The Professional Medical Journal
www.theprofesional.com

ORIGINAL PROF-2117

CHOLECYSTECTOMY;

LAPAROSCOPIC VS OPEN IN PATIENTS WITH MILD LIVER CIRRHOSIS AND SYMPTOMATIC GALL STONES

Dr. Iram Hassan[1], Dr. Muhammad Sohaib Khan[2], Dr. Naveed Akhtar Malik[3], Dr. Jahangir Sarwar Khan[4], Dr. Saadia Zaman[5], Dr. Muhammad Mussadiq Khan[6]

1. Senior Registrar, Surgical Unit-1, HFH , Rawalpindi.
2. Registrar, Surgical Unit-1, HFH , Rawalpindi.
3. Assistant Professor Surgical Unit-1, HFH ,Rawalpindi
4. Associate Surgical Unit-1, HFH, Rawalpindi.
5. Registrar, Surgical Unit-1, HFH, Rwalpindi
6. Professor of Surgery, Surgical Unit-1, HFH, Rawalpindi.

Correspondence Address:
Dr. Naveed Akhtar Malik
Assistant Professor Surgical Unit-1
HFH ,Rawalpindi
naveedmalik1964@hotmail.com

Article received on:
15/11/2012
Accepted for Publication:
22/11/2013
Received after proof reading:
26/01/2014

ABSTRACT… Objective: To compare the operative time, blood loss, postoperative pain and length of hospitalization between open (OC) and laparoscopic cholecystectomy (LC) in Liver cirrhotic patients with Child –Pugh class A & B. **Study Design:** Randomised Control Trial (RCT). **Setting and Duration:** This study was conducted at Surgical department, Holy Family Hospital, Rawalpindi from Jan 2010 to Dec 2011. **Subjects and Methods:** A total of 142 patients having Liver cirrhosis secondary to Hepatitis A & Hepatitis B, who presented in OPD and ER with signs and symptoms of gall stones were randomly allocated into two groups for open (OC) and laproscopic cholecystectomy (LC). All of them were either in Child–Pugh class A or B. Data on the above two groups(LC &OC) was collected and analyzed for operative time, blood loss and length of hospitalization after operation. **Results:** The mean blood loss in LC group was 61.33+39.64 ml vs 90.84+29.88 ml in OC group, Mean operation time was 50.49+18.26 min in LC group vs 59.22+15.66 in OC group which is statistically significant ($p<.05$). In LC group, the mean hospital stay was 1.8+.97 days, while in OC group is 2.4+.91 days which is also statistically significant. **Conclusions:** LC (laparoscopic cholecystectomy) is a safe and effective approach for the treatment of symptomatic cholelithiasis in patients with mild cirrhosis with less blood loss, less postoperative pain, shorter operative time and decreased hospital stay.

Key words: Laparoscopic cholecystectomy, liver cirrhosis.

Article Citation: Hassan I, Khan MS, Malik NA, Khan JS, Zaman S, Khan MM. **Cholecystectomy; laparoscopic vs open in patients with mild liver cirrhosis and symptomatic gall stones.** Professional Med J 2014;21(1): 005-009.

INTRODUCTION

Laparoscopic Cholecystectomy (LC) has become the "golden standard" in treating benign gallbladder diseases. When LC began in the early 1990s, cirrhosis and pregnancy, previous abdominal surgery, obesity, acute cholecystitis were considered absolute contraindications for performance of the laparoscopic technique[1]. Historically, the presence of cirrhosis was believed to be an absolute or relative contraindication to laparoscopic cholecystectomy (LC) because of the potential risks of bleeding or liver failure[2,3].

Viral hepatitis B- and C-related chronic hepatitis is endemic in Pakistan, and chronic liver disease secondary to these infections is one of the major health problems in our country. A study conducted in Pakistan indicated that 4.3% of the population tested was sero-positive for hepatitis B surface antigen and 6% for hepatitis C antibody[4]. With increasing prevalence of viral hepatitis and chronic liver disease, surgeons are now more frequently encountering cirrhotic patients with symptomatic gallstones requiring intervention[3,4].

