Role of Laparoscopic Cholecystectomy in the Management of Acute Cholecystitis

AHMAD F., SOOMROO I., MAHER M.
Prof. of Surgery Ward-II, Jinnah Postgraduate Medical Center, Karachi
Correspondence: *Dr. Farooq Ahmad, Senior registrar, Accident and emergency Department Services Hospital Lahore.* ***Email:*** *drfarooqfcps@yahoo.com* ***Cell:*** *0333-4769076*

Objective: To evaluate the outcome of laparoscopic cholecystectomy in the management of acute cholecystitis in term of hospital stay, ease or difficulty of the procedure and to assess the incidence of complications.

Design: An observational study.

Place and duration of study: The study was conducted at department of surgery ward 2, Jinnah Postgraduate Medical Center Karachi from Jan 2004 to march 2006.

Patients and methods: Case records of all patients who underwent laparoscopic cholecystectomy for acute cholecystitis with in the specified period were scrutinized. Patients with the clinical diagnosis of acute cholecystitis were admitted. All patients had ultrasound abdomen, CBC, LFTs and other laboratory work up as required. Fifty patients with diagnosis of acute cholecystitis were included into the study, who fulfilled the inclusion criteria. Patients with acute symptoms more than five days and ASA grade III &IV were excluded .Data on age, gender, ultra sound findings, operative findings, hospital stay and complications were recorded.

Results: There were fifty patients 27 males and 23 females. Age ranged from 28 to 73 years, majority belonged to 5th decade of life. Mean hospital stay was 2.58 days. There was no mortality and CBD injury. Excessive bleeding was encountered in two patients. Hemostasis was secured and blood transfusion was not required. Operative difficulties were experienced in 39 (78%) patients. These were mainly because of presence of adhesions 28 (56%). Difficult dissection in Callot's triangle was experienced due to obscured anatomy in 10 (20%) patients. Perforation of gall bladder occurred in 12 (24%) patients. One case was converted to open cholecystectomy and drain was placed in that case. In postoperative period shoulder tip pain was noticed by 11 (22%) patients and wound infection occurred in 5 (10%) patients.

Conclusion: Laproscopic cholecystectomy is reliable and safe modality for the management of acute cholecystitis. Better clinical results, shorter hospital stay and few complications points to significant advantage of laproscopic cholecystectomy in the management of acute cholecystitis.

Laparoscopic cholecystectomy has been accepted as the gold standard in the treatment of chronic symptomatic calculus cholecystitis.[1-4] The procedure has been found to be superior to open cholecystectomy with less morbidity and mortality[5]. Acute cholecystitis was initially considered a relative contraindication to laproscopic cholecystectomy[6]. However, with increased experience and improvement in instruments, more and more patients with acute cholecystitis have undergone laparoscopic cholecystectomy successfully.[7]

However, the available reports on safety and efficacy of laparoscopic cholecystectomy in acute cholecystitis are still scanty and conflicting[8]. The purpose of present study was to evaluate the role of laparoscopic cholecystectomy in the management of acute cholecystitis.

Patients and Methods

An observational study based on convenience sampling was conducted at department of surgery ward 2, Jinnah Post Graduate Medical Centre, Karachi from January 2004 to March 2006. Fifty patients with the diagnosis of acute cholecystitis were included in the study. The diagnosis was based on: (1) history and clinical examination; (2) sonography suggesting acute cholecystitis and (3) laparoscopic findings of acute cholecystitis. Patients had CBC, LFTs, and other investigations as required. Patients were admitted through outpatient and emergency departments and were operated on next morning elective list. All the laparoscopic cholecystectomies for acute cholecystitis were performed by the senior consultants. All data and perioperative events were analyzed by careful review of the patient clinical record. Open technique was used for umbilical port placement using Hassan's cone. We instilled 10 ml of bupivicain 0.25% solution in right subphrenic space to avoid post operative shoulder tip pain in all patients.

Fascial defects of 10 mm port were closed with vicryl 0. Bupivicain solution 0.25% was injected around port sites. Statistical analysis was done using SPSS version 10. The nominal and ordinal variables were presented by their frequencies along with their percentage.

Results

Fifty patients with diagnosis of acute cholecystitis were included into the study. All underwent laproscopic cholecystectomy during the same admission.

The ages of patients ranged from 28 to 73 years with a mean of 46.6 years in females and 52.2 years in males. Majority of patients belonged to 5th decade of life.

Out of 50 patients, there were 27 male patients and 23 females, with a male to female ratio of 1:1.7 with a P-value of 0.10 (ns).

