Original Article

Safety of Laparoscopy in Acute Cholecystitis

Wael Fathi Hassaniah, Mohamed Al Haifi, Talib Jumaa
Department of Surgery, Al Amiri Hospital, Kuwait

Kuwait Medical Journal 2006, 38 (4): 308-310

ABSTRACT

Objective: Laparoscopic Cholecystectomy (LC) is the gold-standard procedure for chronic cholecystitis. However, its safety in acute cholecystitis has been questioned because of the abnormal anatomy associated with the acute inflammation. Our aim was to evaluate the safety of LC in acute cholecystitis.

Design: Retrospective

Setting: Department of Surgery, Al-Amiri Hospital, Kuwait

Material and Methods: During the period 1992 -1999, 300 patients with acute cholecystitis were evaluated. We assessed the efficacy of LC by studying the postoperative hospital stay; and its safety by studying the rate of conversion, especially by adopting the policy of early conversion whenever the anatomy was obscure. The morbidity associated with LC in acute cholecystitis was evaluated.

Results: Postoperative hospital stay was one day in 45% and two days in 23% patients. Our conversion rate was 15%. Major postoperative complications were seen in 4% cases. There was no incidence of CBD injury.

Conclusion: LC is a safe and effective procedure for acute cholecystitis if the policy of early conversion when anatomy is obscured is adopted.

KEYWORDS: acute cholecytitis, common bile duct injury, laparoscopic cholecystectomy

INTRODUCTION

Laparoscopic Cholecystectomy (LC) is now considered as the procedure of choice for patients with gall bladder disease, especially those with chronic cholecystitis[1,2] due to reduced postoperative hospital stay and early return to work. However, in acute cholecystitis (AC), the presence of edema and inflammation that results in obscuring the anatomy, make the operative dissection much more difficult and this could result in higher morbidity and reduced benefit from the laparoscopic approach[3,4]. In our experience, LC for AC is a safe and effective method for management of AC with an acceptable rate of conversion and morbidity[5,6]. This has been accomplished by a low threshold for conversion when anatomy is distorted.

MATERIALS AND METHODS

Two thousand seven hundred and fifty patients, who underwent LC from February 1992 until October 1999, were retrospectively evaluated. Three hundred patients presented with acute cholecystitis. The diagnosis was based on history, clinical examination, the presence of fever, leucocytosis and diagnostic evidence of AC by ultrasound examination. Operative time, conversion rate, the reasons for conversion and postoperative complications were evaluated in both urgent and emergency cases.

Technique:

LC was done by using the four port technique. A needle aspiration of the gall bladder was done at the beginning of the procedure to facilitate grasping the gall bladder wall which is usually thickened due to the inflammation. Omental adhesions were released by blunt dissection to identify the Callot's triangle. If traction of the Hartman's pouch was not feasible by the usual graspers, we used the Wolf grasper which has a good grip on the wall by the sharp stems. Traction on the fundus was facilitated by a stitch which was then caught by a grasper. If the dissection at the Callot's triangle was difficult, then an attempt was made at identifying the structures first by fundus dissection. Electrocautery dissection was used to expose the cystic duct and the cystic artery. This was facilitated by the use of hydro-dissection with the suction tube. For thick and wide cystic ducts, a Roeder loop knot was used to secure them. We did not do routine intra-operative cholangiogram. Patients with raised liver enzymes or suspected of having common bile duct stones had a pre-operative endoscopic retrograde cholangio-pancreatogram (ERCP)[7,8,9]. The gall bladder and any spilled stones were collected in a retrieval bag which was extracted through an extended umbilical port. Draining the liver bed was not done

Address correspondence to:
Dr Wael Fathi Hassaniah, PO Box 1002 - Hawalli, Kuwait. E-mail: waelfh@yahoo.com

Table 1: Reasons for prolonged hospital stay (more than one day)

