

# Laparoscopic Management of Groin Hernias in Patients with Ascites.

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## <Abstract>

In spite of increasing risks for both anesthetic and perioperative complications, groin hernias in patients with ascites have required herniorrhaphy due to incarceration, strangulation and spontaneous rupture. Recently laparoscopic herniorrhaphy has become accepted as an alternative to open hernia repair in surgical armamentarium for treatment of groin hernia, with the advantages of reduced postoperative pain, recovery interval and morbidity. The purpose of this study was to investigate the feasibility and effectiveness of the laparoscopic herniorrhaphy in patients with ascites.

We have used laparoscopic herniorrhaphy in 9 such patients(one with tuberculous peritonitis, eight with cirrhosis-four with Child's class A and four with Child's class B. After treatment of ascites including fluid restriction, diuretics, and paracentesis, laparoscopic herniorrhaphy was done under general anesthesia as an elective procedure. The indications for repair were: incarceration(three cases) and mild to moderate discomfort(seven cases). The transabdominal preperitoneal technique(TAPP, six cases) and the totally extraperitoneal approach(TEPA, four cases) were employed.

After as long as a 22 months follow-up, there was no major complications(no recurrence, no episode of ascitic leak, and no postoperative death), one minor wound infection, and one case of mild and reversible postoperative hepatic encephalopathy. The operative time took 70 minutes in TAPP and 50 minutes in TEPA. The median time to return to work is 7 to 28 days as to their underlying disease state.

Short-term results suggest that laparoscopic herniorrhaphy(both TAPP and TEPA) afford good results in patient with ascites and considered as feasible alternatives to open hernia repair. Especially the TEPA without the risks to injury to peritoneum and intraperitoneal adhesions appears to have more advantages. But a controlled randomized trial is needed to compare this procedure with conventional inguinal herniorrhaphy in patients with ascites.

**Key words:** Laparoscopic inguinal herniorrhaphy-Transabdominal preperitoneal(TAPP)-Totally extraperitoneal approach(TEPA)-Liver cirrhosis-Ascites

Over 100 years ago, the Italian surgeon Bassini designed a modern surgical approach for the repair of groin hernias. In spite of many efforts being applied to reduced morbidity and recurrence after then, we didn't have a satisfactory method for the repair of groin hernias without complications. In 1987, inspired by the successful doing of laparoscopic cholecystectomy by P. Mouret[5], laparoscopic techniques got a popularity in the field of general surgery and applied to various operations. In search for reduction of unnecessary tissue damage, the laparoscopic approach was an obvious and welcome alternative. Since Ger et al. [5] applied this technique to the repair of groin hernias, numerous modifications were developed applying prosthetic mesh through the posterior approach for tension-free repair. But this transabdominal preperitoneal technique(TAPP) faced to several unexpected problems including peritoneal injury, bowel adhesions and early recurrence. To avoid these problems, several investigators including Mckernan[9] were explored and the totally extraperitoneal approach(TEPA) was designed according to the Stoppa's theory [12] with excellent results.

It is not easy to have decision-making of herniorrhaphy in a patient with groin hernia accompanying ascites(especially by liver cirrhosis) due to the increasing risks for both anesthetic and perioperative complications. However, it seemed desirable to repair the groin hernias in cirrhotic patient whenever necessary because of the greater possibility of incarceration, strangulation and spontaneous rupture with drainage of ascitic fluid. Hurst et al.[7] states that the surgeon must weigh the risk of perioperative complications, recurrence, and ascitic leak to access the utility of surgical repair of groin hernias in patients with ascites. According to the recent development and good results of laparoscopic techniques, we applied these approaches to the groin

hernias with ascites at a time when ascites was well controlled as possible.

The purpose of this study is to review our experience and investigate the feasibility and effectiveness of the laparoscopic herniorrhaphy in patient with ascites, using both the transabdominal preperitoneal(TAPP) and the totally extraperitoneal approach(TEPA).

## Method

This report concerns 9 patients with ascites who underwent one or more herniorrhaphies between May, 1994 to August 1995. For the period of review, hernias were repaired using both the transabdominal preperitoneal approach(TAPP)[2,3,4,5] and totally extraperitoneal approach(TEPA).[2,9] All patients had a tension free repair of the entire posterior inguinal floor with polypropylene mesh, anchored by staples or sutures. The staples were placed in Cooper's ligament, the medial transversalis fascia, and the lateral transversalis fascia above the iliopubic tract. The mesh was designed large enough to cover all three potential hernia sites.[10,12]

Prior to operative procedure, treatment of ascites which includes fluid restriction, diuretics and paracentesis was performed. Ascites was controlled without difficulty in every cases in this study. The operative procedures were performed under general anesthesia as elective operations with three days of prophylactic antibiotics.

