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# THE EFFICIENCY OF LAPAROSCOPIC SURGERY FOR WOMEN HOSPITALIZED WITH ACUTE CHOLECYSTITIS AT DIFFERENT STAGES OF PREGNANCY.

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## Abstract

**Background:** Gallstones are detected in 1–3% of pregnancies, and 0.05–8% of cases result in biliary disease symptoms. It is thought that progesterone and estrogen cause bile to have higher amounts of cholesterol, which can contribute to the formation of gallstones during pregnancy. Acute appendicitis is the most common cause of non-obstetric abdominal surgical complications during pregnancy, with acute cholecystitis coming in second. Choosing conservative therapies carries hazards for the fetus as well as the mother. Approximately 27–36% of people with symptomatic biliary illness may still need surgery after receiving medical care.

**Objective:** To evaluate the efficiency of laparoscopic surgery for women hospitalized with acute cholecystitis at different stages of pregnancy.

**Study design:** An analytical cross-sectional study

**Place and Duration:** This study was conducted in Muhammad Medical and Dental College Mirpurkhas from September 2022 to September 2023.

**Methodology:** A total of 30 women were included in this research. All of the participants were pregnant women diagnosed with acute cholecystitis. The gathered data included demographics, gestational age, symptoms, clinical and physical examination, maternal and fetal complications, radiological findings, number of pregnancies, treatment, diagnosis, frequency of hospital admissions, and time period of stay in hospital. Some of the things that were looked into before and during surgery were the abdominal entrance technique and the use of endoscopic retrograde cholangiopancreatography (ERCP).

**Results:** A total of 30 pregnant women were involved in this research. All of these participants had complicated gallstone diseases like cholangitis, choledocholithiasis, and acute cholecystitis. The patients were divided into two groups. Group A was the immediate surgery group, which included a total of 9 patients. Group B was the conservative management and delayed surgery group, which included a total of 21 patients. The participant's mean age was 29.5 years. The mean gestational period at the time of diagnosis was 20 weeks.
**Conclusion:** Managing complicated gallstone diseases during pregnancy presents a difficult problem because of the increased rates of fetal and maternal problems.

**Keywords:** complicated gallstones, pregnant women, fetal and maternal problems, endoscopic retrograde cholangiopancreatography

## Introduction

Gallstones are detected in 1–3% of pregnancies, and 0.05–8% of cases result in biliary disease symptoms [1, 2, 3]. It is thought that progesterone and oestrogen cause bile to have higher amounts of cholesterol, which can contribute to the formation of gallstones during pregnancy [4]. Acute appendicitis is the most common cause of non-obstetric abdominal surgical complications during pregnancy, with acute cholecystitis coming in second [5].
Pregnancy-related biliary surgery used to be linked to serious problems for both the mother and the foetus [6]. As a result, it was customary to advise a conservative approach, saving surgical surgery for extreme circumstances or situations in which conservative measures failed [7]. However, choosing conservative therapies carries hazards for the foetus as well as the mother. Approximately 27–36% of people with symptomatic biliary illness may still need surgery after receiving medical care [8, 9, 10]. Furthermore, there is a notable risk of symptom recurrence, with a reported readmission rate ranging from 38 to 69% [11].
New studies show that early laparoscopic cholecystectomy is safer than traditional methods for treating biliary disorders that aren't cancerous and cause symptoms during pregnancy [12, 13]. The purpose of this study was to evaluate the efficiency of laparoscopic surgery for women hospitalized with acute cholecystitis at different stages of pregnancy.

## Methodology

A total of 30 women were included in this research. All of the participants were pregnant women diagnosed with acute cholecystitis. The gathered data included demographics, gestational age, symptoms, clinical and physical examination, maternal and fetal complications, radiological findings, number of pregnancies, treatment, diagnosis, frequency of hospital admissions, and time period of stay in hospital. In the demographics, the following were included: gestational week, participant's age, number of gestations of the participant, and trimester of the pregnancy. Some of the things that were looked into before and during surgery were the abdominal entrance technique and the use of endoscopic retrograde cholangiopancreatography (ERCP).
During their first stay, patients undergoing cholecystectomy were grouped into Group A (Immediate Surgery Group; n = 9). Patients in Group B (Conservative Management and Delayed Surgery Group; n = 21) underwent postpartum surgery under conservative management after declining urgent surgery. Group A's length of hospital stay was calculated from the time of admission to the time of discharge following surgery. The length of stay in Group B included both the original hospitalization and any follow-up readmissions, as well as the postpartum surgical intervention session.
The median was used to display continuous data because of the small sample size. Discrete variables were expressed in terms of the number of patients and the proportion of the study population overall. The study utilized the Mann-Whitney U test to investigate the correlation between dependent and independent variables. A p-value of less than 0.05 was considered statistically significant. With SPSS version 26, all statistical analyses were carried out.

## Results

A total of 30 pregnant women were involved in this research. All of these participants had complicated gallstone diseases like cholangitis, choledocholithiasis, and acute cholecystitis. The patients were divided into two groups. Group A was the immediate surgery group, which included a total of 9 patients. Group B was the conservative management and delayed surgery group, which included a total of 21 patients. The participant's mean age was 29.5 years. The mean gestational period at the time of diagnosis was 20 weeks. Table number 1 shows the demographics of the participants.

