



LAPAROSCOPIC CHOLECYSTECTOMY; COMPARISON OF EARLY VERSUS DELAYED LAPAROSCOPIC CHOLECYSTECTOMY IN ACUTE CHOLECYSTITIS: A RANDOMIZED CONTROL TRIAL

Fatima Abbasi¹, Saeed Ahmed²

1. MBBS, FCPS
Senior Registrar
Department of Surgery
DHQ Hospital Rawalpindi.
2. MBBS, FCPS
Associate Professor
Department of Surgery
University of Hail, UAE.

Correspondence Address:

Dr. Fatima Abbasi
House# B-3, 931 Khurram Colony,
Sadiqabad, Rawalpindi.
dr_fatima_84@hotmail.com

Article received on:

23/05/2018

Accepted for publication:

20/11/2018

Received after proof reading:

23/02/2019

ABSTRACT... Objectives: To compare the outcomes of early versus delayed laparoscopic cholecystectomy in acute calculus cholecystitis. **Study Design:** Randomized control study. **Setting:** Surgical Unit of Rawal Medical and Dental Hospital, Islamabad. **Period:** February 2015 to January 2016. **Subjects and Methods:** 100 patients with acute cholecystitis between the ages 20 years to 60 years were divided into early and late group of 50 patients each. Informed consent was taken. Data was entered into a pre designed performa. Analysis of data was done using spss version 17. T test was applied on quantitative data and chi 2 on qualitative data. p-value of less than 0.05 was taken as significant. Early group had laparoscopic cholecystectomy within 72 hours while late group had surgery 6-8 weeks after the acute attack. **Results:** There was increased operating time in the early group which was statistically significant (p-value 0.046). There was slightly increased rate of conversion to open cholecystectomy, increased hospital stay and intra and post operative complications but none of them were statistically significant. Also pain scores and analgesic requirements had no major difference in both groups. **Conclusion:** Early laparoscopic cholecystectomy is a reasonably safe and cost effective alternative to interval cholecystectomy. Although some complications are more common in early cholecystectomy mainly due to difficult anatomy of calot's triangle like conversion to open, gall bladder perforation and wound infection, none of them proved to be statistically significant.

Key words: Acute calculus Cholecystitis, Conversion to Open, Laparoscopic Cholecystectomy.

Article Citation: Abbasi F, Ahmed S. Laparoscopic cholecystectomy; comparison of early versus delayed laparoscopic cholecystectomy in acute cholecystitis: a randomized control trial. Professional Med J 2019; 26(3):474-478.
DOI: 10.29309/TPMJ/2019.26.03.3256

INTRODUCTION

Gall stones are one of the most commonly encountered problems a general surgeon come across in the outpatient department. As a result, cholecystectomy is the most commonly performed general surgical procedure worldwide.¹ The world wide prevalence of acute cholecystitis is unknown but in western society it is about 10 %.² Acute calculus cholecystitis is a very common surgical emergency with complications both within the gallbladder and outside the gallbladder. Common complications inside the gallbladder are acute cholecystitis, empyema, perforation leading to peritonitis etc. Other complications include acute biliary pancreatitis, gall stone ileus (extremely rare), mirizzi syndrome etc. The conventional initial treatment of acute cholecystitis remains, nil per oral, intravenous fluids, intravenous antibiotics. Surgery is advised after at least 6-8 weeks of the

initial attack, but it is avoided in the acute setting due to fear of increased rate of complications, the most hazardous being common bile duct injury. Other complications include excessive bleeding from adhesions and increased rate of conversion to open cholecystectomy.³ Some studies however now are showing that with increasing surgical expertise, laparoscopic cholecystectomy can be performed in patients with acute cholecystitis.³⁻⁵ So we conducted a randomized control trial to compare the results of early laparoscopic cholecystectomy with delayed cholecystectomy.

