RESEARCH ARTICLE

Our results of emergency cholecystectomy in the treatment of acute cholecystitis

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ABSTRACT

Objective: Laparoscopic cholecystectomy has become a popular alternative to conventional cholecystectomy in the treatment of acute cholecystitis. **Materials and methods:** This retrospective descriptive study was conducted in the general surgery department of Gazi Yaşargil Training and Research Hospital between January 2018 and January 2022. All adult patients who underwent emergency laparoscopic cholecystectomy due to acute cholecystitis who admitted to emergency surgery were included in the study regardless of age and gender. **Results:** Of the 74 patients who underwent emergency cholecystectomy, 34 (45.9%) were male, and 40 (54.1%) were female. The mean age of the patients was 51.16±17.74 (min:15-max:92) years.The age group in which emergency cholecystectomy was needed most was 36-45 and 56-65. The comorbidity of the patients was mainly in the 36-65 age group. HT+DM was the most common comorbid disease in the patients. After 36 years of age, morbidity increased with age.The removed gallbladders were sent to pathology. The results were consistent primarily with chronic cholecystitis (51.4%) and acute cholecystitis (24.3%). Two (2.7%) patients developed adenocarcinoma.Wound infection developed in two patients during post-op follow-up. One (1.4%) patient died due to sepsis. **Conclusion:** Emergency Laparoscopic cholecystectomy is associated with less overall morbidity and shorter hospital stay in recurrent episodes of acute cholecystitis. Our study showed that a team experienced in hepatobiliary surgery could safely perform LC in acute cholecystitis attacks.

INTRODUCTION

The treatment surgery in symptomatic calculous cholecystitis is cholecystectomy [1]. Laparoscopic Cholecystectomy (LC) has become the gold standard, replacing conventional cholecystectomy (CC). In recent years, laparoscopic surgery has begun to be preferred over open surgery in cases of Acute Cholecystitis (AC) as well as elective LC. In the past years, LC was not preferred in AC cases due to technical difficulties and high complication rates [2]. However, after serial case reports, results of non-randomized or controlled randomized studies, and clinical research notes were published in ACs, constituting approximately 20% of gallbladder diseases, LC has been accepted as the gold standard in cases of elective cholelithiasis [3, 4, 5]. Timing of surgery is critical in ACs. Many publications report that LCs performed are reliable, especially in the first 72 hours [6, 7]. Despite this, it is a fact that the rate of complication development and conversion to open technique is higher in LCs than in chronic cholecystitis. This article evaluated cases of AC treated with LC in our clinic in light of the literature.

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MATERIALS AND METHODS

This retrospective descriptive study was carried out in the general surgery department of Gazi Yaşargil Training and Research Hospital between January 2018 and January 2022. All adult patients who underwent emergency laparoscopic cholecystectomy due to acute cholecystitis who admitted to emergency surgery were included in the study regardless of age and gender. Patient's gender, age, anamnesis, laboratory tests, radiological findings, preoperative diagnoses, operative notes, and preoperative diagnoses were recorded. Patients with gallbladder wall thickness or pericholecystic fluid observed in preoperative imaging studies were considered to be accompanied by acute cholecystitis. The first thing to look for in the outcome measures was morbidity and mortality. Secondary outcomes were: operative times, intraoperative blood loss of more than 500 ml, and hospital stay. In addition, although it is impossible to make a meta-analysis

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of these data, the conversion rate and biliary tract injuries were evaluated, and the results in these two subjects were reviewed and compared with the literature.

Statistics

Statistical Package for Social Sciences (SPSS) for Windows 13.0 program was used for all statistical analyzes in the study. While evaluating the study data, Student's t-test was used to compare normally distributed parameters in comparison of quantitative data and descriptive statistical methods (mean, standard deviation, frequency). The chi-square and Fisher's exact chi-square tests were used to compare qualitative data. The results were evaluated at the 95% confidence interval, and the significance level was $p<0.05$.

RESULTS

Of the 74 patients who underwent emergency cholecystectomy, 34 (45.9%) were male, and 40 (54.1%) were female. The mean age of the patients was 51.16±17.74 (min:15-max:92) years **[Table 1].**

Of the patients, 45(60.8%) were diagnosed with acute cholecystitis, tenwith perforated cholecystitis, and six with acute biliary cholecystitis. The remaining 29 (39.2%) were found to be compatible with gallstones.

The age group in which emergency cholecystectomy was most needed was 36-45 and 56-65. The comorbidity of the patients was mainly in the 36-65 age group. Morbidityincreased after 36 years of age **[Figure 1].**

Hypertension (HT) and diabetes mellitus(DM) is the most common comorbidity in patients **[Table 2]**.

The patients were operated. The mean operation time was 64.25±18.22 (min:50-max:200) minutes. Laparoscopic cholecystectomy was performed in 55 of the patients, and laparoscopic cholecystectomy umbilical hernia repair was performed in two patients. One patient

Table 1. General information about the patients.

