ORIGINAL ARTICLE

Complications of Laparoscopic Cholecystectomy in Acute and Chronic Cholecystitis

MUHAMMAD ZULFIQAR ALI, MUHAMMAD ZAFAR IQBAL*, MUHAMMAD ANWAR CHOUDHRY, *SHUMAILA IMRAN***

ABSTRACT

Objective: To compare different complications of laparoscopic cholecystectomy done for acute versus chronic cholecystitis.
Setting: Department of Surgery, Sheikh Zayed Medical College, Rahim Yar Khan.
Duration: Twenty (20) months (January -2009 to August -2010)
Sample size: Total 100 cases undergoing laparoscopic cholecystectomy were included in the study. (50 cases of acute and chronic cholecystitis each).
Methods: Patients were excluded with bilirubin greater than 3.5 mg/dl, alkaline phosphates greater than 250 (UL), choledocholithiasis and carcinoma gallbladder. Data was collected prospectively which included patients' demographics, medical history, presentation, operative and postoperative time.
Results: Female to male ratio was 1: 4.8. Mean age was 46.74±11.30 years. The median of hospital stay were 3.9 and 3.8 days in ALC and CLC respectively (P=0.794). Major complications were observed in 2 patients (4.0%) in ALC and 2 patients (4.0%) in CLC. 11 (22%) patients in ALC and 23 (46.0%) patients in CLC were discharged less than 10 hours after surgery.
Conclusion: No difference in major complications. Laparoscopy appears to be safe and good approach for emergency cholecystectomy in patients with acute cholecystitis.
Key words; Laparoscopic Cholecystectomy, Acute Cholecystitis

INTRODUCTION

Gallstones are the commonest cause of biliary pathology. Carl Langenbuch performed first open cholecystectomy in 1882 and for a century it stayed as gold standard treatment of cholelithiasis[1].

Jacobeus[2] and associates of Stockholm was the first person to carry out laparoscopy in humans in 1911. By 1930 Carbon dioxide (CO_2) was used for pneumoperitoneum. Gynecologists began to use laparoscopy regularly for diagnosis and tubal diathermy in the 1960s.

Laparoscopic surgery is intended to minimize the trauma of access without compromising exposure of the operative field. Laparoscopic cholecystectomy has introduced a new era in general surgery, an era of minimal access surgery. This new procedure has been widely accepted and adopted by surgical community and has become the new gold standard. It has been shown that in experienced hands the procedure decreases postoperative pain, reduces hospital stay, reduces the recovery period without increase in morbidity or mortality rates[3-5]. The reported operative mortality rate of open chole in recent series ranges from 6-1.7%[6].

*Departments of General Surgery, *Paediatric Surgery and **Physiology, Sheikh Zayed Medical College, Rahim Yar Khan Correspondence to Dr. Muhammad Zafar Iqbal, Assistant Professor Paediatric Surgery, Email: drzafar300@yahoo.com Cell: 0301-8778300*

In Pakistan most of the bigger hospitals are offering laparoscopic cholecystectomy since 1991. Laparoscopic cholecystectomy was started at Sheikh Zayed Hospital Rahim Yar Khan and now more and more cholecystectomies are performed laparoscopically. As the initial results of this relatively new procedure were very encouraging so we decided to carry out this study in general surgery department. The main objective of this study was to know the outcome and feasibility of laparoscopic cholecystectomy in acute and chronic cholecystitis.

PATIENTS AND METHODS

This analytical type study was carried out in general surgical department sheikh zayed medical college/ hospital Rahim Yar Khan, which is a tertiary care hospital during January 2009 to August 2010. Our study included 100 cases (50 cases of acute and chronic cholecystitis each). Sampling technique was non probability convenience sampling. All cholecystitis patients above 12 years of age with symptomatic acalculous cholecystitis were included in the study. Patients with carcinoma gallbladder and choledocholithiasis were excluded.

Fifty patients with acute cholecystitis were admitted through the emergency ward; this diagnosis was based on evidence of acute inflammation of the

gallbladder, both clinically (right upper quadrant tenderness, fever) and pathologically. One hundred and forty-one patients with symptomatic gallstone were admitted for CLC. Patients excluded were according to exclusion criteria mentioned above. Patients with AC were treated with ALC (n=50) within 72 hours after admission but not later than 7 days after the onset of symptoms. The AC group received anti-inflammatory drugs, intravenous fluids and cephazolin 1 g/I.V. every 6 hours. The operations were performed using standard four port technique. Closed suction drains were placed in the sub-hepatic space for most patients with acute cholecystitis and were used for chronic LC whenever considered necessary. Resected gallbladders were sent for pathologic examination. The procedures were performed by one surgeon. Written informed consent was obtained from all patients prior to their enrollment in the study.

