

Laparoscopic Treatment of Hydatid Cyst of Liver: Local Experience

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ABSTRACT:

BACKGROUND:

Hydatid cyst disease remains a real health problem in many parts of the world. Surgery remains the mainstay of treatment of liver hydatid disease. Laparoscopic hydatid surgery (LHS) is gaining acceptance all over the world with promising early results.

OBJECTIVE:

To present our experience of laparoscopic management of liver hydatid disease in our locality.

PATIENTS AND METHODS:

All patients presented with liver hydatid disease to our department in Al-Jumhori Teaching Hospital were planned to undergo laparoscopic hydatid surgery (LHS). The diagnosis was made by abdominal ultrasonography and/or computed tomography. Surgical treatment was decided for cysts larger than 4 cm. Exclusions from laparoscopic intervention were for patients with; multiple cysts (>3 cysts), complicated cysts, cysts at risky site, recurrent hydatid, and those who refused the laparoscopic approach.

RESULTS:

From Sep 2001 to Jan 2013, 70 patients with hydatid liver disease were presented for surgical treatment. LHS was performed in 46 patients; 15 were males and 31 were females. Their mean age was 35 years (SD±14). In 31 cases the cysts were in the right lobe, in 5 cases were in the left lobe and in 8 cases were in both lobes of liver. In one patient, there were 2 cysts in liver and one cyst in spleen. In 9 patients (19%) the operation was converted to open surgery. The mean operative time was 75 minutes (range, 40 – 120 minutes). The mean length of hospital stay was 3 days (range, 3-8 days). Pus collection in the residual cavity was occurred in two patients, who were managed by laparotomy and drainage. Recurrence was detected in one patient 10 years after the LHS (2.3%). There was no mortality.

CONCLUSION:

This study highlighted that laparoscopic approach for hepatic hydatid surgery is a safe and effective method in selected patients.

KEY WORDS: Laparoscopic hydatid surgery, endocystectomy, partial ectocystectomy.

INTRODUCTION:

The desired goals in the treatment of hepatic hydatid disease include elimination of the parasite and prevention of recurrent disease with minimum morbidity and mortality. The options for treatment include; surgery whether open or laparoscopic, percutaneous aspiration injection and reaspiration (PAIR), and medical treatment. Surgery remains the mainstay of treatment of liver hydatid disease⁽¹⁾.

Laparoscopic treatment of hepatic hydatid disease has been increasingly popular and has undergone a revolution parallel to the progress in laparoscopic surgery. The important steps of open surgery are the evacuation of cyst contents without spillage, sterilization of the cyst cavity with scolicidal agents and cavity management using classical surgical techniques. The same goals can be achieved with laparoscopic as with open surgery but with less morbidity and early recovery⁽⁵⁾.

This study presents our experience with laparoscopic surgery for liver hydatid, aiming to add our results in this field of surgery for further studies.

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PATIENTS AND METHODS:

This study included patients with liver hydatid disease who were scheduled for laparoscopic hydatid surgery. The diagnosis was confirmed by ultrasonography and/or computerized tomography. Exclusion criteria included those patients; who refused the laparoscopic approach, and those with multiple cysts (> 3 cysts). Patients with recurrent hydatid were excluded during early period of this study but later on were included in this study.

Clinical records of the patients were including; gender of patients, site and number of cyst(s), primary or recurrent cyst. Details of surgery were reported regarding; the number of ports, time of surgery, macroscopic appearance of cysts, and conversion to open surgery. All patients were given Albendazol 10 mg / Kg /day for at least 2 weeks preoperatively and continued postoperatively for 1-3 months.

Follow up of patients was conducted in the clinic evaluating their clinical progress and repeated US examinations were used for assessment. The minimum follow up period was 6 months (range 6 – 120 months).

The procedure:

The operation was performed in the supine position under general anaesthesia with endotracheal tube and muscle relaxation. Pneumoperitoneum was created by open method through the umbilical cicatrix. On average 3-4 ports were used; 10mm for telescope through umbilicus, second 10mm as working port in the epigastrium, and one or two 5mm ports in the right and left upper quadrants. The precise sites of ports varied according to the actual site of cysts.

