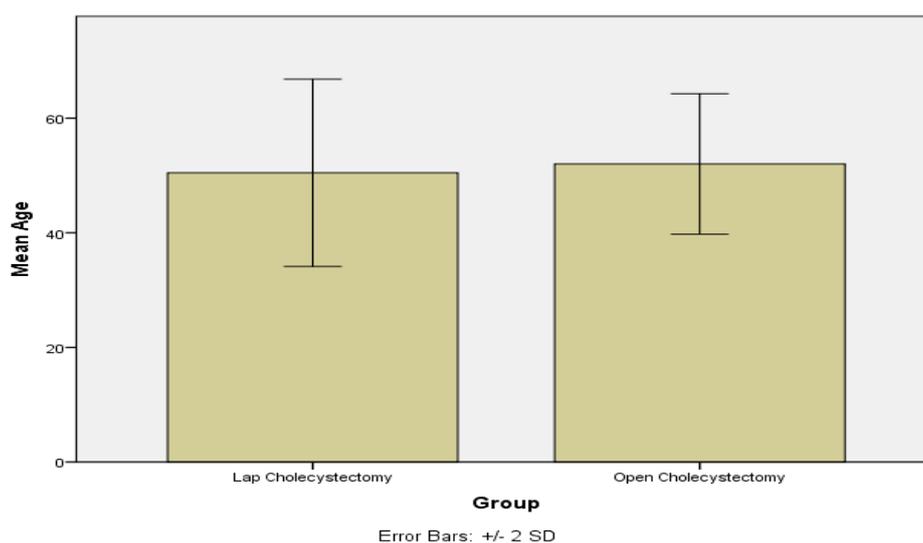


Diagram1: Distribution of Age of the included patients

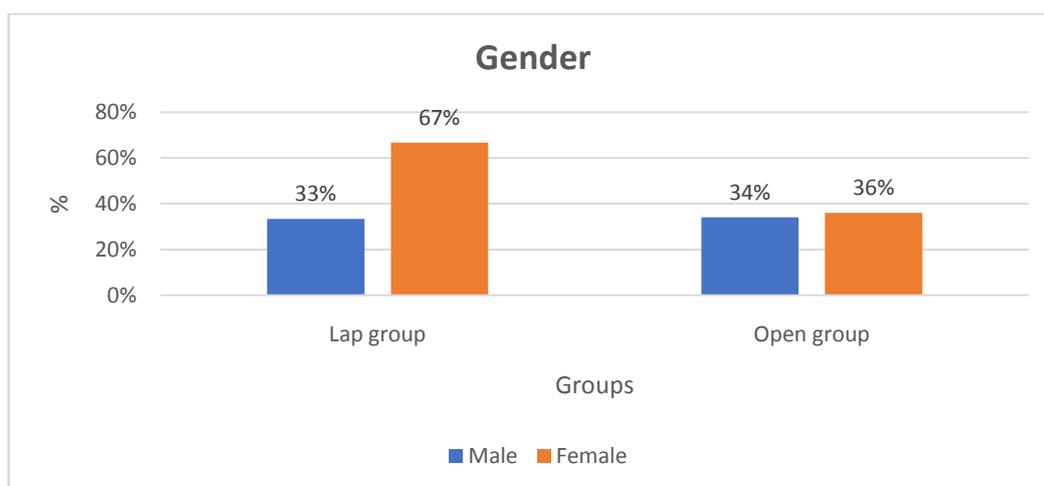


Diagram 2: Gender distribution of the included patients

**Assessment of surgical outcome from laparoscopic versus open cholecystectomy during 1<sup>st</sup> week of.**

Table 2: The presentation of the included patients.

Variables	Lap group (N =15)	Open group (N =15)	P-value
Complaint, No (%)			
- Abdominal pain +fever +nausea/anorexia	5 (33.3%)	6 (40%)	0.57
- Abdominal pain +fever	2 (13.3%)	0	
- abdominal pain +fever+vomiting	1 (6.7%)	0	
- abdominal pain+ fever+dyspepsia	0	2 (13.3%)	
- abdominal pain+nausea + vomiting	3 (20%)	3 (20%)	
- abdominal pain+nausea+distension	1 (6.7%)	1 (6.7%)	
- Epigastric pain +nausea vomiting+pain in RT shoulder	0	1 (6.7%)	
- Epigastric pain+ fever+RT shoulder pain	1 (6.7%)	1 (6.7%)	
- Fever+RT hypochondrial pain+nausea +vomiting	2 (13.3%)	1 (6.7%)	

\*Data are presented as mean ±SD, median (Range), or number (%)

Table 2 shows the association between type of procedure and presentation. There were no statistically significant associations between type of procedure and presentation (p =0.57).

