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“Tension-free” herniorrhaphy for groin hernias in patients with cirrhosis:
Report of four cases

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**“Tension-free” Herniorrhaphy for Groin Hernias in Patients with
Cirrhosis: Report of Four Cases**

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Abstract

Tension-free herniorrhaphy was carried out using either the Mesh Plug repair (M-P) or Perfix® plug technique (P-P) in four patients with cirrhosis. Three patients had a lateral inguinal hernia and the other had bilateral inguinal and femoral hernias. The patients' ages ranged from 55 to 80 years. The Child-Pugh classification showed that one was A, two were B and one was C. The main complaint in two patients was a difficult reduction and the others had discomfort. An M-P was performed in the three patients with inguinal hernias and performed an M-P for the femoral hernias and a P-P for the inguinal hernias in the patient with both inguinal and femoral hernias. Two patients had fluid collection under the incision and one of them required a single puncture. But the others had no related complications after the operation. One patient died due to liver failure without recurrence of the groin hernias 31 months after the operation. The others had no recurrence and no related symptoms from 5 to 52 months after the operation.

Introduction

In the presence of complicating medical conditions, the indications for groin hernias in patients with cirrhosis can be controversial¹⁻⁵. To assess the utility of a surgical repair of groin hernias in the presence of gross ascites, the surgeon must weigh the risk of perioperative complications including infection, recurrence and ascitic leakage relative to the likelihood of complications from an untreated hernia in a patient who is often a poor medical risk. But there is little clinical data to guide the surgeon in this difficult situation. This report describes four patients with cirrhosis who underwent tension-free herniorrhaphy using either the mesh plug repair (M-P) or Perfix® plug

technique (P-P)⁶ to repair groin hernias.

Case Report

“Tension-free” herniorrhaphy was carried out in four patients with cirrhosis between November 2003 and March 2008. The patients’ ages ranged from 55 to 80 years (**Table 1**). One patient had a left inguinal hernia (patient 1) and two patients had right inguinal hernias (patients 2 and 3). The other patient (#4) had left inguinal and femoral hernias after the first herniorrhaphy for right the inguinal and femoral hernias. The etiology of the cirrhosis was a previous hepatitis C virus infection in all of the patients. Two patients underwent pretreatment for hepatocellular carcinoma (HCC) and the others had both esophageal varices which did not require urgent treatment and diabetes mellitus. The Child-Pugh classification showed that one patient was A, two were B and one was C. The indocyanine green retention rate at 15 min in three of the four patients were from 42 to 52. The primary complaint in two of the patients was a difficult reduction and the others had discomfort (**Table 2**). Specifically, both patients 1 and 4 had severe cirrhosis with gross ascites and they took medication including an infusion of albumin and patient 1 underwent a puncture of ascites before the hernia operation.

In the cases of inguinal hernias (patients 1, 2 and 3), an M-P was performed by an anterior approach method under spinal or general anesthesia. In the patient 1, a platelet (20 unites) and fresh frozen plasma (4 units) transfusion were infused in the morning before the operation and spinal anesthesia was performed. In patient 4, the patient had a right femoral hernia with a direct inguinal hernia (**Figures 1**). Under general anesthesia, the femoral hernia sac and right inguinal canal were carefully dissected and

the spermatic cord structures were retracted (**Figure 2A and B**). The plug was inserted using forceps into the right femoral ring (**Figure 2B**) and a piece of mesh measuring approximately 4 x 5 cm in size was placed on the right femoral ring and was sutured (**Figure 2C**). A high ligation of the small indirect sac and a P-P for the weakness of the right inguinal floor were performed (**Figure 2D**). A few months after the operation, the patient had a difficult reduction for a left groin hernia (**Figure 3**). Therefore, six months after the first operation, an M-P was performed for a left femoral hernia and a P-P for an inguinal hernia.

Two of the patients had minor fluid collection under the incision and one of them was required a puncture. The others had no complications (**Table 2**). The gross ascites in patients 1 and 4 did not appear to influence the outcome of the surgical repairs. All patients were discharged within seven days after the operation. Patient 1 had microwave coagulo-necrotic therapy under the laparoscopic assistance for HCC at 12 months after the operation and died due to liver failure without recurrence of the groin hernias at 31 months after the herniorrhaphy. The others had no infection, recurrence, or related symptoms from 5 to 52 months after the operation.

