

Laparoscopic Cholecystectomy: Experience of 100 Cases

Haque MR¹, Rahman MM², Bhuiyan FA³, Hossain SMS⁴, Mahabub M⁵, Khan LN⁶

DOI: <https://doi.org/10.3329/jafmc.v13i2.41372>

Abstract

Introduction: Cholelithiasis or gallstone disease is one of the major health problems worldwide. Earlier traditional open cholecystectomy (OC) was the treatment for symptomatic gall stone disease. With the advancing cutting edge technology, laparoscopic cholecystectomy (LC), a minimal access surgery has become a well established modality of treatment.

Objective: To study the overall outcome and related experiences of laparoscopic cholecystectomy.

Materials and Methods: This descriptive observational study was carried out at Combined Military Hospitals of Jashore, Cumilla and Dhaka from September 2015 to December 2017. A total of 100 patients suffering from symptomatic cholelithiasis were admitted for LC and included in this study. Data were collected in a structured proforma and expressed in mean±SD, frequency and percentage.

Results: Patients mean age was 42±7.63 years with ranged 25 to 62 years. Eighty five percent patients were female. Mean operative time was 55±12.37 minutes with ranged 30 to 100 minutes. Mean postoperative hospital stay was 2.5±1.29 days with ranged from 2 to 4 days. No major intra operative and post operative complications encountered except 2 patients needed conversion to OC.

Conclusion: LC is a safe minimal access surgical procedure for gallstone disease. An experienced well-trained surgical team with standard surgical technique and early recognition and management of complications encountered are key elements to good surgical outcome.

Key-words: Cholelithiasis, Laparoscopic cholecystectomy, Minimal access surgery.

Introduction

Cholelithiasis or gallstone disease is one of the major health problems worldwide particularly in the adult population¹. The traditional open cholecystectomy (OC) was performed for the first time in 1882 by Carl August Langenbach. Later on this open technique has been replaced by laparoscopic cholecystectomy (LC), a minimal access surgery, has revolutionized the treatment of gall bladder diseases. This is now the gold standard treatment of symptomatic gallstones and the commonest operation performed worldwide^{2,3}.

Minimal access surgery began in the early 1980s with the introduction of laparoscopic fallopian tube ligation. First LC was performed by Dr. Philippe Mouret in 1987 in Lyon, France and was rapidly embraced as the preferred method for cholecystectomy despite a lack of evidence to support the safety of the new technique^{4,5}. Clinical trials comparing the laparoscopic procedure with other approaches eventually revealed the newer procedure to be less morbid than traditional OC or even mini-laparotomy^{6,7,8}.

In LC the gallbladder is removed using the laparoscopic technique. It causes less surgical trauma hereby resulting in reduced hospital stay and early resumption of normal activity^{9,10}. The current research review shows clear benefits of LC over OC in terms of intra operative, post operative and long term morbidity^{9,12}. The contraindications to LC in the early years following its introduction contain a long list of local and systemic conditions but the list has progressively become shorter¹³. Acute cholecystitis, previous scars, morbid obesity, common bile duct (CBD) stones and compensated cardiac and pulmonary diseases are no longer considered as contraindications to LC¹⁴⁻¹⁸. Now LC has become the first-line surgical treatment of benign gallbladder diseases but conversion to OC is still substantial. This study was an assessment of the outcome

1. Lt Col Md Rezwonul Haque, MBBS, FCPS, Classified Specialist in Surgery, CMH, Dhaka 2. Maj Gen Md Mahubur Rahman, MBBS, FCPS, Fellowship in Colorectal Surgery (France), Consultant Surgeon General, Bangladesh Armed Forces 3. Brig Gen Farook Ahmed Bhuiyan, MBBS, FCPS, Professor & Head, Department of Surgery, AFMC, Dhaka 4. Col SM Shakhwat Hossain, MBBS, FCPS, DHBS (China), Classified Specialist in Surgery (Hepatobiliary Surgeon), CMH, Dhaka 5. Lt Col Md Mahabub, MBBS, FCPS, Fellowship in Colorectal Surgery (India), Classified Specialist in Surgery, CMH, Dhaka 6. Lt Col Lutfunnahar Khan, MBBS, DCP, MCPS, FCPS, Classified Specialist in Pathology (Haematologist), AFIP, Dhaka.

of the first hundred cases in terms of operative time, complications, conversion rate and postoperative hospital stay during the initial experiences with the LC in learning phase.

