Faridpur Med. Coll. J. 2011;6(2):74-77

Original Article

Rate of Conversion and Postoperative Complications of Laparoscopic Cholecystectomy in District Level Hospital of Bangladesh.

SK Biswas[1], JC Saha[2], ASMT Rahman[3], ASMZ Rahman[4],MM Rahman[5]

Abstract

Laparoscopic cholecystectomy (LC) has become the gold standard for the surgical treatment of gallbladder disease, but conversion to open cholecystectomy and postoperative complications are still inevitable in certain cases. Knowledge of the rate and underlying reasons for conversion and postoperative complications could help surgeons during preoperative assessment and improve the informed consent of patients. We decide to review the rate and causes of conversion and postoperative complications of our LC series. This study included 760 consecutive laparoscopic cholecystectomies from July 2006 to June 2011 at Faridpur Central Hospital and Faridpur Medical College Hospital. All patients had surgery performed by same surgeon. Conversion to open cholecystectomy required in 19 (2.5%) patients. The most common reasons for conversion were severe adhesions at calot's triangle (6, 0.83%) and acutely inflamed gallbladder (5, 0.66%). The incidence of postoperative complications was 1.58%. The most common complication was wound infection, which was seen in 5 (0.66%) patients followed by biliary leakage in 3 (0.40%) patients. Delayed complications seen in our series is port site incisional hernia (2, 0.26%). LC is the preferred method even in difficult cases. Our study emphasizes that although the rate of conversion to open surgery and complication rate are low in experienced hands, the surgeons should keep a low threshold for conversion to open surgery and it should not be taken as a step in the interest of the patient rather than be looked upon as an insult to the surgeon.

Key words: Laparoscopic cholecystectomy (LC), Open cholecystectomy, Conversion, Complications, Calot's triangle

Introduction :

Gallstone disease is a global health problem. Over the past two decades, laparoscopic cholecystectomy (LC) has become gold standard for the surgical treatment of gallbladder disease. A shorter hospital stay, less postoperative pain, faster recovery, better cosmesis are some of the advantages of LC over open surgery[1,2]. The complications encountered during LC are numerous: some that are specific to this unique technique and somethat are common to laparoscopic surgery in general. These include complications related to anesthesia; complications related to peritoneal access (e.g., vascular injuries, visceral injuries, and port-site hernia formation); complications related to pneumoperitoneum (e.g., cardiac complication, pulmonary complications, and gas embolism); and complications related to thermocoagulation. Specific complications of LC are hemorrhage, gall bladder perforation, bile leakage, bile duct injury, and perihepatic collection), and others such as external biliary fistula, wound sepsis, hematoma, foreign body inclusions, adhesions, metastatic port-site deposits, and cholelithoptysis[3,4]. Some of these complications and several other factors can necessitate the conversion from LC to open cholecystectomy. The conversion from LC to open cholecystectomy results in a significant change in outcome for the patient because of the higher rate of postoperative complications and the longer hospital stay. We decided to retrospectively review our series and to compare our results with those reported in the literature.

1. Dr. Swapan Kumar Biswas, FCPS (Surgery), MRCS (Edin), Assistant Professor, Dept. of Surgery, FMC, Faridpur.

2. Dr. Jitesh Chandra Saha, FCPS (Surgery), FRCS (Edin), Professor and head, Dept. of Surgery, Diabetic Association Medical College, Faridpur.

3. Dr. A. S. M. Tanjilur Rahman, FCPS (Surgery), Residential Surgeon, FMCH, Faridpur.

4. Dr. A. S. M. Zahidur Rahman, FCPS (Surgery), Associate Professor, Dept. of surgery, Shahid Monsur Ali Medical College, Dhaka.

5. Dr. Mahfajur Rahman, FCPS=Part-II Student, BSMMU, Dhaka.

Address of correspondence
Dr. Swapan Kumar Biswas, FCPS (Surgery), MRCS (Edin), Assistant Professor, Department of surgery, Faridpur Medical College. Telephone: +88-0171-2120828, E-mail: swapan_kb@yahoo.com.

