

Laparoscopic Treatment Of Hepatic Hydatid Cyst

Ibrahim Ekhlafyef Mughir Al- Doghan, M. B. Ch. B. / F.I.C.M.S.^{1,2}

Haitham Khalid Hussein, M. B. Ch. B. / C.A.B.S.²

Hasanain Abdulameer Jasim, M. B. Ch. B. / C.A.B.S. / F.I.C.M.S.^{1,2}

¹ Department of surgery /Collage of Medicine/ Al- Mustansiriya University

² Al Yarmouk Teaching Hospital

Date Submitted: 3/10/2016

Date Accepted: 6/3/2017

Address for Correspondence:

Dr. Ibrahim Ekhlafyef Mughir

Doghan M.B.Ch.B- F.I.C.M.S.

Senior Lecturer, Dept. of Surgery /

College of Medicine / Al Mustansiriya

University.

Consultant General and Laparoscopic

Surgeon /Department of Surgery /Al

Yarmouk Teaching Hospital/Baghdad

/Iraq

Mobile: 009647705144059

Email: dribrahimdoghad@gmail.com

Abstract

Background: Hydatid Cyst disease is caused by Echinococcus Granulosis which is a parasite that inhabits the intestine of dogs and canines as definitive hosts. Humans are infected accidentally after ingestion of the parasitic eggs. The commonly affected areas are the liver, lung, brain and other viscera. A variety of treatment modalities were employed starting from medical therapy for small cysts, to the classical surgical procedures. Nowadays Hepatic Hydatid Cyst can be effectively managed by laparoscopic surgery.

Aim: For evaluate the feasibility and safety of laparoscopy in the management, of Hepatic Hydatid Cysts regarding complications, recurrence rate, duration of surgery and hospital stay.

Patients and Methods: A study of 54 patients with hydatid cysts of liver, who underwent laparoscopic surgery at Al-Yarmouk teaching hospital, and two private hospitals in Baghdad.

Results: From Oct. 2009 - Oct. 2016 a study of 54 patients of hepatic hydatid cysts, who underwent laparoscopic procedure at Al-Yarmouk teaching hospital, and two private hospitals in Baghdad – Iraq. All patients were treated preoperatively with albendazole. A successful laparoscopic surgery was performed for 47 patients (87.03%), by de-roofing of the cyst wall and evacuation of the germinal membrane, daughter cysts and hydatid fluid by a 10mm sucker after packing of the peritoneal cavity with 20 per cent hypertonic saline-soaked packs and instilling 20 per cent hypertonic saline into the cyst cavity as a Scolicidal agent before it is opened. The cavity was then irrigated with normal saline and a drain placed inside it, while conversion to an open surgical procedure was done to 7 patients (12.96%). Due to various reasons, as deep intraparenchymal cysts 1 (1.85%) patient, posteriorly located cyst 3 (5.55%) patients, more than three cysts (multiple cysts) 1 (1.85%) patient, cysts with thick and calcified walls 1 (1.85%) patient, and cysts characterized by a heterogeneous complex mass 1 (1.85%) patient. Postoperative complications occurred in 7 (13%) patients. About 46 (85.2%) of patients were discharged from hospital within 3 days, and about 8 (14.8%) of patients discharged from hospital within 4-7 days., one patient, who converted to open surgery recurrence of the disease occurred after 3 years, exploration was done without complications. No mortality in this study.

Conclusion: Treatment of Hepatic Hydatid cyst by Laparoscopy is effective, feasible, safe, early recovery with low morbidity and no mortality.

Key words: Hepatic Hydatid cyst, laparoscopy, complications.

INTRODUCTION

Liver hydatid disease a common in the Mediterranean area. The, *Echinococcus granulosus*, is present in the intestine of dogs, and the ova are ingested by humans which travel to the liver through portal vein. Diagnosis is by Ultrasound and CT scan finding of a unilocular or multilocular cyst.^(1, 2)

In humans liver is the most common organ affected by hydatid cysts (50-93%)³. while other organ are affected less.⁽⁴⁻⁵⁾ Liver Hydatid cyst is single cyst (62.5%) and the right lobe involved by (80.77%).⁽⁶⁾

Hydatid cysts have no symptom. The patient may complaining of pain and discomfort in the abdomen, biliary colic, liver enlargement, abdominal swelling, jaundice, malaise, itching, cough, anorexia, and

pyrexia.⁽⁷⁾ The main goal in the management is to excise the cyst without spillage of the contents.

