Hydatid Liver Disease: Long Term Results of a Surgical Management

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Abstract

Objective: To review the experience of the surgical management of liver hydatid cystic disease between 1973 and 1999.

Patients and Methods: We retrospectively analyzed the files of 169 patients with liver hydatid cyst that were managed surgically between 1973 and 1999 with emphasis on the surgical treatment and its results. There were 112 females and 57 males with a mean age of 39.2±17.9 years (range: 5-85 years).

Results: Most patients were symptomatic, 29.5% presented with abdominal pain, 27% with jaundice or gave a history of jaundice and 6% with weight loss.

Hepatomegaly and palpable abdominal mass were the commonest physical signs. The right liver was affected more than the left 68% and 21.8%, respectively. In 13.6%, the cysts were ≥10 cm in diameter. Pre-operative complications were common in our series (37.8%) and the commonest pre-operative complication was intra-biliary rupture (34%).

The surgical procedures performed were variable, external drainage and omentoplasty were the commonest procedures performed. The mortality, morbidity and recurrence rates were high, 6.5%, 53.8% and 7%, respectively.

Conclusion: The surgical management of liver hydatid disease is still carrying a high morbidity, mortality and recurrence rates, radical surgery when feasible, is associated with better results regarding length of hospital stay, morbidity and mortality than conservative surgery. The best surgical procedure to be employed is yet to be determined. The surgical option should be tailored to the case and according to the surgeon's experience and setup.

Keywords: Hydatid cyst, Intra-Biliary rupture, pre-operative complications.

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Introduction

Hydatid disease is frequently found in endemic areas such as countries around the Mediterranean, Australia, and South America. [1, 2]

However, due to increasing and ease of travel and immigration, the disease is emerging in non endemic areas as well. [1, 2]

Humans are affected when they become accidentally intermediate hosts of the parasite Echinococcus Granulosus. [1,2]

Hydatid cyst develops in the liver and mostly in the right liver. [1, 3]

Until now, the most effective single treatment of liver hydatid cyst remains surgical despite the increasing development in drug therapy, percutaneous and endoscopic measures. [1, 4- 6]

There is still controversy regarding the best surgical option, the procedures frequently proposed by surgeons include drainage whether external or internal, omentoplasty, pericystectomy and liver resection. [1- 4]

Emerging minimally invasive surgery and percutaneous techniques are now available but cannot be applied to all patients or all cysts and there is not enough data to support their benefit over the standard surgical approach. [7- 9]

The aim of this retrospective study is to review our experience of surgical management of hydatid cyst of the liver between 1973 and 1999.

Patients and Methods

Between January 1973 and December 1999, the files of patients with liver hydatid cysts managed surgically were retrospectively reviewed.

The patients were managed by several surgeons of the same department of a teaching hospital.

Analysis focused on the demographic data, the clinical presentation, the different investigations and their results, the surgical procedures performed and the post-operative mortality, morbidity and hospital stay.

There were 169 patients, 112 females and 57 males, the mean age was 39.2±17.9 years with a range from 5 to 85 years; age distribution of the patients is illustrated in Table (1).

Table 1: Age distribution of our serial study.

Age (years)	*No. of patients*	*%*
1-10	*8*	*4.7*
11-20	*27*	*15.9*
21-30	*40*	*23.6*
31-40	*32*	*18.9*
41-50	*29*	*17*
51-60	*16*	*9.46*
61-70	*9*	*5.3*
71-85	*8*	*4.7*

Organs involved by the disease other than the liver are predominated by the lungs and the peritoneum Table (2).

All the patients had liver function tests, most of them had Casoni test or complement fixation test before 1984, however, after that Echinococcus titer was determined, again the isotopic liver scan and plain X-ray of the abdomen were replaced by abdominal ultrasound and CT scans after 1980.

Most patients were symptomatic; the commonest clinical presentations of liver hydatid cyst are summarized in Table 3.

Patients who presented to surgeons with symptoms or complications of hydatid liver cysts or referred following failure of medical treatment were subjected to either conservative surgery (external or internal drainage, omentoplasty and marsupialization) or to radical surgery (total pericystectomy and liver resection).

Table 2: Concomitant organ involvement.

Organ	*No. of patients*	*%*
Lungs	*13*	*7.6*
Spleen	*6*	*3.5*
Kidney	*9*	*5.3*
Peritoneum	*8*	*4.7*
Pelvis	*4*	*2.36*
Pancreas	*2*	*1.2*
Abdominal wall	*1*	*0.6*
Brain	*1*	*0.6*
Stomach	*1*	*0.6*
Total	*45*	*26.6*

Table 3: Clinical manifestations.