Reason	No. of cases
Conversion	45
Gall bladder pathology	50
Patient's request	15
Complications	27

Table 2: Reasons for conversion

Reason for conversion	No. of cases
Gall bladder pathology	35
Abnormal anatomy	20
Bile leak and stone spillage	15
Abdominal adhesions	4
Cystic artery bleeding	2
Common bile duct injury	0
Bowel injury	0

Table 3: Operative complications

Complication	No. of cases
Bleeding	12
Common bile duct injury	Nil
Cystic duct injury	4
G B puncture	45
Liver trauma	6

Table 4: Post-operative complications

Complication	No. of Cases
Major complications	
Common bile duct Injury	Nil
Bleeding	1
Bile leak	3
Abdominal collection	5
Melena	1
Pancreatitis	2
Minor complications	
Re-admission	11
Wound Complications	20
Others:	
Medical or anesthesia related	15

routinely and it's use was left to the judgement of the operating surgeon.

RESULTS

LC was attempted in 300 patients with a clinical and radiological diagnosis of AC. Out of these patients, 120 (40%) were male and 180 (60%) female. The mean age was 45 years (range 17 - 73 years). The mean operating time was 80 minutes (range 45 - 310 minutes). The mean postoperative hospital stay was 1.56 days (range 1 - 20 days). One day postoperative hospital stay was seen in 137 (45%) and two days hospital stay in 69 (23%) patients. The remaining patients stayed for more than two days. The reasons of prolonged hospital stay (more than one day) are shown in Table 1. In some cases, there was more than one reason to account for the increased hospital stay. The conversion rate was 15% (45). The reasons for conversion are shown in Table 2. There was again more than one reason for conversion to open cholecystectomy.

Pre-operative ERCP was done in 42 cases. The indications were raised liver function tests or evidence of dilated common bile duct by ultrasound. ERCP was abnormal in only 20 (47%) cases where stones were found and extracted. Postoperative ERCPwas done in eight cases and was abnormal in seven (87%) cases. Postoperative ERCPwas done to deal with retained stones (2 cases), postoperative complications such as bile leak (3 cases) and pancreatitis (2 cases). Our operative complications are shown in Table 3, and postoperative complications in Table 4.

Re-admission to hospital was considered as a minor complication and was seen in 11 cases; out of which two cases were due to retained stones, three cases were found to have small non-drainable abdominal collection, two cases due to non-specific abdominal pain and four cases due to upper abdominal pain that was due to peptic ulcer. Other minor complications included those due to anesthesia or associated medical disease like ischemic heart disease, heart failure and hypertension.

DISCUSSION

Laparoscopic cholecystectomy done electively has significant benefits for the patients, including short hospitalization and reduced wound complications. In our experience, these benefits have also been achieved for patients with acute cholecystitis, where the majority of our patients stayed post-operatively for short periods (45% stayed for one day and 23% stayed for two days). Twenty (6.6%) patients suffered from minor wound complications like wound seromas or superficial wound infection.

The presence of edema, inflammation, fibrosis and sometimes necrosis with gangrene make dissection of the Callot's triangle and the gall bladder more difficult, especially if associated with omental adhesions. This can lead to more procedure-related complications. An aspiration needle can be used to decompress the edematous and thick-walled gall bladder which would facilitate grasping the wall. Also, the use of stronger tooth graspers for the cephalad fundus retraction helped. For thickened cystic ducts, the use of extra

large clips or roeder loop and the use of a bag for retrieval of the gall bladder through an extended umbilical port is useful. Closed suction drainage of the liver bed was performed in cases with bile leakage, spilled stones, presence of extensive necrosis in the liver bed and in cases with thickened cystic duct where there is a potential for bile leak. In spite of this modified technique the anatomy remains unclear; therefore a low threshold for conversion should be maintained to avoid serious complications, especially common bile duct injury[10]. Our conversion rate was 15% and is similar to the conversion rates in published literature[11,12].

