

# Hydatid Cyst Disease: A Series Of 226 Cases\*

226 VAK'ALIKHIDA TIK KIST HASTALIĞI SERİSİ

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## SUMMARY

*Hydatid disease is a serious health problem in Turkey. 226 patients with hydatid disease were admitted to Surgical Department of Erciyes University and Şişli Etfal Hospital (Istanbul) between 1978 and 1990 and reviewed retrospectively. 102 patients (45.1 %) were male and 124 (54.9 %) female. In the patients with hydatid cyst the most frequent symptoms were right upper abdominal pain (66 %) were examined with ultrasonography which has diagnostic value of 94 %. Preoperative complications were infection of cyst (7 %), intrabiliary rupture (3.5 %) and anaphylactic shock (0.4 %). All patients were operated on by using various surgical techniques; omentoplasty (101), external drainage of residual cavity (64), marsupialization (25), capitonnage (15), introflexión (10), pericystectomy (6), and hepatic resection (5).*

*Main postoperative complications were wound infection (12 %) and biliary fistula (2.6 %). Total mortality rate was 1.8 % in this series.*

**KeyWords:** Hepatic cyst disease, Omentoplasty

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## ÖZET

*Kist hidatik hastalığı memleketimiz için önemli bir problemdir. 1978 ile 1990 yılları arasında Erciyes Üniversitesi Tıp Fakültesi Genel Cerrahi Anabilim Dalına müracaat eden kist hidatikli 226 hasta retrospektif olarak incelenmiştir. Hastaların 102'si (%45.1) erkek, 124'ü (%54.9) kadındır. Hastalarda en sık tespit edilen semptom karın sağ üst kadranda ağrıdır. Fizik muayenede hastaların %43.8'inde hepatomegali, %39'unda ise palpabl kitle bulunmuştur. 167 hastaya (%73.9), %94 doğruluk oranı ile ultrasonografi yapılmıştır. Preoperatif komplikasyon olarak kistin enfeksiyonu vakaların %7'sinde, safra yollarına ruptür %3.5'inde görülmüştür. Operatif teknik olarak hastaların 101'ine omentoplasti, 64'üne rezidüel kavitenin ekstemal drenajı, 25'ine marsüpiyalizasyon, 15'ine introfeksiyon, 6'sına perikistektomi, 5'ine da hepatic rezeksiyon yapılmıştır. En sık görülen postoperatif komplikasyonlar yara enfeksiyonu (%12) ve bilier fistül (%2.6) olup, total mortalité oranı %1.8 olarak bulunmuştur.*

**Anahtar Kelimeler:** Karaciğer kist hidatiği, Omentoplasti.

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## INTRODUCTION

**Hydatid disease of the liver remains an important worldwide health problem, including Turkey, which is endemic in many sheep-raising areas. As a result of the ease of travel and migration, the disease is now being encountered in immigrant adults in many parts of the world in which it is not endemic (1,2). Hydatid cyst of human liver occur when man**

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becomes an accidental intermediate host for the larval form of *Echinococcus granulosus*, which lives as an adult worm in the canine intestine. The liver is the most common site infected in the adult. About one-third of patients with liver hydatid cysts have other sites involved, including peritoneum, lungs, spleen, brain, bone and thyroid.

In this study, the various surgical techniques were compared with regard to postoperative complications, hospital stay, return to activity and convalescence time. Herein, we discuss our experience over a 12 year period.

### CLINICAL MATERIAL AND FINDINGS

During the years 1978-1990, 226 patients with hepatic hydatid disease underwent surgical treatment at the Surgical Department of Erciyes University and Sisli Etfal Hospital (Istanbul). Patients' ages ranged from 15 to 75 (median 49) years, and the male: female ratio was 1:1.2. 102 patients (45.1 %) were male and 124 (54.9 %) female. The Student's t test was used to assess the significance of the results.

#### Symptoms And Signs

Symptoms arise from local pressure, leakage, infection or rupture into the biliary tree. Right upper abdominal pain, hepatic enlargement, palpabl mass were the most common signs of the disease. Pain may result from stretching of the liver capsule or leakage of contents. Leakage may also produce urticaria or anaphylaxis when cyst fluid is absorbed

Table 1. Clinical Findings in 226 Patients With Hydatid Cysts Of The Liver

Clinical findings	Incidence	
	n	(%)
Right upper abdominal pain	149	66
Hepatic enlargement	99	43.8
Palpabl mass	88	39
Anorexia, wight loss	57	25
Nausea and vomiting	48	21
Fever and chills	27	12
Dispnea	23	10
Jaundice	7	3.1
Persistent cough	5	2.2
Urticaria and anaphylaxis	1	0.4

into the blood stream. The duration of symptoms and signs ranged from 2 weeks to 8 years. The most common clinical findings are shown in Table 1.