Pain was the main presenting symptom and it was present in all the cases as shown in Table 1. Indigestion and nausea were the next most common symptoms reported by 36 (72%) and 35 (70%) patients respectively. Twenty five (50%) patients also had vomiting on presentation.

Table 1: *Presenting Complaints.*

Pain	***No. of cases***	***%***
Mild	11	22
Moderate	28	56
Severe	11	22
Epigastric pain	34	68
Referred pain	41	82
Pain right hypochondrium	42	84
Nausea	35	70
Vomiting	25	50
Indigestion	36	72

Pain was recorded as mild moderate and severe on the basis of visual analogue score. Score 1-3 mild, score 4-7 moderate, 8-10 severe.

On clinical examination tachycardia (pulse rate >100) was present in only 03 patients.

Fever was recorded in 14 patients, it was > 100 F° in only six patients and 99F°-100 F° in eight patients.

Tenderness in right hypochondrium was present in 48 (96%) patients however muscle rigidity and guarding was present in 14 (28) patients.

Total leucocytes count was more than 11000/mm^3 in only 06 patients, the count was within normal range (3000 to 11000/mm^3) in the remaining cases.

Ultrasound abdomen was used in all patients to establish the diagnosis. The findings were as follows as shown in Table 2.

1. Thick walled Gall bladder in 28 (56%) patients.
2. Distended gall bladder in 18 (36%) patients.
3. Multiple stones in 42 (84%) patients, single stone in 04 98%) patients and no stone in 4 (8%) patients.

During laparoscopic cholecystectomy Gall bladder was found distended in 37 (74%) patients, and 43 (86%) patients had thick walled gall bladder. Pericholecystic fluid was present in 20 (40%) patients and 05(10%) patients had pocket of pus around gall bladder.

Table 2: *Pre-Operative Ultrasound Findings.*

Ultrasound findings	***Frequency***	***Percent***
Thick walled GB with multiple stones	20	40
Distended GB with multiple stones	17	34
Thick walled GB with single stone	4	8
Thick walled GB with no stone	4	8
Normal wall GB with multiple stones	3	6
Gall bladder packed with stones	2	4
Total	50	100

Table 3: *Operative difficulties.*

Operative difficulties	**Frequency**	**Percent**
Dissection		
Difficult	39	78
Not difficult	11	22
Omental adhesions	28	56
Difficult dissection of gallbladder bed	15	30
Perforation of gallbladder due to instrumentation	12	24
Spillage of gallbladder contents	23	46
Operative stone findings		
Single	4	8
Multiple	42	84
No stone	4	8
Access to gallbladder		
Difficult	12	24
Not difficult	38	76
Callot's dissection		
Difficult	10	20
Not difficult	40	80
Port of gallbladder withdrawal enlarged	44	88
Pus in gallbladder	11	22
Excessive bleeding	2	4

Gall bladder perforation with a gangrenous patch was found in only 02 (4%) patients. Multiple stones were found in 39 (78%), single stone in 04 (08%), and no stone in 04 (08%) patients.

Operative difficulties were encountered in 39 (78%) patients as shown in Table 3. The reason for difficulty was mainly because of the presence of adhesions of omentum in 28 (56%) patients and difficult dissection of gall bladder from its bed in 15 (30%) patients. Perforation of gall bladder during instrumentation occurred in 12 (24%) patients and difficult dissection in Callot's triangle due to obscured anatomy was experienced in 10 (20%) patients.

Spillage of stone and gall bladder contents occurred in 23 (46%) patients.

There was only one (2%) conversion to open surgery and drain was placed in this case. In 44 (88%) patients, port of gall bladder withdrawal was enlarged 0.2 to 0.5cm

There was no mortality or CBD injury in the study. Excessive bleeding was encountered in two cases. Hemostasis was achieved by use of diathermy, pressure packing with guaze for few minutes and later by application of spongistan piece at the bleeding point. Blood transfusion was not required in both cases.

In the immediate post operative period there was complain of shoulder tip pain in 11 (22%) patients and wound infection occurred in 5 (10%) patients.

Out of 50 patients 26 were discharged within next 24 hrs, with a total stay of 02 days. Twenty cases were kept postoperatively between 24 to 48 hrs (total stay 03 days). Two patients had stay of 04 days. Only one patient had a stay of 06 days. Average hospital stay was 2.56 days.

Discussion

Treatment of acute cholecystitis is still debatable[9] but laparoscopic cholecystectomy is increasingly being employed as an initial surgical approach in patients with acute cholecystitis where the procedure may be difficult and challenging. In the early years of laproscopic cholecystectomy acute cholecystitis was considered a relative contra indication especially in severe attack or where wall thickness more than 4mm[4, 6].