Materials and Methods

This descriptive observational study was carried out at Combined Military Hospitals Jashore, Cumilla and Dhaka of Bangladesh Armed Forces from September 2015 to December 2017. A total of 100 adult patients of either sex, who had symptomatic gall stones, were included in this study. The patients who had jaundice, GB mass, CBD stones and dilated CBD were excluded. All patients were admitted as a routine case before surgery and detailed history, clinical examination and necessary investigations including full blood count, urine routine examination, serum creatinine, blood glucose, liver function tests and hepatitis B and C screening and blood grouping were done. Ultrasound of abdomen was done in each patient to confirm diagnosis of gallstones and to assess the CBD diameter or any CBD stone. Chest X-ray and ECG were done if the patient was above forty years. Informed consent was taken from all the patients after explaining the benefit and risks of LC and may need conversion to open procedure. Patient's demography, operative time, postoperative hospital stay, intraoperative findings, intraoperative complications, conversion rate and postoperative complications were observed. The data were collected in a structured proforma and expressed in mean \pm SD, frequency and percentage.

Results

In this study patients mean age was 42 ± 7.63 years and ranged 25 to 62 years among them highest (54%) patients were 35-44 years age group (Table-I). Eighty five percent patients were female and 15% were male.

Table-I: Distribution of the patients by their age (n=100)

Age group (Years)	Frequency	%
25-34	18	18
35-44	54	54
45-54	22	22
55-62	06	06
Total	100	100

Mean operative time was 55 ± 12.37 minutes with ranged from 30 to 100 minutes. In the first few cases operative time was upto 100 minutes due to long learning curve of laparoscopic surgery. The mean postoperative hospital stay was 2.5 ± 1.29 days with the range being 2-4 days. Intraoperative findings of no adhesion, sparse adhesions and dense adhesions with gall bladder were found in 52%, 26% and 10% patients respectively (Table-II).

Table-II: Intraoperative findings (n=100)

Findings	Frequency	%
No adhesion with gall bladder	52	52
Sparse adhesions with gall bladder	26	26
Dense adhesions with gall bladder	10	10
Acute calculus cholecystitis with frozen Calot's triangle	03	03
Contracted gall bladder	04	04
Empyema gall bladder	02	02
Aberrant cystic artery	02	02
Aberrant right hepatic artery	01	01
Total	100	100

Intraoperative complications like gas leakage in 10% cases, perforation of gall bladder in 29% cases and some stones were spilled from gall bladder in 8% cases. No major intra operative vascular and visceral injury occurred except one case of slipped clip from cystic artery. Two patients needed conversion to open procedure in this series (Table-III).

Table-III: Intraoperative complications

Complications*	Frequency	%
Gas leakage	10	10
Extra-peritoneal insufflations	03	03
Port site bleeding	02	02
Perforation of gall bladder and bile spillage	29	29
Spilled stones	08	08
Bleeding through gall bladder fossa of liver	04	04
Slipped clip from cystic artery	01	01
Conversion to open procedure	02	02

*More than one complication observed

No major postoperative complications encountered except postoperative pyrexia for 1-2 days was observed in 8 patients, 2 had minor port site infection and 2 patients developed post cholecystectomy syndrome. None of the patients had biliary leakage, postoperative bleeding, subhepatic collection, postoperative jaundice and port site hernia. No mortality was reported (Table-IV).

Table-IV: Postoperative complications

Complications	Frequency	%
Postoperative pyrexia	08	08
Wound infection	02	02
Post cholecystectomy syndrome	02	02

Discussion

In this study, majority (85%) of the patients were female which is consistent with other regional studies^{5,9,10}. The mean age was 42 ± 7.63 years with highest incidence in the age group 35-44 years, which is comparable to other similar study¹⁹. The mean operative time was 55 minutes;

the range being 30-100 minutes which is less than other regional studies^{9,19}. The mean postoperative hospital stay was 2.5±1.29 days; the range being 2-4 days, comparable to other studies^{10,19}.