Discussion

The incidence and natural history of groin hernias in patients with cirrhosis are not clearly documented. Patients with cirrhosis often have limited hepatic reserve and their tolerance for physiological stress is very poor⁷. In a series of 18 cirrhotic patients with a groin hernia reported by Hurst RD *et al.*, 11 patients were treated with either a Bassini or MacVay herniorrhaphy¹. In that report, no major and four minor postoperative complications occurred and there were no postoperative deaths or ascites

leaks. One recurrence (8%) occurred 11 months after the repair. They concluded that these results suggest that in such cases elective repair can be performed safely in selected patients. On the other hand, Pere P *et al.* reported three patients with stable cirrhosis and controlled ascites whose condition deteriorated severely after undergoing elective inguinal herniorrhaphy². Belghitei J *et al.* reported that surgical repair with prosthetic devices for umbilical hernias is not recommended in patients with ascites and poor liver function⁸.

The use of an M-P for an inguinal hernia was reported by Rutkow IM *et al*⁹. But there are no reports that mesh plug repair for groin hernias in patients with cirrhosis. Hachisuka T *et al.* reported a cirrhotic patient with ascites who underwent a mesh plug repair for a small incisional hernia and had no recurrence for one year¹⁰.

In the presence of complications due to other medical conditions, the indications for groin hernias still remain controversial. Although some patients are able to live comfortably with their hernias and incarceration and strangulation are uncommon in cirrhotic patients even in those femoral hernias like patient 4, others may experience bothersome discomfort and pain. The current results suggested that elective “tension free” herniorrhaphy in such patients with cirrhosis was one option for symptomatic inguinal and femoral hernias with acceptable complication rates.

Figure legends

Figure 1 Abdominal CT in patient 4 showed the presence of a right groin hernia.

Figure 2 The first operation in patient 4. (A) The right femoral hernia sac was carefully dissected. (B) The right inguinal canal was also dissected and the spermatic cord structures were retracted. The plug was inserted using forceps into the right femoral ring. (C) A piece of onlay-mesh measuring approximately 4 x 5 cm in size was placed on the right femoral ring and was sutured. (D) A high ligation of the small indirect sac and a Perfix® plug technique for the weakness of the inguinal floor were performed.

Figure 3 Abdominal CT at 4 months after the first operation in patient 4 showed atrophy of the liver with gross ascites (A) and a left groin hernia (B).

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Table 1 Patients with groin hernias associated with cirrhosis (1).

No	Age	Sex	Type of hernia	Ethiology	Other disease	Child-Pugh score (point)	Plate (10 ⁴ /mm ³)	Alb (g/dl)	TB/DB (mg/dl)	AST/ALT (IU/l)	PT% (%)	ICG R15
1	55	M	Lt-IH (indirect)	HCV	V, DM	B(9)	4.3	3.8	1.8/0.6	42/30	70	43
2	70	M	Rt-IH(pantaron)	HCV	HCC	A(5)	14.6	4.2	0.5/0.1	30/30	74	—
3	80	M	Rt-IH(indirect)	HCV	HCC	B(8)	8.1	2.8	1.1/0.4	59/29	67	46
4	66	M	Rt-IH(direct) and FH	HCV	V, DM, GS	C(11)	5.4	2.6	1.6/0.8	73/36	70	52
			Lt-IH(direct) and FH				4.2	2.8	2.3/1.0	57/22	64	—

Alb: albumin, TB: total bilirbin, DB: direct bilirubin, ICG R15; indocyanine green (0.5 mg/kg intravenous injection) retention rate at 15 min, M: male, Lt: left, Rt: right, IH: inguinal hernia, FH: femoral hernia, HCV: hepatitis C virus, V; Varices, DM: diabetes mellitus, HCC: hepatocellular carcinoma, GS: gallstone, —: not examined.

Table 2 Patients with groin hernias associated with cirrhosis (2).

No	Symptom	Status of operation	Type of Anesthesia	Type of operation	Ascites	Complication	Outcome	
							Follow-up (M)	Recurrence
1	Difficult reduction	Elective	Spiral	M-P	Gross	Fluid	31 Died	No
2	Discomfort	Elective	General	M-P	Minimal	None	52 Alive	No
3	Discomfort	Elective	General	M-P	Minimal	Fluid	25 Alive	No
4	Difficult reduction	Elective	General	M-P, P-P	Gross	None	10	No
	Discomfort	Elective	General	M-P, P-P	Gross	None	5 Alive	No

M: Months, M-P: Mesh-Plug repair, P-P; Perfix® plug technique, Gross: uncontrollable ascites, Minimal; ascites was detected at operation.