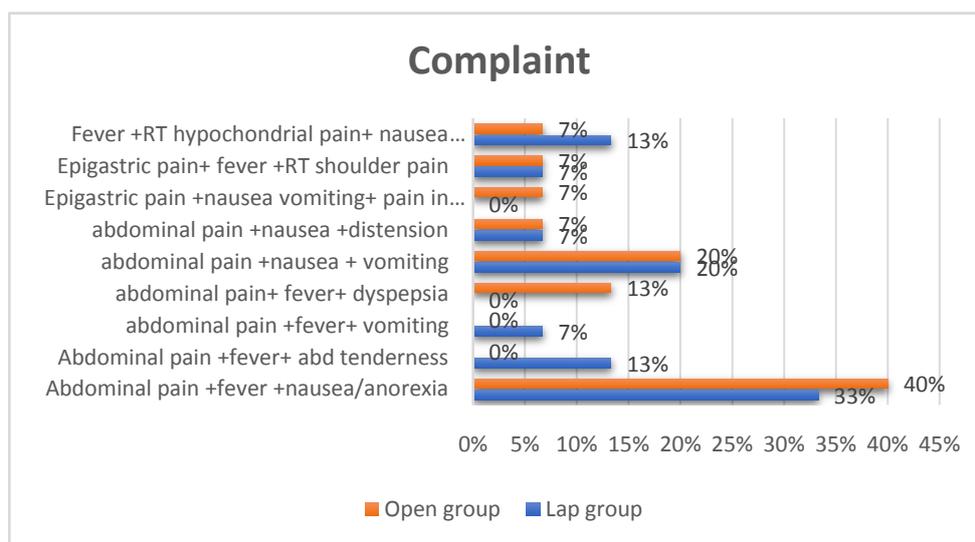


Diagram3: Complaint distribution of the included patients

Table 3: CBC findings of the included patients

Variables	Lap group (N =15)	Open group (N =15)	P-value
Hemoglobin (g/dL)			
- Mean ±SD	11.96 ±1.2	12.22 ±0.85	0.32
- Median (range)	11.9 (10 -15)	12.8 (10.8 -14)	
TLC x10 <sup>3</sup> (cell/mm <sup>2</sup> )			
- Mean ±SD	12.7 ±1.9	12.7 ±2.9	0.53
- Median (range)	12.8 (10 -17)	12 (9.3 -19)	
Neutrophils (%)			
- Mean ±SD	61.3 ±10.3	62.3 ±9.3	0.95
- Median (range)	60 (45 -70)	66 (46 -74)	

\*Data are presented as mean ±SD, median (Range), or number (%)

Table 3 shows the association between type of procedure and CBC findings. There were no statistically significant associations

between type of procedure and hemoglobin (p =0.32), TLC (p =0.53), or neutrophil % (p =0.95).

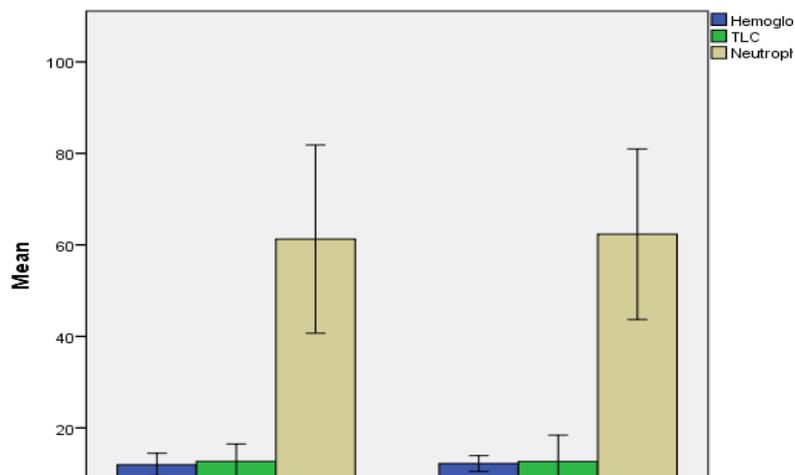


Diagram 4: CBC distribution of the included patients.