The open surgical operative procedures include "complete or partial pericystectomy with endocystectomy including encapsulation, cystectomy, evacuation, marsupialization, etc." In recent years with the progressive laparoscopic surgery for the treatment of liver hydatid cyst, it is a safe technique.⁽⁸⁾ "The exclusion criteria" for laparoscopic surgery include: more than three liver hydatid cysts, cysts situated in "a blind area" for laparoscopy as segments I, II and IIV or near to the inferior vena cava, deep intraparenchymal cysts; cysts with a thick, calcified wall, a heterogeneous complex cystic mass, small cysts; a communication between the cyst and the biliary tree; and coagulopathy.⁽⁹⁾ The laparoscopic techniques in hydatid liver; including simple drainage, puncture and aspiration of contents with marsupialization, deroofing with omentoplasty, partial cystectomy or total pericystectomy, and anatomical hepatic resections.⁽¹⁰⁾ The main advantages of laparoscopic surgery are decrease morbidity and hospital stay.⁽¹¹⁾

PATIENTS AND METHODS

A study of 54 patients with hydatid cyst of liver, who underwent laparoscopic surgery at Al-Yarmouk teaching hospital, and two private hospitals in Baghdad-Iraq, during the period from Oct.2009 to Oct. 2016.

The diagnosis was based on history, clinical examination, biochemical, hematological investigations and abdominal ultrasound. Chest X- ray was also done to diagnose thoracic cysts and a computerized tomography study was done for all patients to evaluate the number of cysts, and their locations and sizes. Albendazole were given to all patients, 400 mg tablet once daily for fourteen days before surgery.

Under general anaesthesia a hydrocortisone administered with the induction of anesthesia. A nasogastric tube and Foley's catheter was introduced. After creating pneumoperitoneum, through the first infra-umbilical port a telescope was inserted. A second port and a third port was used for procedure mobilization. Two packs soaked with 20% hypertonic saline as a Scolicidal agent were introduced to control any spillage. The fluid content of the Hydatid cystic was aspirated and Scolicidal agent in form of a 20% hypertonic saline was introduced into the cysts, then after evacuation of all the fluid and with the use of a

hook the cyst was opened and partial pericystectomy was done to allow de-roofing of the cyst wall and evacuation of the germinal membrane including the daughter cysts with the use of a 10mm sucker. After removing of the germinal layer and all the fluid inside the cavity. For postoperative drainage a tube was put inside the residual cavity. The tube was extracted after 2 -3 days if it was empty. On the 3rd - 4th post-operative day the patient was discharged home. If there was bile leakage, the tube was remain in side for a long period. By ultrasound the residual cavity was observed at fourteen day, 1st, 3ed and 6th month's interval. If the ultrasound report was inconclusive A CT scan was performed. All the patients given Albendazole for three months post- operatively.

A 47 patients in whom successively laparoscopic endocystectomy was done, and 7 patients where conversion to open endocystectomy and partial pericystectomy was done.

The outcomes of laparoscopic procedures were assessed regarding the rate of complications and the period of hospital stay.

RESULTS

Through a 7-year period from Oct.2009 to Oct. 2016. A study conducted to a 54 patients of liver hydatid cyst, who were doing a laparoscopic procedure at Al-Yarmouk teaching hospital and two private hospitals in Baghdad – Iraq. All patients were treated preoperatively with Albendazole.

