Laparoscopic Cholecystectomy in Patients with Chronic Liver Disease; a Ten Years Experience

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To evaluate the safety and efficacy of laparoscopic cholecystectomy in patients with chronic liver disease. It was a retrospective analysis. The study was conducted at Shaikh Zayed Hospital, Lahore between 1993 and 2002. Out of 656 patients undergoing laparoscopic cholecystectomy during this period, 22(6 male, 16 female) were having chronic liver disease as well. Ultrasonography was mainstay of diagnosis of cholelithiasis while liver function tests, platelet count and prothrombin time were done to evaluate liver status.. Eighteen patients were having Child's class A while rest were in Child's class B. Laparoscopic cholecystectomy was successful in 20 patients of chronic liver disease. Liver biopsy and paraumbilical hernia repair were additional procedures performed in 8 patients. Two patients were converted to open cholecystectomy due to bleeding and adhesions. Acute cholecystitis was found in 3 patients while rest were having chronic cholecystitis. Mean operative time was 75.45+/-10.9 minutes and mean hospital stay was 2.81+/-1.1 days. Postoperative complications in the form of wound infection (2 pts), prolonged ileus (2 pts) and port hernia (1 pt) occurred in 5 patients. There was no mortality. Laparoscopic cholecystectomy can be safely performed in patients with mild to moderate chronic liver disease without any additional morbidity.
Key words Laparoscopic cholecystectomy, Chronic liver disease, Complications

Laparoscopic cholecystectomy (LC) was first performed in 1987 and is now routinely performed for symptomatic gallstones. Its main advantages are decreased post-operative pain, earlier discharge from hospital and an earlier return to normal activity for the patient when compared to open cholecystectomy[1]. With the passage of time the list of indications for the procedure is expanding resulting into shrinkage of list of contraindications.

The incidence of gallstone disease in patients with chronic liver disease is greater than that in healthy patients[2]. Laparoscopic cholecystectomy was originally contraindicated in chronic liver disease patients because of associated portal hypertension and coagulopathy[3]. However as the popularity of the procedure is increasing, the number of patients with chronic liver diseases with gallstones undergoing laparoscopic cholecystectomy are increasing. So this study was conducted to examine the safety and efficacy of laparoscopic cholecystectomy in patients with chronic liver disease.

Patients and methods

This was a retrospective analysis of all patients with chronic liver disease and gallstones who underwent laparoscopic cholecystectomy at Surgical Unit 2 of Shaikh Zayed Hospital Lahore. Laparoscopic cholecystectomy was first performed at Shaikh Zayed Hospital in 1991 and analysis of all patients who underwent laparoscopic cholecystectomy from 1993 to 2002 was done via chart review and outpatient follow up data. A total 656 patients underwent LC during this period. Initial assessment of all patients included full blood count, liver function tests and abdominal ultrasound. After proper workup, written informed consent was obtained with explanation of procedure and its possible complications. All procedures were performed by consultant surgeons. First dose of antibiotic was given at the time of induction and drug was continued postoperatively depending upon the status of gallbladder. All patients were operated under general anesthesia with CO_2 pneumoperitoneum using standard three port technique. Nasogastric or orogastric tube was inserted after induction of patient and removed at the end of procedure. The umbilical port was used to insert telescope. The dissection was done using epigastric port while right hypochondriac port was utilized to hold the grasper. After assessment of abdominal cavity, dissection was done in Calot's triangle to recognize cystic duct and cystic artery. Both structures were clipped separately and gallbladder was dissected out from gallbladder fossa. Hemostasis was secured with the help of diathermy. After successful completion of the procedure, gallbladder was taken out via umbilical wound. The fascial layer of umbilical wound was stitched with continuous vicryl stitch. Skin was approximated with prolene suture in interrupted manner. All patients were kept in ward post operatively and were discharged only when they were mobile and tolerating oral diet. After discharge, they were followed up in out patient department on regular basis.

Out of 656 cases, 22 patients turned out to be having chronic liver disease. This group comprised of 6 male and 16 female patients with mean age of 47.68+/-8.6 years having range of 35 to 74 years. Seventeen were known patients of chronic liver disease while rest of them were unaware of their liver status and were diagnosed on operative findings. HbsAg was detectable in 3 patients while antibodies to HCV were present in 9 patients. In remaining 10 patients, the etiology of chronic liver disease was uncertain. On the basis of Child-Pugh criteria, 18 patients were in Child's class A and 4 were having Child's

class B. There was no patient in Child's class C. Previous history of lower abdominal surgery was present in 5 patients while a same number of patients gave history of jaundice in the past. Hypertension was present in 5 patients whereas diabetes mellitus was a co-morbid condition in 4 patients.

Table 1 Clinical features

Features	n=	%age
Pain RHC	20	91
Dyspepsia	18	81.8
Tenderness RHC	19	86
H/O Jaundice	05	22
H/O Chronic liver disease	17	77

RHC = right hypochondrium

Ultrasonography was performed in all patients with special emphasis on hepatobiliary system. The results are shown in Table 2.