### Diagnosis of The Disease

The diagnosis of hydatid disease of the liver is usually easily made when a liver cyst is found in a patient from an endemic area. Calcification of the cyst wall is commonly seen on plain X-ray films. Ultrasound and CT scanning may show the characteristic picture of a cyst containing multiple daughter cysts. Serological studies also provide useful verification.

In this study twentyeight patients had radionuclide scanning of the liver and hepatic lesions were confirmed in 100 % patients. Ultrasonographic examination was used 167 patients and demonstrated hepatic cysts in 94 % (Tabic 2). Ultrasound and CT scanning were accurate in locating the site, size and number of intrahepatic cysts, together with contained daughter cysts. The Casoni's skin test being positive in 42 out of 62 patients tested (now no longer used).

Preoperative complications were infection of cyst, intrabiliary rupture and anaphylactic schock (Table 3).

#### Operative Findings

Cysts were localized in the left lobe in 24 % of patients, and in the right lobe in 76 % of patients. One hundred fourty seven (65 %) patients had single cysts, 38 (16.8 %) patients had 2 cysts, 27 (12

Table 2. Diagnostic Procedures And Results

Diagnostic procedur	n	Positive result	%
Ultrasound examination	167	157	94
Plain X-ray	226	84	37.1
Casoni's skin test	62	42	67.7
Weinberg test	56	31	55.4
Radionuclide scan	36	36	100

Table 3. Preoperative Complications Of The Liver Cysts

Complication	n'	%
Infection of cyst	16	7
Rupture into biliary tract	8	3.5
Intraperitoneal rupture	1	0.4
Total	25	11

%) patients had 3 cysts and 14. (6.2 %) patients had 4 or more cysts.

The patients are best analysed in two groups: (1) uncomplicated cysts, 201 patients (89 %); (2) complicated cysts, 25 patients (11 %).

### Uncomplicated Cysts

In 87 of the 201 patients with uncomplicated cysts, omentoplasty was performed (Table 4). In this group 33 patients developed various complications (Table 5).

**Table 4. Management Of The Patients With Uncomplicated Cysts (n = 201)**

Treatment	%
Omentoplasty	87
External drainage of residual cavity	64
Marsupialization	15
Capitonnage	15
Introflexión	10
Peri cystectomy	6
Hepatic resection	4

### Complicated Cysts

In 14 of the 25 patients with complicated cyste omentoplasty and 10 patients with marsupialization was performed (Table 6). In this group, 11 patients developed various complications (Table 7).

Mean postoperative hospital stay and return to daily activity, duration of drainage, which are an important indications of postoperative morbidity. They were significantly higher in complicated group than uncomplicated group (Table 8 and 9).

**Table 5. Postoperative Complications In Patients With Uncomplicated Cysts (n = 201]**

Complication	n	%
Wound infection	24	12
Infection of residual cavity	3	15
Biliary fistula	3	15
Pulmonary infection	3	15
Total	33	16.4

**Table 6. Management Of Patients With Complicated Cysts (n = 25)**

Complication and surgical procedures	
Intrabiliary rupture (8 patients)	Omentoplasty 4-T tube (5) Omentoplasty + Colectomy 4- Cholodocoduodenostomy (2) Omentoplasty + Colectomy 4- Sphincteroplasty (0)
Infection of cysts (16 patients)	Marsupialization (10) Omentoplasty (6)
Intraperitoneal rupture (1 patient)	Hepatic resection (0)

**Table 7. Postoperative Complications In Patients With Complicated Cysts (n = 25)**

Complication	n	%
Wound infection	3	12
Biliary fistula	3	12
Infection of residual cavity	2	8
Pulmonary infection	2	8
Intraabdominal abscess	1	4
Total	11	44

**Table 8. Mean Postoperative Hospital Stay And Return To Daily Activity**

Group	Postoperative stay (days)	Return to activity (days)
Uncomplicated (n = 201)	12	61
Complicated (n = 25)	23	94
	p < 0.001	p < 0.001

The mortality rate was 18 % in this series. The cause of death were myocardial infarctus (2), renal failure (2) in these patients. The follow-up period ranged from 3 months to 5 years (average 2.8 years). No patient underwent late surgery for reason related to hydatid diseases.

## DISCUSSION

Hydatid cyst disease is a serious health problem in Turkey. The principles of surgical management for hepatic echinococcosis include 1) neutralization of the parasite, 2) evacuation of the cyst and removal of the germinal lining, and 3) management of the residual cavity.

Complete surgical removal is the ideal treatment of the disease, and can be accomplished by removal of all germinal lining, daughter cysts, fluid and scolices leaving the pericyst; or by resection of the intact cyst including pericyst (3).