Patients were followed after two weeks, 1 month, 3 months and 6 months of surgery in outdoor patient's clinic. Every patient was followed up after two week of surgery for wound healing, wound infection, any discharge, pain in the right upper quadrant of abdomen and any other complication. Stitches were removed on this first visit. Duration of convalescence, return to work, pain in right upper quadrant of abdomen, condition of wound, and other complications were looked during one month, three months and six months follow up visits.

Data was collected prospectively and included patients' demographics, medical history, presentation, operative and postoperative course, operating time (operation time was calculated in minutes from the moment of entering the abdomen to the end of the last suture), length of hospital stay (which was calculated as postoperative number of nights spent in the hospital). Statistical analysis was carried out using SPSS statistical package. For comparing the groups, chi-square analysis and the Student 't' test were performed. P-value less than 0.05 were considered statistically significant.

RESULTS

The mean age (±SD) of acute cholecystitis patients was 46.74±11.30 years (25-65 years) and 45.10±9.02 years (27-60 years) in chronic cholecystitis patients. There was no statistically significant difference between two groups. In acute cholecystitis, male were 9 and female were 41 and in chronic cholecystitis, male were 10 and female were 40, the male female ratio over the two groups 1:4.2. The median of post operative stay were 1 and 0.82 day in ALC and CLC respectively (mean 0.80 ± 0.60 vs. 1.80 ± 2.7 days) [P=0.0005].

Twenty three (46.0%) patients in CLC, 11 (22%) patients in ALC were discharged less than 10 hours after surgery. The mean time between admission and laparoscopy in patients with ALC was 1.55 ± 1.02 days. Conversion was carried out in 2 (4.0%) out of 50 patients with CLC and in 7 (14.0%) out of 50 patients with ALC. There was statistical significant difference between ALC and CLC.

The complications in intraoperative and postoperative cases are presented in Table 8 & 9. Complications which needed longer postoperative stay or re-admission for intervention (major complications) were observed in 2 patients (4.0%) in CLC and 2 patients (4.0%) in ALC groups. Two patients were missed stone (major complications). Other patients with major complications were treated by percutaneous drainage or medical therapy. The wound infections were 2 (4.0%) and 6 (12.0%) in patients with CLC and ALC respectively. The complications noted in 2 patients, converted to open cholecystectomy, included colon tearing and hematoma in acute cholecystitis.

Table I: Treatment results

	ALC	CLC	P value
Operative time (minutes)	38.26±16.6	49.58±18.9	0.00059
Associated disease	39 (28.6%)	8(18.6%)	0.19
Use of drain	15(11%)	35(81.4%)	0.0005

Key: CLC = Chronic laparoscopic cholecystectomy, ALC = Acute laparoscopic cholecystectomy

Table II: Intra-operative complications.

	Acute cholecystitis	Chronic cholecystitis
Hemorrhage	1	1
Liver damage	-	-
Cystic artery rupture	2	2
Gallbladder tearing	11	10
Colon tearing	-	-
Bile duct transaction	-	-

Table III: Post-operative complications.

	Acute cholecystitis	Chronic cholecystitis
Umbilical wound infection	2	2
Epigastric wound infection	4	1
Bile collection	-	1
Missed stone	1	1
Hematoma	1	1
Delay peritonitis	-	1
Pneumonia aspiration	-	1
Epigastric trocar pain	4	2
Umbilical trocar pain	1	1
Shoulder pain	5	6

DISCUSSION

Gallstones are the commonest biliary pathology. These can be managed by both non operative and operative techniques. Among the non surgical modalities oral dissolution therapy is appropriate only for 10 percent of patients who either have pigment stones or/and are unable to undergo general anaesthesia. Extracorporeal/ intracorporeal shock wave lithotripsy reduces stone load and thus makes gallstone extraction easier. But has not been widely adopted because diseased gallbladder mucosa is in situ and always there is risk of stone recurrence. So better option is the surgical removal of gallbladder. Open cholecystectomy is used for this purpose from about a century. But now laparoscopic cholecystectomy has standardized the gallbladder treatment over a decade because of less operative trauma, minimal postop pain and early ambulation.

