

ACUTE CHOLECYSTECTOMY IN ACUTE CHOLECYSTITIS: A COMPARATIVE SURGERY WITHIN THREE DAYS VERSUS FOUR DAYS AND BEYOND

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ABSTRACT:

INTRODUCTION: with the early increase in the rise of the frequency of the gall bladder disorder, there has been observed a rise in the usage of the use of the various scanning and diagnostics modalities yet resulting in many cases going undiagnosed with acute cholecystitis as one of the main cause of the hospitalization and surgical interventions, the early surgical management can not only help to prevent the numerous complication but can also be helpful in reducing the hospital stay resulting in the desired patient outcome

OBJECTIVE The main goal was to assess the effectiveness of laparoscopic cholecystectomy for acute cholecystitis by comparing the results of procedures carried out 0–3 days with 4–7 days after the beginning of symptoms.

METHODOLOGY: Patients with acute calculus cholecystitis who were admitted to the hospital's Department of Surgery were included in the study. Group A consisted of patients who presented within three days of the commencement of symptoms, while Group B consisted of patients who presented between four and seven days after the onset of symptoms. Age, surgical difficulties, operating time, recovery time, gender distribution, comorbidities, conversion rates, intraoperative complications, and postoperative problems were among the outcomes that were evaluated for both groups.

RESULTS: The overall conversion rate was 2%, with Group A having a 0% rate and Group B having a 3.6% rate. With a p-value of 0.300, there was no discernible difference. Group B experienced more intraoperative problems (16.4% adhesions, 3.6% haemorrhage, and 1.8% bile leakage) than Group A (4.4% adhesions). There was no significant difference, as indicated by the p-value of 0.110. Postoperative complications were comparable, with wound infections occurring in 12.7% of Group B and 20% of Group A. There was no discernible difference in the p-value for postoperative complications, which was 0.350.

CONCLUSION: For acute cholecystitis, the study finds that laparoscopic cholecystectomy is safe for the first 0–7 days after the onset of symptoms. The differences are not statistically significant, even if surgery done within 0–3 days might lead to a little quicker recovery, fewer intraoperative problems, and fewer postoperative problems.

Search Items: gall bladder, gall bladder disorders, gall stone, gall calculus, gall stone prevention, cholestasis, lap chole, cholecystectomy, gall bladder disorder complication, other gall stone complication, open surgery Laparoscopy, lap surgery, advancement in laparoscopy

INTRODUCTION

The incidence of gall bladder disease has increased several times in the past ten years. Due to the appropriate use of technologically sophisticated investigations such as HIDA Scanning and ultrasonography, an increasing number of cases are diagnosed annually. In India as well as throughout the world, the prevalence of acute cholecystitis is steadily rising. One Gallstones, a consequence of cholelithiasis, are linked to 90% to 95% of cases of acute cholecystitis. A bacterial infection is a secondary component in acute cholecystitis, which is a chemical ischemic inflammation of the gallbladder. Acute cholecystitis caused by a calculus frequently has a fulminant course and several consequences. Five to ten percent of cases of acute cholecystitis are caused by it.² One of the most frequent surgical conditions requiring immediate hospitalization is acute cholecystitis (AC) and its consequences. These Usually, these individuals have non-operative treatment at first, then surgery six weeks or more after the acute incident has passed. 1. Significant paradigm changes have recently occurred in the treatment of these cases, favoring early surgery at the same admission with the benefit of shorter hospital stays (LOS) while maintaining the same rate of complications (2). Furthermore, conservative management doesn't always work. Prior to scheduled operation 3, almost one-fifth of the patients who were waiting for postponed surgery experienced ongoing symptoms or experienced another acute attack that necessitated intervention. The optimal timing to intervene in AC is a topic of continuous discussion. Others define "early" as taking place between 24 and 7 days after diagnosis or symptom onset, while others propose early acute phase surgery within 3 days of admission, and yet others follow the 24-96-hour emergency surgery method 4,5. The national institute for health and care excellence (NICE) recommended that AC be treated within seven days of diagnosis, while the Tokyo guidelines of the Japanese society of hepatobiliary pancreatic surgery recommended that emergency cholecystectomy be indicated for patients with symptoms within 72 hours⁷. There is currently no agreement on the technical issues of accepting early surgery for AC, such as whether an open or laparoscopic cholecystectomy should be performed. 48.7% of AC are operated using the open approach because the presence of inflammation, oedema, necrosis, and adhesion are unfavourable for safe dissection

Some authors claim that during LC in acute phases 8 and 9, the conversion rate to open procedure is likewise higher. However, certain randomized controlled trials (10–13) and meta-analyses (14–16) suggested acute phase LC because of its benefits, which include fewer problems, reduced blood loss during surgery, and a shorter length of stay after surgery.⁶ 72 hours after the beginning of symptoms, Gonzalez Rodrigueg FJ et al. deemed urgent LC challenging and linked to a higher risk of complications¹⁶. Some studies, however, did not find any difference in LOS, morbidity, or conversion rate between patients who had symptoms for less than or more than 72 hours.