Table 4: Imaging Findings included patients

Variables	Lap group (N =15)	Open group (N =15)	P-value
US, No (%)			
- Acute non calcularcholecystitis	0	1 (6.7%)	0.36
- Acute calcular cholecystitis	14 (93.3%)	10 (66.7%)	
- Gall bladder mucocele	0	3 (20%)	
- Gall bladder mud	1 (6.7%)	1 (6.7%)	
ERCP, No. (%)			
- Done	3 (20%)	1 (6.7%)	0.299
- No	12 (80%)	14 (93.3%)	

\*Data are presented as mean ±SD, median (Range), or number (%)

Table 4 shows the association between type of procedure and imaging findings. There was no statistically significant

association between type of procedure and U/S findings (p =0.36) or ERCP (p =0.29).

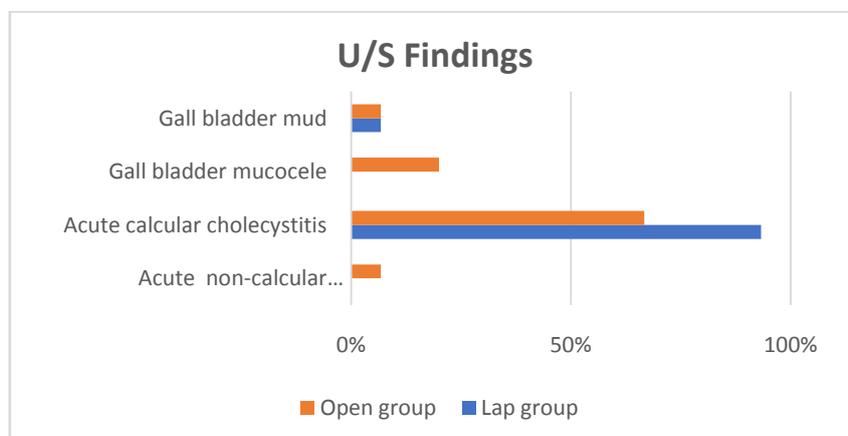


Diagram 5: U/S findings distribution of the included patients

*Assessment of surgical outcome from laparoscopic versus open cholecystectomy during 1<sup>st</sup> week of.*

Table 5: Association between type of procedure and length of stay

Variables	Lap group (N =15)	Open group (N =15)	P-value
Hospital stay (days)			
Mean ±SD	1.67±0.9	3.2±1.8	0.021
• Median (range)	1 (1 – 4)	3 (1 – 7)	
Duration of follow-up			0.61
- Mean ±SD	8.8 ±2.8	8.6±2.1	
- Median (range)	7 (7 – 14)	7 (7 – 14)	

\*Data are presented as mean ±SD and median (range)

Table 5 shows the association between type of procedure and length of stay. There was statistically significant association between type of procedure and hospital stay

(p =0.021). Patients in laparoscopic group had significantly shorter length of hospital stay.

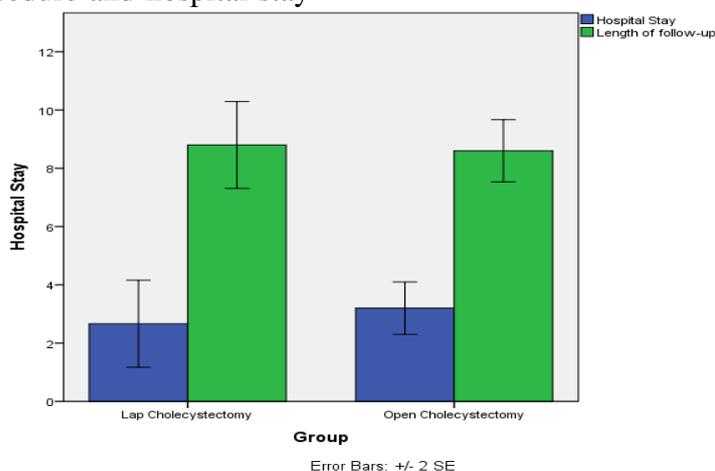


Diagram 6: Length of stay distribution of the included patients

Table 6: Outcomes of the included patients

Variables	Lap group (N =15)	Open group (N =15)	P-value
Wound infection, No (%)			0.01
- Yes	1 (6.7%)	6 (40%)	
- No	14 (93.3%)	9 (60%)	

\*Data are presented as mean ±SD, median (Range), or number (%)

Table 6 shows the association between type of procedure and wound infection. There was statistically significant association between type of procedure and

incidence of wound infection(p=0.01).Patients in Lap group had significantly lower incidence of wound infection.

