ORIGINAL
PROF-1773

LAPAROSCOPIC CHOLECYSTECTOMY;
OPTIMAL TIMING FOR SURGERY IN ACUTE GALL STONE DISEASE

DR. AWAIS SHUJA, MRCS
Assistant Professor Surgery
Independent Medical College
Faisalabad.

DR. ABID RASHID, FCPS
Assistant Professor of Surgery
Independent Medical College
Faisalabad.

DR. ABID BASHIR, FCPS
Associate Professor of Surgery
Nawaz Sharif Medical College,
Gujrat

ABSTRACT: Laparoscopic cholecystectomy is the gold standard treatment for patients presenting with acute gall stone disease necessitating hospital admission. **Objective:** To assess the impact of timing of laparoscopic cholecystectomy on conversion rate, hospital stay and morbidity. **Period:** Jan 2008-2010. **Setting:** Department of Surgery, Independent University Hospital, Faisalabad. **Study Design:** Experimental study. **Material & Methods:** The subjects were included by consecutive sampling technique. 81 cases were divided into 3 groups. Group A (Surgery within 72 hrs of onset symptoms). Group B (surgery between 72hrs to 96 hours of onset of symptoms). Group C (surgery after 96 hours of onset of symptoms). **Results:** The mean age was 41-95 years. Female to male ratio was 4.5:1. The overall complication rate was 12.69%. Mean hospital stay was 2.85 days. The open conversion rate was 8.64%. In group A the complication rate was 6%, group B 11.5% and group C 12.8&. The mean hospital stay and conversion rate had no significant difference. **Conclusions:** The timing of laparoscopic cholecystectomy has no significant impact on the conversion rate and length of hospital stay in cases with acute cholecystitis. However the complication rate was higher when surgery performed after 72 hours of onset of symptoms.

Key words: Acute cholecystitis, Laparoscopic cholecystectomy, Timing.

INTRODUCTION

Laparoscopic cholecystectomy (LC) is the gold standard treatment for patients presenting with acute gall stone disease, neccesitating hospital admission. Acute Cholecystitis is generally found in approximately 28% of all admissions for gall stone disease. Laparoscopic cholecystectomy has been established as the treatment of choice for the management of acute cholecystitis, despite initial reservations , regarding the impact of this policy on the conversion rate and morbidity. Early laparoscopic cholecystectomy has been proven superior to delayed interval laparoscopic cholecystectomy in most of prospective randomized trial.

Optimal surgical timing in the treatment of acute gall stone disease is of major importance and still a debatable issue.

Early LC can be performed safely in most patients with acute gall stone disease but it is recommended to perform surgery within 72 hrs of admission to minimize complication rate and shorter duration of hospital stay[2]. Recently studies are suggesting that timing of LC in the patients with acute cholecystitis has no clinically relevant effect on conversion rates , operative times and length of stay[3].There is no advantage to delaying cholecystectomy for acute cholecystitis on the basis of out comes in complications, rate of conversion to open surgery and mean hospital stay[4].

Our hospital operates a specialist led protocol for the management of acute gall stone disease under the care of surgical team. This aim of treatment is to perform definitive surgery in same admission.

Objective

The objective is to assess the impact of timing of Laparoscopic cholecystectomy on the conversion rate, hospital stay and morbidity.

Setting

This study was carried out at Department of Surgery , Independent Medical College Faisalabad.

Period

Data was collected prospectively from Jan 2008 to Jan

2010.

Study Design
Experimental study

Sampling Technique
Consecutive sampling

MATERIAL AND METHODS

81 patients with acute cholecystitis who underwent laparoscopic cholecystectomy were included in this study. The patients were divided in three groups according to time elapsed between onset of symptoms and operation. Time elapsed before surgery was calculated from time of onset of symptoms to operation. All data including demographics, pre-operative, operative findings and post-operative information were collected prospectively into computerized database. Group A was of patients who underwent surgery within 72 hours of onset of symptoms. Group B was of patients who underwent surgery between 72 hours and 96 hours of onset of symptoms. Group C was of patients who underwent surgery after 96 hours of onset of symptoms.