MATERIAL AND METHODS

Our study was conducted at the surgical department of a teaching hospital Rawal medical and dental hospital, Islamabad. Study duration was 11 months from February 2015 to January 2016. The study population included patients of

either gender, between the ages of 20-60 years presenting with acute calculous cholecystitis to the emergency or Surgical OPD of the hospital. Patients were divided into 2 groups of 50 patients each. Group A had early laparoscopic cholecystectomy and group B was the delayed surgery group. Diagnosis of acute cholecystitis was based on the following criteria:

- 1: Acute right upper abdominal pain
- 2: Fever > 37 degrees
- 3: Total leukocyte count > 11000/mm
- 4: Sonological features suggestive of acute cholecystitis including pericholecystic fluid, edematous gallbladder wall, presence of gallstones

All the patients were matched for their comorbid and anaesthesia fitness. Patients with coexistent acute pancreatitis and CBD stones were excluded. Also patients with ASA above 4 were excluded from the study. Informed consent was taken and laparoscopic cholecystectomy was done within 72 hours on the acute attack in the early group and within 6-8 weeks in the delay group. Standard 4 port technique was used. Patients were allowed orally after routine 6-8 hours NPO. Postoperative pain control was achieved by intramuscular diclofenac injection. Patients were given oral painkillers on discharge. The pain was assessed by visual analogue scale. Patients were discharged once taking orally and pain-free.

Following parameters were assessed in both groups in the intraoperative period:

- 1: Duration of surgery (starting from incision till closure of ports)
- 2: Conversion to open cholecystectomy
- 3: Gallbladder perforation
- 4: Common bile duct injury

Following parameters were assessed in both groups in the postoperative period

- 1: Pain using the Visual Analogue Scale
- 2: Wound-related complications
- 3: Duration of postoperative hospital stay
- 4: Analgesic requirement

All the data was entered and statistical analysis was done using paired T-test and Chi-square test. SPSS version 17 was used. P value was

calculated and a value of <0.05 was taken as significant.

RESULTS

100 patients with acute calculous cholecystitis were evaluated in our study. These patients were well matched in terms of age and gender and comorbid. They were also matched in terms of disease severity (assessed by clinical and laboratory parameters). The following outcome measures were sought for difference in both Group A and Group B.

Difficulty in surgery and a longer operating time was required in the early group. Mean operating time was 77.78 min in the early group and 58.83 in the delayed group. The p-value calculated was statistically significant for increased operating time (p-value 0.046). Postoperative hospital stay was 1.57 in the early group and 1.47 in the delay group (p-value 0.36~insignificant). There was no significant difference in pain scores and analgesic requirements in both groups. (p-values of 0.115 and 0.116 respectively). See Table-I.

	Early Group n=50	Delayed Group n=50	P-value
Operating time (hours)	77.78	58.83	0.046
Hospital stay (days)	1.57	1.47	0.36

Table-I. Comparison of both groups in terms of mean operating time and hospital stay:

Six patients in the early group and four patients in the delay group underwent conversion to open cholecystectomy. P-value for this was calculated (0.78) which was insignificant. The main reason for conversion in the early group was the unclear anatomy of the Calot's triangle. The main reason for conversion in the delay group was bleeding. (See Table-I)

Procedure	Early n=50	Delayed n=50	P-Value
Successful	44	46	
Conversion to Open	6	4	
Conversion Rate	12%	8%	0.78

Table-II. Conversion from laparoscopic to open cholecystectomy

There was no death in any of these two groups. The overall complication rate was 18% (9 of 50) in the early group and 4% (02 of 50) in the delayed group. There was no major bile duct injury in any patient. There was a high rate of wound infection in the early group. p-value was not significant for any of the complications. Different complications are shown in Table-III:

Complications	Early	Delayed	P-Value
Intraoperative:			
Bile leak	2	0	0.38
Gall bladder perforation	2	0	
Postoperative:			
Wound infection	05	02	0.52
Total complications	9	02	

Table-III. Comparison of intraoperative and postoperative complications in both groups

DISCUSSION

The outcomes of our study were encouraging for surgeons to perform early laparoscopic cholecystectomy in setting of acute calculus cholecystitis. By proving that the adverse complications of this procedure are almost similar and comparable to the literature rate, this study can be taken as a reference in our setup to start the procedure in emergency.