The presence of cirrhosis has been shown to contribute substantially to the mortality rate after biliary operations. In fact, open cholecystectomy in cirrhotic patients has been associated with a morbidity rate of 5% to 23% and a mortality rate of 7% to 20%[5,6]. The major causes of the poor results associated with open cholecystectomy in patients with cirrhosis are intraoperative blood loss, ascites, gastrointestinal tract hemorrhage[4,6,7]. The

first reports of laparoscopic cholecystectomy in cirrhotic patients appeared in the literature in 1993.Several studies documented the safety and efficacy of laparoscopic cholecystectomy in patients with cirrhosis[8,9]. In fact, recent comparative studies have shown that the laparoscopic approach is more beneficial than the traditional approach in this group of patients[4,5,10].

From previous studies, it has been shown that there was no significant difference in surgical duration between between LC and OC groups[1,8]. The LC offers the advantages of reduced blood loss due to magnification, reduced wound-related complications, time to resume diet, shorter anesthesia as well as surgical periods and reduced hospital stay[3,13]. Additionally, an important advantage of this approach is the few number of right upper quadrant adhesions postoperatively. This will be an advantage for patients having a liver transplantation in future. The use of LC for patients with hepatitis B- and C-related cirrhosis is advantageous for the surgical team because laparoscopy reduces the possibility of prick injuries with sharps[3].

Although laparoscopic cholecystectomy (LC) has become the procedure of choice for cholelithiasis in the general population, many consider cirrhosis as a relative or absolute contraindication for laparoscopic surgery[3].The rationale of the study is that minimally invasive laparoscopic cholecystectomy can be done in patients with Liver cirrhosis without any additional morbidity. This study will thus evaluate safety and efficacy of laparoscopic cholecystectomy in patients with liver cirrhosis.

MATERIALS AND METHODS

This study was conducted at Surgical Department of Holy Family Hospital Rawalpindi from January 2010 to December 2011 after approval from Hospital ethical committee.

Sample size was 142 patients (71 patients in each group) , calculated by WHO sample size calculator and the sampling technique was consecutive (non –probability) sampling. For sample selection:

Inclusion criteria were

- All patients with symptomatic cholelithiasis with Ultrasonographic evidence.
- Age : 18 - 65 years
- Positive hepatitis B surface antigen or anti-HCV (Diagnosed through ELISA)
- Patients, either in child –Pugh class A or Child –Pugh class B[7].

Exclusion criteria were

- Patients in Child –Pugh class C.
- History of upper abdominal surgery
- History of upper GI malignancy
- History of obstructive jaundice.

All the patients with liver cirrhosis secondary to hepatitis B or Hepatitis C who presented in OPD and ER with signs and symptoms of gall stones were admitted in ward after initial evaluation and baseline investigations, USG examination was done by consultant radiologist to confirm the gall stones and patients were evaluated for child class disease. Informed written consent was taken from patients fulfilling inclusion criteria. The patients were then randomized into 2 groups through a lottery method.

1. GROUP 'A': laparoscopic cholecystectomy was performed
2. GROUP 'B' : Open cholecystectomy was performed

Patients were operated on the elective list by one of the two consultant surgeons. Data on these two groups was collected and analyzed for operative time, blood loss and length of hospitalization after operation. Operative time & blood loss was recorded by operative surgeon, while 3rd / 4th year postgraduate trainees on call recorded the length of hospitalization. Data was recorded in the Performa.

Data was analyzed on SPSS version 12. Mean and standard deviation were calculated for quantitative derivatives like age, operation time, blood loss and length of hospitalization. Frequency and percentages were presented for qualitative variables like gender, and type of surgery.

Statistical comparisons between OC and LC groups was made with independent sample t test for all the continuous variables like age, time of surgery, blood loss and length of hospitalization.

RESULTS

142 patients were included in the study (71 patients in each group). Our study population was in age group of 22-65 years.

The mean age in OC group is 44.38+11.93, and in LC group is 43.08+10.77 . 24 male and 118 female patients were included(n=142). In OC group 18% were male patients and 81.7% female patients. However in LC group, 15.5% were male and 84.5% female patients.