Numerous solutions such as, 15-20 percent hypertonic saline solution, 2 percent formalin, 0.5 percent silver nitrate, 10 percent aqueous povidone iodine and formalin have been employed as scolicidal agents. There is debate not only as to most effective scolicide but also about the value of scolicidal agents. There is debate not only as to most effective scolicide but also about the value of scolicidal injection before cyst evacuation (4,5). Saidi has developed a cryogenic cone to obtain entry to and evacuation of the cyst without fear of spillage into the peritoneal cavity (5). We have no experience of this method or of the suction cone devised by Aarons and Kune (6). The use of scolicidal agents has a long tradition but there is little evidence to justify their use and they are probably of negligible value in multivesicular cysts (4). Perhaps the most important aspect of the manoeuvre is partial decompression of the cyst contents which are under tension. In recent years, 0.5 per cent silver nitrate has become the solution of choice for many surgeons, including us.

Some reports have described the successful management of hydatid disease using benzimidazol compounds (mebendazole, albendazole) in small numbers of hydatid disease using benzimidazol compounds (mebendazole, albendazole) in small numbers of patients (7-12). Because of the general results are not reliable medical treatment is not curative at present. Thus, until further clinical data are available, these drugs should be reserved for patients who will not tolerate operation and, perhaps, for those with the more virulent form of al-

veolar hydatid disease of the liver caused by *Echinococcus multilocularis*.

A wide variety of techniques have been proposed to deal with the residual cavity after evacuation. Practised alternatives include: hepatic resection (2,13); Pericystectomy (14,15); Omentoplasty (1,16,17); capitonnage (18); cystojejunostomy (19); marsupialization; external drainage (20); Introflexión (21) and finally primary closure after saline instillation (22).

In selecting a particular surgical technique, the surgeon should be guided by the size and location of the cyst and the complications it has already caused.

Whenever possible, we managed the residual cyst cavity by omentoplasty. This technique has been shown to reduce hospital stay and lower the incidence of biliary fistula compared with marsupialization or tube drainage (16). Our findings confirm these satisfactory results. Omentoplasty was performed in 87 patient. There seems advantage of omentoplasty to obliterate the cavities, as infection is quite uncommon. However, in some patients, the omentum may not available because of a previous operation or the technique can not be performed because of the location of the cyst. Besides, omentoplasty itself can cause adhesions; consequently, future operations upon the liver may be very difficult.

Also, Introflexión is a simple and safe method for the treatment of the remaining cavity. It may be easily applied in most of the patients. This technique not only prevents dead space and its possible potential complications, but also covers the inner surface of the cystic cavity by several layers of peritoneum, which has been demonstrated to have a high resorptive capacity (23). The omentoplasty resembles introflexión in that it enables the omentum to fill the cavity with its absorptive capacity; however, introflexión is most always applicable, where as omentoplasty is either difficult or impossible, at least in some instances (9).

In the capitonnage method, the cystic walls are approximated by sutures to obliterate the cavity. Adjacent intrahepatic vessels may be injured; moreover, approximation may be very difficult or impossible in large cavities.

Marsupialization of the residual cavity has not performed in our clinic for ten years, because its results have been unsatisfactory.

Because of the risk of spillage of infective material into the peritoneal cavity leading to recur-

rent disease, some authors have favoured resection (2,13), but this approach carries a significant operative risk and is not applicable in many cases (3). Total cystectomy may be preferred for cysts located peripherally. Hepatic lobectomy and pericystectomy are, in our opinion, too radical and extensive procedures for a benign lesion.

Intrabiliary rupture is the commonest complication of hepatic hydatid cysts (4,24). The pressure inside these cysts is always higher than the pressure in the biliary tract and after rupture the cyst elements pass into the biliary ducts. The liver cyst material does not die in the biliary channels and may cause obstruction and cholangitis at any stage of their life cycle (25). Eight patients in this series (3.5 per cent) had cyst associated with cholangitis. The principles of operative management in these cases were to treat the mother cyst and to clear the biliary tree of any hydatid material. In this case intraoperative diagnosis is very important and there are biliary tree of any hydatid material. In this case intraoperative diagnosis is very important and there are two stages of the operation. The first is the surgical treatment of the cyst. The other is the exploration and drainage of the common bile duct. From the point of view of the intrabiliary rupture any technique can be used for the cyst cavity but the removal of all the cystic elements is important. Drainage of the dilated common bile duct may be essential to avoid death from suppurative cholangitis or septic shock (25-28). A drainage procedure, T tube (28-30), sphincterotomy (31), choledochoduodenostomy or cystojejunostomy (20,30) should be added if there is any doubt about free biliary drainage.

In many large series of echinococcal liver cysts, operative mortality has ranged from 2 to 4 per cent, but has recently been reported to be as high as 6.3 per cent (13,16). In our series, the mortality rate was 1 %.

At the result of this study; omentoplasty was found to be superior to the other procedures from the point of morbidity, hospital stay and duration of drainage. It can be thought omentum may absorb the fluid oozing the cavity. We recommend omentoplasty, management of the liver hydatid cysts.

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