
ELECTIVE REPAIR OF UNCOMPLICATED UMBILICAL HERNIAS IN CIRRHOTIC PATIENTS

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ABSTRACT:

Objective: To evaluate efficacy and outcome after elective repair of uncomplicated umbilical hernia in cirrhotic patients.

Patients and Methods: Twenty adult cirrhotic patients with uncomplicated umbilical hernias underwent elective repair in a randomized prospective study at Minia University Hospital from June 2009 to June 2011. Preoperative management of co-morbidities was properly done before surgery. Mayo repair, anatomical repair or hernioplasty, were applied in the present study. Early postoperative complications were assessed. All patients were followed-up at surgery out-patient clinic after 1 week, then 1 month, 6 months later.

Results: The cirrhotic patients were classified according to Child-Pugh-Turcotte (CPT) classification: 8 of them were class A, 8 were class B and 4 were class C. all patients underwent Mayo or anatomical repair, except 4 patients in Child class A underwent mesh repair. There were 5 patients (25%) had postoperative complications; one in class-A, 2 in class-B and 2 in class-C, and differences between the 3 groups were not statistically significant. There were no deaths attributable to the umbilical hernia repair. Patients in child class A had a significant shorter time of return to full activity.

Conclusion: Elective repair of uncomplicated umbilical hernia is safe in cirrhotic patients. Good outcomes can be achieved by careful control of ascites pre- and/or post-operatively.

KEYWORDS:

Umbilical hernia
Mesh repair

Herniorraphy
Liver cirrhosis

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INTRODUCTION:

Umbilical hernias are present in up to 20% of patients with long-standing cirrhosis and 40% of those with ascites¹. It is believed these abdominal wall defects occur in cirrhosis due to the increases in intra-abdominal pressure created by ascites. If left untreated, abdominal wall defects in cirrhotic patients may grow

to immense size and can be associated with pressure necrosis of the overlying skin, skin breakdown, ascitic leak, and the potential for bacterial peritonitis².

Repair of umbilical hernias in the cirrhotic patients has been associated with elevated morbidity, mortality, and recurrence rates³. Surgery in cirrhotic patients is

considered by many surgeons to be high risk, and there is a tendency to reserve umbilical hernia repair (UHR) until bowel-related complications develop, such as incarceration, strangulation, rupture, ulceration, and leakage of ascitic fluid⁴.

The development of incarceration, strangulation, ulceration, and rupture further elevate the risk of surgical repair. Additionally, surgical repair of incarcerated hernias in cirrhotic patients is associated with an elevated morbidity and mortality rate^{1,2}. Multiple recent studies showed that early elective umbilical hernia repair is safe and the preferred approach in cirrhotic patients and it should be advocated considering the hepatic reserve and patient's condition⁴.

The aim of this study is to evaluate efficacy of elective repair of uncomplicated umbilical hernia in cirrhotic patients with a special regard to operative and post-operative complications, recurrence rate, liver impairment and mortality.

PATIENTS AND METHODS:

This study was a randomized prospective study. It included 20 adult cirrhotic patients with uncomplicated umbilical hernias with or without ascites attending the surgical outpatient clinics of Minia University Hospital from June 2009 to June 2011. The cases with strangulation, ulceration or rupture of the overlying skin and leakage of the ascitic fluid were excluded from the study. Preoperative management of co-morbidities like ascites, hepatic encephalopathy, hypoalbuminemia, anemia, chest problems, cardiac troubles, constipation was properly done before surgery.

Operative technique:

Mayo repair, anatomical repair or hernioplasty technique, were applied in the present study. The patient was placed in supine position on the operating table; the arms are positioned at the patient's sides to facilitate access. Anesthesia was applied which was local in most of cases, spinal, epidural or general in selected cases. Mayo repair was applied when the cirrhotic patient was CTP class A or B with minimal ascites. In this operation, after the hernial sac and contents had been dealt with, the defective linea Alba was repaired by overlapping across a transverse axis.