In patients undergoing the TAPP procedure, pneumoperitoneum was established and the abdomen was explored visually with 0 degree or 30 degree laparoscope inserted through a 10/12mm infraumbilical port. Bilateral lateral rectus ports(10/12mm in the opposite site of the lesion, 5mm in lesion site)

were inserted above or below the level of umbilicus according to the location and size of the hernial defect. A transverse incision was made in the peritoneum extending from the pubic tubercle to the umbilical fold above and lateral to the hernial defect and the floor of the groin was exposed with developing of peritoneal flap on both sides of incision. Small hernial sacs were dissected away from the inguinal attachments or were excised, but large hernial sacs were not excised. The full coverage of the entire floor was accomplished with a patch of polypropylene mesh(7 X 12cm) into the preperitoneal space and secured with hernia stapler, avoiding the inferolateral portion of the iliopubic tract because of the nerve damage. The peritoneal flap over the mesh was closed with staples.

In TEPA all three trocars(one 10/12mm for laparoscope, two 5mm for instruments) were placed along the lower midline. Small incision was made in the skin just below the umbilicus and off the midline. The anterior rectus fascia was incised, the muscle was retracted laterally, and balloon dissector was slipped on top of the posterior rectus sheath and advanced beyond the linea semilunaris into the preperitoneal space until the pubis was felt. Under direct vision the extraperitoneal space was exposed by expanding the

balloon. After exchange of balloon dissector(PDB) with Hasson trocar, the space was insufflated with 12mmHg of carbon dioxide. After complete exposure of entire floor of posterior groin, a single sheet of mesh without a slit was fashioned to cover the entire floor and anchored with hernia stapler. The carbon dioxide was slowly desufflated to allow the peritoneum to layer itself over the mesh repair. In all cases, ascites detected at operation was considered to be minimal.

When ambulatory, the patients were discharged from the surgical recovery area. We placed no restrictions on the patient's postoperative activities. They were encouraged to return to work as soon as they felt comfortable to do so.

## Results

Ten hernias were repaired laparoscopically in nine patients with ascites. There were eight males and one female. There was not any conversion to open procedure during the laparoscopic procedures. They consisted of seven cases of indirect inguinal hernias, and three direct hernias. The indication for repair was pain and discomfort in majority(seven cases), and in

Table 1. Characteristics of patients with ascites who underwent laparoscopic herniorrhaphy(Number of patients without ascites)

Total No. of Procedures/Patients		10/9	(83/77)
Sex	M/F	8/1	(52/25)
No. of attempt to laparoscopic procedure		10	(83)
Conversion to open procedure		0	( 0)
Side of hernia	right	5	(49)
	left	3	(28)
	bilateral	1	( 7)
Type of groin hernia	indirect	7	(69)
	direct	3	(10)
	femoral	0	( 4)
Indication for repair	pain & discomfort	7	
	incarceration	3	
	difficult reduction	0	

three cases incarceration was indication for repair. During the same period 83 laparoscopic herniorrhaphy were performed in 77 patients without ascites (Table 1).

Among the nine patients with ascites, eight had ascites because of liver cirrhosis, and one had tuberculous peritonitis. The cause of cirrhosis was viral hepatitis in majority of cases. Five patients with liver cirrhosis met criteria to be classified as Child A, three were Child B, and no case was met the criteria to be classified as Child C (Table 2). Ascites was controlled with fluid restriction, diuretics and paracentesis successfully.

Table 2. Causes of ascites and degree liver dysfunction

Cause of ascites	liver cirrhosis	8
	tuberculous peritonitis	1
Cause of cirrhosis	ethanol abuse	2
	viral hepatitis	6
	cryptogenic	1
Child's class in cirrhosis	A	4
	B	4
	C	0

Table 3. Results of laparoscopic herniorrhaphies using two approaches

	TAPP	TEPA
No. of procedures	6	3
Conversion to open procedure	0	0
Avg. length of operation	70mins	55mins
Avg. postoperative stay	6.1days	5.5days
Wound infection	1	0
Other morbidity	0	0

Although there was no perioperative mortality, minor wound infection was occurred in one case, and there was no any other major morbidity. No episodes of ascities leak occurred and no recurrence of hernia was observed after 7 to 22 months of follow-up periods. No death of patient due to progression of their hepatic disease was not occurred. During the

same period no remarkable difference of postoperative results were not observed between TAPP and TEPA (Table 3).