Gallstone disease is a well known health problem throughout the world specifically in Asian countries. Laparoscopic cholecystectomy is the most acceptable procedure to be adopted internationally for symptomatic cholelithiasis. After its advent in 1987, laparoscopic cholecystectomy has become the cornerstone in management of cholelithiasis. But its role in the setting of acute cholecystitis has always been challenged. There has been a false and firm apprehension of increased patients, morbidity and even mortality. However, it has largely been proved to be wrong by many researchers.^{8,9,10,11,12}

We, therefore, aimed to conduct this study to evaluate the feasibility of early laparoscopic cholecystectomy in our setup. For this purpose, we divided patients into two groups. Group A or the early group and Group B or the delayed group. Each group had 50 patients each with

similar social and clinical parameters. The main outcome measures which were assessed were the operating time, intra and post operative complication and duration of hospital stay.

The difference in operation time in our study in both groups was statistically significant. This is consistent with the findings of some international trials which showed more difference in the operative time of early and delayed cholecystectomy.¹³ Duration of hospital stay in early laparoscopic cholecystectomy is also variable. The mean hospital stay in our study in the early group was 1.57 days which is comparable to the literature which shows mean hospital stay of about 2.4 days.¹⁴

The timing of cholecystectomy in acute cholecystitis is both crucial and controversial. Currently there is no definite agreed upon timing of surgery in acute cholecystitis with many surgeons still reluctant to perform surgery in the acute setting. But many studies now incorporate 1st week after the acute attack into the early intervention group^{15,16,17} In our study surgery was done within 72 hours of acute attack. The timing of delayed surgery for acute cholecystitis is less controversial and most surgeons agree to perform interval cholecystectomy 6-8 weeks after the initial conservative trial.^{13,14} This was also the timing of interval cholecystectomy in our study group.

Laparoscopic cholecystectomy in acute setting is definitely more difficult due to adhesions and bleeding. As a result for the purpose of ease a number of modifications can be adapted like using a 5th port, emptying the gall bladder before grasping, subtotal cholecystectomy etc.¹⁸ Also subhepatic drain can be placed for controlling bile leak which is expected more in acute setting. In our study 30(60%) patients required drain, 15(30%) needed decompression and no patients required extra port insertion.

This study like many other studies being carried out nowadays endorses early laparoscopic cholecystectomy in acute cholecystitis. This not only prevents the a second readmission but also

many of the complications of delayed surgery in gallstone diseases like perforation, a very difficult surgery due to fibrosis, recurrent cholecystitis and acute pancreatitis. This has also been proved in some recent studies that early cholecystectomy is no doubt beneficial and even has better outcomes than delayed cholecystectomy.¹⁹

CONCLUSION

In conclusion, both early and delayed laparoscopic cholecystectomies are feasible and safe in acute cholecystitis; however, delayed lap chole is associated with lower conversion rate, while early cholecystectomy offers definitive treatment at the initial admission associated with a shorter total hospital stay which is a major economic benefit to the health care system especially in our country.

Copyright© 20 Nov, 2018.