Anatomical repair was performed in cases with small defects and in cases with refractory ascites for fear of loss of large quantities of ascitic fluid deteriorating hepatic condition. After the hernial sac and contents had been dealt with, the defective linea Alba was repaired by simple sutures.

Hernioplasty was performed in child-A class when the general condition was so good and ascites was absent or minimal. After the hernial sac and contents had been dealt with, and when the peritoneum was easily separable from the overlying sheath, the peritoneum was closed and then a prosthetic polypropylene mesh was fixed underneath the sheath, the defective linea Alba was then repaired by simple sutures. Then anatomical closure with a drain as described above was performed.

Postoperative management and follow up:

Antibiotic coverage was continued for 24- 72 hours postoperatively. Abdominal binder, as a support, was

applied to all patients. Epidural analgesia or paracetamol injection was used for postoperative pain. All patients were given proton pump inhibitors.

Early postoperative complications were assessed. All patients were followed-up at surgery out-patient clinic after 1 week, then 1 month, 6 months later. The assessed parameters during the follow-up visits included: variceal bleeding, appearance or increasing of ascites, hepatic encephalopathy, and assessment of serum bilirubin, wound complications and detection of recurrence.

Statistical Analysis:

Statistical calculations were performed using SPSS (version 13.0 for Windows; SPSS Inc., Chicago, IL, USA). Comparisons between groups were tested using the Pearson Chi-square test. A P value < 0.05 was considered statistically significant.

RESULTS:

The study included 10 male and 10 female cirrhotic patients with uncomplicated umbilical hernia. The age of them ranged from 45 years to 65 years old with mean age of 53.5 years. They were classified according to Child-Pugh-Turcotte (CPT) classification: 8 of them were class A, 8 were class B and 4 were class C. They were repaired with different techniques: 12 of them with Mayo repair technique, 4 with anatomical repair and the other 4 patients with mesh repair technique. Four patients in class-A were managed with Mayo repair and another 4 patients had mesh repair, while all patients in class-B were managed with

Mayo repair and all patients in class-C had anatomical repair (Table 1).

Postoperative complications in the studied patients are shown in Table 2. There were 5 patients (25%) had postoperative complications; one in class-A, 2 in class-B and 2 in class-C. Although the differences between the 3 groups were not statistically significant, there was an increased safety (less complications) towards compensated cirrhotic cases (i.e. towards child A class cases) and decreased safety (more complications) towards decompensated cases (i.e. child C class cases) even with prolonged and good preoperative preparation. These complications had been dealt with and managed with the assistance of Tropical medicine staff members. The recurrence rate was 15% (3 patients). The patients who experienced recurrence in this study underwent anatomical repair. The mortality rate was 0% in child-A and child-B, while one patient (25%) died in child-C class, whose death was not attributable to the umbilical hernia repair.

Regarding time of return to full activity (Table 3), there was a significant difference between the three groups ($P = 0.0001$). In case of group I (child A) 4 patients (50%) returned to full activity after 2 weeks, and all cases (100%) returned to full activity by 1 month postoperatively; in group II (child B) 3 cases (37.5%) returned to activity after 2 weeks reaching to 100% (all of the cases) by 6 weeks postoperatively; and in group III (child C) 1 patient (25%) returned to full activity after two weeks reaching 100% (all of the alive cases; $n=3$) by 2 months postoperatively.

Table 1: Type of operation in the studied patients.

Type of operation	Group I (Child A)	Group II (Child B)	Group III (Child C)
Anatomical repair	0(0%)	0(0%)	4(50%)
Mayo repair	4(50%)	8(100%)	0(0%)
Mesh repair	4(50%)	0(0%)	0(0%)

Table 2: Postoperative complications in the studied patients.