Manifestation	*No. of patients*	*%*
Upper Abdominal Pain	*50*	*29.58*
Hepatomegaly	*104*	*61.5*
Upper abdominal mass	*44*	*26*
Jaundice	*27*	*15.9*
History of jaundice	*19*	*11.2*
Fever	*28*	*16.5*
Weight loss	*11*	*6*

The right liver was the predominant location for the disease, it was involved in 115(68%) cases, the left liver was involved in 37(21.8%) cases and location was bilateral in 38(22.5%) cases.

The cysts were multiple in the liver in 30(17.7%) cases and huge (diameter≥10cm) in 23 (13.6%) cases. Calcification was demonstrated in 9(5.3%) cases.

The commonest pre-operative complication was intra-biliary rupture (34%) (Table 4).

The surgical procedures performed are listed in Table (5) the commonest procedures performed were external drainage (45.5%), and omentoplasty (24.5%), several other procedures were performed; this reflects the variety of surgical procedures adopted and the lack of a standard effective treatment.

Other types of surgical procedures were performed in our series and are listed in Table (6).

A software of the statistical program SPSS version 9 was used, particularly the t-test for independent samples to compare the results of conservative and radical surgery as well as the results of the two periods of the study (1973-1984 and 1985-1999).

Table 4: Pre-operative complications.

Complications	*No. of Patients*	*%*
Occult intrabiliary rupture with suppuration	*24*	*14.2*
Frank intrabiliary rupture with daughter cyst in CBD	*33*	*19.5*
Intra-peritoneal rupture	*2*	*1.2*
Rupture with subphrenic collection	*1*	*0.6*
Bilio-bronchial fistula	*2*	*1.2*
Budd-Chiari syndrome	*1*	*0.6*
Acute pancreatitis	*1*	*0.6*
Total	*64*	*37.8*

Table 5: Surgical procedures.

Type of Surgical Procedure	*No. of Patients*	*%*
External drainage	*76*	*44.9*
Omentoplasty	*42*	*24.8*
Total pericystectomy	*18*	*10.6*
Internal drainage	*17*	*10*
Liver resection	*8*	*4.7*
Obliteration of cavity	*7*	*4.1*
Marsupialization	*1*	*0.6*
Total	*169*	

Table 6: Associated surgical procedures.

Type of Procedure	*No. of Patients*	*%*
Cholecystectomy	*17*	*10*
CBD exploration	*10*	*6*
Splenectomy	*2*	*1.2*
Vertical banded gastroplasty	*1*	*0.6*
Right adrenalectomy	*1*	*0.6*
Transcystic biliary drainage	*1*	*0.6*
Total	*32*	*18.9*

Results

Intra-operative complications were encountered in 4% and are detailed in Table (7) while post-operative complications were much more common and variable (53.8%) and were headed by biliary fistula (16%), followed by septic complications and wound complications Table (8).

Table 7: Intra-operative complications.

Type of complication	*No. of patients*	*%*
Anaphylactic shock	*2*	*1.2*
Hepatic vein injury	*2*	*1.2*
Diaphragmatic injury	*1*	*0.6*
Urinary bladder injury	*1*	*0.6*
Portal vein injury	*1*	*0.6*
Total	*7*	*4.1*

Table 8: Post-operative complications.

Type of post-op. complication	*No. of patients*	*%*
Infection of residual cavity	*19*	*11.2*
Biliary fistula	*26*	*15.4*
Septicemia/septic shock	*7*	*4*
Jaundice	*3*	*1.7*
Wound infection	*17*	*10*
Bleeding inside the residual cavity	*1*	*0.6*
Hemobilia	*1*	*0.6*
Deep vein thrombosis	*2*	*1.2*
Fecal fistula	*1*	*0.6*
CBD Structure	*1*	*0.6*
Arrythmia	*1*	*0.6*
Chest complications	*12*	*7*
Total	*91*	*53.8*

There were 2 intra-operative deaths, one due to anaphylactic shock and the other due to a rupture of a right hepatic vein once a neighboring cyst was evacuated and the patient exanguinated and died.

Post-operatively 9 other patients died of several causes Table (9).

Table 9: Surgical mortality.

Cause	*No. of patients*	*%*
Liver failure	*2*	*1.2*
Respiratory failure	*3*	*1.7*
Septic shock	*3*	*1.7*
Anaphylactic shock	*1*	*0.6*
Hepatic vein injury	*1*	*0.6*
Myocardial Infarction	*1*	*0.6*
Total	*11*	*6.5*

Hospital stay, morbidity and mortality were significantly higher in the group of patients who underwent conservative surgery Table (10).