The main reason for the conservative approach was the fear of having higher risk of CBD injury due to oedematous inflamed tissues obscuring the anatomy in Callot's triangle[6]. Several reports show that laproscopic approach in acute cholecystitis is feasible with conversion rate ranging from 0.5 to 28%. Our conversion rate was 2% in this study. However experience demonstrates that a history of acute cholecystitis is an independent risk factor in predicting a difficult operation, increasing the probability of conversion to an open procedure.[10-14]

Mortality and morbidity associated with acute cholecystitis remains relatively high and this seems to be determined by the degree of acute and chronic illness present at the time of diagnosis[15].

Operative mortality in laproscopic cholecystectomy for acute cholecystitis was reported in 0 to 0.9% of cases[16-18] and in one study by Ludwig et al reported fatal outcome in 9% among 985 patients[19]. In our study there was no mortality.

Bile duct injury is reported more frequently in laproscopic cholecystectomy than in open approach and some consider acute cholecystitis as independent risk factor[20]. Colonval P reported an incidence of 0.4% for CBD injury. However, study by Zucker et al dealing with 720 cases has reported no bile duct or major vascular injury[21] and similar other studies reported no such risk of bile duct injury.[22, 23]

We also had no clinically detectable cases of CBD injury. In another study by Rehman et al there was also no CBD injury[24]. We feel that oedematous tissue in acute cholecystitis may protect CBD from diathermal injury. Laparoscopic cholecystectomy is performed by more experienced surgeons.

Bleeding is the most frequent and potentially fatal complication of laparoscopic cholecystectomy and it can be prevented by surgeon's experience. Significant hemorrhage occurs in 0.5% of laparoscopic cholecystectomies and majority of these complications require laprotomy.[25-27] Significant bleeding occurred in two of our patient. Haemostasis was controlled by packing with a guaze for few minutes. Then diathermy was used under vision, using suction irrigation system. Haemostasis was successfully secured.

Gall bladder perforation and spillage of contents may occur in as many as 58% of patients[18]. In our study gall bladder perforation occurred in 12 cases and stone spillage in 23 (46%) patients. we managed all such cases by immediate collection of stones in the bag and washing of right upper quadrant with copious amount of saline.

Kamala lA, in his study reported shoulder tip pain in 51% patients. In our study 11(22%) patient had shoulder tip pain in immediate postoperative period. We routinely instill 10 ml of bupivicain 0.25% in right subphrenic space to prevent post operative shoulder tip pain.

Begi l [28] in his study concluded that better clinical results and faster return to every day activity, points to the significant advantage of laproscopic cholecystectomy. Total cost of laproscopic cholecystectomy of working patients is significantly lower.

In our study mean hospital stay was 2.58 days. All patients were admitted one day before surgery. Only one patient had hospital stay of six days who was converted to open cholecystectomy. At first follow up of one week 49 (98%) patients were fit to return to their work.

Oktar and Asaglu reported 0.6% incidence of incisional hernia developed at umbilical port site two to four months after laparoscopic cholecystectomy. In our short follow up of four weeks no case of incisional hernia was reported. We close fascia of 10 mm port wound with vicryl 0 on J-shape needle.

Conclusion

The results of present study indicate that the laproscopic cholecystectomy can be performed safely in acute cholecystitis. Better clinical results, shorter hospital stay and fast return to work point to significant advantage of laproscopic cholecystectomy in acute cholecystitis. It should be offered to all patients with acute cholecystitis if they present with in one week of onset of symptoms.