In LC group, The mean blood loss is 61.33+39.64 ml, mean operaion time is 50.49+18.26 min (as shown in table I & II respectively). However in OC group, mean blood loss is 90.84+29.88 ml, mean operation time is 59.22+15.66.Difference in operating time between LC and OC is statistically significant.(as shown in table 2).In LC group, the mean hospital stay is 1.8+.97 days, while in OC group is 2.4+.91 days which is statistically significant (as shoswn in table III).

	Mean (ml)	Std deviation	t-test (p<0.05)
*OC	90.84	29.88	.000
**LC	61.33	39.64	.000

Table-I. Comparison of blood loss between two groups

	Mean (min)	Std deviation	t-test (p<0.05)
*OC	59.22	15.66	.003
**LC	50.49	18.26	.003

Table-II. Comparison of operation time between OC & LC

	Mean (days)	Std deviation	t-test (p<0.05)
*OC	2.4	.919	.003
**LC	1.8	.975	.003

Table-III. Comparison of hospital stay after surgery between *OC & **LC

**OC : open cholecystectomy*
***LC : laparoscopic cholecystectomy*

DISCUSSION

Viral hepatitis B- and C-related chronic hepatitis is endemic in Pakistan, and chronic liver disease secondary to these infections is one of the major health problems in our country[4]. A study conducted in Pakistan indicated that 4.3% of the population tested was sero-positive for hepatitis B surface antigen and 6% for hepatitis C antibody[11].

Since the introduction of LC in 1990s, the question of whether cirrhotic patients might benefit from this less invasive approach has arisen. Recent studies have demonstrated that LC was safer and better tolerated than OC in cirrhotic patients[10,12,13].

In our study, patients fulfilling the inclusion criteria were divided in to two groups. Laparoscopic cholecystectomy was compared with open cholecystectomy in patients with hepatitis B & C, which showed that laparoscopic approach is associated with lesser blood loss, shorter operation time (p<0.05) and decreased length of hospital stay (p<0.05).

In the study by Ji W et al, carried out in China in 2005, patients are divided in to OC and LC groups. There was no significant difference in operation time between OC and LC group. But LC offered several advantages over OC, including fewer blood loss and lower postoperative complication rate, shorter time to resume diet and shorter length of hospitalization[1].

A study conducted in Agha khan University Pakistan by Tayeb M et al, in 2008 showed that LC can be performed safely in compensated cirrhotic patients with acceptable morbidity and mortality. In this study, hepatitis caused by B and C viruses was the leading cause of cirrhosis[4].

In another study done by Shaikh AR et al in 2009, thirty percent were hepatitis B positive, and 70% were hepatitis C positive. Morbidity rate was 15% and mortality rate was 0%. Two patients developed postoperative ascites, and mean hospital stay was 2.8+/-0.1 days. The mean operation time was 70.2+/-32.54 minutes. Laparoscopic cholecystectomy is an effective and safe treatment for

symptomatic gallstone disease in selected patients with cirrhosis[14].

This data seem to be associated with several causes: Magnification of the surgical field in laparoscopy permits meticulous care during hemostasis, and pneumoperitoneum seems to play a role in determining hemostasis (barohemostasis). Laparoscopy avoids the subcostal incision that would increase hemorrhage, particularly in patients with coagulopathy. Furthermore, laparoscopic cholecystectomy reduces the risk of infections, dehiscences, postoperative hernias, and infiltration of ascites through the abdominal wound[15,16,17].

However surgeon should be very careful while doing surgery in these patients. As hemorrhage is the most common and dreadful complication in these patients. First, care must be taken to avoid bleeding from the periumbilical wall varices. Second, transillumination of the abdominal wall by laparoscope helps to identify major collaterals in the abdominal wall.

Third, placement of the subxiphoid port more to the right of the midline is useful to avoid injury to the falciform ligament and the umbilical vein. Fourth, excessive traction is avoided to prevent avulsion of the gallbladder from liver bed and bleeding[18,19].