DATA COLLECTION PROCEDURE

The main outcome endpoints were time elapsed between admission and surgery, post-operative length of hospital stay and complication were recorded. A standardized data performa was used to record information including patient detail, time elapsed before operation, operation details ,intra-operative findings and post operative complications.

All patients with acute cholecystitis were included during this period. The data was collected from operation notes and medical notes on a specifically designed proforma. Data analysis was done by using SPSS Software.

INCLUSION CRITERIA

Patients with acute cholecystitis were included in study. Patients were considered having acute cholecystitis when they had five of the following six positive criteria : persistent right upper quadrant pain , temperature > 37.5 C , WCC > $10x10^9$, positive murphy's sign , presence of gall stones on ultrasound in combination with wall thickening and / or fluid at gall bladder fossa.

EXCLUSION CRITERIA

Patients with suspicion of gall bladder malignancy and CBD stones were excluded.

The objective was to perform laparoscopic cholecystectomy in all patients at the initial admission. The diagnosis of acute gall stone disease was based on the presence of right upper quadrant pain, laboratory blood tests(white cell count , amylase and liver function), ultrasonographic evidence of gall stones and laparoscopic findings at surgery.

PROCEDURE

LC was performed with standard surgical technique and pneumoperitoneum was created with open method .Four standard ports were introduced. Blunt dissection was performed in calot's triangle to identify cystic duct and cystic artery.Decompression of tense distended gall bladder was achieved with laparoscopic needle.

Patients were categorized in 3 groups to determine timing of surgery. Time elapsed before surgery was calculated from time of admission and categorized as surgery within 72 hrs ,surgery within 96 hours and surgery after 96 hours.The degree of gall stone disease was classified into colic, simple cholecystitis and complicated cholecystitis(empyema, perforated gall bladder) based on operative findings[1,5].

RESULTS

A total number of 81 patients were recruited for this study. The mean age was 41.95 years (range 24-61). 67 were female and 14 male subjects. 60 of 81 had simple acute cholecystitis and 20 of 81 had complicated cholecystitis. 12.64%(11) developed post-operative complications, including (7) wound infection ,(2) collection and (2) billiary tract injuries. Post operative wound infection was treated with antibiotics and opening up wounds. Collections were dealt with ultrasound guided aspiration. One of two cases with biliary tract injury was managed conservatively and one was treated with choledochojejunostomy. 7 patients were converted to open cholecystectomy for multiple reasons. The mean

hospital stay was 2.85 days with range 1-8 days (table-I). Group A was of patients who were operated within 72 hours of onset of symptoms. 16 / 81 were in this group.

Table-I.	
No.	81
Male	14
Female	67
Mean age	41.95 years (SD 9.22)
Range	24-61 years
Acute cholecystitis	60
Complicated cholecystitis	20
Biliary colic	1
Complications	11 (12.64%)
Type of complication	Infection 7 Collection 2 Biliary injury 2
Duration of stay	2.85days
Range	1-8

Mean age was 37.2 years(SD8.52) with range 26-52 years. 13 were female and 3 male patients. 11 patients had simple acute cholecystitis and 4 had complicated cholecystitis. 6% (2) developed complications. 1 had wound infection and one sustained biliary tract injury. No patient required open conversion. The mean hospital stay was 2.6 days with range 2-6 days (table-II).

Group B was of patients who were operated between 72 hours to 96 hours from onset of symptoms. 26 of 81 were in this group. Mean age was 45.3 years (SD11.93) with range of 33-56 years.22 were male and 4 were female. 20 had simple acute cholecystitis and 4 had complicated cholecystitis. 11.5%(3) developed complications like wound infections. The mean hospital stay was 2 -8 days with range 1-8 days. 4 patients required conversion to open cholecystectomy.