Our postoperative complications rate was 19.3%. However, major complications were only 4% as shown in Table 4. We had no common bile injury and only one case of intra- abdominal bleeding that was from the liver bed. This patient required a laparotomy. We had three cases of bile leak, two cases from cystic duct and one case from gall bladder bed. All cases were managed conservatively by ERCP and percutaneous aspiration of the collection under ultrasound guidance[13,14]. One patient had malena after ERCP. Abdominal collection was seen in five cases. Three were managed conservatively and in two patients, aspiration under ultrasound guidance was done[15].

CONCLUSION

Laparoscopic cholecystectomy for acute cholecystitis is an effective procedure due to reduced postoperative hospital stays and wound complications. It is also safe due to reduced postoperative morbidity and with an acceptable rate of conversion. This is achieved by a policy of early conversion in cases where the anatomy is not clear.

REFERENCES

1. Schirmer BD, Edge SB, Dix J, Hyser MJ, Hanks JB, Jones RS. Laparoscopic cholecystectomy: Treatment of choice for symptomatic cholelithiasis. Ann Surg 1991; 213:665-676.
2. Anderson RE, Hunter JG. Laparoscopic cholecystectomy is less expensive than open cholecystectomy. Surg Laparosc Endosc 1991; 1:82-84.
3. Cuschieri A, Dubois F, Mouiret P, Becker H, Buess G, *et al*. The European Experience with laparoscopic cholecystectomy. Am J Surg 1991; 161:385-387.
4. Kum CK, Goh PM, Isaac JR, Tekant Y, Ngoi SS. Laparoscopic cholecystectomy for acute cholecystitis. Br J Surg 1994; 81:1651-1654.
5. Lujan JA, Parrilla P, Robles R, Marin P, Torralba JA, Garcia-Ayllon J. Laparoscopic cholecystectomy vs open cholecystectomy in the treatment of acute cholecystitis: a prospective study. Arch Surg 1998; 133:173-175.
6. Eldar S, Sabo E, Nash E, Abrahamson J, Matter I. Laparoscopic cholecystectomy for acute cholecystitis: prospective trial. World J Surg 1997; 21:540-545.
7. Phillips EH: Controversies in the management of common duct calculi. Surg Clin North Am 1994; 74:931-948.
8. Fernandez M, Csendes A, Yarmuch J, Diaz H, Silva J. Management of common bile duct stones: the state of the art in 2000. Int Surg 2003; 88:159-163.
9. Liu CL, Fan ST, Lai EC, Lo CM, Chu KM. Factors affecting conversion of laparoscopic cholecystectomy to open surgery. Arch Surg 1996; 131:98-101.
10. Lo CM, Fan ST, Liu CL, Lai EC, Wong G; Early decision for conversion of laparoscopic to open cholecystectomy for treatment of acute cholecystitis. Am J Surg 1997; 173:513-517.
11. Johansson M, Thune A, Blomqvist A, Nelvin L, Lundell L. Management of acute cholecystitis in the laparoscopic era: results of a prospective, randomized clinical trial. J Gastrointest Surg 2003; 7:642-645.
12. Cox MR, Wilson TG, Luck AJ, Jeans PL, Padbury RTA, Toouli J. Laparoscopic cholecystemy for acute inflammation of the gall bladder.Ann Surg 1993; 218:630-634.
13. Mehta SN, Pavone E, Barkun JS, Cortas GA, Barkun AN. A review of the management of post cholecystectomy bile leak during the laparoscopic era. Am J Gastroenterol 1997; 92:1262-1267.
14. Bose SM, Mazumdar A, Singh V. The role of endoscopic procedures in the management of post-cholecystectomy and post-traumatic biliary leak. Surg Today 2001; 31:45-50.
15. Lee VS, Chari RS, Cucchiarro G, Meyers WC. Complications of laparoscopic cholecystectomy. Am J Surg 1993; 165:527-532.