BACKGROUND

A condition known as cholelithiasis is common around the world and is brought on by an imbalance in the quantities of cholesterol and bile salts, which leads to precipitation inside the gallbladder. Cholelithiasis is by far the most prevalent illness condition affecting the gallbladder and biliary tree. Overall, gallstones are almost twice as common in women as in men, however the prevalence rises with age in both sexes. Family history and obesity are important risk factors as well. If treatment is not received, up to 20% of patients may develop acute cholecystitis after biliary colic. Complications are more likely to occur in younger people. Small stones are linked to an increased risk of pancreatitis over the course of a lifetime. Cholecystectomy is used to treat nearly all cases of symptomatic or complex cholelithiasis, regardless of the underlying cause.

Since the invention of laparoscopic cholecystectomy twenty years ago, the treatment of gallstone disease has changed significantly. From early cholecystectomy for cholecystitis and same-day elective laparoscopic cholecystectomy to single port laparoscopic cholecystectomy and even robotic treatments, the surgical method has changed throughout time.²⁶

AIM AND OBJECTIVES

The main goal was to assess the effectiveness of laparoscopic cholecystectomy for acute cholecystitis by comparing the results of procedures carried out 0–3 days with 4–7 days after the beginning of symptoms.

MATERIAL AND METHODS

This investigation was conducted at the hospital and medical college in Katihar. This prospective study was conducted between July 2022 and December 2023. This study comprised 100 patients of acute cholecystitis that required surgery in the surgical department.

Study sample: Patients of both sexes admitted to Katihar Medical College and Hospital's Department of Surgery after being diagnosed with acute calculus cholecystitis.

Sample size: 100 patients hospitalized to the surgery department of Katihar Medical College and Hospital with a diagnosis of acute calculus cholecystitis.

Sampling Methods: This study included patients who met the inclusion and exclusion criteria and presented to the Department of Surgery within three or four days, or later (up to seven days).

The Katihar Medical College & Hospital, a tertiary care facility in Katihar, was the site of this single center, two-group study. The institutional ethics committee gave its approval to the project. Prior to enrollment, written informed consent was given to each patient.

INCLUSION CRITERIA:

1. Patients older than 18 years
2. Patients willing for this study
3. Patients diagnosed with Acute cholecystitis of less than or equal to 7 days (according to Tokyo guidelines)

EXCLUSION CRITERIA:

1. Severe sepsis,
2. Immunosuppression,

3. Biliary Peritonitis,
4. Cholangitis,
5. Acute Pancreatitis,
6. pregnancy

Using a laparoscopic technique and general anesthesia, the procedure was carried out with endotracheal intubation. A Veress needle was used to construct the pneumoperitoneum, and four ports were used—a fifth might be inserted if needed for improved exposure. The cystic duct and artery were clipped and divided after adhesions were removed and Calot's triangle was dissected. Using a retrieval bag, the gallbladder was extracted through the epigastric incision. If necessary, a suction drain was inserted, and hemostasis was maintained. If necessary, open surgery was carried out. Following surgery, patients were closely watched for problems and routinely checked in to gauge their general healing and symptom resolution.

Endotracheal intubation and general anesthesia were used during the laparoscopic procedure. A Veress needle was used to generate the pneumoperitoneum, and four ports were used—a fifth port is optional for improved exposure. The gallbladder was extracted using a retrieval bag through the epigastric incision following the dissection of Calot's triangle and the cutting of the cystic duct and artery. A suction drain was installed if necessary, and hemostasis was guaranteed. If necessary, open surgery was carried out. Following surgery, patients were closely watched for problems and routinely checked in to gauge their level of healing and symptom alleviation.

RESULT

The study compared Group A's mean age (46.29 ± 8.971) and Group B's mean age (49.93 ± 10.399). Although Group B's mean age was somewhat greater, the difference was not statistically significant ($p = 0.067$) because it fell short of the 0.05 significance level.

