"A COMPARITIVE STUDY OF EARLY VS INTERVAL LAPAROSCOPIC CHOLECYSTECTOMY IN ACUTE CHOLECYSTITIS"

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ABSTRACT:
Introduction: Acute cholecystitis is an inflammatory gallbladder pathology, often linked to cholelithiasis. The timing of laparoscopic surgery remains controversial, with early, conservative, and delayed approaches. Early studies show better outcomes and shorter hospital stays, but recent evidence often excludes open cases. **Aims:** The study compares early vs interval laparoscopic cholecystectomy outcomes, safety, intra-operative difficulties, postoperative morbidity, and hospital stay duration in acute cholecystitis, determining conversion rates and reasons. **Methodology:** This comparative prospective study examines 50 patients with acute cholecystitis admitted in emergency at Krishna Hospital, Karad, analyzing safety, effectiveness, outcome, complications, quality of life, and early resumption of activities. **Results:** A study comparing early and delay laparoscopic cholecystectomy combinations in 50 patients with acute cholecystitis found that 52% of females were in the early group and 56% in the delay group. Early patients underwent laparoscopic cholecystectomy, while late patients had open cholecystectomy. The study also found that early patients had shorter average hospital stays. **Discussion:** Recent studies show laparoscopic cholecystectomy is feasible and safe for acute cholecystitis, with higher conversion rates. Delayed laparoscopic cholecystectomy may be a better option due to its technically easier procedure and lower conversion rates. Early laparoscopic cholecystectomy is safe, shortens hospital stay, and reduces cholecystitis risk. **Conclusion:** Early laparoscopic cholecystectomy is a safe, feasible, and effective treatment option for acute cholecystitis, with reduced complications and comparable postoperative morbidity and mortality rates.

INTRODUCTION

Acute cholecystitis is an inflammatory gallbladder pathology, often linked to cholelithiasis, causing chronic inflammation, empyema, mucocele, and perforation, with delayed laparoscopic surgery and socioeconomic impact. [1,2]

The timing of laparoscopic cholecystectomy for acute cholecystitis with cholelithiasis remains controversial, with two approaches: early, conservative, and delayed, depending on hospital infrastructure, surgical expertise, and patient condition. [3,4]

Acute inflammation makes laparoscopic cholecystectomy (LC) difficult due to edema, exudate, adhesions, and distorted anatomy. Early open cholecystectomy is preferred for acute cholecystitis, but early surgery has been associated with increased complications and hospital stays. Delayed LC is now accepted, although conversion to open cholecystectomy may be higher. [5,6-8,9]

Early studies on EC treatment for acute cholecystitis began in the 1950s, with the first controlled study in 1970 showing improved morbidity and shorter hospital stays. Laparoscopic surgery, initially considered contraindicative, experienced negative results. [10,11]

Recent studies show favor for laparoscopic cholecystectomy, but these studies often exclude open cases, potentially biasing the external validity. There's controversy over timing and clinical practice, with most evidence coming from prospective studies and not in many hospitals. [12,13]

Early laparoscopic surgery (EC) for acute cholecystitis has been studied since the 1950s, with early studies showing better outcomes and shorter hospital stays compared to delayed surgery, particularly in the 1990s. [14-17]

AIM AND OBJECTIVE

The study compares early vs interval laparoscopic cholecystectomy outcomes, safety, intra-operative difficulties, postoperative morbidity, and hospital stay duration in acute cholecystitis, determining conversion rates and reasons.

METHODS AND MATERIAL

Study design:Comparitive Prospective type of Study
Place of study: KVVDU, Karad hospital
Study period: 2022 to 2023
This study focuses on 50 patients with signs of cholecystectomy admitted in emergency between 2022 and 2023, analyzing safety, effectiveness, outcome, complications, quality of life, and early resumption of activities.

Inclusion criteria: The study included adult patients aged 20-65 with acute cholecystitis admitted at Krishna Hospital, Karad.

Exclusion criteria: Patients under 18 years or older, with ultra-sonographic findings of common bileduct calculi, pancreatitis, gallbladder perforation, gangrene, gall bladder abscess, or other abdominal pathology are excluded.

Sample Size

The study will involve a sample of 50 patients from Krishna Institute of Medical Sciences, Karad.

$$n=(SD1^2+SD2^2)(Z1-\alpha/2+Z1-\beta)^2/(M1-M2)^2$$

$$n=\frac{(10^2+12^2)(1.96+0.84)^2}{(100-110)^2}$$

$$n=50$$

Methodology

This study involved 50 patients with acute cholecystitis admitted to the Krishna Institute of Medical Sciences Karad between March 2022 and September 2023. The patients were divided into two groups: early and delayed. The diagnosis was based on clinical and ultrasonographic criteria. The patients underwent baseline investigations, including blood tests, liver function tests, and ultrasound. Ultrasonographic signs included distension of the gallbladder, oedematous gall bladder, gallstones, and fluid collection.

Results

A prospective study involving 50 patients with acute cholecystitis, including those presenting with laparoscopic cholecystectomy, compared early and delay laparoscopic cholecystectomy combinations.

STATISTICAL ANALYSIS

The study analyzed data from 50 patients, divided into two groups based on age, sex, and clinical parameters. The data was analyzed using IBM SPSS v23, with frequencies, percentages, cross tabulation, and Chi-square analyses. Statistical significance was determined at p values <0.05. The results were discussed in the study. The study aimed to compare intraoperative and postoperative complications between early and late groups.