Complications	Group I (Child A)	Group II (Child B)	Group III (Child C)	P-value
Wound infection	1(12.5%)	1(12.5%)	1(25%)	0.82
Iry hemorrhage	0(0%)	0(0%)	1(25%)	0.12
Ascitic leak	0(0%)	1(12.5%)	2(50%)	0.07
Jaundice	0(0%)	1(12.5%)	1(25%)	0.37
Hepatic encephalopathy	0(0%)	0(0%)	1(25%)	0.12
Wound dehiscence	0(0%)	1(12.5%)	0(0%)	0.42
Recurrence	1(12.5%)	1(12.5%)	1(25%)	0.82
Mortality	0(0%)	0(0%)	1(25%)	0.12

Table 3: Time of return to full activity in the studied patients.

Time	Group I (Child A)	Group II (Child B)	Group III (Child C)	P-value
2 weeks	4(50%)	3(37.5%)	1(33.3%)	0.0001*
4 weeks	4(50%)	0(0%)	0(0%)	
6 weeks	0(0%)	5(62.5%)	0(0%)	
8 weeks	0(0%)	0(0%)	2(66.7%)	

*significant difference.



Fig. 1. Huge uncomplicated umbilical hernia in a cirrhotic patient.



Fig. 2. Mesh repair in a cirrhotic patient with Child class-A.

DISCUSSION:

Although the incidence of umbilical hernia is high in cirrhotic patients, an optimal treatment strategy is unclear. For many years, surgical dogma dictated a "wait and see" approach, and surgical repair of umbilical hernia was limited to patients who developed complications^{1,9,10}. Conservative management, however, can be complicated by bowel incarceration or spontaneous rupture from necrosis of overlying skin and subsequent peritonitis. Such conditions force emergency repair in patients who are then at a greater risk of developing complications in an emergency setting than after elective surgery^{5,11,12}.

In the present study, 20 cirrhotic patients with umbilical hernia were randomly selected to undergo elective repair, their hernias were not complicated with ulceration, ascitic fluid leakage, incarceration or strangulation. Those patients were classified according to Child-Pugh-Turcotte classification. In literature, the most accurate predictor of outcome is the patient's preoperative Child's class however; Elective repair in cirrhotics is associated with similar outcomes as in patients without cirrhosis. Early elective repair may improve the overall outcomes for patients with cirrhosis¹⁰.

While in the past it was commonly advised against the repair of uncomplicated hernias, there has been little disagreement with operative repair when complications have arisen^{13,14}. There is a considerable lack of evidence regarding how severe the liver dysfunction must be in order to preclude operative repair¹⁵. In other words, there does not appear to be any reliable, commonly accepted methods to determine whether the cirrhosis is too severe to allow for elective repair

or whether it is mild enough that the risk of major complications is low enough to justify the repair. Serum albumin levels may be prognostic. Fisher and Calkins report that, among 21 patients with cirrhosis undergoing herniorrhaphy, there were no mortalities when the serum albumin level was above 24 g/L¹⁶.

In the present study, elective hernia correction was carried out after optimal management of co-morbidities like ascites, hepatic encephalopathy, and hypoalbuminemia. Control of ascites in these patients presents a further dilemma. Uncontrolled ascites can negatively influence morbidity and recurrence rates¹⁴. When ascites persisted despite vigorous medical therapy, the mortality and morbidity were 5 and 30%, respectively (compared to 0 and 15%, respectively, when it was possible to control the ascites)¹⁴. In addition to the medical treatment of ascites, some investigators suggest that concomitant peritoneo-venous shunting at the time of herniorrhaphy¹⁷, and the use of temporary peritoneal dialysis catheters have been shown to reduce recurrence rates by controlling ascites¹⁸.