The study analyzed gender distribution in two groups undergoing laparoscopic cholecystectomy for acute cholecystitis. Group A (0–3 days post-onset, $n=45$) had 66.7% females and 33.3% males, while Group B (4–7 days post-onset, $n=55$) had 54.5% females and 45.5% males. In the overall population of 100 participants, females constituted 60% and males

40%. The p-value of 0.152 showed no significant difference in gender distribution between the groups.

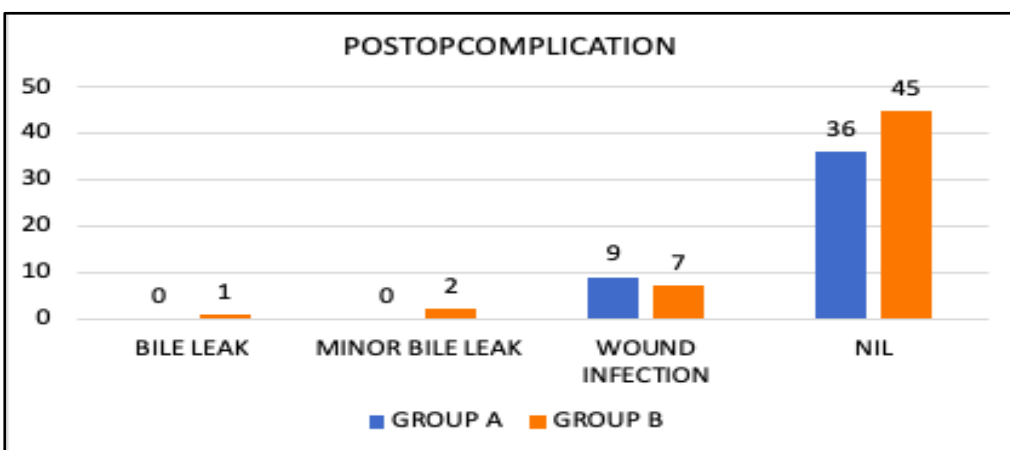
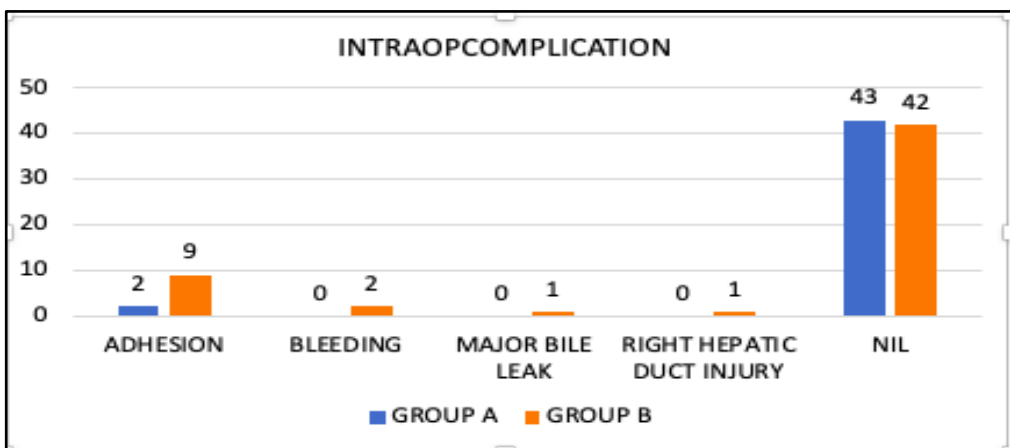
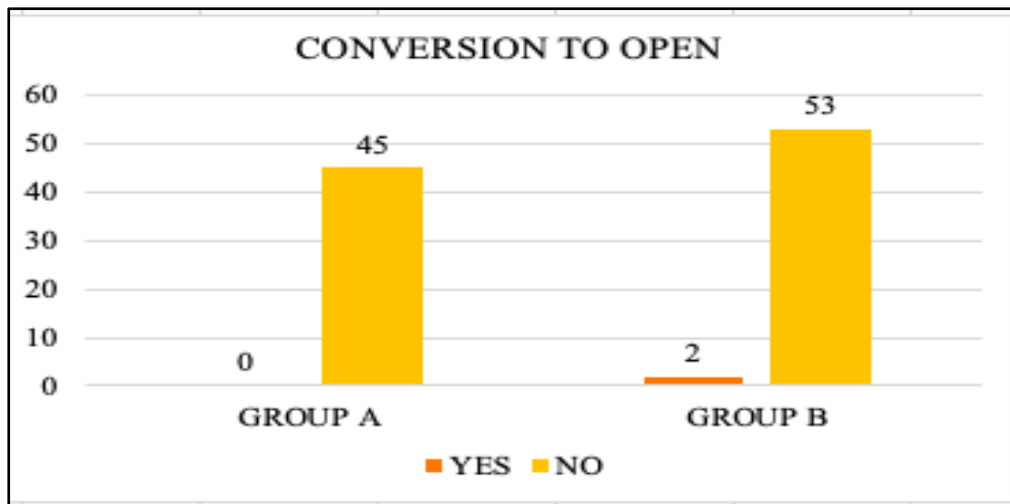
TABLE 1: The study assessed the gender distribution of patients with acute cholecystitis undergoing laparoscopic cholecystectomy. There were 66.7% more females and 33.3% more men in Group A (0–3 days post-onset, n=45) and 54.5% more females and 45.5% more males in Group B (4–7 days post-onset, n=55). Of the 100 participants, 60% were women and 40% were men. The gender distribution between the groups did not differ significantly, as demonstrated by the p-value of 0.152.