The peritoneal cavity was examined and the size and position of the cyst noted. Then the steps of surgery proceeded as follow:

- 1- Pieces of gauze (2-3 in number), soaked with 4% povidone iodine as a scolicedal agent were introduced and placed around the cyst (Figure 1).
- 2- The cyst was punctured with a 14-gauge (6F) aspiration needle. A 5-mm suction catheter was placed close to the puncture site (Figure 2) as a guard in case spillage may occur , and as much cystic fluid as possible was aspirated.
- 3- Povidone iodine 10% injected inside the cyst (20 – 30 cc). Waiting for about 5 minutes, then reaspiration of as much as possible of cyst fluid.
- 4- Enlarging the opening in ectocyst to introduce the 5 mm suction tube inside the cyst cavity and evacuation of the contents performed.
- 5- Excision of most part of ectocyst “deroofting” done.
- 6- The endocyst (laminated membrane and germinal layer) extracted outside within an extraction bag.
- 7- Video endoscopic examination of the residual cavity to ensure complete removal of the contents of the cyst and to look for any overt cyst – biliary communication (verified by the absence of bile in the suctioned fluid and non-visualization of any opening within the cyst cavity).
- 8- Irrigation of the cystic cavity with 10% povidone iodine several times during the procedure.
- 9- Wide tube drain was left inside the residual cavity.
- 10- Omentoplasty was simultaneously performed in suitable cases.



Figure 1: Hydatid cyst of left lobe of liver surrounded by packs soaked with povidone iodine.



Figure 2: Aspiration of hydatid cyst of left lobe of liver with suction tube (5mm) on guard.

RESULTS:

From Sep 2001 to Jan 2013, 70 patients with liver hydatid disease consulted us for surgical treatment. 24 patients underwent primary open surgery and so excluded from the study; 6 patients because of having multiple cysts (>3 cysts), 6 patients having recurrent cyst, 2 patients having complicated inaccessible cysts, and 11 patients refused the laparoscopic approach. LHS was performed in 46 patients; 15 Males (30%), and 31 females (70%). Their mean age was 35 years(SD±14), (range 11 -64 years).

The cysts were in the right lobe in 28 patients, in the left lobe in 8 patients, and in 8 Patients were found to have two cysts. In one patient there were 3 cysts; 2 in liver and one in the spleen. The average size of the cysts was 79 mm (range 40 - 140 mm). There were; 26 uncomplicated cysts (containing clear fluid), and 20 complicated cysts; 9 infected cysts (purulent fluid content), 8 of bile stained content, and 3 cysts with thick gelatinous content. The cysts were multivesicular (multilocular) in 16 patients and univesicular (unilocular) in 30 patients, [Table 1].

Table 1: Clinicopathological features of the hydatid cysts.

Clinicopathology of cysts	No.	%
Single cyst	37	80
Two cysts	8	17
Three cysts	1	2

Anatomical site of cyst in liver		
- right lobe	33	71.7
- left lobe	4	8.7
- both lobes	8	17
- liver and spleen	1	2

Type of cyst		
Univesicular	30	65
Multivesicular	16	35

Uncomplicated cysts	26	56.5
Complicated cysts	20	43.5
Bile content	(8)	
Thick gelatinous material content	(3)	
Infected cysts	(9)	

Recurrent cysts	10	22

In 10 patients the hydatid cysts were recurrent from earlier open surgery. The first 6 patients were

scheduled for open surgery and so excluded from the study. While the last 4 patients with recurrent

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hydatids were given the opportunity to undergo laparoscopic surgery, which was successfully completed in 3 patients, and in one patient converted to open surgery.

In 19 patients four ports were followed while three ports were followed in 26 patients and in one patient 5 ports were used.

Conversion to open surgery was needed in 9 patients (19.5 % conversion rate); in 4 patients because the cysts were complicated, in 2 patients the cysts were in risky and inaccessible site, in 2 patients because of dense adhesions, and in one

patient because of multiple cysts (> 3 cysts) detected intraoperatively.

Postoperative bile leakage was occurred in 3 patients (6.5%), managed conservatively and closed spontaneously within (8, 14, 19 days) respectively.

Two patients (4.34%) developed pus collection in the residual cavity that required laparotomy for drainage with successful results.

One female patient developed recurrence of the cyst 10 years after the first LHS (2.3% recurrence rate) [Table 2].

The mean hospital stay was 2.8 days (range 1 – 8 days).

The mean operative time was 75 minutes (range 50 -120 minutes). There was no mortality in this series.

Table 2: Complications of surgery.