In study by El-Awadiab S et al published in INTNL J SURG in 2008, comparing the risk and benefits of open cholecystectomy (OC) versus LC in cirrhosis. Mean surgical time was significantly longer in OC group than LC group (96.13 + 17.35 min versus 76.13 + 15.12) $P < 0.05$, associated with significantly higher intraoperative bleeding in OC group ($P < 0.01$). Hospital stay was significantly longer in OC group than LC group (6 + 1.74 days versus 1.87 + 1.11 days) which is comparable to our study[20]. LC in these patients is complicated and difficult, however it offers lower morbidity, shorter operative time, less blood loss and reducing hospital stay than Open Cholecystectomy[21,22,23].

CONCLUSIONS

Laparoscopic approach should be considered as the procedure of choice in this subgroup of patients with symptomatic cholelithiasis even in the developing countries, and especially those with reasonable expertise in laparoscopic surgery. As laparoscopic cholecystectomy is a better choice as compared to open cholecystectomy in terms of the operative time, blood loss, and length of hospitalization in mild cirrhotic patients secondary to hepatitis B &C.

REFERENCES

1. Ji W, Li LT, Wang ZM, Quan ZF, Chen XR, Li JS. **A randomized controlled trial of laparoscopic versus open cholecystectomy in patients with cirrhotic portal hypertension.** World J Gastroenterol 2005;11:2513-7.
2. Cobb WS, Heniford BT, Burns JM, Carbonell AM, Matthews BD. **Cirrhosis is not a contraindication to laparoscopic surgery.** Surg Endosc 2005.19: 418–23.
3. Curro.G, Baccarani.U, Adani. G, Cucinotta. E. **Laparoscopic Cholecystectomy in Patients With Mild Cirrhosis and Symptomatic Cholelithiasis.** Transplantation proceedings.2007;39:1471-33
4. Tayeb M, Khan MR, Riaz N. **Laparoscopic cholecystectomy in cirrhotic patients: Feasibility in a developing country.** Saudi J Gastroenterol 2008;14:66-9.
5. Palanivelu.C, Seshiyer Rajan .P, Jani.K, Roshan Shetty. A, Sendhilkumar. K, Senthilnathan.P et al. **Laparoscopic Cholecystectomy in Cirrhotic Patients:The Role of Subtotal Cholecystectomy and Its Variants.** J Am Coll surg.2006;203:145-51.
6. Chmielecki DK, Hagopian EJ, Kuo YH, Kuo YL, Davis JM. **Laparoscopic cholecystectomy is preffered approach in cirrhosis: a nationwide population based study.** HPB(Oxford).2012:14(12):848-53.
7. Leandros E, Albanopoulos K, Tsigris C, Archontovasilis F, Panoussopoulos SG, Skalistira M et al. **Laparoscopic cholecystectomy in cirrhotic patients with symptomatic gallstone disease.** ANZ J Surg 2008;78:363-5.
8. Flores Cortés M, Obispo Entrenas A, Docobo Durántez F, Romero Vargas E, Legupín Tubío D, Valera García Z. **Laparoscopic treatment of cholelithiasis in cirrhotic patients.** Rev Esp Enferm Dig 2005;97:648-53.

9. Meshikhes AW. **Asymptomatic gallstones in the laparoscopic era.** Journal of the Royal College of Surgeons of Edinburgh. 2002;47:742-8.

10. Schirmer BD, Winters KL, Edlich RF. **Cholelithiasis and cholecystitis.** J Long Term EffMed Implants. 2005;15:329-38.

11. Luby SP, Qamruddin K, Shah AA, Omair A, Pahsa O, Khan AJ, et al. **The relationship between therapeutic injections and high prevalence of hepatitis C infection in Hafizabad, Pakistan.** Epidemiol Infect. 1997;119:349–56.

12. Morino M, Cavuoti G, Miglietta C, Giraudo G, Simone P. **Laparoscopic cholecystectomy in cirrhosis: contraindication or privileged indication?** Surg Laparosc Endosc Percutan Tech. 2000;10:360 –63.

13. Sun H, Tang H, Jiang S, Zeng L, Chen EQ, Zhou TY, et al. **Gender and metabolic differences of gallstone diseases.** World J Gastroenterol. 2009;15:1886-91.