**Table No. 1: demographics of the participants.**

| Variables | Group A (n=9) | Group B (n=21) |
|---|---|---|
| **Mean Age (years)** | 29.5 | 29.5 |
| **Mean gestational week** | 22 | 19.5 |
| **1st trimester** | 0 | 7 |
| **2nd trimester** | 6 | 9 |
| **3rd trimester** | 3 | 5 |
| **Mean no. of pregnancies** | 3 | 2 |
| **Gallbladder wall thickness (mm)** | 4.65 | 4.5 |

A combination of clinical history review, physical examinations, lab tests, and imaging modalities, such as magnetic resonance cholangiopancreatography (MRCP) and ultrasound (USG), was used to establish all diagnoses. In every patient, ultrasound (USG) was used as a diagnostic tool. On the other hand, MRCP was used expressly to diagnose choledocholithiasis in 2 (10%) people. Elevated serum lipase and amylase levels, as well as ultrasonographic signs of pancreatic inflammation, led to this diagnostic phase. Table 2 shows the diagnosis of the patients.

**Table No. 2: diagnosis of the patients.**

| Diagnosis | N | % |
|---|---|---|
| **Acute cholecystitis** | 27 | 90 |
| **Acute cholecystitis & choledocholithiasis** | 3 | 10 |

Table number 3 shows the laboratory data of the participants. All the values are in terms of mean.

**Table No. 3: laboratory data of the participants**

| Variables | Group A | Group B |
|---|---|---|
| **White blood cells** | 16.1 | 11.9 |
| **Amylase** | 42 | 43 |
| **Lipase** | 31 | 45 |
| **Alanine aminotransferase** | 94 | 53.5 |
| **C-reactive protein** | 5.5 | 2.8 |
| **Aspartate aminotransferase** | 87.5 | 55.5 |
| **Alkaline phosphatase** | 101 | 60.5 |
| **Gamma glutamyl transferase** | 111.5 | 62.5 |
| **Total. Bilirubin** | 0.95 | 0.85 |
| **Readmission rate** | 0 | 11 |
| **Hospital stay (days)** | 3 | 11 |
| **Preterm labor rate** | 0 | 4 |

## Discussion

Pregnant and non-pregnant women present with acute cholecystitis symptoms essentially in the same way [14]. Common signs and symptoms include dyspepsia, nausea, vomiting, and sensitivity

to fatty meals. Strong or colicky sudden pain that starts in the right upper abdominal quadrant or mid-epigastrium and frequently radiates to the back may also occur. Although the majority of pregnant women with acute cholecystitis do not usually show Murphy's sign, all of the patients in our study showed the same symptoms, and every patient had a positive Murphy's sign, which is consistent with previous research [15].

When it comes to diagnosing gallstones, ultrasound is the recommended method because it is quick, non-invasive, and has a high accuracy rate of 95–98% [16]. If you have symptoms like gallbladder stones, a gallbladder wall that is thicker than 3 mm, pericholecystic fluid, and sonographic Murphy's sign (pain under the ultrasound transducer placed over the gallbladder), you can use ultrasound to diagnose acute cholecystitis [17]. Due to the pregnant patients' condition and the ultrasound's consistent diagnostic performance in this setting, ultrasonography was the radiological imaging method of choice for all patients in this investigation.

At any stage of pregnancy, magnetic resonance imaging (MRI) is a reliable imaging technique for identifying a variety of stomach pain reasons. Magnetic resonance cholangiopancreatography (MRCP) has been shown to be safe during pregnancy, despite earlier worries. In cases of pregnant women experiencing symptomatic common bile duct stones, ERCP (endoscopic retrograde cholangiopancreatography) may be required to manage symptoms and avoid problems [18]. This may involve operations such as biliary sphincterotomy, biliary stone removal, or stent implantation. Though they are uncommon, ERCP operations may result in problems such as bleeding, perforation, or post-ERCP pancreatitis.

The best way to treat complicated gallstone problems during pregnancy is still up for discussion. In the past, non-surgical techniques have been prioritized for managing severe biliary diseases during pregnancy in order to protect the mother and fetus [19]. On the other hand, choosing nonoperative treatment for complicated gallbladder disorders during pregnancy results in a high rate of symptom recurrence and several readmissions to the hospital before or after delivery. In their study, Dixon et al. found that 58% of 44 pregnant individuals with acute cholecystitis who underwent conservative treatment also had recurrent symptoms [20].

The results of this investigation show that individuals who had urgent surgery had a more severe disease than those who were treated conservatively. Variations in liver function, gallbladder wall thickness, and cholestasis test findings demonstrated this. Furthermore, the group that underwent urgent surgery had significantly greater levels of inflammatory markers.

## Conclusion

Managing complicated gallstone diseases during pregnancy presents a difficult problem because of the increased rates of fetal and maternal problems. Choosing a cautious course of therapy may decrease recurrent episodes of the illness, hospital stays, and possible fetal problems such as premature labor or miscarriage.

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This study was conducted without receiving financial support from any external source.

## Conflict in the interest

The authors had no conflict related to their interest in the execution of this study.

## Permission

Prior to initiating this study, approval from the ethical committee was obtained to ensure adherence to ethical standards and guidelines.

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