The age of the patients was ranging from 20 to 65 years with the mean age 45years. Regarding the patients gender, in which 21 male, 33 female patients, with male: female ratio 1:1.57 (**Tab.1**)

The Number of cysts; One cyst 39 (72.2 %), Two Cysts 9 (16.7 %) and Three Cysts 6 (11.1%)

(**Tab.2**)

Location Right Lobe of Liver 43 (79.6 %), Left Lobe 9 (16.7%) and both lobes 2 (3.7%) (**Tab.2**)

A successful laparoscopic was performed on 47 patients (87.03%), while conversion to an open surgical procedures was done in 7 patients (12.96%) (**Tab.3**)

Due to various reasons, as deep intraparenchymal cysts 1 (1.85%) patient, posteriorly located cyst 3 (5.55%) patients, more than three cysts (multiple cysts) 1 (1.85%) patient, cysts with thick and calcified walls 1 (1.85%) patient, and cysts characterized by

heterogeneous complex mass 1 (1.85%) patient. (Tab.4)

Postoperative complications occurred in 7(13%) patients (Tab.5). About 46(85.2%) patients discharged from hospital within 3 days, and about 8(14.8%) patients were discharged from hospital within 4-7days (Tab.6). In one patient, who converted to open surgery, recurrence of the disease occurred after 3 years, exploration was done without complications or recurrence. There was no mortality.

Table 1: Age of patients and gender

Age of patients (years)	No. of patient Mean age	No. of male patients	No. of female patients	Male to female ratio
20-65	45	21	33	1: 1.57

Table 2: No. and Site of cysts

No. of cysts	No. of patients	%
One cyst	39	72.2 %
Two Cysts	9	16.7 %
Three Cysts	6	11.1 %
Site	No. of patients	%
Right Lobe of Liver	43	79.6 %
Left Lobe	9	16.7 %
Both Lobes	2	3.7 %

Table 3: Groups of patients

Total No. of patients in study	No. of patients with laparoscopic treatment successfully done	No. of patients converted to open surgery
54(100%)	47(87%)	7(13%)

Table 4: The main causes for conversion to open endocystectomy

The causes for conversion	No. of patients 7(13%)
deep intraparenchymal cysts patients, and posteriorly located cyst	1 (1.85%)
more than three cysts (multiple cysts)	3 (5.55%)
thick calcified cystic wall	1 (1.85%)
a heterogeneous complex cystic mass	1 (1.85%)

Table 5: Outcome of management

Total No. of patients 54(100%)	No. of patients with successful laparoscopic treatment 47(87%)	No. of patients converted to open surgery 7(13%)
No. of patients present with Complications 7(13%)	3	4
Anaphylactic shock	Nil	Nil
Mortality	Nil	Nil
Wound Infection (port site) 5(9%)	2	3
Bile leakage 3(5.6%)	1	2
Peritonitis	Nil	Nil
Recurrence 1(1.9%)	0	1
Hernia formation 1 (1.9%)	Nil	1
Mortality	Nil	Nil
Abdominal & shoulder pain 6(11%)	3	3

❖ Note; Patient may have more than one complication.

Table 6: Median hospital stay

	Hospital stay	
	1-3 days	4-7 days
No. of patients with successful laparoscopic treatment 47 (87%)	43(79.6%)	4(7.4%)
No. of patients converted to open surgery 7(13%)	3(5.5%)	4(7.4%)
Total no. of patients 54(100%)	46(85.2%)	8(14.8%)

DISCUSSION

In 1992 Saglam was publish the first laparoscopic drainage of hepatic hydatid cysts.⁽¹²⁾ Laparoscopic surgery offer many of the advantages of minimal access surgery, including a smaller incision, low morbidity, short hospital stay, and early return to work. Furthermore, the ability to examine the cavity of the cyst which enables to detect cystobiliary communications.⁽¹³⁾ A major disadvantage of laparoscopy difficulty is control spillage which increased risk of anaphylactic shock and contamination of the peritoneal cavity with scolices.^(10,12) Laparoscopic techniques for treatment of the cyst; either perforation with aspiration then marsupialization, deroofing with drainage, deroofing with omentoplasty, total excision combined with segmental liver resection,⁽¹⁴⁾ in this study which is done with no selection criteria and no special instruments. In this study, laparoscopic de-roofing and drainage of the cyst. Conversion to an open procedure in case of difficulties .Seven R et al have reported simple drainage of cysts in sixteen patients with deroofing, and drainage in twenty patients.⁽¹⁴⁾ Ertem et al. In Cerrahpasa Medical School, University of Istanbul, they mention that laparoscopic cystectomy or partial cystectomy with tube drainage in thirty-three cases, with omentoplasty in fifteen patients, and conversion from to open surgery in two patients.⁽¹⁵⁾ Misra MC et al and Foster EN et al both perform hepatic resections and pericystodigestive anastomosis via laparoscopy.^(16, 17)