Table 7: Outcomes of the included patients

Variables	Lap group (N =15)	Open group (N =15)	P-value
Missed stone, No. (%)			0.59
- Yes	3 (20%)	1 (6.7%)	
- No	12 (80%)	14 (93.3%)	

\*Data are presented as mean ±SD, median (Range), or number (%)

Table 7 shows the association between type of procedure and incidence of missed stone. There was no statistically significant

association between type of procedure and incidence of missed stone (p =0.59).

Table 8: Outcomes of the included patients

Variables	Lap group (N =15)	Open group (N =15)	P-value
Fistula, No (%)	0	0	---
- Yes	15 (100%)	15 (100%)	

\*Data are presented as mean ±SD, median (Range), or number (%)

Table 8 shows the association between type of procedure and incidence of fistula. There was no statistically significant

association between type of procedure and fistula

Table 9: Outcomes of the included patients

Variables	Lap group (N =15)	Open group (N =15)	P-value
Intestinal Injury, No. (%)		4 (26.7%)	0.04
- Yes	0	12 (73.3%)	
- No	15 (100%)		

\*Data are presented as mean ±SD, median (Range), or number (%)

Table 9 shows the association between type of procedure and incidence of intestinal injury. There was statistically significant association between type of procedure and

intestinal injury (p =0.01).Patients in Lap group had significantly lower incidence of intestinal injury.

Table 10: Outcomes of the included patients

Variables	Lap group (N =15)	Open group (N =15)	P-value
CBD injury. (%)			0.48
- Yes	3 (20%)	1 (6.7%)	
- No	12 (80%)	14 (93.3%)	

\*Data are presented as mean ±SD, median (Range), or number (%)

Table 10 shows the association between type of procedure and CBD injury. There was no statistically significant association between type of procedure and incidence of CBD injury (p =0.48).

not associated with gallstones, and usually occurs in critically ill patients. It accounts for approximately 10 percent of cases of acute cholecystitis and is associated with high morbidity and mortality<sup>(10)</sup>.

**DISCUSSION:**

**Acute calcularcholecystitis:** Acute cholecystitis refers to a syndrome of right upper quadrant pain, fever, and leukocytosis associated with gallbladder inflammation that is usually related to gallstone disease.

**Acalculouscholecystitis:**

Acalculouscholecystitis is clinically identical to acute cholecystitis but is

The Acute cholecystitis is associated with cholelithiasis in 90% to 95% of cases, and obstruction of the cystic duct is an important factor in its pathogenesis. There is no unique marker capable of definitively indicating the diagnosis of acute calcularcholecystitis (ACC) with high accuracy. The key aspects for diagnosis are upper left side signs of inflammation (pain and tenderness) and positive Murphy’s sign, as well as clinical and biochemical indicators of systemic inflammatory response. These

datamust be nowadays supported with positive imaging such as abdominal ultrasound (AUS)<sup>(11)</sup>.

The American Association of Surgery of Trauma proposes a uniform grading system for eight intra abdominal infectious diseases including ACC. The grades range from I to V, considering the progressive anatomic inflammation severity(from mild to serious widespread complications)<sup>(12)</sup>.

Most patients with acute cholecystitis respond to conservative, first line management: the gall stone disimpacts and falls back into the gall bladder, whic hallows the cystic duct to empty. If the gallstone does notdisimpact, complications such as advanced cholecystitis (gangrenous cholecysytitis or empyema of the gall bladder)or perforation—may result<sup>(13)</sup>.

About 20% of patients with acute cholecystitis need emergency surgery. Such surgery is indicated if the patient's condition deteriorates or when generalized peritonitis or emphysematous cholecystitis is present. These features suggest gangrene or perforation of the gallbladder<sup>(14)</sup>.

Laparoscopy has significant advantages over open surgery in managing septic patients. The immune response and the levels cytokines yielded, which are associated with systemic inflammatory response severity, are smaller and influence the clinical outcomes<sup>(15)</sup>.

In present prospective study, we included 30 patients diagnosed with acute calcular cholecystitis attended to surgery theatre at Ain Shams hospitals. The patients were divided into two groups:

- Group I including 15 patients underwent laparoscopic cholecy-stectomy during the first week of their presentation
- Group II including 15 patients underwent open cholecystectomy during the first week of their presentation.

In our cohort, mean age of the included

patients in group I was  $50.5 \pm 10.7$  years and the majority of patients were females (66.7%). While the mean age of the included patients in group II was  $52 \pm 6.1$  years and the majority of patients were females (63.6%). There were no statistically significant differences between both groups in terms of age ( $p = 0.57$ ) or gender ( $p = 0.81$ ).

