



Laparoscopic partial cystectomy for the treatment of hepatic hydatid cysts

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Abstract

Background: The laparoscopic approach for the treatment of hepatic hydatid cysts is increasingly gaining importance. The aim of this study was to report a series of 27 patients with hepatic hydatid cyst managed with laparoscopic partial cystectomy.

Methods: A retrospective review of patients treated at a university clinic for hepatic hydatid cysts from March 2010 to May 2014 was performed. Operative time, blood loss, length of hospital stay, post-operative complications, and early follow-up outcomes were evaluated.

Results: Laparoscopic surgical intervention was performed on 27 patients (17 females and 10 males) who were diagnosed with hydatid cysts by ultrasonography and computed tomography (CT). Except 3 of the cysts, were located in the right lobe of the liver. No mortality was noted during the study. Two surgical site infections were observed and no abscesses developed in the cystic cavity. Recurrence was not noted during the mean follow-up period of 22 months.

Conclusion: Laparoscopic partial cystectomy is a safe and effective method for the treatment of hepatic hydatid cyst.

Key words

Hepatic hydatid cyst, Laparoscopy, Partial cystectomy.

Introduction

Hydatid cysts of the liver are frequently encountered in endemic regions, such as Turkey. There are a variety of treatment modalities for

hepatic hydatid cysts, including medical therapy and open or laparoscopic surgery, depending on the size and characteristics of the cyst [1]. Surgical treatment techniques include aspiration, drainage, marsupialization, and total

cyst excision combined with segmental liver resection [2]. The main purpose of the surgery is to provide elimination of scolices in the cyst cavity, removal of all viable parts of the cyst, and obliteration of the remaining cavity [3]. There is an ongoing controversy concerning the laparoscopic treatment of hepatic hydatid cysts due to limited experience [4].

The aim of this study was to examine the feasibility and safety of laparoscopic partial cystectomy for the treatment of hepatic hydatid cyst.

Material and methods

Laparoscopic surgical intervention was performed on 27 patients (17 females and 10 males) who were diagnosed with hepatic hydatid cyst between March 2010 and May 2014 in our institute. Preoperative radiologic evaluation of the cysts was performed using abdominal ultrasonography and computed tomography in all patients. Hepatic infestation with *E. granulosus* was confirmed histologically in all patients. All patients in the study were consulted by radiology and confirmed that were unsuitable for PAIR treatment. Patients with liver cirrhosis, peritonitis, previous upper abdominal surgery, severe obesity, or patients who were high-risk for general anesthesia were excluded. All patients received oral albendazole (10 mg/kg) for 10 days before surgery.

The patients' demographics, operative time, blood loss, length of hospital stay, post-operative complications, and early follow-up outcomes were evaluated. All patients were followed up for at least 22 months.

Surgical procedure

Prophylaxis was provided with 1 g of cefazolin sodium administered 30 minutes prior to surgery. Patients were placed on the operating

table in the right lateral position for hydatid cysts of the right lobe of the liver and in the left lateral position for hydatid cysts of the left lobe of the liver. A 1.5 cm infra umbilical incision was made and a laparoscope was inserted after insufflation through a 10 mm trocar inserted into the abdominal cavity. In cases with hydatid cysts of the right lobe, the other trocars were inserted into the abdominal cavity at the junction of the subcostal line and midclavicular line, and in the subxiphoid area. Gauze pads soaked with hypertonic saline (20% NaCl) were placed around the site where the cyst protruded from the surface of the liver, in Morrison's pouch, and in the subhepatic area. The content of the cyst was aspirated as much as possible using a laparoscopic needle and hypertonic saline was injected into the cyst and left for 10 minutes. The hypertonic solution in the cyst was re-aspirated. The cyst wall was punctured with a perforator grinder aspirator (**Photo – 1**), and the daughter vesicles in the cyst were aspirated completely (**Photo - 2**). The puncture site was enlarged by a 10 mm Ligasure™ (Valleylab, Boulder, CO, USA). The protruding wall of the cyst was excised by the Ligasure™ (**Photo - 3**), placed in a plastic bag, and removed with the trocar. If the bile duct communication seen, it routinely sutured with non-absorbable sutures. After assuring that there was no evidence of a biliary leak, the operation was completed by inserting a 20-F Nelaton drain into the posterior of the liver.