Materials and Methods:

We retrospectively reviewed 760 patients with symptomatic gall bladder disease who underwent LC at Faridpur Central Hospital and Faridpur Medical College Hospital between July 2006 to June 2011. A routine history was taken from all patients presenting for treatment for symptomatic gallbladder disease and all underwent a physical examination, laboratory testing, and ultrasonographic examination of abdomen. Informed consent was obtained from all patients after the nature of the procedure and the possibility of the need for conversion from the laparoscopic approach to an open cholecystectomy was explained. Prophylactic antibiotic, cefuroxime 1.5 gm intravenously was given to all patients at induction of anaesthesia. All patients had surgery performed by same surgeon using standard four port techniques. The conversion rate to open cholecystectomy, the underlying reasons, and postoperative complications were recorded.

Results:

Laparoscopic cholecystectomy was performed in 760 patients during July 2006 to June 2011, out of which 692 (91.05%) were female and 68 (8.95%) were male with a mean age of 39.6 years (range 17-76 years).Ultrasonography demonstrated cholelithiasis in all the cases. Six hundred eighty four (90%) patients were evaluated on an elective basis and scheduled for surgery, while the remaining 76 (10%) patients were admitted emergently with a diagnosis of acute cholecystitis. Conversion to open cholecystectomy occurred in 19 patients (2.5%) (Table I). Dense adhesions at calot's triangle were found to be most common cause of conversion to open cholecystectomy.

Table I: Indications for conversion to open cholecystectomy (n = 19)

Indications for conversion	Number of patents (%) (n = 760)
Dense adhesions at Calot's triangle	06 (0.83)
Acutely inflamed gallbladder	05 (0.66)
Contracted small fibrotic adherent gallbladder	02 (0.26)
Gallbladder mass (Cancer)	03 (0.40)
Common bile duct injury	01 (0.13)
Bleeding complication	02 (0.26)
Total patients	19 (2.54)

Postoperative complications (Table II) were found in 12 cases (1.58%) of which wound infection was most common. Biliary leakage occurred in 3 (0.40%) patients, only 1 needed laparotomy in 4th postoperative day.

Table II: Postoperative complication

Complication	Number of patients (%) (n = 760)
Wound infection	5 (0.66)
Biliary collection	3 (0.40)
Subphrenic abscess	1 (0.13)
Bile duct injury	1 (0.13)
Port site hernia	2 (0.26)
Total patients	12 (1.58)

Discussions:

The majority of cholecystectomies are performed laparoscopically now a days and it is the commonest operation performed laparoscopically worldwide[5]. The conversion rate and complications associated with LC depend on the experience of the surgeon and degree of difficulty faced during surgery. Conversion to open cholecystectomy should not be viewed as complication, rather a matter of sound surgical judgment as patient safety is of foremost importance.

There are many studies in the literature concerning the conversion rate (range: 1.5% to 7.7%) and reasons for conversion[6-8]. In this study, the conversion rate was determined to be 2.5%, which compares favorably with the rates reported in the literature. Dense adhesions at the calot's triangle and acute cholecystitis are two of the most important reasons for conversion to open procedure, as was also shown in the present study. Dense adhesions at calot's triangle signified chronic inflammation and were certainly due to the repeated attacks of acute cholecystitis which makes very difficult identification of structures of calot's triangle. The conversion rates in acute cholecystitis were reported in the literature to reach up to 27.7%[9]. In our series of 760 patients, only 76 patients having acute cholecystitis submitted for LC of which 5 (6.6%) patients were converted. Our low rates of conversion in acute cholecystitis to the fact that most our LC in acute cholecystitis was performed within 72 hours of onset of symptoms where tissue planes are oedematous which magnify the structures and facilitate dissection. After 72 hours, the tissue becomes increasingly frozen and friable which makes dissection at calot's triangle very risky and dangerous till 4-6 weeks time when inflammation subsides and fibrosis sets in[10].

Other situations associated with increased difficulty of laparoscopic cholecystectomy are gallbladder growth, catastrophes during operation such as abnormal bleeding and bile duct injuries, adhesions caused by previous operation and cholecystoduodenal fistula. In our series 3 patients were converted to open procedure due to suspicion of carcinoma of gallbladder on initial laparoscopy which later proved by histopathological examination as carcinoma of gallbladder. LC for gallbladder growth should not be done due increased chance of port site metastasis.

Bleeding complication account for up to one third of all major complications seen in LC[11], and are the second most common cause of death in patients undergoing the procedure (after anaesthesia related complications) [12,13]. The reported incidence of uncontrollable bleeding in LC is 0.03-10%[12-16]. Two (0.26%) our cases were converted due bleeding complication, one from cystic artery due to inadvertent hook injury and another from abnormal cystic artery. Both cases were managed well by prompt conversion, one required blood transfusion.