In this study the age range from 20-64 years, the mean age was 45 years. Similarly, Chautems R et al and Niscigorska J et al reported equally affected age groups.^(8, 9) In this study Females were predominantly affected as in studies of Chautems R et al, Niscigorska J et al and Rooh-ul-Muqim et al.⁽¹⁰⁾ While Cohen H et al have reported male predominance.⁽¹¹⁾

Mergen H et al mention that Right lobe involved in 65% of cases, the left lobe involved in 13%, and both left and right lobes involved in 8%¹⁸., in our study the right lobe was involved in 79.6%, the left lobe involved in 16.7% and in both lobes involved in 3.7%, in all studies show the right lobe mostly involved (most probably due to the large size of the right lobe and the portal vein circulation to the right lobe).

In this study 39 (72.2%) patients had One cysts, while 9(16.7%) had two cysts, and 6 (11.1%) had three cysts(multiple cysts in 27.8%). similarly Rooh-ul-Muqim et al reports a One cyst was present in 31 (72.09%) patients, Two cyst in13.95% and Three cysts in 13.95% and Mergen H et al reports that 69% of patients had One cyst, and 31% of patients had multiple cysts, while Viral G. Sangani et al reports single cyst in 40% of cases, and 60% of cases multiple cysts.⁽¹⁹⁾

Albendazole was given to all patients preoperatively. Tekin A et al study show chemotherapy decreased recurrence rates from 80% to 10% making that combination chemotherapy and surgery is a safe and effective approach.⁽²⁰⁾ Successful laparoscopic procedures were reported in 47(87%), and in 7(13%) an open surgery was done. the causes of conversion were: 1 (1.85%) deep intraparenchymal cysts, 3 (5.55%) posteriorly located cysts, 1 (1.85%) more than three cysts (multiple cysts), 1 (1.85%) thick calcified cystic wall, and1 (1.85%) a heterogeneous complex cystic mass. Viral G. Sangani reports 40% Conversion to open surgery due to multiple cysts, thick calcified walls, a complex heterogeneous cyst (GHARBI type IV), was their causes of conversion.⁽¹⁹⁾ In Rooh-ul-Muqim study conversion to laparotomy was (6.97%) because of unclear anatomy, and exposure.⁽¹⁰⁾ Ertem M et al and Seven R et al have reported conversion rates of 4% and Reports 25% respectively due to same reasons.^(14,15) Hanan R Rihanni et al report no conversion (in their study only 4 patients was included).⁽²¹⁾

In our study there was no mortality, but different complications was reported were, 7(13%) of patients, (3 patients with laparoscopic procedure and 4 patients with open procedure) in which 5(9%) patients have wound infection, 3(5.6%) patients have bile leakage, 1(1.9%) patient have hernia formation, 1(1.9%) patient have recurrence and 36(11%)patients complaining of abdominal and shoulder pain, (note; patient may have more than one complication). Also in our study no anaphylactic reaction due to spillage of the cystic content, no injury to biliary system or any blood vessels. In other studies Rooh-ul-Muqim reports port

site infection, biliary leakage and peritonitis as early complications in 5% and hernia and recurrence in 5% as late complications¹⁰. Other series, infection was reported in 3%, biliary leakage in 13.7%⁷. Seven R et al have reported 4% per operative, 17% postoperative complications and 9% recurrence rate¹⁴. Ertem M et al have reported that recurrence rate from 3% - 10% following surgery for hepatic hydatid cysts.⁽¹⁵⁾

The Bile leak which occurs in 3(5.6%) patients in our series was treated conservatively by ERCP and drainage.

In this study the patients who underwent laparoscopic procedure in which (79.6%) stay no more than 3 days.

Conclusion:

Laparoscopic surgery of Hepatic Hydatid cyst is feasible, safe, effective, early recovery with low morbidity and no mortality.