References

1. Cusheri A, Dubois F, Mouiel J, et al. the European experience with laparoscopic cholecystectomy. Am J Surg 1991; 161: 385-7.
2. Soper NJ, Stockmann PT, Dunnegan DL, Ashley SW. laparoscopic cholecystectomy. The new gold standard? Arch Surg 1992; 127: 917-23.
3. The Southern Surgeons Club. A prospective analysis of 1518 laparoscopic cholecystectomies. N Eng J Med 1991; 324 : 1073-8.
4. Navez B, Mutter D, Russier Y, et al. Safety of Laparoscopic approach for acute cholecystitis: retrospective study of 609 cases. World J Surg 2001; 25:1352-6.
5. Hannan EL, Imperato PJ, Nenner RP, Satarr H. Laparoscopic and open cholecystectomy in New York state: Mortality, complications and choice of procedure. Surgery 1999; 125: 223-31.
6. Schirmer BD, Edge SB, Dix J, Hyser MJ, Hanks JB, Jones RS. Laproscopic cholecystectomy: Treatment of choice for symptomatic cholelithiasis. Ann Surg 1991; 213: 665-7.
7. Wilson RG, Macintyre IMC, Nixon SJ, Saunders JH, Varma JS, King PM. Laparoscopic cholecystectomy as a safe and effective treatment for severe acute cholecystitis. BMJ. 1992; 305: 394-6.
8. Shikista S, Noguchi Y, Fukui T. Early verses delayed cholecystectomy for acute cholecystitis: a meta-analysis of randomized controlled trial. Surg Today. 2005; 35: 553-60.
9. Serralta AS, Beno JL, Planells MR, et al. Prospective evaluation of emergency versus delayed laproscopic cholecystectomy for early cholecystitis. Surg Laprosc Endosc Percutan Tech 2003; 13: 71-5.
10. Frierson HF, Gall bladder and extrahepatic biliary tree. In: Sternberg SS (Ed): Histology for pathologist. New York: raven Press, 1992, pp. 639-45.
11. Capizzi FD, Fogli L, Brulatti M, et al. Conversion rate in laparoscopic cholecystectomy: evolution from 1993 and current state. J laproendosc adv Surg Tech A 2003; 13: 89-91.
12. Franklin ME, Vancaillie TG, Daniel C. Is laparoscopic cholecystectomy applicable to patients with acute cholecystitis? J Laproendosc Surg 1992; 2: 159-63.
13. Garber SM, Korman J, Cosgrave JM, Cohen JR. early laparoscopic cholecystectomy for acute cholecystitis. Surg endosc 1997; 11: 347-50.
14. Idar S, Sabo E, Nash E, Abrahamson J, Matter I. Laparoscopic cholecystectomy for acute cholecystitis: Prospective trial. World J Surg 1997; 21: 540-5.
15. Bender JS, Duncan MD, Freeswick PD, et al. Increased laparoscopic experience does not lead to improved results with acute cholecystitis. Am J Surg 2002; 184 (6): 591-4.
16. El Madni A, Badawy A, Henry C, Nicolet J, Vons C, Smadja C, Franco D [laparoscopic cholecystectomy in acute cholecystitis]. Chirurgie 1999; 124: 171-5.
17. Colonval P, Navez B, Cambier E, et al [Is laparoscopic cholecystectomy reliable and effective in acute cholecystitis? Results of a prospective study of 221 pathologically documented cases] Ann Chir. 1997; 51: 689-96.
18. Bender JS, Zenilman ME. Immediate laparoscopic cholecystectomy as a definitive therapy in acute cholecystitis. Surg Endosc. 1995; 9: 1081-4.
19. Ludwig K, Lorenz D, Koeckerling f. Surgical strategies in the laparoscopic therapy of cholelithiasis and CBD stones. ANZ J Surg 2002; 72 (8): 547-52.
20. Kum CK, Eypasch E, Lefring R, Paul NA, Neugebauer E, Troid H. laparoscopic cholecystectomy for acute cholecystitis: is it really safe? World J Surg 1996; 20: 43-9.
21. Zucker KA, Flowers JL, Bailey RW, et al. laparoscopic management of acute cholecystitis. Am J Surg. 1993; 165 (4): 508-14.
22. Koperma T, Kisser M, Schulz F. Laparoscopic versus open treatment of patients with acute cholecystitis. Hepatogatroenterology 1999; 46: 753-7.
23. Z'graggen K, Wehrli H, Metzger A, Buehler M, Frei E, Klaiber C. Complications of laparoscopic cholecystectomy in Switzerland: A prospective 3- year study of 10174 patients. Swiss Association of Laproscopic and Thoracic Surgery. Surg Endosc 1998; 12: 1303-10.
24. Rehman S, Fasih T, Ashraf M, Sultan N, Hussain A. Laparoscopic versus open cholecystectomy. A surgical Audit. Pak J Surg. July-Sept: 1995, 11 (3): 155–7.
25. Lee VS, Chari RS, Cucchiaro G, et al. Complications of laparoscopic cholecystectomy. Am J Surg 1993; 165: 527-32.
26. Deziel DJ. Complications of cholecystectomy. Sur Clin North Am 1994; 74: 809-23.
27. Larson GM, Vitale GC, Casey J, et al. Multipractice analysis of laparoscopic cholecystectomy in 1983 patients. Am J Surg 1992; 163: 221-6.
28. Begic L, Glavic Z, Simlesa D, Rukavina a, Gveric D, Sabalic S. comparison of open and laparoscopic cholecystectomy in the treatment of acute cholecystitis. Lijec Vjesn. 2004 may-Jun; 126 (5-6): 137-40.