In line with our findings, **Ganpathi and colleagues**<sup>(16)</sup> retrospectively studied patients who had a cholecystectomy (laparoscopic or open surgery) for acute cholecystitis at National University Hospital from January 2001 to May. The mean age of the included patients was 52 years old and the majority of patients were females.

**Mason and colleagues**<sup>(17)</sup> reviewed the clinical and pathological data of 245 patients undergoing urgent cholecystectomy. The average age was 41.9 years old and only 28.1% of the patients were males.

Cases of acute cholecystitis present with progressing right upper abdominal pain with bloating, nausea, and vomiting. The finding of right upper abdominal pain with deep palpation, Murphy's sign, is usually classic for this disease<sup>(18)</sup>.

In the present study, the most common presentation in both groups were abdominal pain, fever, nausea/anorexia, and vomiting.

It is presumed that the main advantages of LC include less postoperative pain, shorter operation time, lower rate of postoperative complications and early ambulation leading to shorter hospital stay<sup>(19)</sup>.

In the present study, we found that there was statistically significant association between type of procedure and hospital stay ( $p = 0.021$ ). Patients in LC group had significantly shorter length of hospital stay.

In concordance with our findings, **Coccolini and colleagues**<sup>(20)</sup> performed a meta-analysis study to compare

OC and LC in ACC. Electronic searches were performed using Medline, Embase, PubMed, Cochrane Central Register of Controlled Trials (CCTR), Cochrane Database of Systematic Reviews (CDSR) and CINAHL. Ten trials have been included with a total of 1248 patients: 677 in the LC and 697 into the OC groups. The mean postoperative hospital stay was significantly shortened in the LC group (MD = -4.74 days).

Likewise, **Teixeira and colleagues**<sup>(21)</sup> reported an analysis of 520 patients operated on for acute cholecystitis performed in the department of surgery at the SÉoJoÉo Hospital in Oporto to compare open versus LC. The mean postoperative hospital stay was significantly shortened in the LC group.

In addition, **Antoniou and colleagues**<sup>(22)</sup> investigated the comparative effect of LC and open cholecystectomy. A systematic review of Medline was embarked on, up to June 2013. Thirteen articles (2 randomized and 11 observational studies) reporting on the outcome of 101559 patients (48195 in the laparoscopic and 53364 in the open treatment group, respectively) were identified. The mean postoperative hospital stay was significantly shortened in the LC group.

**Kiviluoto and colleagues**<sup>(23)</sup> undertook a randomized comparison of the safety and outcome of LC and open cholecystectomy in patients with acute cholecystitis. 63 of 68 consecutive patients who met criteria for acute cholecystitis were randomly assigned OC (31 patients) or LC (32 patients). The postoperative hospital stay was significantly shorter in the LC than the OC group (median 4 [IQR 2–5] vs 6 [5–8] days;  $p=0.0063$ ).

On the contrary to our findings, **Johansson and colleagues**<sup>(24)</sup> performed a prospective trial to determine whether surgical approach (open *versus* laparoscopic) had an impact on morbidity and postoperative recovery after

cholecystectomy for acute cholecystitis. Seventy patients who met the criteria for acute cholecystitis were randomized to open or LC. Median hospital stay was not shorter in the laparoscopic than open groups.

The exact cause of such difference between our findings and **Johansson and colleagues**<sup>(24)</sup> is not clear. However, this difference can be explained by the variations in the characteristics and demography of the included patients; as well as the surgical approach. The difference in sample size may be another cause.

Adopting LC in a treatment of symptomatic cholelithiasis introduced a new spectrum of associated intraoperative and postoperative complications. Minor complications (biliary and non-biliary) are usually treated conservatively. Major complications (biliary and vascular) are life threatening and increase mortality rate, therefore creating the need for conversion to open surgical approach in order to treat them<sup>(25)</sup>.

In the present study, we found that there were statistically significant associations between type of procedure and incidence of wound infection ( $p=0.01$ ) and intestinal injury ( $p=0.01$ ). In contrary, there were no statistically significant association between type of procedure and incidence of missed stone ( $p=0.59$ ), fistula, or CBD injury ( $p=0.48$ ).

