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Original Research Article

Inguinal hernia repair in patients with liver cirrhosis: Lichtenstein repair versus laparoscopic total extra-peritoneal approach

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ABSTRACT

Background: The optimal surgical approach of inguinal hernia in patients with liver cirrhosis; laparoscopic or open; is still undefined. Whether laparoscopic inguinal hernia repair is safe and potentially affords superior outcomes in patients with liver disease is unknown. Aim of this study is to assess the outcomes of laparoscopic inguinal hernia repair compared to open procedures regarding postoperative complications and recurrence rate in patients with liver cirrhosis.
Methods: This study involves data of ninety patients with primary unilateral inguinal hernia and liver cirrhosis. 48 of them had Lichtenstein repair and 42 patients had laparoscopic inguinal hernia repair with the total extra-peritoneal (TEP) approach.
Results: The mean operation time was greater for the patients operated by TEP than that by Lichtenstein repair with a statistically significant difference (p=0.02). Wound infection, scrotal edema and hospital stay were greater for the patients operated by Lichtenstein repair (p=0.0001 for all). At a mean follow-up of 16.9 months (range: 2 –32 months); recurrence of hernia developed in 3 (3.1 %) with Lichtenstein repair but no recurrence of hernia occurred in the patients operated with TEP.
Conclusions: Elective Laparoscopic inguinal hernia repair is feasible option in liver cirrhosis patients. However; despite of some better outcomes with TEP; there is insufficient evidence to conclude its greater effectiveness than Lichtenstein repair.

Keywords: Inguinal hernia, Liver cirrhosis, Lichtenstein repair, Laproscopic TEP repair

INTRODUCTION

Although exact prevalence of patients with concomitant inguinal hernias and liver disease is unknown, up to 40% will develop inguinal hernias requiring repair.[1] In contrary to was previously thought; patients with liver cirrhosis undergoing elective inguinal hernia repair after medical optimization had incidence of postoperative complications and long-term recurrence which is not different from patients without liver cirrhosis.[2,3] However, the optimal surgical approach of inguinal hernia in patients with liver cirrhosis laparoscopic or open is still undefined. Whether laparoscopic inguinal hernia repair is safe and potentially affords superior outcomes in patients with liver disease is unknown. Searching in literature, a single recent study revealed that patients with liver disease operated by laparoscopic inguinal hernia repair had similar morbidity, hospital stay, and recurrence rate compared to those operated by open repairs with a slightly longer operative time suggesting that both approaches are viable repair options.[4] Aim of this study is to assess the outcomes of laparoscopic inguinal hernia repair compared to open procedures regarding postoperative complications and recurrence rate in patients with liver cirrhosis.

METHODS

This study involves data of patients with primary unilateral inguinal hernia and liver cirrhosis as co-morbid condition between January 2015 and January 2019 in whom surgical repair had been performed and complete data including follow up was available. They electively operated upon at the department of general surgery of Theodor Bilharz Research Institute (TBRI) by open or the laparoscopic surgical techniques. According to department protocol; open technique was the Lichtenstein repair with the use of polypropylene mesh to provide a tension-free repair and Laparoscopic inguinal hernia repair were undertaken with the laparoscopic total extra-peritoneal (TEP) approach. Proline mesh was used for groin repair in all cases with fixation by absorbable tacks.

Data collected included patient demographics, etiology of liver cirrhosis, preoperative Child-Turcotte-Pugh class (CPT) and MELD score, operative procedure type, operation time, postoperative complications, hospital stay and persisting groin pain and numbness and hernia recurrence at follow up.

Statistical analysis

Results were expressed as mean or number (percent). Comparison between categorical data (number (%)) was performed using Chi square test. According to test of normality, comparison between different variables in the two groups was performed using either unpaired t test or Mann-Whitney U test whenever it was appropriate. $P \leq 0.05$ was considered significant. The data was analyzed using SPSS version 16.0 and Microsoft Excel 2007.

RESULTS

Complete data were available of a total of ninety patients; 48 of them had open inguinal hernia repair and other 42 patients had laparoscopic inguinal hernia repair. Ten (11.1%) of patients had associated umbilical hernia. Liver cirrhosis diagnosed in all patients on clinical, biochemical, serum virus titers and histopathology findings. Etiology of liver cirrhosis was HCV infection in all patients. Preoperative data of patients are shown in Table 1.

Table 1: Characteristics of patients.

	Open (n=48)	Lap (n=42)
Age (mean range), years	36.01 (16-57)	37.82 (18-63)
Male /Female ratio	42/6	38/4
Childe-pughe-turcotte (n)		
Class I	42	39
Class II	6	3
Class III	0	0
MELD score (mean& range)	7.5 (6.4-39.5)	7.3 (6.4-38.6)
Ascites(n)	3	0
Hernia side (n)		
Right	40	40
Left	8	2
Co morbidity (n)		
Diabetes	12	10
Obstructive pulmonary disease	8	2

All operative procedures performed electively. Type of anesthesia was determined by an anesthesiologist after individual patient evaluations; whether general or spinal anesthesia. All the laparoscopic procedures were performed under general anesthesia. Open technique was the Lichtenstein repair and laparoscopic inguinal hernia repair were undertaken with the total extra-peritoneal (TEP) approach. TEP in three cases were converted to the transabdominal preperitoneal (TAPP) technique due to technical difficulties. Postoperative data are shown in table 2.