REFERENCES

- Jensen KH, Jorgensen T. **Incidence of gallstones in a Danish population.** *Gastroenterology.* 1991; 100:790–794.
- Bates T, Harrison M, Lowe D, Lawson C, Padley N. **Longitudinal study of gall stone prevalence at necropsy.** *Gut.* 1992; 33:103–107.
- T. Siddiqui, A. MacDonald, P. S. Chong, and J. T. Jenkins, “**Early versus delayed laparoscopic cholecystectomy for acute cholecystitis: a meta-analysis of randomized clinical trials,**” *American Journal of Surgery,* vol. 195, no. 1, pp. 40–47, 2008.
- R. Sinha and N. Sharma, “**Acute cholecystitis and laparoscopic cholecystectomy,**” *JLS: Journal of the Society of Laparoendoscopic Surgeons/Society of Laparoendoscopic Surgeons,* vol. 6, no. 1, pp. 65–68, 2012.
- C.-M. Lo, C.-L. Liu, E. C. S. Lai, S.-T. Fan, and J. Wong, “**Early versus delayed laparoscopic cholecystectomy for treatment of acute cholecystitis,**” *Annals of Surgery,* vol. 223, no. 1, pp. 37–42, 2010.
- C.-M. Lo, C.-L. Liu, S.-T. Fan, E. C. S. Lai, and J. Wong, “**Prospective randomized study of early versus delayed laparoscopic cholecystectomy for acute cholecystitis,**” *Annals of Surgery,* vol. 227, no. 4, pp. 461–467, 2011.
- M. Johansson, A. Thune, A. Blomqvist, L. Nelvin, and L. Lundell, “**Management of acute cholecystitis in the laparoscopic era: results of a prospective, randomized clinical trial,**” *Journal of Gastrointestinal Surgery,* vol. 7, no. 5, pp. 642–645, 2013.
- Shikata S, Noguchi Y, Fukui T. **Early versus delayed cholecystectomy for acute cholecystitis: A meta-analysis of randomized controlled trials.** *Surg Today.* 2005; 35(7):553–560.
- A. P. Nagle, N. J. Soper, and J. R. Hines, “**Cholecystectomy (open and laparoscopy),**” in *Maingot’s: Abdominal Operations,* M. J. Zinner and S. W. Asmshley, Eds., pp. 847–861, McGraw-Hill, New York, NY, USA, 11th edition, 2007.
- A. S. Serralta, J. L. Bueno, M. R. Planells, and D. R. Rodero, “**Prospective evaluation of emergency versus delayed laparoscopic cholecystectomy for early cholecystitis,**” *Surgical Laparoscopy, Endoscopy and Percutaneous Techniques,* vol. 13, no. 2, pp. 71–75, 2009.
- W. Van Der Linden and G. Edlund, “**Early versus delayed cholecystectomy: the effect of a change in management,**” *British Journal of Surgery,* vol. 68, no. 11, pp. 753–757, 2011.
- A. Cuschieri, F. Dubois, J. Mouiel et al., “**The european experience with laparoscopic cholecystectomy,**” *The American Journal of Surgery,* vol. 161, no. 3, pp. 385–387, 2005.
- C. K. Kum, P. M. Y. Goh, J. R. Isaac, Y. Tekant, and S. S. Ngoi, “**Laparoscopic cholecystectomy for acute cholecystitis,**” *British Journal of Surgery,* vol. 81, no. 11, pp. 1651–1654, 2010.
- Al-Mulhim AA. **Timing of early laparoscopic cholecystectomy for acute cholecystitis.** *JLS.* 2008; 12:282–287.
- Gutt CN, Encke J, Köninger J, Harnoss JC, Weigand K, Kipfmüller K, et al. **Acute cholecystitis: early versus delayed cholecystectomy, a multicenter randomized trial.** *Ann Surg.* 2013; 3:385–393.
- Casillas RA, Yenyiyants S, Collins JC. **Early laparoscopic cholecystectomy is the preferred management of acute cholecystitis.** *Arch Surg.* 2008;143:533–537.
- R. G. Wilson, I. M. C. Macintyre, S. J. Nixon, J. H. Saunders, J. S. Varma, and P. M. King, “**Laparoscopic cholecystectomy as a safe and effective treatment for severe acute cholecystitis,**” *British Medical Journal,* vol. 305, no. 6850, pp. 394–396, 2008.
- H. A. Graves Jr., J. F. Ballinger, and W. J. Anderson, “**Appraisal of laparoscopic cholecystectomy,**” *Annals of Surgery,* vol. 213, no. 6, pp. 655–660, 2009.
- Hartwig W, Büchler MW. **Acute Cholecystitis, Early versus delayed surgery.** *Adv Surg.* 2014; 48:155–164.


“

Wise men learn by other men's **mistakes**,
fools by their **own**.

”

“Norwegian Proverb”

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Fatima Abbasi	Data collection, Statistical analysis.	
2	Saeed Ahmed	Literature review.	