Operative bile duct injury is one of the serious complications of hepatobiliary surgery. During surgical learning curve of LC there was an initial rise in the reports of bile duct injuries, resulting mainly from the surgeon's inexperience and misinterpretation of anatomy[17]. Compared to open operation, injuries sustained during LC are often more severe (e.g., excision of a segment of the CBD) and generally extend to higher level. A recent audit of 1522 LCs performed in Thailand revealed a bile duct injury rate of 0.59%[18]. In Jordan in 2001, of 791 patients with chronic cholecystitis and 207 with acute cholecystitis who underwent LC, extra hepatic bile duct injuries were reported in only three cases[19]. A Swedish study has shown that a surgeon is most likely to injure the bile duct when undertaking between his 25th and 100th laparoscopic cholecystectomy. Only one case was converted due bile duct injury (Case no 41, Common hepatic duct transection) which was detected intraoperatively and primarily repaired over a T-tube. This patient was developed obstructive jaundice after 8 months due stricture of bile duct and managed thereafter by Roux-en-Y heapaticojejunostomy.

Previous abdominal operations, even in the upper abdomen, are not a contraindication to a safe LC. However, previous upper abdominal surgery is associated with an increased need for adhesiolysis and a higher open conversion rate. In the present study, only 2 cases with previous truncal vagotomy and gatrojejunostomy were submitted for LC and done successfully without conversion. Cholecystoduodenal fistula was not encountered in our series and only 2 cases were converted due to small fibrotic gallbladder. None of our case was converted due to visceral injury in anyway.

Since surgeons are reluctant to publish their own rate of complications, and since the complications of LC are treated in tertiary care centers, the precise magnitude of the problem remains uncertain[7]. Serious complications of LC occur in fewer than 2% of all cases[20,21]. In our study the postoperative complication rate (1.58%) was within the range of published reports (0-8.6%)[3,4,7,13,14]. Wound infection of umbilical port through which gallbladder is extracted occurs in 0.3 to 1% of cases[22]. In our study it occurred in five cases (0.66%), all were treated with antibiotics and dressing. Three cases (0.40%) developed postoperative bile leak through drainage tube, two stoped spontaneously within weeks but one required laparotomy due gradual clinical deterioration. Laparotomy revealed that, clip of cystic duct was loosened and there was distal obstruction caused by choledocholithiasis. According to literature, leak may be minor, arising from a small, accessory bile duct and clinically insignificant. Such cases should be treated with percutaneous drainage[23-25]. On the other hand, a major leak due injury to main duct or a retained stone in common bile duct may result in biliary fistula, peritonitis, or bilioma[25]. One our case developed subphrenic abscess following peropeartive gallbladder rupture and spillage of stones which was treated by ultrasonogram guided percutaneous drainage and intravenous antibiotics. Two our cases developed port site hernia at umbilicus, one after 6 months and another after 12 months of follow up. Other complications, such as those related to pneumoperitoneum or thermocoagulation, were not seen in our study.

Conclusions:

Laparoscopic cholecystectomy is one of the most commonly performed laparoscopic procedures.

Problems during laparoscopic cholecystectomy include conversion to open cholecystectomy, bile duct injury and other postoperative complications. Although there are several studies reporting various rates and their causes of conversion, every institution or surgeon must have a thorough understanding of the rate and causes of conversion to open surgery based on culture and geography. Conversion from laparoscopic to open cholecystectomy should be based on the sound clinical judgment of the surgeon and not due to lack of individual expertise.

References :

1. Bittner R. Laparoscopic surgery: 15 years after clinical introduction. World J surg. 2006; 30:1190-203.

2. Ros A, Gustafsson L, Krook H, Nordgren CE, Thorell A, Wallin G, et al. Laparoscopic Cholecystectomy versus mini-laparotomy Cholecystectomy: a prospective, randomized, single blinded study. Ann surg. 2001; 234:741-9.

3. Deziel DJ, Millikan KW, Economou SG, Doolas A, Ko ST, Airan MC. Complications of LC: A national survey of 4292 hospitals and an analysis of 77604 cases. Am J Surg. 1993; 165:9-14.

4. Lee VS, Chari RS, Cucchiaro G, Meyers WC. Complications of laparoscopic cholecystectomy. Am J Surg. 1993; 165:527-32.

5. Mir IS, Mohsin M, Kirmani O, Majid T, Wani K, Hasan MU, et al. Is intraoperative cholangigraphy necessary during laparoscopic cholecystectomy? A multicenter rural experience from a developing world country. World J Gastroenterol. 2007; 13:4493-7.