## Discussion

There are controversies for repair of groin hernias in cirrhotic patients with ascites, and literatures reporting on this issue have been limited. It is known that cirrhosis might compromise the prospects for a good surgical repair and increase risks for both anesthetic and perioperative complications. The poor nutritional state, accompanying anemia and ascites of these patients might contribute to a poor outcome and they do not easily tolerate bowel obstruction or strangulation that may result from an untreated groin hernias. Henrikson et al[6] state that hernia occurred 16%(26 out of 162 cases) of patients with cirrhosis.

In this study all cirrhotics could be classified as child A or B, and did not experienced any mortality or major morbidity. Although laparoscopic herniorrhaphy could be performed safely in this series of patients, it is not possible to determine the precise gains and drawbacks of this procedure because of small studies and short follow-up period.

It is well known that ascites might lessen the likelihood of incarceration and strangulation of groin hernias, so we should consider to choose expectant management for groin hernias with ascites[1,7]. However it seemed desirable to repair the groin hernias in cirrhotic patient whenever necessary because of the greater possibility of incarceration, strangulation and spontaneous rupture with drainage of ascites. The surgeon must weigh the risk of perioperative complications, recurrence, and ascitic leak to access the utility of surgical repair of groin hernias in patients with ascites. Hurst et al[7] stated

that important factors in deciding whether to proceed with elective herniorrhaphy should include severity of symptoms, the degree of hepatic dysfunction, the control of ascites, and the presence of coagulopathy.

If elective repair is to be undertaken, it is recommended to treat ascites aggressively before repair because of the danger of ascitic leak[14]. We controlled the ascites by fluid restriction, diuretics and abdominal paracentesis(av. 800ml), and we found the presence of minimal ascites in our series of 10 groin hernias at the time of operation. Also we should consider that ascites greatly increases the risk for recurrence after umbilical hernia repair as high as 50% to 60%[1].

According to Stoppa's theory, being incorporated synthetic mesh into their repairs and used a posterior approach to the inguinal floor to eliminate tension and herniorrhaphy failure, laparoscopic herniorrhaphy was developed with many modifications and had popularity due to its advantages[2,3,4,5,8,9,11,13]. The advantages of laparoscopic herniorrhaphies are lesser pain, lesser morbidity, lesser disability, earlier return to work, economic savings to both employee and employer, and the possibility of diagnosis and repair of occult hernias on opposite side. But it is not without drawbacks—requiring general anesthesia, minimal risk of vascular or bowel injury requiring laparotomy, lack of long term follow-up, technical complexity, lengthy procedure, and higher surgical fee.

Although many surgeons have approached the posterior wall of the groin laparoscopically via the transabdominal preperitoneal route(TAPP), recently some surgeons adopted totally extraperitoneal approach avoiding peritoneal violation with early excellent results[9]. Although this study was retrospective and nonrandomized, a totally extraperitoneal approach(TEPA) is considered less intrusive than a transabdominal preperitoneal approach

(TAPP) due to elimination of peritoneal injury. There were no ascitic leak in both of TAPP and TEPA, but it is imagined TAPP has the possibility of ascitic leak because of peritoneal violation. But the choice of which approach is best suited for each patient is still up to the individual surgeon.

After as long as a 16 months follow-up, there was no major complications(no recurrence, no episode of ascitic leak and no postoperative death), one minor wound infection, and one case of mild and reversible postoperative hepatic encephalopathy. The formation of a seroma didn't observed. This study confirms that the laparoscopic herniorrhaphy allows patients to rapidly return to normal activities and work. The median time to return to work is 7 to 28 days as to their underlying disease state.

In summary, the findings of this study indicate that in symptomatic hernias with ascites, laparoscopic herniorrhaphy can be performed safely with acceptable complication in selected cirrhotic patients—generally Child Class A and B. If elective repair is to be undertaken, it is prudent to treat ascites aggressively before herniorrhaphy. Limited life expectancy due to progression of underlying liver disease, combined with reduced risk of incarceration, an expectant approach is recommended, particularly in patients who are classified as Child Class C. Both technique-TAPP & TEPA—shortened recovery and eliminated most early failure, but TEPA seems to be better because of the eliminated potential for intraperitoneal complications and may be the procedure of choice in most situations of laparoscopic herniorrhaphy.

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