In agreement with our findings, **Boo and colleagues**<sup>(26)</sup> included 33 patients with acute calculous cholecystitis were assigned to LC (LC,  $n=18$ ) or open cholecystectomy (OC,  $n=15$ ). Hospitalization was significantly shorter in the LC group than in the OC group (LC group:  $3.7\pm 1.2$  days versus OC group:  $6.3\pm 2.7$  days,  $p=0.010$ ). There was no postoperative morbidity in the LC group, but two patients in the OC group had postoperative complications.

On the other hand, **Catena and colleagues**<sup>(27)</sup> conducted a prospective,

randomized investigation to compare LC versus open approach. There were no deaths

### **Study's Limitations**

We acknowledge that the present study has a number of limitations. The sample size of our cohort was relatively small as open cholecystectomy is rare now days which

### **Conclusion:**

Cholecystectomy during 1st week of acute cholecystitis should be attempted by laparoscopy at first in condition that there are no complications as gangrenous gall bladder. as, post-operative morbidity and hospital stay are reduced by laparoscopic cholecystectomy. Moreover, intestinal injury and wound infection rate are reduced by laparoscopy. A positive trend exists in operating time favoring laparoscopy, however more studies are necessary. Severe hemorrhage and bile leakage rate are not influenced by the technique.

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## تقييم النتائج الجراحية من استئصال المرارة بالمنظار مقابل فتحها جراحياً خلال الاسبوع الأول من التهاب المرارة الحاد

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### المستخلص

**الخلفية:** التهاب المرارة الحاد (A.C) هو التهاب في المرارة وهو أكثر المضاعفات شيوعاً لحصى المرارة، مما يتطلب دخول المستشفى والتدخل السريع. تشمل أعراضه آلام الجزء العلوي الأيمن من البطن والغثيان والقيء وأحياناً الحمى. غالباً ما تسبق هجمات المرارة (المغص الصفراوي) التهاب المرارة الحاد دون علاج مناسب، وتشيع نوبات التهاب المرارة المتكررة. تشمل مضاعفات التهاب المرارة الحاد التهاب البنكرياس وحصى القناة الصفراوية و التهاب القناة الصفراوية الشائعة.

**الهدف من العمل :** تقييم النتيجة الجراحية من استئصال المرارة بالمنظار والجراحة المفتوحة في التهاب المرارة الحاد من خلال التقييم والتمييز بينهما في هذه المعايير فيما يتعلق ب: 1- الإقامة في المستشفى ، عدوى الجرح ، 3- الناسور الصفراوي ، 4- الحصوات المفقودة ، 5- إصابة الأمعاء.

**المرضى والطرق :** نوع الدراسة: تجربة سريرية مستقبلية. اعداد الدراسة: ستجرى هذه الدراسة بمستشفيات عين شمس. فترة الدراسة: ستجرى هذه الدراسة خلال الفترة ما بين أكتوبر 2018 وأكتوبر 2019. مجتمع الدراسة: ستشمل هذه الدراسة 30 مريضاً بتشخيص الالتهاب الحاد الحصى بالمرارة.

**النتائج:** كانت الدراسة الحالية تجربة إكلينيكية مستقبلية شملت 30 مريضاً تم تشخيص إصابتهم بالتهاب المرارة الحاد وحضروا إلى غرفة الجراحة في مستشفى عين شمس. تم تقسيم المرضى إلى مجموعتين: المجموعة الأولى التي تضم 15 مريضاً خضعوا لعملية استئصال المرارة بالمنظار خلال الأسبوع الأول من العرض التقديمي. خضعت المجموعة الثانية التي تضم 15 مريضاً لعملية استئصال المرارة المفتوحة خلال الأسبوع الأول من العرض التقديمي.

**الاستنتاج:** يجب محاولة استئصال المرارة خلال الأسبوع الأول من التهاب المرارة الحاد عن طريق المنظار الجراحي بالبطن في البداية بشرط عدم وجود مضاعفات مثل المرارة الملتهبة بالغرغرينة. حيث يتم تقليل الفترة المرضية بعد الجراحة والإقامة في المستشفى عن طريق استئصال المرارة بالمنظار. علاوة على ذلك ، يتم تقليل إصابة الأمعاء ومعدل الإصابة بالجروح عن طريق المنظار الجراحي بالبطن. يوجد اتجاه إيجابي في وقت العملية لصالح تنظير البطن ، ولكن يلزم إجراء المزيد من الدراسات. لا يتأثر النزف الشديد ومعدل تسرب الصفراء بهذه التقنية.

**الكلمات الرئيسية:** التهاب المرارة الحاد. التهاب المرارة الحاد. استئصال المرارة بالمنظار. استئصال المرارة الجزئي بالمنظار