Patient	Number	Percent
Male	34	45.9%
Woman	47	54.1%
Age(years)	51,16±17,74(min:15-max:92)	
Operation time (min.)	64,25±18,22(min:50-max:200)	
Length of stay (days)	4,15±3,2(min:1-max:24)	
mortality	1	1.4%

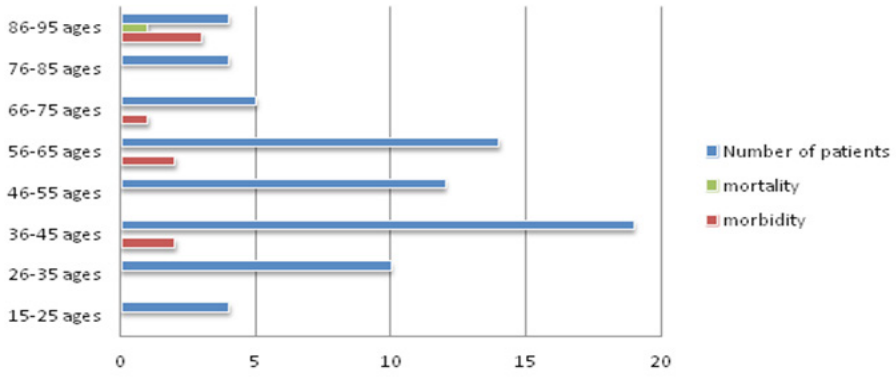

Figure 1. Clinical outcomes of patients undergoing acute cholecystectomy.

Table 2. Co-morbidities of patients.

Co-Morbidity	Number	Percent
HT	19	25.7
DM	8	10.8
Asthma	6	8.1
glaucoma	1	1.4
gonarthrosis	1	1.4
hypothyroid	1	1.4
chronic kidney disease	1	1.4
Chronic ischemic Heart disease	4	5.4
myocardial infarction	1	1.4
Heart failure	1	1.4
chronic obstructive pulmonary disease	1	1.4
Migraine	2	2.7
cerebral palsy	1	1.4

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was diagnosed with colon cancer at the same time, and laparoscopic cholecystectomy + right hemicolectomy + ostomy was performed. Partial laparoscopic cholecystectomy was performed in one patient. Laparoscopic cholecystectomy+liver abscess drainage was performed in one patient. One patient underwent conventional cholecystectomy + umbilical hernia repair.

Conventional cholecystectomy was performed in 16 (21.6%) patients. After the age of 35, the number of conversions to conventional cholecystectomy has increased with the increase in age **[Figure 2].**

The removed gallbladders were sent to pathology. The results were mostly consistent with chronic cholecystitis (51.4%) and acute cholecystitis (24.3%). Two (2.7%) patients had adenocarcinoma **[Table 3].**

Wound infection developed in two patients during post-op follow-ups **(Table 4)**. One (1.4%) patient died due to sepsis.

Our morbidity was 11.2%, and our mortality was 1.4%. Our mean hospital stay was 4.15±3.2(min:1-max:24) days.

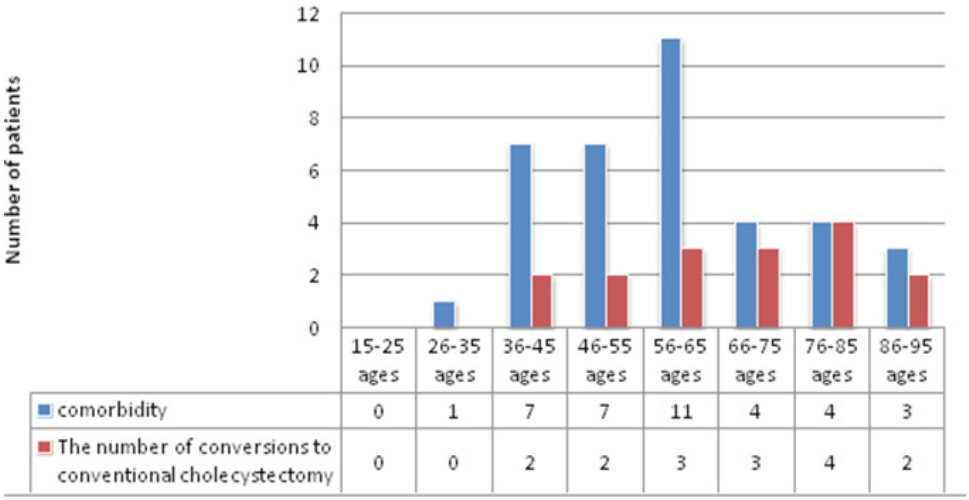

Figure 2. Comorbidity and distribution of patients who underwent conventional cholecystectomy by age groups.

Table 3. Pathology results.