14. Shaikh AR, Muneer A. **Laparoscopic cholecystectomy in cirrhotic patients.** JSLS. 2009;13:592-6.

15. Delis S, Bakoyiannis A, Madariaga J, Tassopoulos N, Dervenis C. **Laparoscopic cholecystectomy in cirrhotic patients: the value of MELD score and Child-Pugh classification in predicting outcome.** Surg Endosc. 2010;24:407-12.

16. Puggioni A, Wong LL. **A metaanalysis of laparoscopic cholecystectomy in patients with cirrhosis.** J Am Coll Surg. 2003;197(6):921–6.

17. Tuech JJ, Pessaux P, Regenet N, Rouge C, Bergamaschi R, Arnaud JP. **Laparoscopic cholecystectomy in cirrhotic patients.** Surg Laparosc Endosc Percutan Tech. 2002;12(4): 227–31.

18. Curro G, Iapichino G, Melita G, Lorenzini C, Cucinotta E. **Laparoscopic Cholecystectomy in Child-Pugh Class C Cirrhotic Patients.** JSLS. 2005;9:311-5.

19. Poggio JL, Rowland CM, Gores GJ, et al. **A comparison of laparoscopic and open cholecystectomy in patients with compensated cirrhosis and symptomatic gallstone disease.** Surgery.2000;127:405– 11.

20. El-Awadiab S, El –Nakeebab A, Youssefab T, Fikryab A, El-Hamedab TM, Ghazyab H, Fodabb E, Mohamed Faridab. **Laparoscopic versus open cholecystectomy in cirrhotic patients: A prospective randomized study.** INTNL J SURG 2008;7:66-9.

21. Young AL, Cockbain AJ, White AW, Hood A, Menon KV, Toogood GJ: **Index admission laparascopic cholecystectomy for patients with acute biliary symptoms: results from a specialist centre.** HPB(Oxford).2010 ;12(4):270-6.

22. Sinha R, **Early laparoscopic cholecystectomy in acute biliary pancreatitis: the optimal choice?** HPB. 2008; 10:332–5.

23. El-Awadi S, El-Nakeeb A, Youssef T, Fikry A, Abd El-Hamed TM, Ghazy H et al. **Laparoscopic versus open cholecystectomy in cirrhotic patients: A prospective randomized study.** Int J Surg 2009;7:66-9.

PREVIOUS RELATED STUDY

Abdul Ghafoor, Irfan Shukr, Abdul Nasir, Chaudhry Altaf. CHOLECYSTECTOMY; IS DRAINAGE NECESSARY? (Original) Prof Med Jour 15(4) 437-439 Oct, Nov, Dec, 2008.

Ali Kashif, Waqas Ahmad Kazi, Faheem Feroze. OPEN CHOLECYSTECTOMY; MANAGEMENT OF PONV: COMPARISON OF SUB HYPNOTIC DOSE OF PROPOFOL VS METOCLOPRAMIDE (Original) Prof Med Jour 17(2) 193-198 Apr, May, Jun 2010.

Javaid Iqbal, Bashir Ahmed, Qamar Iqbal, Andul Rashid. LAPAROSCOPY V/S OPEN CHOLECYSTECTOMY; MORBIDITY COMPARISON (Original) Prof Med Jour 9(3) 226-235 Jul, Aug, Sep, 2002.

Muhammad Rahim Bhurgri, Muhammad Jawaid Rajput, Syed Razi Muhammad. LAPAROSCOPIC CHOLECYSTECTOMY; FATE OF SPILLED BILE WITH GALLSTONES DURING LAPAROSCOPIC CHOLECYSTECTOMY (Original) Prof Med Jour 18(3) 361-365 Jul, Aug, Sep 2011.

Thakur K. Hinduja, Sher Mohammad Shaikh, Malick Hussain Jalbani, Nisar Ahmed Shaikh , Ishaque Soomro. EARLY LAPAROSCOPIC CHOLECYSTECTOMY; (Original) Prof Med Jour 15(1) 162 - 167 Jan, Feb, Mar, 2008.