The mean hospital stay was 21±13.5 days with a range from 1-60 days, comparing the hospital stay before 1984 (27±11.5days) and after 1984(14.9±12 days) there was a significant decrease of hospital stay in the later period ($P<0.001$).

Morbidity was also significantly higher in the period before 1984, while there was no significant difference in the rate of mortality between the two periods Table (11).
Our mean follow-up was 12 years with a range from 5-32 years.

Table 10: Comparison of results of conservative and radical surgery.

Type of surgery	*Number of patients*	*Mean hospital stay± (Days)*	*Morbidity*	*Mortality*
Conservative surgery	140	22.5±13.7	88 cases	9 cases
Radical surgery	27	10.4±4.3	5 cases	0

Hospital stay: t=4.6,df=165, P<0,001.
Morbidity: t=4, df= 164, P<0.001.
Mortality: t=1.4, df=165, P=0.004.

Table 11: Comparison of results of the two periods of the study.

Period	**Number of patients**	**Hospital stay (days)**	**Morbidity**	**Mortality**
1973-1984	75	27±11.5	62	4
1985-1999	94	14.9±12	27	7

Hospital stay: t=6.7, df=164, P<0.001.
Morbidity: t=8.2,df=167, P<0.001.
Mortality: t=0.5, df=167,P=0.08.

Discussion

Management of liver hydatid cyst in recent years is variable; it may range from medical therapy to radical liver surgery. [1, 4]

Surgical management of hydatid cyst of the liver requires an appreciation of the exact pathology in the individual case so that the appropriate operative procedure can be undertaken.

The size, location, number, and type of complication of liver hydatid cyst are important factors to determine which surgical procedure is to be used. [10]

It is also important to consider the experience of the surgeon as well as his setup before deciding the type of operative procedure.

The liver is the commonest organ involved by hydatid disease and particularly the right liver, females are more affected than males, in our series 112 and 57, respectively, 107 of our patients were ≤40 years of age, and this conforms to other published series. [11- 15]

The most common pre-operative complication of our series was biliary communication 57 cases (34%), this appears higher than what is reported in the literature, [16- 22] this is because we are including even occult biliary communications and not reporting only the frank biliary rupture.

Other pre-operative complications were encountered; some of these are very rare such as bilio-bronchial fistula (2 cases) and Budd-Chiari syndrom (1 case).

The surgical procedures performed in our series as stated in Table (5) are various and included 7 procedures ranging from conservative to radical procedures, this is understandable because patient presentations and surgeons' experience were different.

The majority of our procedures were conservative, 142 cases (84.6%) while only 27 (14.4%) patients underwent radical procedures in the form of total pericystectomy (19 cases) and liver resections (8 cases). Most of the radical procedures were performed for either peripheral cysts, pedunculated cyst or for cysts occupying a whole anatomic liver area.

Our results support radical surgery particularly regarding length of hospital stay, mortality and morbidity rate. It was clear that in our series, the group who underwent radical surgery was selected and this type of surgery was not possible in all cases.

Whether to perform a conservative or radical procedure is a matter of controversy, there are publications that support radical and claim a better outcome with regard to hospital stay, mortality, morbidity and recurrence rate. [12, 15, 23]

Other publications support conservative procedures as dictated by the benign nature of the disease and this is clear now by the progress made by the minimally invasive procedures.

We definitely need more prospective randomized trials to provide a high level of evidence with regard to the use of conservative or radical procedures. [24]

Our mortality, morbidity and recurrence rate were 6.5%, 53.8%, and 7%, respectively, apart from the recurrence rate which parallels other series, [11, 25] our mortality and morbidity rates appear higher than what is reported in the literature, [11, 14, 15] our explanation to this may be that a good number of our patients presented with complications (64 patients, 37.8%), as well as the lack of standardization of surgical procedures among managing surgeons.

Our observation demonstrated better results obtained in the last decade than the previous two decades of the study, there was a significant decrease in the length of hospital stay ($p<0.001$) and morbidity rate ($p<0.001$).

In conclusion, surgical management of hydatid liver disease is still having a high morbidity, mortality and recurrence rate. Radical surgery in our experience is associated with shorter hospital stay, decreased morbidity and mortality rate. What is the best procedure to be performed? Is there really a difficult question to be answered at the time being, we need more randomized controlled trials to have a high level of evidence for the best type of surgical management.

We would like to emphasize again that every case of hydatid cyst should be considered separately and management should be tailored to each case taking into consideration that the best results are obtained with the most experienced surgeon.

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