Age	Mean±SD	tvalue	pvalue	Unpairedt test
Early	42±12.44	2.05	0.04	**SIGNIFICANT**
Interval	35.88±8.29			

TABLE:1 Age Distribution

The study found that the average age of patients was 42 years and 12.44 years in the early group and 35.88 years and 8.29 years in the delay group.

Table2: Sexvariation

Sex	Groups	
	Early(25)	Delay(25)
Male	12(48%)	11(44%)
Female	13(52%)	14(56%)
Total	100%	100%

The study found that 52% of the female population was in the early group and 56% in the delay group, while 48% of the male population was in the early group.

Table 3:Treatment Groups

TreatmentGroups	Groups	
	Early(25)	Delay(25)
Laparoscopiccholecystectomy %withingroups	18(72%)	17(68%)
Opencholecystectomy% within groups	7(28%)	8(32%)
Total	25(100%)	25(100%)

The study found that 72% of early patients underwent laparoscopic cholecystectomy, while 28% underwent open cholecystectomy, and 68% underwent laparoscopic cholecystectomy in the late group.

Table 4:Intraoperativedifficulty

InteroperativeDifficulty	Groups		t value	p value	Chi-square test
	Early(25)	Delay(25)			
presentwithingroups	7(28%)	9(36%)	0.368	0.544	Not significant
absentwithingroups	18(72%)	16(64%)			
Total	25(100%)	25(100%)			

Early and late groups experienced 28% and 36% difficulty in identifying Calot's triangle, respectively, with 72% and 64% cases having no difficulty during the early and delay intra-operative periods.

Table 5:Bile leak

Bileleak	Groups		tvalue	pvalue	chi-square test
	Early(25)	Delay (25)			
Present%withingroups	0(0%)	1(4%)	4.5	0.049	Significant
Absent%withingroups	25(100%)	24(96%)			
Total	25(100%)	25(100%)			

The Pearson Chi-square value assigned to the pvalue was approximately 0.03, indicating significant significance due to the small sample size.

Table 6:Hemorrhage

hemorrhage	**Groups**		**t value**	**p value**	**chi-square test**
	Early	**Delay**			
Present%	8(16%)	7(14%)	4.5	0.75	**Not significant**
Absent%	17(84%)	18(86%)			
Total	25(100%)	25(100%)			

Table 7: Post operativewoundinfection

Postoperativewound infection	**Groups**		**tvalue**	**pvalue**	**chi-square test**
	Early(25)	**Delay(25)**			
Present%withingroups	6(24%)	8(32%)	**0.397**	**0.529**	**not significant**
Absent %withingroups	19(76%)	17(68%)			
Total	25(100%)	25(100%)			

The study found that 24% of early patients and 32% of late patients had wound infections postoperatively, with a p-value of 0.397 due to a small sample size.

Table 8: Atelectasis

Atelectasis	**Groups**		**t value**	**pvalue**	**chi-square test**
	Early (25)	**Delay(25)**			
Present%withingroups	7(28%)	10(40%)	**0.802**	**0.37**	**not significant**
Absent%withingroups	18(72%)	15(60%)			
Total	25(100%)	25(100%)			

The study found that 28% of patients in the early group and 40% in the late group had lung infections, with 72% in the early group and 60% in the late group.

Table 9: Duration of Hospital Stay (in days)

Durationofsymptoms (DAYS)	Mean± SD	tvalue	pvalue	**Unpairedt test**
Early	9.16±6.189	5.075	<0.0001	**SIGNIFICANT**
Interval	19.92±8.607			

The study compared hospital stays for early and late cholecystectomy patients, finding that early laparoscopic cholecystectomy patients had shorter average stays.

DISCUSSION

Recent studies show that laparoscopic cholecystectomy is feasible and safe for acute cholecystitis, with higher conversion rates. However, delayed laparoscopic cholecystectomy may be a better treatment option if it leads to a technically easier procedure with lower conversion rates. [18,19]

Delayed laparoscopic cholecystectomy may be a better treatment option for acute cholecystitis due to its technically easier procedure and lower conversion rate. However, there is an increased risk of gallstone-related morbidity during the waiting period. With increasing experience and advances in imaging techniques and instruments, laparoscopic cholecystectomy is becoming more applicable in acute cholecystitis settings. Both early and delayed groups had similar difficulties in identifying calot's triangle, leading to bile duct injury and cholangitis. The technical difficulty of laparoscopic cholecystetomy is related to operative findings in early surgery. Post-operative wound infection was different in both groups, with early patients having a higher prevalence of lung infections. Adequate analgesia and physiotherapy with good antibiotic coverage can prevent post-operative lung atelectasis, but the significance of being in either group does not play a major role in lung infections.

Postoperative wound infection, a common postoperative complication, is more common in patients undergoing early laparoscopic cholecystectomy, according to Linden et al. [1970]. [20]

Early laparoscopic cholecystectomy is safe, shortens hospital stay, and reduces the risk of repeated cholecystitis. It decreases morbidity, operating time, and hospital stay compared to delayed laparoscopic cholecystectomy. The study found that hospitalization duration and work lost days were lower in early laparoscopic cholecystectomy patients, possibly due to shorter hospitalization duration and lack of conservative treatment.

CONCLUSION

Early laparoscopic cholecystectomy is safe and feasible for acute cholecystitis, with reduced intraoperative and postoperative complications. Increased surgeon experience can reduce complication rates. Postoperative morbidity and mortality are comparable. Early laparoscopic cholecystectomy reduces medical treatment failure and biliary peritonitis, making it a preferred option over delayed treatment.

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