6. Tayeb M, Raza SA, Khan MR, Azami R. Conversion from laparoscopic to open cholecystectomy: Multivariate analysis of preoperative risk factors. J Postgrad Med. 2005; 51:234-8.

7. Ghnnam W, Malek J, Shebl E, Elbeshry T, Ibrahim A. Rate of conversion and complications of laparoscopic cholecystectomy in a tertiary care center in Saudi Arabia. Ann Saudi Med. 2010; 30(2):145-8.

8. Genc V, Sulaimanov M, Cipe G, Basceken SI, Erverdi N, Gurel M, et al. What necessitates the conversion to open cholecystectomy? A retrospective analysis of 5164 consecutive laparoscopic operations. Clinics 2011; 66(3):417-20.

9. Kim KR, Ibrahim S, Tan NC, Lim SH, Tay KH. Risk factors for conversion to open surgery in patients with acute cholecystitis undergoing interval laparoscopic cholecystectomy. Ann Acad Med Singapore 2007; 36:631-5.

10. Biswas SK, Saha JC, Rahman MM, Rahman MA. Laparoscopic cholecystectomy in acute calculus cholecystitis-Experience at district level hospital. Faridpur Med Coll J. 2010; 5(1):3-6.

11. Mases A, Montes A, Ramos R, Trillo L, Puig MM. Injury to the abdominal aorta during laparoscopic surgery: an unusual presentation. Anesth Analg. 2000; 91:561-2.

12. Phillips PA, Amaral JF. Abdominal access complications in laparoscopic surgery. J Am Coll Surg. 2001; 192:525-36.

13. Singh R, Kaushik R, Sharma R, Attri AK. Non-biliary mishaps during laparoscopic cholecystectomy. Ind J Gastroenterol. 2004; 23:47-9.

14. Kaushik R. Bleeding complications in laparoscopic cholecystectomy: Incidence, mechanisms, prevention and management. J Minim Access Surg. 2010; 6(3):59-65.

15. Nordestgaard AG, Bodily KC, Osborne RW, Jr, Buttorff JD. Major vascular injuries during laparoscopic procedures. Am J Surg. 1995; 169:543-5.

16. Ihasz M, Regoly-Merei J, Fazekas T, Batorfi J, Balint A, Zaborszky A, et al. Complications of laparoscopic cholecystectomy in Hungary: A multicentre study of 13833 patients. Eur J Surg. 1997; 163:267-74.

17. Huang ZQ, Huang XQ. Changing patterns of traumatic bile duct injuries: A review of forty years experience. World J Gastroenterol. 2002; 8:5-12.

18. Sicklick JK, Camp MS, Lillemoe KD, Melton GB, Yeo CJ, Campbell KA, et al. Surgical management of bile duct injuries sustained during laparoscopic cholecystectomy. Ann Surg. 2005; 241:786-95.

19. Gharaibeh KI, Ammari F, Al-Heiss H, Al-Jaberi TM, Qasaimeh GR, Bani-Hani K, et al. Laparoscopic cholecystectomy for gallstones. Ann Saudi Med. 2001; 21:312-6.

20. Andrén-Sandberg A, Alinder G, Bengmark S. Accidental lesions of the common bile duct at cholecystectomy. Pre- and perioperative factors of importance. Ann Surg. 1985; 201:328-32.

21. Gouma DJ, Opertop H. Management of bile duct injuries: treatment and long term results. Dig Surg. 2002; 19:117-22.

22. Vagenas K, Karamanakos SN, Spyropoulos C, Panagiotopoulos S, Karanikolas M, Stavropoulos M. Laparoscopic Cholecystectomy: A report from a single center. World J Gastroenterol. 2006; 12:3887-90.

23. Morgenstern L, Berci G, Pasternak EH. Bile leak after biliary tract surgery: A laparoscopic perspective. Surg Endosc. 1993; 7:432-8.

24. Balija M, Huis M, Szerda F, Bubnjar J, Stulhofer M. Laparoscopic cholecystectomy-accessory bile ducts. Acta Med Croatica. 2003; 57:105-9.

25. Al-Kubati WR. Bile Duct Injuries Following Laparoscopic Cholecystectomy: A Clinical Study. Saudi J Gastroenterol. 2010-16(2):100-104.