Group C was of patients who were operated after 96 hours from onset of symptoms. 39 of 81 were in this

Table-II Group-A (<72hours).	
Time elapsed from onset of symptoms	72 hours
No.	16
Male	3
Female	13
Mean age	37.2 years (SD 8.52)
Range	26-52 years
Acute cholecystitis	11
Complicated cholecystitis	4
Biliary colic	1
Complications	2 (6%)
Type of complication	Infection 7 Biliary injury 1
Duration of stay	2.6days
Range	2-6

Table-III Group-B (72-96hours).	
Time elapsed from onset of symptoms	72-96 hours
No.	26
Male	4
Female	22
Mean age	45.3 years (SD 11.93)
Range	33-58 years
Acute cholecystitis	20
Complicated cholecystitis	6
Biliary colic	-
Complications	3 (11.5%)
Type of complication	Infection 3
Duration of stay	2.80days
Range	1-8

group. Mean age was 42.9 years(SD9.39) with range (24-61 years). 29 patients had simple acute cholecystitis and 10 had complicated cholecystitis. 12.85% (5) developed complications. 4 developed wound infections and 1 had biliary tract injury. 3 of 39 were converted to open cholecystectomy. The mean hospital stay was 2.94 days with range 1-7 days (table-IV).

DISCUSSION

Table-IV Group-C (>96hours).

Time elapsed from onset of symptoms	>96 hours
No.	39
Male	7
Female	32
Mean age	42.9 years (SD 9.39)
Range	24-61 years
Acute cholecystitis	29
Complicated cholecystitis	10
Biliary colic	-
Complications	5 (12.8%)
Type of complication	Infection 4 Biliary injury 1
Duration of stay	2.94days
Range	1-7

In this study acute cholecysititis had female predominance with 4.5 to 1 female to male ratio. 19.75% subjects were operated within 72 hours of symptoms ,32.09% between 72 to 96 hours and 48.14% after 96 hours of onset of symptoms. This highlights the fact that about half of patients with acute cholecystitis seek surgical opinion after 96 hours leading to delay in surgery, The overall gender distribution in all three groups was similar. The total mean age was 41.95 while group A had mean age 37.2 years and in groups B and C mean age was in mid forties , in keeping with the overall trend.

Our study shows that 24% had complicated acute cholecystitis and this pattern has been in all three groups suggesting the impact of time elapsed from onset of symptoms to surgery in first 96 hours has minimal impact on the ratio of simple and complicated acute cholecystitis.The complicated cholecystitis was 25% ,23% and 25.64% respectively in group A ,B and C.

In this study the overall complication rate was 12.64%. In subgroups the group A had complication rate 6 % ,group B 11.5% and group C 12.8% .This shows that the morbidity of complications was least in patients who were operated before 72 hours (table-V).

The comparison of three groups suggests that the about one half of the cases presented after 96 hours which led to delay in surgery. The mean age and distribution had no significant difference in all three groups. One third of cases were complicated acute cholecystitis in all three groups and this pattern was constant in all three groups. The impact of timing of surgery had no impact on complication rate in all groups. The open conversion rate was 8.64% overall and in group B and C was 6.25% and 2.5% respectively.

Table-V. Impact of timing of laparoscopic cholecystectomy on outcomes

Outcome	Group A	Group B	Group C	Overall
Conversion	-	15.38%	7.69%	8.64%
Complications	6%	11.5%	12.8%	12.64%
Mean hospital stay	2.6days	2.80days	2.94days	2.85days

Chi-square test was used P=0.336 Non-significant

Our study suggests that the mean length of hospital stay in all three groups was similar in all groups.

The outcome variables of three groups analyzed and Chi-square was applied. The P-value was 0.336 which conclude that there was no statistically significant difference in outcome of laparoscopic cholecystectomy done within 72 hours or between 72 - 96 hours or after 96 hours.