REFERENCES

1. Williams NS, Christopher J.K. Bulstrode, P. Ronan O'Connell, Hydatid liver disease. Bailey & Love's Short practice of Surgery, 2013; 26th Edition: 1081.
2. Ustunsoz B, AKHAN O, Kamiloglu MA, Percutaneous treatment of Hydatid cysts of the liver: long-term results. Am J Roentgenol. 1999; 172:91-6.
3. Mousavi S, Khoshinevis J, Kharazm P. Surgical treatment of hydatid cyst of the liver: drainage versus omentoplasty. Ann Hepat. 2005; 4:272-4. [PubMed]
4. Huizinga W, Grant C, Daar A. Hydatid disease. In: Moris P, Wood W, editors. Oxford textbook of surgery. 2nd Ed. New York, NY: Oxford University Press; 2000. pp. 3298-305.
5. Gomez R, Marcello M, Moreno E, et al. Incidence and surgical treatment of extra-hepatic abdominal hydatidosis. Rev Esp Enferm Dig. 1992; 82:100-3. [PubMed]
6. Georgescu S, Dubei L, Tarcoveanu E. Minimally invasive treatment of hepatic hydatid cysts. Rom J Gastro. 2005; 9:249-52. [PubMed]
7. Palanivelu C, Senthilkumar R, Jani K. Palanivelu hydatid system for safe and efficacious laparoscopic management of hepatic hydatid disease. SurgEndosc. 2006; 20:1909-13. [PubMed]
8. Chautems R, Buhler L, Gold B, Chilcott M, Morel P, Mentha G. Long-term results after complete or incomplete surgical resection of liver hydatid disease. Swiss Med Wkly 2003; 133:258-62.
9. Niscigorska J, Sluzar T, Marczevska M, Karpinska E, Boron-Kaczmarek A, Moranska I, et al. Parasitic cysts of the liver: practical approach to diagnosis and differentiation. Med Sci Monit 2001; 7:137-41.
10. Rooh-ul-Muqim 1, Khawar Kamran 1, Jawad Khalil . Laparoscopic Treatment of Hepatic Hydatid Cyst , Journal of the College of Physicians and Surgeons Pakistan 2011, Vol. 21 (8): 468-471
11. Cohen H, Paolillo E, Bonifacino R, Botta B, Parada L, Cabrera P, et al. Human cystic echinococcosis in a Uruguayan community: a sonographic, serologic, and epidemiologic study. Am J Trop Med Hyg 1998; 59:620-7.
12. Saglam A. (1996). Laparoscopic treatment of liver hydatid cysts. Surg Laparosc Endosc (6): 16-21.
13. Walid Faraj , Eliane Malek , , Najla Tani et al , Management of Bile Leak After Laparoscopic Hydatid Liver Surgery , CRSLS MIS Case Reports from SLS.org . e2014.00060
14. Seven R, Breber E, Mercan S, Eminoglu L, Budak D. Laparoscopic treatment of hepatic hydatid cysts. Surgery 2000; 128:36-40.
15. Ertem M, Karahasanoglu T, Yavuz N, Erguney S. Laparoscopically treated liver hydatid cysts. Arch Surg. 2002; 137:1170-3.
16. Misra MC, Khan RN, Bansal VK, Jindal V, Kumar S, Noba A, et al. Laparoscopic pericystectomy for hydatid cyst of the liver. Surg Laparosc Endosc Percutan Tech, 2010; 20: 24-26.
17. Foster EN, Hertz G. Echinococcus of the liver treated with laparoscopic hepatectomy. Perm J, 2010; 14: 45-46
18. Mergen H, Genç H, Tavusbay C. Trop Doct. 2007 Jan; 37(1):54-6
19. Viral G. Sangani
20. Tekin A, Küçük Kartallar T, Kartal A, Kaynak A, Ozer S, Tavli S, Belviranlı M, Şahin M, Yol S, Aksoy F, Tekin S, Vatansev C, Erikoglu MJ Gastrointest Liver Dis. 2008 Mar; 17(1):33-7
21. Hanan R Rihanni , Basem El-Nabulsi . Abdul Aziz Ziadat. Laparoscopic approach to hepatic hydatid cyst is it safe. J RMS June 2005, 12(2):69-71
22. Alaa Bakir Raheem, Laparoscopic Treatment of Hepatic Hydatid Disease Department of General Surgery, Hilla Teaching General Hospital, Babylon, Iraq . World Journal of Laparoscopic Surgery, January-April 2009; 2(1):35-39