Table 2 Ultrasound findings

Features	n=	%age
Multiple stones	19	86
Single stone	03	14
Wall thickness > 4mm	18	82
Fatty liver	03	14
Chronic liver disease	19	86

All patients were subjected to LC and it was successfully performed in 20 patients. Alongwith LC, liver biopsy was performed in 6 patients to determine the liver status. Two patients were having paraumbilical hernia which was repaired simultaneously at the end of procedure.

Table 3 Details of procedures

Features	n=	%age
Attempted LC	22	100
Successful LC	20	91
Conversion	02	09
Liver biopsy	06	27
Repair of PUH	02	09

PUH = Paraumbilical hernia

Results

LC was accomplished in 20 patients out of 22 patients. The procedure was converted to open cholecystectomy in 2 patients. Peroperatively 3 patients were found to be having acute inflammation of gallbladder while rest of patients were found to be having chronic cholecystitis. Histopathology reports confirmed the operative findings and proved the diagnosis of chronic liver disease in patients who were subjected to liver biopsy. Postoperative course was uneventful in all patients. However prolonged ileus of more than 24 hours occurred in 2 patients which settled down on conservative management. Superficial infection of umbilical wound was observed in 2 patients. Out of these two patients, one was suffering from acute cholecystitis. Wound infection was treated with daily wound dressing .All patients were discharged on the next day except those who suffered from prolonged ileus and remain admitted into hospital for 3 days postoperatively. The patient who were converted to open cholecystectomy were discharged on 5th postoperative day. One patient reported with umbilical port hernia after 8 months of operation. This patient suffered from wound infection at the original operation. There was no change in Child's status of any patient postoperatively at 2 weeks and 6 weeks. No mortality was noted in this group.

Table 4 Indications for conversion

Features	n=	%age
Massive bleeding	01	4.5
Adhesions	01	4.5
Total	02	9.0

Table 5. Complications

Features	n=	%age
Prolonged ileus	02	09
Wound infection	02	09
Port hernia	01	4.5
Total	05	22

Discussion

The application of laparoscopic techniques to general surgical procedures has revolutionized the field of general surgery.[4] Since the first LC was performed about 15 years back, minimally invasive techniques have been applied to an increasing number and a variety of patients[4]. At first, several absolute contraindications to laparoscopy were advocated including cirrhosis. As advancement occurred , these limitations were reassessed; many became only relative contraindications. Some are no longer considered as contraindication at all because in these situations proper planning, expert judgment and meticulous surgical technique can prevent complications allowing patients to experience the benefits of minimally invasive surgery[4]., cirrhosis is one of the example. Cholecystectomy in a more challenging group of patients was reported by Poggio and associates who described experience with cholecystectomy in patients with cirrhosis. LC was performed safely in patients with Child-Turcotte-Pugh class A or B cirrhosis with less bleeding and fewer wound complications than in patients undergoing open cholecystectomy[5].

The prevalence of gallstones is increased in patients with chronic liver disease[1]. At the same time cholecystectomy is associated with increased risk of complications in patients with chronic liver disease.[6] Cirrhosis leads to a stiff liver which is difficult to elevate and retract, thereby compromising visual exposure of the porta hepatis and gallbladder.In addition, depressed synthetic function of liver may also result in coagulopathy. Aberrant portosystemic venous collateralization may lead to exsanguanating hemorrhage from liver bed or from small veins in porta hepatis or from trocars placed through large veins in the abdominal wall.[7] In addition the incidence of postoperative ascites is high.

In our study, there were 22 patients (3.35%) having chronic liver disease. This percentage of patients presenting with chronic liver disease and gallstones is higher than other studies (0.66%--1.6%)[8,9]. This is due to well established Gastroenterology department at Shaikh Zayed Hospital, Lahore resulting into referral of patients of chronic liver disease having gallstones for surgery. The mean operation time in our study was 75.45+/-10.9 minutes. Whereas Urban L et al[3] and Jan YY et al [10] have reported it to be between 84 and 105 minutes. The mean hospital stay (2.81+/-1.1 days) in our patients quite comparable to other studies[11,12,,13] mentioning hospital stay of 1.7 days to 6.7 days. Morbidity in our group consisted of wound infection, prolonged ileus and port hernia for a rate of 22%. The reported morbidity for such kind of patients varies from 12.3% to 32%[11,2,13]. The low incidence of complications in our study is probably due to the fact that the operating surgeons were fairly experienced in dealing such kind of patients.

Conversion of LC to open cholecystectomy was done immediately when it was found that things were not going in the right direction. The decision to convert must be timely before serious damage to common bile duct and major vessels has occurred[14]. It should not be considered as a complication but an attempt to prevent further damage on the part of surgeon. In present study, a conversion rate of 9% was achievable. This rate is quite lower than that of reported by Fontes et al (20%)[8] and Friel et al (17%)[4]. Lacy et al[15] mentioned conversion rate of 9.1% which is comparable to our study. However, 6% conversion rate recorded by Morio et al[12] is lower than that of our series.

In conclusion, LC can be safely performed in patients with mild to moderate chronic liver disease without increasing morbidity or mortality or worsening of outcome. The facility to obtain liver biopsy at LC under direct vision is a further advantage of the procedure in this situation.

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