Pathology results	Number	Percent
adenocarcinoma	2	2,7
adenomyosis + chronic cholecystitis	2	2,7
acute cholecystitis	18	24,3
gangrenous cholecystitis	1	1,4
chronic cholecystitis	38	51,4
chronic cholecystitis + colon mucinous adenocarcinoma	1	1,4
chronic stony cholecystitis + adenomyosis	2	2,7
necrosis sac + necrotic liver tissue (wedge resection)	1	1,4
necrosing chronic cholecystitis	5	6,8
necrosis perforated gallbladder	1	1,4
perforated gangrenous cholecystitis	1	1,4
perforated cholecystitis	2	2,7
calculous gangrenous cholecystitis	1	1,4

Table 4. Post op complications.

Complications	Number	Percent
acute renal failure	1	1.4
atelectasis	1	1.4
biloma, Liver abscess	1	1.4
hematoma	1	1.4
cholangitis	1	1.4
sepsis	1	1.4
wound infection	2	2.7

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DISCUSSION

Today, LC is a preferred method in treating patients with symptomatic cholelithiasis. Publications report that LC is a contraindication for patients with acute cholecyst in the first years of starting LC [3]. Today, many publications report that LC can be performed safely by well-trained and experienced surgeons in patients with AC [8, 9]. It is a fact that the rate of conversion to open surgery is higher in patients than in patients with elective cholecystectomy. The literature shows that the conversion rate from LC to open surgery in patients with AC is 6%-35% [8, 10]. The most crucial reason for the high conversion rate to open surgery in patients with AC is adhesions due to inflammation and fibrosis around the gallbladder, resulting in difficulty in dissection and dissection. Anatomy is not fully revealed. Bleeding and biliary tract injuries are the other most common exposure causes. In our study, conventional cholecystectomy was performed in 23 (31.08%) cases due to additional pathologies other than the gallbladder. Our overall conversion rate to open surgery was found to be 37.8% (28 cases), consistent with the literature. The most common causes of turning to conventional laparoscopy were additional pathologies other than the gallbladder, dissection difficulty due to adhesions, bleeding, and biliary tract injuries.

Bile duct injuries in laparoscopic cholecystectomies are one of the complications with high morbidity and fear. While biliary tract injuries were reported as 0.1%-0.2% in years when open cholecystectomy was preferred, this rate was reported to increase to 0.8%-1.4% in the first years when laparoscopic cholecystectomy became common. However, after the intensive use of laparoscopic surgery, this rate decreased to 0.5%-0.6% in the following years [11]. In our study, only one (1.4%) of our patients who underwent laparoscopic cholecystectomy had a major biliary injury and were switched to conventional cholecystectomy.

One of the most important disadvantages of LC in acute cholecystitis is the length of the operation time, but this disadvantage disappears as the surgical experience increases [12]. Our average operation time for conventional cholecystectomy is 68.43±18.41 minutes; for laparoscopic cholecystectomy, our average operation time is 63.1±18. It is 13 minutes. The mean operation time for all our patients was 64.26±18.22 minutes. Since intensive laparoscopy is used in our hospital, our operation time is gradually decreasing.

The average hospitalization time of our AC cases treated laparoscopically was 3.4 days, and our cases treated with open cholecystectomy were 7.1 days. It is compatible with the study of Tekin et al. [12]. As a result, it shows that laparoscopic cholecystectomy shortens the hospital stay.

There is no clear consensus on when surgery should be performed in elderly patients with AC. However, if surgery is to be performed on elderly patients, the patient's systemic condition should be carefully evaluated in terms of possible complications. In this group of patients, laparoscopic cholecystectomy is the recommended surgical method because of the short operation and hospital stay and the lack of post-operative rehabilitation. In addition, when open and laparoscopic cholecystectomy was compared in terms of mortality and morbidity in these patients, it was determined that the mortality rate was the same and the morbidity rate was higher than that of open cholecystectomy [13]. Per the literature, our morbidity after age 35 increased with increasing age.

Studies focusing on non-elderly patients undergoing early cholecystectomy for acute cholecystitis have reported a 7-36% conversion rate from laparoscopic to conventional cholecystectomy. Meta-analyses have shown that increasing age is associated with an increased risk of switching from laparoscopic to conventional cholecystectomy, although no clear explanation has been provided. Dense adhesions or perioperative cardiopulmonary complications due to previous episodes of complicated gallstone disease or previous abdominal surgery may be the reason for this [14]. Our study's conversion rate from laparoscopic to conventional cholecystectomy was 21.6%. Furthermore, the transition to conventional cholecystectomy increased systematically with age after 35 years.

CONCLUSION

Emergency LC is associated with less overall morbidity and shorter hospital stay in recurrent episodes of acute cholecystitis. Our study showed that a team experienced in hepatobiliary surgery could safely perform LC in acute cholecystitis attacks. Regardless of the duration of symptoms and the number of attacks, we recommend performing LC in experienced centers.

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CONFLICT OF INTEREST

The authors declare that they no conflict of interest

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