The mean of operation time between the two groups was different significantly. After exclusion of converted patients, the mean of operation time was further reduced in ALC. Eldar et al. reported the mean operation time was 60 minutes[7]. Chau et al. reported the mean operation time in the patients with ALC was 84 minutes[8]. However, the operative time remained significantly longer for these procedures than for those performed with the traditional method, but in this study the mean of operation time in patients with ALC was 57.8 + 29.2 minutes, which is comparable to mentioned studies.

Conversion rate between the two groups was different significantly (P<0.009). Wang et al. reported the overall conversion rate was 4.0% for ALC[9]. Our rate for the same was 14%. Other papers reported conversion rate ranging from 6% to 35%[10,11]. Arnalson et. al. reported that conversion rate were 3.1% and 12.2% for CLC and ALC respectively[12]. The most common cause of conversion rate in patients with ALC was difficult dissection of Calot's triangle. It has been previously described[8,13]. Conversion rate for males was higher than females which is similar to those reported in previous reports[14]. Major complication rates had no significant difference in complication rates between the ALC and CLC. Previous studies had similar results[8,15].

CONCLUSION

Gallstone disease is much more common among females in our population and tends to occur at younger age group. Chronic cholecystitis with cholelithiasis is the main indication for cholecystectomy. This study showed that statistical differences exist in operation time, reason and rate of conversion in two groups, but no such difference in major complications in acute and chronic groups. Laparoscopy appears to be safe and good approach for emergency cholecystectomy in patients with acute cholecystitis.

REFERENCES

1. Hardy KJ, Corl Langenbuch and the Lazarus Hospital. Aust N Z J Surg 1993; 63:56-64 cited by Macintyre IMC, Wilson RG. Laparoscopic cholecystectomy. Br J Surg 1993; 80:552-59.
2. Jacobeus HC, Kurze Ubersicht uber meine erfahrungen mit der lproskopie Wochenschr 1911; 58:2017-19 cited by Macintyre IMC, Wilson RG. Lap. Cholecystectomy. Br J Surg 1993; 80:552-59.
3. Lester F, Williams, William C. Chapman, Roger a. Bonau, Edwin C. Comparison of laparoscopic cholecystectomy with open cholecystectomy in a single center. Am J Surg 1993; 165:459-65.
4. Messahel M. Post-cholecystectomy admission to the intensive care unit - comparison between open, min-lap and laparoscopic techniques. Anaesthesia 1995; 50:901-04.
5. Berggren U, Gordh T, Grama D, Haglund U, Rastad J Arvidsson D. Laparoscopic versus open cholecystectomy: hospitalization sick leave, analgesia and trauma responses. Brit J Surg 1994; 81:1362-65.
6. McSherry CK. Advantages of elective surgical treatment of gallstones. Hepatogastroenterology 1989; 36:330-32.
7. Eldar S, Eitan A, Bickel A, Sabo E, Cohen A, Abrahamson J, et al. The impact of patient delay and physician delay on the outcome of laparoscopic cholecystectomy for acute cholecystitis. Am J Surg 1999; 178: 303-7.
8. Yamashita Y, Takada T, Hirata K. A survey of the timing and approach to the surgical management of patients with acute cholecystitis in Japanese hospitals. J Hepatobiliary Pancreat Surg 2006; 13: 409-15.
9. Lai PB, Kwong KH, Leung KL, Kwok SP, Chan AC, Chung SC, et al. Randomised trial of early versus delayed laparoscopic cholecystectomy for acute cholecystitis. Br J Surg 1998; 85: 764-7.
10. Wang YC, Yang HR, Chung PK, Jeng LB, Chen RJ. Urgent laparoscopic cholecystectomy in the management of acute cholecystitis: timing does not influence conversion rate. Surg Endosc 2006; 20: 806.
11. Bickel A, Rappaport A, Kanievski V, Vaksman I, Haj M, Geron N, et al. Laparoscopic management of acute cholecystitis. Surg Endosc 1996: 10: 1045 -9.
12. Arnarson A, Hauksson H, Marteinsson VT, Albertsson SM, Datye S. Laparoscopic cholecystectomy. The first 400 cases at Akureyri Central Hospital. Laeknabladid 2003; 89: 35-40.
13. Hammarstrom LE. Prediction of unsuccessful lap. cholecystectomy. J Postgrad Med 2005; 51: 21.
14. El-Madani A, Badawy A, et al. Lap. cholecystectomy in acute cholecystitis. Chirurgie 1999; 124: 171-6.
15. Ibrahim S, Hean TK, Ho LS, Ravintharan T, Chye TN, Chee CH. Risk factors for conversion to open surgery in patients undergoing laparoscopic cholecystectomy. World J Surg 2006; 30: 1698-704.