	group	N	Mean	Std. Deviation	Std. Error Mean	P value
OPERATIVE DIFFICULTY GRADE	Group A	45	5.73	1.195	.178	0.052
	Group B	55	6.13	1.826	.246	
OPERATIVE TIME IN MINS	Group A	45	63.53	7.197	1.073	0.054
	Group B	55	65.64	10.620	1.432	
RECOVERY TIME IN DAYS	Group A	45	7.29	1.180	.176	0.056
	Group B	55	7.98	2.147	.290	

TABLE 1:

The distribution of comorbidities among patients having laparoscopic cholecystectomy for acute cholecystitis was investigated in this study. Group A (n=45) had bronchial asthma (BA) in 15.6% of cases, diabetes mellitus (DM) in 37.8%, hypertension (HTN) in 37.8%, and no comorbidities in 8.9% of cases (0–3 days post-onset). Group B (n=55) had 20.0% BA, 38.2% DM, 32.7% HTN, and 9.1% no comorbidities (4–7 days post-onset). 18% of the 100 people in the combined population had BA, 38% had DM, 35% had HTN, and 9% had no comorbidities. There was no discernible variation in the distribution of comorbidity across the groups, according to the p-value of 0.929.

In patients with acute cholecystitis, the study evaluated the conversion rates from laparoscopic to open surgery. There were no conversions (0.0%) in Group A (0–3 days post-onset, n=45), but Group B (4–7 days post-onset, n=55) had 2 conversions (3.6%). Of the 100 patients, 98 percent underwent laparoscopic surgery, and 2 percent needed conversion. There was no discernible difference in the groups' conversion rates, as demonstrated by the p-value of 0.300.



The study evaluated the intraoperative complications of laparoscopic cholecystectomy for acute cholecystitis. In Group A, there were 4.4% of adhesions and no instances of hemorrhage,

bile leaks, or hepatic duct injury (0–3 days post-onset, n=45). Group B (4–7 days post-onset, n=55) exhibited higher rates of complications: 1.8% hepatic duct injury, 3.6% bleeding, 16.4% adhesions, and 1.8% substantial bile leak. Of the 100 patients, 85% had no issues at all, while 11% had adhesions, 2% had bleeding, 1% had bile leakage, and 1% had hepatic duct damage. The p-value of 0.110 showed that there was no appreciable difference between the groups.

Postoperative complications following laparoscopic cholecystectomy for acute cholecystitis were examined in this study. Eighty percent of Group A (0–3 days post-onset, n=45) had no problems, whereas twenty percent had wound infections and no bile or moderate bile leakage. In Group B (4–7 days post-onset, n=55), bile leaks were reported by 1.8%, mild bile leaks by 3.6%, wound infections by 12.7%, and no problems by 81.8%. Of the 100 patients, 16% had wound infections, 1% had bile leaks, 2% had minor bile leaks, and 81% had no problems. There was no discernible difference in the groups' postoperative complications, as indicated by a p-value of 0.05.