In fact, urgent laparoscopic cholecystectomy is now considered the optional treatment of patents with acute cholecystitis. It is results in shorter hospital stay and a shorter recuperation time while conversion rate and morbidity remain similar with or even lower than delayed interval laparoscopic cholecystectomy[5].

In the study by Izovavas etal[5] 28% with acute cholecystitis had their operation with in first 3 days from onset of their illness, 45% between 4-7 day and 27% after week. These findings are comparable to our showing 19.75% having laparoscopic cholecystectomy within 72 hours, 32.09% between 72-96 hrs and 48.14% after 96 hours of onset. This shows that it is considerable delay in onset of symptoms and timing of surgery.

In our study the overall complication rate was 12.64% ranging from 6-12.8% in different groups. The study by Kitano et al shows overall complication rate of laparoscopic cholecystectomy for acute cholecystitis range from 9.0% to 15.0%. This suggests that there is significant difference in the complication rate in different groups.

The same study by Kitano et al reveals that biliary tract injury rate during laparoscopic cholecystectomy for acute cholecystitis is 0.7% to 1.3%. In another report it can be as high as 5.5%. Our study had CBD biliary tract injury rate 2.4%. These are comparable with open surgery for acute cholecystitis.

In study by Tzovaras the total conversion rate was 4.6% for laparoscopic cholecystectomy in acute cholecystitis. The overall conversion rate in this study is 8.64%.

CONCLUSIONS

We can conclude that timing of laparoscopic cholecystectomy has no significant impact on the conversion rate and length of hospital stay in cases with acute cholecystitis. However the complication rate shows increase in groups where surgery was performed after 72 hours of onset of symptoms.

We can conclude that optimal timing of laparoscopic cholecystectomy in acute cholecystitis is early as soon as the patient presents ,delaying surgery has no impact on conversion rate and length of hospital stay.Early Laparoscopic cholecystectomy is safe and can be performed in simple and complicated cholecystitis.

REFERENCES

1. Al-mulhim A. **A timing of early laparoscopic cholecystectomy for acute cholecystitis.** JSLS 2008 jul-sep;12(3):282-7

2. Soffer d, Blackbourne LH, schulman CI, Goldman M, habib F, Benjamin R, et al. **Is there an optimal time for laparoscopic cholecystectomy in acute cholecystitis.** SURG ENDOSC. 2007 may ;21:805-9

3. Gonzalz-rodriguez FJ ,Paredes-cotore JP , pontoon C ,Rojo Y,Flores E, luis-calo ES et al. **Early or delayed laparoscopic cholecystectomy in acute choleystitis?** Conclusion of a controlled trial. Hepatogastroentrology. 2009 jan-feb:56(89);11-6

4. Knight JS, Mercer SJ, Somers SS, Walters AM, Sadec SA and Toh SKC ,et al. **Timing of urgent laparoscopic cholecystectomy does not influence conversion rate.** British journal of Surgery 2004;91:601-604.

5. Tzovaras G, Zacharoulis D, Paras Kevil, Theodoropoulos T, Paroutoglou G, Hatzitheofilou c. **Timing of laparoscopic cholecyctectomy for acute cholecystitis: a prospective non-randomized study.** World J Gastroenterol 2006; 12(34):5528-5531.

6. Kitano S, Matsumoto T, Armaki M, Kawano K: **laparoscopic cholecyctectomy for acute cholecystitis.** J Hepatobilliary Pancreat Surg (2002)9:534-537.

Article received on: 20/01/2011 Accepted for Publication: 15/02/2011 Received after proof reading: 16/05/2011

Correspondence Address:
Dr. Awais Shuja, MRCS
Assistant Professor of Surgery
Independent Medical College
Faisalabad.
ashuja@hotmail.com

Article Citation:
Shuja A, Bashir A, Rashid A. Laparoscopic cholecystectomy; optimal timing for surgery in acute gall stone disease. Professional Med J Apr-Jun 2011;18(2): 237-242.

"Hope is the dream of a soul awake."

(French Proverb)