The mean operation time was greater for the patients operated by TEP than that by Lichtenstein repair with a statistically significant difference (Table 2). Wound infection and scrotal edema were greater for the patients operated by Lichtenstein repair with a statistically significant difference. All complications resolved by conservative management. Hospital stay was greater for the patients operated by Lichtenstein repair than that by TEP (Table 2).

Mean follow-up for the patients was 16.9 months (range: 2-32months). Recurrence of hernia developed in 3 patients with Lichtenstein repair. The mean time to recurrence was 13.9 months (range: 6-18 months). All recurrent hernias developed in patients who had ascites at the time of the initial operation. No recurrence of hernia occurred in the patients operated by TEP. Persisting groin pain and numbness were greater for the patients operated by Lichtenstein repair with a statistically significant difference. During follow-up, an inguinal hernia

developed at the contralateral side in six patients (12.5%) repaired by Lichtenstein repair and in two patients (4.7%) operated by TEP. CTP class was not found to be related to contralateral hernia development (class A; 4.4% and class B; 4.5%, respectively; p=0.68) however, the latter was found to be related to the presence of ascites (0.9% versus 4.6%; p=0.001).

Table 2: Postoperative outcomes.

	Open (n=48)	Lap (n=42)	P value
Operation time (minutes)	45 (30-65)	55 (45-75)	0.02**
Postoperative complications	**N (%)**	**N (%)**	
Wound (or trocar site) hematoma	3 (6.25)	2 (4.76)	0.03**
Wound (or trocar site) seroma	1 (2.08)	2 (4.76)	0.06*
Scrotal edema	4 (8.33)	0 (0)	0.0001**
Wound (ports sites) infection	6 (12.5)	1 (2.38)	0.0001**
Acute urinary retention	3 (6.25)	0(0)	0.002**
Postoperative ascites	5 (10.4)	4 (9.52)	0.06*
Hospital stay(mean) days	3.56	1.5	0.001**
Recurrence	3 (6.25)	0 (0)	0.002*
Persisting groin pain and numbness	22 (33.33)	4 (9.52)	0.0001**

DISCUSSION

Risk for postoperative wound-healing complications in open groin hernia surgery is increased in patients with liver cirrhosis. Risk of hemorrhage or hematoma within 30 days and postoperative wound infection were found to be significantly increased.[5] Also, postoperative morbidity and mortality rates in patients with liver cirrhosis who undergo non-hepatic surgery are greatly depending on severity of the cirrhosis and the type of surgical procedure. Surgery procedure can be safely performed in patients with low MELD scores or CTP class- A without portal hypertension as well as, with the minimally invasive techniques.[6,7]

The advent laparoscopic approach to inguinal hernia repair is a safe and reliable method with a similar recurrence rate as the open tension-free mesh repair. Advantages involve fewer incidences of wound infection and hematoma, less chronic postoperative pain and numbness and decreased recovery time.[8-11] However, careful attention should be given to the technical details to avoid the incidence of life-threatening complications including intestine, vascular or bladder injury which is more common with laparoscopic manipulations.[12,13]

In this study operation times for laparoscopic repair were longer compared to open mesh methods which are consistent with other studies.[8-12] There were no serious complications. Scrotal edema and wound infection were greater for the patients operated by open technique with a statistically significant difference. Lengths of hospital stay were greater for the patients operated by open technique than that by laparoscopic hernia repair.

Laparoscopic surgery was associated with less long-term numbness and less pain in the groin which is consistent with other studies.[14,15] No recurrence of hernia occurred in the patients operated by laparoscopic inguinal hernia repair in our study on contrary with other studies found hernia recurrence was not different between laparoscopic approach and open mesh repair.[10-12]

The choice between the transabdominal preperitoneal (TAPP) procedure and the totally extraperitoneal (TEP) procedure should be based on surgeon because there is no evidence of superiority between both.[9] According the European Hernia Society guidelines; TEP repair is preferred to a TAPP because it reduces short-term postoperative pain more effectively than TAPP repair and results in shorter hospital stay of primary cases.[10] In contrast, TAPP repair is correlated with the advantage of that the technique is more familiar and much easier and of a shorter surgery duration. These findings show that shared decision-making regarding both approaches of laparoscopic hernia repair may be needed.[16-18] A totally extraperitoneal approach potentially offers advantage of eliminating complications related to violating the peritoneal cavity to reach the extraperitoneal space which is beneficial in patients with liver cirrhosis which may have minimal or potential ascites.

Although Lichtenstein operation was associated with a shorter operating time however, TEP repair had less wound infections, less chronic neuralgia pain that enabled patients to return to work at a shorter time. There is statistically significant difference in terms of hernia recurrence for TEP repair in our study with follow-up time is less than 3 years. Other studies when follow-up time is more than 3 years, there was no significant difference in recurrence rate compared with Lichtenstein repairs.[19,20] The latter is considered as limitation in our study in addition to it is not a controlled randomized trial, to conclude superiority of laparoscopic inguinal hernia repair compared to open inguinal hernia repair in postoperative outcomes for patients with liver cirrhosis and future research is required.

CONCLUSION

Elective laparoscopic inguinal hernia repair is feasible option in liver cirrhosis patients. However; despite of some better outcomes with TEP; there is insufficient evidence to conclude its greater effectiveness than Lichtenstein repair.

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