In the present study, four patients in class-A were managed with Mayo repair and another 4 patients had mesh repair, while all patients in class-B and class-C had anatomical or Mayo repair. The data from a series reported by Belghiti and colleagues¹⁴ showed that, as the severity of the cirrhosis increased, patients were less likely to be selected for elective herniorrhaphy for uncomplicated hernias. Among patients with class A, B, and C cirrhosis, the frequencies for which hernia repairs that were done on an elective basis rather than for

complications of the hernia were 80, 52, and 17%, respectively.

In our study group, the incidence of complications after elective repair was relatively low (25%) compared to complication rates reported in the literature, ranged from 7% to 43%^{5,7}. Other studies also have demonstrated that postoperative outcome in cirrhotic patients is correlated with the patient's CPT classification^{19,20}. In this study, however, no significant correlations were found between a patient's CPT classification and their postoperative outcome, but this finding could be due to the relatively low number of patients in our study.

Rates of recurrence after umbilical herniorrhaphy have been reported to be 2.7–24%^{5,21}. In the present study, the recurrence rate was 15%, and the patients who experienced recurrence in this study underwent anatomical repair at initial operation rather than mesh repair. A randomized clinical trial²¹ reported that permanent mesh can be used to treat complicated hernias in cirrhotic patients with minimal wound-related morbidity (16.2%) and a significantly lower rate of recurrence (2.7%). However, most hernias in the current study were repaired anatomically instead of mesh, reflecting the fear of increased risk of infection associated with ascites leakage through mesh in the cirrhotic patients.

In conclusion, early repair of umbilical hernias in patients with cirrhosis is safer than it was in the past and can be considered for selected patients. Elective mesh repair is the corner stone approach in cases of UH in early cirrhotic patients to decrease the incidence of the recurrence. Careful

control of ascites pre- and/or post-operatively is mandatory for good outcomes.

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الإصلاح الجراحي الإختياري للفتق السري غير المصحوب بمضاعفات في مرضى التليف الكبدى

الهدف من الدراسة: تقييم فعالية ونتائج إصلاح فتق السرة الإختياري غير المصحوب بمضاعفات في مرضى التليف الكبدى.

المرضى وطرق البحث: شملت الدراسة 20 مريضا بالفتق السري غير المصحوب بمضاعفات من مرضى التليف الكبدى، وقد أجريت لهم عمليات جراحية إختيارية (غير طارئة) بمستشفى المنيا الجامعي في الفترة من يونيو 2009 وحتى يونيو 2011. وقد تم التركيز على علاج الحالات المرضية المصاحبة للتليف الكبدى بشكل صحيح قبل إجراء العملية الجراحية، وقد تم ملاحظة نتائج ومضاعفات العملية الجراحية لكل المرضى عند نهاية الأسبوع الأول وعند نهاية الشهر الأول والشهر السادس بعد إجراء التدخل الجراحي.

النتائج: تم تصنيف مرضى التليف الكبدى طبقا لتصنيف (Child-Pugh-Turcotte) إلى 8 مرضى في الفئة (أ)، 8 مرضى في الفئة (ب)، و 4 مرضى في الفئة (ج)، وقد تم إجراء رتق تشريحي لجميع حالات الفتق السري عدا 4 حالات تم إصلاح الفتق بوضع شبكة خيوط بمنطقة الفتق. ظهرت مضاعفات بعد إجراء العملية الجراحية في 5 حالات، معظمهم تم تصنيفه ضمن الفئتين (ب) و(ج). لم يتم تسجيل حالات وفاة ناتجة عن إجراء العملية الجراحية أثناء الدراسة، وقد لوحظ سرعة عودة المرضى من الفئة (أ) إلى مزاوله نشاطهم المعتاد مقارنة بالفئتين (ب) و(ج).

الاستنتاج: الإصلاح الجراحي الإختياري للفتق السري غير المصحوب بمضاعفات آمن و فعال لمرضى التليف الكبدى. يتم تحقيق النتائج الجيدة إذا ما تم التحكم في الأعراض المصاحبة لتليف الكبد قبل إجراء العملية الجراحية.