In this study gall bladder having dense adhesions with omentum, transverse colon, duodenum and in some cases with stomach were found in 10% cases, which is consistent with other regional study²⁰. Acute calculus cholecystitis with frozen Calot's triangle and empyema gall bladder were found in 3% and 2% cases respectively, which is consistent with other study²⁰. Contracted gall bladder was found in 4% patients which is comparable with other studies in this region²⁰. Out of 100 patients in this study, only two patients (2%) needed conversion to OC which is less than other regional studies^{19,20}. In 3 patients of abnormal biliary anatomy and frozen Calot's triangle assistance of senior hepato-biliary surgeon was taken and thus conversion to open procedure could be avoided which contributed a lot in less conversion rate in this series. This is in keeping with the 2-5% acceptable conversion rates that are reported in some larger series^{21,22}.

No major visceral or vascular injury encountered during the first trocar insertion into the abdominal cavity except gas leakage in 10% cases and extra-peritoneal insufflations in 3% cases which is higher than other studies^{23,24}. Hashizume and Sugimachi have reported trocar injuries to bowel and major blood vessels to be as high as 1% and most of them have occurred during the insertion of the first trocar²⁴. Schafer et al. in their study report a similar result²⁵. Blind trocar insertion and access by Verres needle remain the important causes of complications as reported by many authors^{24,25}. On the other hand, modified open technique using umbilical cicatrix tube of first trocar insertion has promising results and seems to have reduced the access-related major vessel and bowel injury and mortality rate²⁶.

Perforation of gall bladder (GB) and spillage of bile occurred in 29 cases in the initial learning period and such incidence decreased in successive period. Few stones were spilled from gall bladder due to perforation of GB in 08 cases which is comparable to other regional studies^{20,23,24}. All spilled stones were retrieved and spilled bile sucked out with normal saline wash in subhepatic region. No major intra operative vascular and visceral injury occurred in this series except one case of slipped clip from cystic artery during haemostatic maneuver, in contrast to other studies^{23,24}. Bleeding through gall bladder fossa of liver due to opening of venous sinus encountered

in 4 cases and managed laparoscopically using surgical and spongostan which is comparable to other regional studies²³. No incidence of bile duct (RHD, CHD or CBD) injury occurred in this series in contrast to other regional studies²³.

No major postoperative complications encountered in this series compared to other regional studies^{19,20,23}. Only 02 patients had minor port site infection and managed by regular dressing which is less than what has been reported in other regional series^{20,23}. Two patients developed post cholecystectomy syndrome, may be due to antral gastritis or peptic dyspepsia and managed conservatively with proton pump inhibitor which is less than other study²³. None of the patients had biliary leakage, postoperative bleeding and subhepatic collection in comparison to other studies^{19,20,23}. No major morbidity or mortality reported in this series as comparable to other studies^{23,24}. Intra and postoperative complications are less in this series in comparison to other studies²²⁻²⁶, may be due to a comprehensive approach adopted, careful dissection done, awareness, early recognition of complicated cases and timely conversion to open procedure and seeking assistance of hepatobiliary surgeon by the surgical team.

Conclusion

LC is a safe minimal access surgical procedure for gallstone disease. An experienced and well trained surgical team, standard surgical technique, awareness, early recognition and management of complications encountered, are keys to good surgical outcome. LC should be performed by surgeons who are confident enough in open biliary surgery and knowledgeable in diverse hepatobiliary anatomy.

References

1. Raza M, Wasty WH, Habib L et al. An audit of Cholecystectomy. Pak J Surg 2006; 23(2):100-3.
2. Cuschieri A. Laparoscopic cholecystectomy. JR Coll Surg Edin 1999; 44:187-92.
3. Ji W, Li LT, Li JS. Role of laparoscopic subtotal cholecystectomy in the treatment of complicated cholecystitis. Hepatobilpancreatic Dis Int 2006; 5(4):584-89.
4. Yamashita Y, Kurohiji T, Kakegawa T. Evaluation of two training programs for laparoscopic cholecystectomy: Incidence of major complications. World J Surg 1994; 18:279-85.
5. Hodgson WJ, Byrne DW, Savino JA et al. Laparoscopic cholecystectomy. The early experience of surgical attending compared with that of residents trained by apprenticeship. Surg Endosc 1994; 8:1058-62.
6. Shea JA, Healey MJ, Berlin JA et al. Mortality and complications associated with laparoscopic cholecystectomy. A meta-analysis. Ann Surg 1996; 224:609-20.

