ORIGINAL ARTICLE

Laparoscopic Cholecystectomy in Cirrhotic Patients

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ABSTRACT

Background: Gallstones are twice as common in cirrhotic patients as in the general population. Although laparoscopic cholecystectomy (LC) has become the gold standard for symptomatic gallstones, cirrhosis has been considered an absolute or relative contraindication.
Aim: To assessed the safety of LC in cirrhotic patients at a tertiary care hospital in Pakistan
Methods: From October 2015 to October 2016, a prospective study was conducted at Surgical Unit 2 of Shalamar Hospital, Lahore. All the cirrhotic patients with Child-Pugh class A and B cirrhosis undergoing LC were included in the study. Cirrhosis was diagnosed based on clinical, biochemical, ultrasonography, and intraoperative findings of the nodular liver.
Results: Of 350 patients undergoing laparoscopic cholecystectomy, 40(12%) was cirrhotic. Of these 40, 33(80%) were Childs group A and 7(20%) were group B. Twenty percent were hepatitis B positive, and 80% were hepatitis C positive. Preoperative diagnosis of cirrhosis was possible in 90% of cases, and 10% were diagnosed during surgery. Morbidity rate was 15% and mortality rate was 0%. Two patients developed postoperative ascites, and mean hospital stay was 2.8±0.1 days. Of the 40 cases, 6(15%) were converted to open cholecystectomy. The mean operation time was 80.2±30.54 minutes.
Conclusion: Laparoscopic cholecystectomy is an effective and safe treatment for symptomatic gallstone disease in select patients with Child-Pugh A and B cirrhosis. The advantages over open cholecystectomy are the lower morbidity rate and reduced hospital stay.
Keywords: Cirrhosis, Laparoscopic cholecystectomy

INTRODUCTION

Chronic liver disease is a major health problem in Pakistan. The most common cause is viral hepatitis B and C, which is now endemic in Pakistan. According to one study[1], 4.3% of the population is sero-positive for hepatitis B surface antigen and 6% for hepatitis C antibodies. This results in an increasing number of patients who ultimately will develop cirrhosis.

Gallstones are twice as common in cirrhotic patients as in the general population[2,3,4]. With this increase in the prevalence in viral hepatitis, surgeons now more frequently encounter cirrhotic patients with symptomatic gallstones.

Since the introduction of laparoscopic cholecystectomy in the United States in 1988, it has become the gold-standard treatment for symptomatic gallstones. Postoperative morbidity and mortality rates are significantly lower with LC compared with those for open cholecystectomy. Although laparoscopic cholecystectomy has become the treatment of choice, cirrhosis has been considered an absolute or relative contraindication[5]. However, with surgeons' increased experience in laparoscopic surgery, it has been shown to be safe and well tolerated in cirrhotic patients. Several studies have reported the efficacy and safety of laparoscopic cholecystectomy in cirrhotic patients[6–11].

The aim of our study was to assess the safety of laparoscopic cholecystectomy in cirrhotic patients and to evaluate its benefits compared with the benefits in noncirrhotic patients

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PATIENTS AND METHODS

From October 2015 to October 2016, a total of 350 patients underwent laparoscopic cholecystectomy for symptomatic gallstone disease in our unit. Of these 350 patients, 40 had cirrhosis. All of these patients provided a medical history followed by a physical examination, ultrasonography, liver function tests, prothrombin time, platelet count, and viral hepatitis screening. The diagnosis of cirrhosis was made based on preoperative workup and intraoperative findings of a nodular liver. All patients were evaluated preoperatively according to the American Society of Anesthesiologists (ASA) scoring system. Laparoscopic cholecystectomy was performed with the standard 4-port technique with the patient under general anesthesia. Pneumoperitoneum was created through the first port subumbilically by means of the open (Hassan) technique. A subhepatic drain was kept in place in all cases.

The data were analyzed for patient demographics, laboratory findings, cause of cirrhosis,

Child-Pugh class, operative time, conversion rate, procedure-related morbidity, and mortality and hospital stay. The data were evaluated by using SPSS version 22.0. Fisher's exact test and Pearson's chi-square test were applied for categorical parameters, and the independent t test was used to compare the means (2-tailed) among continuous variables. The results were calculated on 95% confidence interval. P≤0.05 was considered significant.

RESULTS

Forty patients with cirrhosis, 6 males and 34 females, underwent laparoscopic cholecystectomy. Mean age of the patients was 43.9± 7.06. Of these 40 patients, cirrhosis was diagnosed as secondary to hepatitis C in 32 (80%) patients and hepatitis B in 8 (20%) patients. Child-Pugh classification was used to assess the severity of liver cirrhosis; 33(80%) patients were class A, and 7(20%) were class B. Significant comorbidity was present in 4 (10%)of cirrhotic patients.. Preoperative diagnosis of cirrhosis was possible in 90% of cases, and 10% were diagnosed during surgery. Morbidity rate was 15% and mortality rate was 0%. Two patients developed postoperative ascites, and mean hospital stay was 2.8±0.1 days. Of the 40 cases, 6(15%) were converted to open cholecystectomy. The mean operation time was 80.2±30.54 minutes.