Complications	Number of patients	Percentage (%)
Anaphylactic shock	Nil	0
Infection of residual cavity	2	4.34
Bile leakage	3	6.5
Conversion	9	19.5
Recurrence	1	2.3
Mortality	Nil	0

DISCUSSION:

Echinococcosis was described by Hippocrates more than two thousand years as a "fluid-filled liver"; followed by the famous Arabian physician Al-Rahzes⁽¹⁾. Hydatid disease is caused by *Echinococcus granulosus* and is endemic in many parts of the world like in our country, Iraq. The most common site of occurrence of hydatid cysts in humans is the liver (50% – 93%)⁽²⁻⁴⁾.

Hydatid disease (echinococcosis) remains a complex worldwide problem, especially in rural areas⁽⁶⁾.

Surgical treatment is the mainstay method, aiming to sterilize the cyst, removing the germinative membrane and dealing with residual cavity with every effort must be spent to prevent intraoperative spillage especially during the initial puncture aspiration of cyst⁽⁷⁾. These aforementioned goals that was practiced for years by the conventional (open) surgery, was fulfilled by the laparoscopic approach efficiently⁽⁵⁾. The results of LHS as seen in many series were, encouraging and comparable to those of open method with the added benefits of excellent cosmesis, rapid recovery, and shorter hospital stay^(5,8).

In this study, laparoscopic techniques were followed in selected patients with liver hydatid cysts, applying the principles of conventional liver

hydatid cyst surgery, including inactivation of scolices, prevention of spillage, elimination of viable elements of the cyst, and management of the residual cavity. The results were found to be favorable in comparison with other series.

The main parameters regarding the successfulness of any treatment modality for hydatid disease were; the postoperative morbidity and in particular; cavity related complications like biliary fistula and abscess formation and recurrence of the disease⁽⁹⁾. In this study there was no report of prolonged biliary fistula, in 3 patients (6.5%) bile leakage was continued for maximum of 19 days and relieved by conservative measures. On reviewing the literature, the incidence of postoperative biliary fistula was ranged from 7.9% to 28.6%, highlighting our favorable results⁽¹⁰⁾. In two patients (4 %) pus collection in the residual cavity occurred that mandated laparotomy about two weeks after the first surgery. Such complication can occur whatever the type of surgery open or laparoscopic. The reported incidence of residual cavity infection in the literature was 3% which was comparable to the results of this study⁽¹¹⁾.

Almost all cysts in the liver can be dealt with laparoscopically, only cysts not removed laparoscopically are deep intraparenchymal cysts

close to the vena cava, or cysts containing thick, calcified walls^(12,13). In this study conversion to open surgery was needed in 9 patients (19.5%), mainly because of; unsafe site of cyst in 2 patients, complicated cysts in 4 patients, intra-abdominal adhesions in 2 patients, and multiple cysts (more than 3 cyst) in one patient. In reviewing literatures conversion rate was seen to be ranged from 4-25% and almost for the same reasons^(14,16-18).

Recurrence of the disease was faced in one patient during this study (incidence 2%), which was occurred 10 years after the first surgery. This result was acceptable as long as such mishap following open surgery in literature was reported to be ranged from 3 – 10%^(12,16), while recurrence after laparoscopic surgery was 4.6%⁽¹⁷⁾. Spillage of hydatid fluid is held to be the most important factor responsible for recurrence⁽¹⁹⁾. The most critical step for spillage is during the initial needle aspiration of the high intracystic pressure. To decrease such spillage, we used a precautionary suction tube near the puncture site, and small packs soaked with povidone iodine (4%) were introduced and placed around the cyst like in open surgery.

Most of our patients left the hospital within two days of surgery with a mean hospital stay of 2.8 days, clarifying the less invasiveness of laparoscopic approach with its inherent benefits of early independency and return to work. While the average hospital stay as reported in the literature was (2.3 day), indicating our relatively comparable results⁽⁵⁾.

In the past, recurrent hydatid disease was considered as contraindication for laparoscopic approach, but with increased experience, such rule is no longer applied^(14,16). Initially, in this study those patients with recurrent hydatid were excluded but later on after gaining experience with the procedure do we operated on recurrent hydatid. Although surgery for recurrent hydatid was found to be a bit more difficult, with high conversion rate (25%), but the overall outcome was favorable with no added risks. So that recurrent hydatid assumed to be no longer regarded as a contraindication to laparoscopic approach.

CONCLUSION:

Laparoscopic treatment of liver hydatid cyst disease was found to be safe and effective in selected patients and offers all the advantages of laparoscopic surgery.

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