DISCUSSION

The mean age and gender distribution of study participants undergoing laparoscopic cholecystectomy for acute cholecystitis were compared. Group A (0–3 days, n=45) had a mean age of 46.29 ± 8.971 years, while Group B (4–7 days, n=55) had a mean age of 49.93 ± 10.399 years. The mean ages did not differ in a statistically significant way ($p = 0.067$). Group A's gender distribution was 33.3% male and 66.7% female, whereas Group B's was 45.5% male and 54.5% female. With 60% of the population being female and 40% being male ($p = 0.152$), the gender distribution of the overall population ($n = 100$) did not differ substantially.

In their analysis of laparoscopic cholecystectomy outcomes across age groups, Chang et al. (58) discovered that patients over 50 had longer recovery periods and more operative difficulty, especially when surgery was postponed. Our results were consistent with this trend of older patients having surgery later. According to Kwon et al. (59), patients who underwent delayed surgery had an average age of 51.2 years, whereas those who underwent early surgery had an average age of 47.5 years. Our non-significant age difference is consistent with older patients having a higher likelihood of delayed surgery, which may be the result of cautious care or delayed presentation. According to Patel et al. (60), older patients (mean age 50.6) frequently had surgery after three days, whereas younger patients (mean age 45.8) preferred to have

surgery earlier. But the variations in results were not statistically significant according to age, which is in line with the non-significant p-value for age differences in our study.

By contrasting the results of procedures carried out 0–3 days and 4–7 days after the onset of symptoms, the study evaluated the effectiveness of laparoscopic cholecystectomy for acute cholecystitis. Age, gender distribution, operative complexity, operating hours, and conversion rates did not differ statistically significantly between the two groups. While there was a tendency for the later surgery group (4–7 days) to have greater intraoperative problems (adhesions, hemorrhage, bile leaks, and right hepatic duct injury), longer recovery times, and more difficult surgeries, these differences were not statistically significant. Additionally, there were no appreciable differences in postoperative sequelae such as bile leakage and wound infections. According to the study, laparoscopic cholecystectomy can be safely done between 0 and 7 days, with some trends suggesting that early surgery may result in a faster recovery and fewer complications

Li et al. (65) found a marginally higher conversion rate of 3.1% for procedures carried out after 72 hours, which is consistent with the trend in our study, whereas Zhu et al. (64) reported a conversion rate of 2.5% in delayed laparoscopic cholecystectomy, which is comparable to our findings. On the other hand, Jiang et al. (66) discovered that the conversion rate for earlier procedures (within 72 hours) was 1.5%, while the rate for delayed surgeries was 5.2%. This suggests that timing may affect conversion rates, as demonstrated by other research. This pattern was further supported by Wang et al. (68), who observed increased conversion rates in procedures that were postponed, especially those that lasted longer than five days.

Timing had no discernible effect on intraoperative or postoperative problems, according to our research. Only 4.4% of Group A (0–3 days) experienced adhesions, and there were no significant bile leaks or damage to the right hepatic duct. Although these differences were not statistically significant ($p = 0.110$), Group B (4–7 days) experienced a greater rate of complications, such as adhesions (16.4%), hemorrhage (3.6%), bile leaks (1.8%), and right hepatic duct damage (1.8%). Which is consistent with Li et al. (65), who observed that postponed procedures raised the likelihood of problems, such as bleeding and bile leakage, and Zhu et al. (64), who discovered less intraoperative complications with early surgery. In line with our findings of a greater rate of wound infections and mild bile leaks in Group B, Jiang et al. (66) found that postoperative complications, including bile leaks and wound infections, were more common with delayed procedures. Our conclusion that there was no significant difference in postoperative complications between the groups ($p = 0.350$) was supported by

Wang et al.'s (68) finding no significant difference in overall postoperative complications between early and delayed procedures.

CONCLUSION

By contrasting the results of procedures carried out 0–3 days and 4–7 days after the onset of symptoms, the study evaluated the effectiveness of laparoscopic cholecystectomy for acute cholecystitis. Age, gender distribution, operative complexity, operating hours, and conversion rates did not differ statistically significantly between the two groups. While there was a tendency for the later surgery group (4–7 days) to have greater intraoperative problems (adhesions, hemorrhage, bile leaks, and right hepatic duct injury), longer recovery times, and more difficult surgeries, these differences were not statistically significant. Additionally, there were no appreciable differences in postoperative sequelae such as bile leakage and wound infections. According to the study, laparoscopic cholecystectomy can be safely done between 0 and 7 days, with some trends suggesting that early surgery may result in a faster recovery and fewer complications.

The flexibility of surgical time dependent on patient and logistical circumstances is supported by the fact that these trends were not statistically significant. Larger sample numbers in future studies could yield more precise findings.

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