Post-operative course after laparoscopic cholecystectomy for patients with cirrhosis patients

30-day mortality	0
Acute hepatic decompensation	0
Post-op bile leak	1/40 (2.5%)
Post-operative infectious complications	2 UTI, 1 pneumonia, 1 wound infection
ICU admission	0
Length of hospital stay	2.8±0.1 days
30-day re-admissions	4/40 (10%)

Intra-operative characteristics of laparoscopic cholecystectomy for patients with cirrhosis

Operative time, median and range in minutes	80.2±30.54 minutes
Conversion to open Cholecystectomy	6/40 15%

DISCUSSION

Gallstone disease is a prevalent disease worldwide and more common in patients with cirrhosis of the liver. Its incidence is 29.4% for patients with cirrhosis compared with 12.8% for patients without cirrhosis[2,12]. According to a study[13] conducted at a teaching hospital, in Pakistan, the frequency of gallstones is 31%. Pathogenic factors seem to be responsible for the high incidence of gallstones in cirrhosis including intravascular hemolysis, hyper-splenism, reduction in biliary acidity, increased levels of estrogen, and functional alterations of the gallbladder (reduction in motility and emptying). Several published reports have shown that cirrhosis of the liver has a major impact on morbidity and mortality after open cholecystectomy. Because of the high rates of mortality (83.3%) and morbidity, Aranha et al[14] considered cholecystectomy in patients with cirrhosis as “a formidable operation.” The main complications of open cholecystectomy in cirrhotic patients are ascites, wound and pulmonary infection, and hemorrhage. By the late 1980s, better surgical results have been published for cirrhotic patients with normal hepatic synthetic function who underwent elective cholecystectomy.

Laparoscopic cholecystectomy has been proven safe and feasible for symptomatic gallstones, but its role in cirrhotic patients remains controversial. Yerdel et al[10] in 1993 reported the first study of laparoscopic cholecystectomy in cirrhosis. Although a small number of patients were included in the study, no morbidity or mortality occurred. However, with surgeons' increase in laparoscopic experience, various recent studies have demonstrated that laparoscopic cholecystectomy in cirrhosis is safer and better tolerated than open cholecystectomy. Proper patient selection after estimating the risk is an essential requirement. The Child-Pugh classification is helpful in estimating the risk and provides an idea of the patient's liver reserve[15,16]. The need for blood transfusion and patient mortality and morbidity all correlate with the Child-Pugh classification. Block et al[16] reported a mortality of 27% among Child-Pugh C, 9% among Child-Pugh B, and no mortality among Child-Pugh A patients. Kogut et al[18] also reported a zero percent mortality among Child-Pugh A patients.

Our study reflects the patient population at our hospital. Hepatitis B and C were the leading causes of cirrhosis in our patients, which is contradictory to reports in the literature, which indicate that alcoholic liver disease is more prevalent in the West. Mean operation time in our study was 80.2 minutes, which is significantly shorter than that reported in the earlier literature. Our study showed an increased conversion rate to open cholecystectomy that differs from previous published data. In the literature, the conversion rate of laparoscopic cholecystectomy in cirrhotic patients ranged from 0% to 9%[10,11]. However, a 0% conversion rate was reported in some small series containing less than 10 patients that might indicate selected patients in the series. The mean hospital stay was 2.8 days, similar to that in patients without cirrhosis.

The morbidity rate in this study was 15%. The main complication in our series was ascites and bile leakage, which were managed conservatively. The incidence of ascites after open cholecystectomy is unknown. Brown and Burk[17] reported a 39% rate of ascites after exploratory laparotomy for various indications in cirrhotic patients. Several causes are postulated, such as leakage of lymphatic vessels interrupted at surgery, gallbladder bed lymphatics, and blood loss.

Based on previous published reports, it is evident that bleeding complications are more common in patients with cirrhosis. The bleeding that occurs during gallbladder dissection is usually venous and can easily be controlled. In case of troublesome bleeding, Spongstan can be used. If the blood is spurting then a figure of eight stitch can be applied. Because of the anticipated difficulties during surgery in patients with cirrhosis, particular care is necessary.

Results of several studies have been published that show encouraging outcomes with laparoscopic cholecystectomy in cirrhotic patients. Laparoscopic cholecystectomy offers several advantages over open cholecystectomy including less bleeding, lower morbidity, and shorter hospital stay. Blood loss is reduced because magnification of the surgical field permits meticulous dissection of the gallbladder and a hemostasis role for pneumoperitoneum (barohemostasis)[10].

In addition, laparoscopy avoids the subcostal incision that would increase hemorrhage in patients with cirrhosis. Morino et al[13] also note that laparoscopic cholecystectomy has distinct advantages for the surgical team. Laparoscopy reduces the risk of contamination, especially in treatment of patients with hepatitis B and C related cirrhosis.

CONCLUSION

Based on our results as well as those of others, we conclude that laparoscopic cholecystectomy is an effective and safe treatment for symptomatic gallstone disease in select patients with Child-Pugh A and B cirrhosis. However, appropriate preoperative preparations and careful intraoperative techniques are required for better outcomes. LC has the advantages over open cholecystectomy of lower morbidity and reduced hospital stay.

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