Results

A total of 27 patients with 34 hydatid cysts were treated with laparoscopic partial cystectomy. There were 17 male and 10 female patients, with a mean age of 44 years (range, 28-69 years). The mean cyst diameter was 6.3 cm ranging from 3 to 10 cm. Thirty-one (91.2%) of the cysts were located in the right lobe, whereas

3 (8.8%) was located in the left lobe. Cysts were multiple in 5 of 27 patients.

All patients were administered 15 mg/day of albendazole until the 3rd post-operative month follow-up visit. No mortality was noted during the study. Endoscopic sphincterotomy was performed in 1 patient on the 4th post-operative day due to the appearance of bile in the drain; biliary leak ceased on the 8th post-operative day. Two surgical site infections were observed and no abscesses developed in the cystic cavity. The operative datas including operative time, blood loss, complications, length of hospital stay and recurrence rate were as per **Table - 1**. Surgical site infection is the most common complication that occurred in 2 patients, followed by a low-output bile leakage in 1 patient, and 1 patient with minimal pleural effusion was treated conservatively. No recurrence was noted during the mean follow-up period of 22 months (range, 12-48 months).

Table - 1: Patient demographics and operative datas.

Parameters	Partial cystectomy (n = 27)
Age (years)	44 ± 11.3 (28-69)
Gender, n (%)	
-Males	17 (62.9%)
-Females	10 (37.1%)
Diameter of cysts (cm)	6.3 (3-10)
Operative time (minutes)	108 ± 21.4
Blood loss (mL)	55.5 ± 15.9
Hospital stay (days)	4.8 ± 2.4
Complications, n (%)	
-Bile leakage	1 (3.7%)
-Surgical site infection	2 (7.4%)
-Pleural effusion	1 (3.7%)
-Intra-abdominal abscess	-
-Mortality	-

Photo - 1: The use of perforator grinder aspirator.



Photo - 2: Cyst wall was punctured with a perforator grinder aspirator and enlarged.



Photo - 3: Cystic content evacuated completely and partial cystectomy was performed with Ligasure™.



Discussion

There has been widespread use of laparoscopic interventions, following the confirmation of their reliability in laparoscopic cholecystectomy [5]. Laparoscopic surgery of hydatid cysts has become an effective procedure in the treatment of uncomplicated hydatid cysts which are not suitable for percutaneous aspiration. Cystectomy and drainage procedures were common in previous practice; however, with the recent development in laparoscopic techniques and increasing surgeon experience, there has been increased use of pericystectomy and radical resection of hepatic hydatid cysts in many centers [4]. The use of laparoscopic ultrasonography is known to facilitate surgical interventions in cysts with a posterior localization and in those neighboring large vessels [6]. The main principles of conventional liver hydatid surgery including inactivation, prevention of spillage, elimination of viable elements of the cyst, and management of the residual cavity have been strictly implemented in the laparoscopic treatment of liver hydatid disease. However, there are still some concerns for spillage and anaphylactic shock under the high abdominal pressure induced by the pneumoperitoneum until the evidence that the increase in intracystic pressure was no greater than the increase intra-abdominal pressure and that pneumoperitoneum was protective against spillage [7], and various studies have demonstrated that the surgically-created pneumoperitoneum does not cause spread of the cyst into the abdomen [8].

Most of the surgeons have limited patient-selection criteria for the laparoscopic treatment of hepatic hydatid cyst, and, with the increased experience they are relaxing their inclusion criterias. In this study, patients with history of previous upper abdominal surgery, patients with cysts deeply located and diameter >10 cm were

not included. The main advantages of laparoscopy include less post-operative pain, a shorter duration of hospital stay, and better cosmetic results. On the other hand, similar results have been reported concerning intra-abdominal spread and related recurrences when performed by experienced surgeons, compared to the open surgical technique [9, 10]. However, the mortality rate is lower [11].

Conclusion

In conclusion, the laparoscopic drainage and partial cystectomy for the surgical treatment of hepatic hydatid cysts is safe and effective techniques in selected patients. However, further multi centric, prospective and randomized studies are needed to define the role of laparoscopy as the gold standard for the treatment of hepatic hydatid cysts.

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