7. Majeed AW, Troy G, Nicholl JP et al. Randomised, prospective, single-blind comparison of laparoscopic versus small-incision cholecystectomy. *Lancet* 1996; 347:989-94.
8. Kane RL, Lurie N, Borbas C et al. The outcomes of elective laparoscopic and open cholecystectomies. *J Am Coll Surg* 1995; 180:136-45.
9. Saeed T, Zarin M, Aurangzeb M et al. Comparative study of Laparoscopic versus OC. *Pak J Surg Jun* 2007; 23(2):96-9.
10. Bhopal FG, Rai MA, Iqbal MA. A comparative study of morbidity in laparoscopic and OC. *J Surg Pak* 1998; 3(3):2-7.
11. Khan S, Oonwala ZG. An audit of Laparoscopic Cholecystectomy. *Pak J Surg Jun* 2007; 23(2):100-03.
12. Iqbal M, Sattar I, Rasheed K et al. Complications of Laparoscopic Cholecystectomy: A Learning Curve. *J Surg Pak Dec* 2006; 11(4):170-1.
13. Mouret G. From the first Laparoscopic cholecystectomy to the Frontiers of Laparoscopic surgery: The future perspective. *Dig Surg* 1991; 8:124-5.
14. Wittgen CM, Andrus JP, Andrus CH et al. Cholecystectomy, which procedure is best for the high-risk patient? *Surg Endosc* 1993; 7:395-9.
15. Unger SW, Rosenbaum G, Unger HM et al. A comparison of laparoscopic and open treatment of acute cholecystitis. *Surg Endosc* 1993; 7:408-11.
16. Zucker KA, Flowers JL, Baily RW et al. Laparoscopic management of acute cholecystitis. *Am J Surg* 1993; 165:509-14.
17. Unger SW, Scott JS, Unger HM et al. Laparoscopic approach to gallstones in the morbidly obese patient. *Surg Endosc* 1991; 5:116-7.
18. Slater K, Strong R, Wall D et al. Iatrogenic bile duct injury: The Scourge of laparoscopic cholecystectomy. *ANZ-J-Surg* 2002; 72:83-8.
19. Dholia KR, Memon AA, Sheik MS et al. Laparoscopic cholecystectomy Experiences of 100 cases at a teaching hospital of Sindh. *JLUMHS* 2005; 4(3):106-7.
20. Sanjay K, Bhasin J, Langer G. Laparoscopic cholecystectomy : An experience of 200 cases. *JK Science* 2004; 6(2):74-5.
21. Soper NJ, Flye MW, Brunt LM et al. Diagnosis and management of biliary complications of laparoscopic cholecystectomy. *Am J Surg* 1993; 165(6):663-9.
22. Gadacz TR. Update on laparoscopic cholecystectomy, including a clinical pathway. *Surg Clin North Amer* 2000; 80(4):1127-49.
23. Mitra TK, Ullah ME, Mondol SK et al. Operative and post-operative complications of laparoscopic cholecystectomy: Experience from a tertiary care hospital of Bangladesh. *Bangladesh crit care J* 2017; 5(1):11-6.
24. Hashizume M, Sugimachi K. Needle and trocar injury during laparoscopic surgery in Japan. *Surg Endosc* 1997; 11:1198-201.
25. Schafer M, Lauper M, Krahenbuhl L. Trocar and Verres needle injuries during laparoscopy. *Surg Endosc* 2001; 15:275-80.
26. Lal P, Sharma R, Chander R et al. A technique for open trocar placement in laparoscopic surgery using the umbilical cicatrix tube. *Surg Endosc* 2002; 16:1366-70.