

# Surgical Treatment in Liver Cyst Hydatid Cases: Analysis of 276 Patients

## Karaciğer Kist Hidatik Olgularında Cerrahi Tedavi: 276 Hastanın Analizi

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### Abstract

**Purpose:** Hepatic hydatid disease is still a significant public health problem in Turkey. It is a parasitic infection, which liver is the most frequently infected organ. Surgical treatment has been controversial for a long time.

**Material and Methods:** Patients, which has been undergone surgical therapies with the diagnosis of hepatic hydatid disease were retrospectively analyzed during 15 years period between January 1986 and December 2000 at the Department of General Surgery, Erciyes University Medical School.

**Results:** Overall 276 patients with hepatic hydatid disease were included in the study. Of these, 152 (%55) were male and 124 (%45) were female. The most common complaints were right upper quadrant or epigastric pain and abdominal fullness. Right upper quadrant or epigastric tenderness and hepatomegaly were the most common findings obtained from the physical examination. Of the patients, 17 (%6.4) patients with USG and 3(2.4%) with CT showed miscorrelation with the surgical exploratory findings. As the surgical treatment, cystdrainage with partial cystectomy was the most commonly procedure in 196(%71) patients. Twenty patients (%7.2) had complication postoperatively and biliary fistula was the most common complication (%3.2).

**Conclusion:** Although the improvement in conventional treatment modalities, surgical therapy is still the main treatment option for hepatic hydatid disease.

Key words: **Hydatid cyst; Echinococcosis, Hepatic; Surgical Procedures, Operative.**

### Özet

**Amaç:** Türkiye’de hala önemli bir halk sağlığı sorunu olan hidatik kist hastalığı genellikle enfekte köpeklerden insanlara bulaşan paraziter bir hastalıktır ve en sık tutulan organ karaciğerdir. Cerrahi tedavi yöntemleri uzun yıllardır tartışma konusu olmuştur.

**Gereç ve Yöntemler:** Erciyes Üniversitesi Tıp Fakültesi Genel Cerrahi Anabilim Dalında Ocak-1986 ile Aralık-2000 tarihleri arasındaki 15 yıllık dönemde karaciğer kist hidatik tanısı ile ameliyat edilen hastalar retrospektif olarak değerlendirildi.

**Bulgular:** Ameliyat edilen 276 karaciğer kist hidatikli hastanın 152’i kadın (%55) ve 124’ü erkek (%45) idi. Hastalarda en sık rastlanan semptomlar sağ hipokondriak ve epigastrik ağrı ile abdominal dolgunluk iken, fizik muayenede en sık gözlenen bulgular sağ hipokondriak ve epigastrik hassasiyet ve hepatomegali idi. Preoperatif dönemde abdominal ultrasonografi yapılan 265 hastanın 17’sinde (%6.4) ve bilgisayarlı tomografi yapılan 123 hastanın 3’ünde (%2.4) radyoloji ile cerrahi eksplorasyon bulguları arasında uyumsuzluk tespit edildi. Cerrahi tedavi olarak en sık olarak uygulanan ameliyat 196 hasta (%71) ile kist drenajı + parsiyel kistektomi idi. Postoperatif dönemde 20 hastada (% 7.2) komplikasyon gelişti, 9 hastada (%3.2) gözlenen safra fistülü en sık karşılaşılan komplikasyon idi.

**Sonuç:** Son yıllarda özellikle seçilmiş vakalarda uygulanan konvansiyonel tedavi yöntemlerindeki gelişmelere rağmen, cerrahi karaciğer kist hidatiğinin ana tedavi metodu olma özelliğini korumaktadır.

Anahtar kelimeler: **Hidatik kist; Ekinokok enfeksiyonu, Karaciğer; Cerrahi işlemler.**

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## Introduction

Cyst Hydatid disease caused by *Echinococcus Granulosus* is a parasitary disease transmitted from excrement of infected dogs. Like in many regions of the world, the disease creates a major community health issue specifically in Middle East and Mediterranean countries including Turkey. The incidence of disease in Turkey is known to be between 87-400 out of 100.000 people (1,2).

The disease is most frequently localized in liver (50-70%) and lungs (20-30%). Approximately 80% of the liver cyst hydatics are single and located on right lobe. They have the potential to grow to 30 cm or more in diameter when their development is completed. Its symptoms and findings depend on the organ involvement, localization place, the pressure exerted on adjacent tissue, complications and immune reactions created. Furthermore about 40-60% of patients have no symptom (3).

Liver cyst hydatid disease may cause complications such as allergic reactions, infections and rupture that have high morbidity and mortality along with some pressure symptoms. Today in medical treatment of liver cysts hydatid disease, percutaneous drainage and surgical treatment methods are most widely used. Improvements in medical treatments and successful results in percutaneous drainage are reported (4, 5). Nevertheless in liver cyst hydatid treatment, surgical treatment is still the most reputable treatment method available (6,7).

## Materials and Methods

Records of 276 patients on whom surgery is performed due to liver cyst hydatid disease between January 1986-December 2000 in Erciyes University Medical Faculty, Department of General Surgery, were evaluated retrospectively. Cases with cyst hydatid disease in other organs along with liver are not included under the study. Age, gender, frequently seen symptoms, physical examination findings, radiological examinations carried out preoperative, number of cysts in liver and their positions, surgical procedures applied, postoperative morbidity and mortality rates were evaluated.

## Results

152 of 276 subjects who were operated due to liver cyst hydatid were women (55%), 124 were men (45%) and mean age was 42.1 (18-77). The most frequently observed symptom in patients was pain in right hypochondriac zone and epigastria (38.4%) and the most frequently seen physical examination finding was hepatomegaly (36.9%).

Distribution of symptoms of liver cyst hydatid case series is given in Table I.

**Table I.** Distribution of symptoms of liver cyst case series (n:276).

Symptoms	N	%
Pain	106	38.4
Hepatomegaly	102	36.9
Abdominal fullnees	69	25
Abdominal hassasiyet	66	23.9
Nause and vomiting	51	18.4
Icter	36	13

Abdominal ultrasonography (USG) and computerised tomography (CT) were used for establishing the diagnosis. There was disparity between radiological findings of 17 of 265 patients who were subjected to USG (6.4%) and 3 of 123 patients who were subjected to CT (2.4%) and surgical exploration in terms of size, number and localization of cysts. In 112 of the patients (40.5%) both USG and CT were applied. Especially CT application was routinely used in the last 5 years.

195 of the cysts (70.5%) were localized in the right lobe, 47 (17) in left lobe, 34 (12.5%) bilaterally. In 187 patients (67.5%), there was solitary single cyst, in 89 patients (32.5%) there were multiple cysts. Most frequently applied surgical procedures were cyst drainage + partial cystectomy (applied to 196 patients, 71%) and cyst drainage + partial cystectomy + vacuum capitonnage (applied to 51 patient, 18.4%) (Table II).

In 23 of the patients (8.3%) cyst was perforated in abdominal cavity and in 45 patients (16.3%) there was fistula between cyst cavity and bile routes. In patients where intrabilier rupture was detected, in addition to the surgical operation made for cyst, primary suture was placed on fistula entry with 2/0 silk sutures and then coledoc exploration was made. In 40 of those patients (14.5%), T-tube was placed and 5 patients (2%) were subjected to choledochoduodenostomy.

As of January 1994, all patients were administered 10 mg/kg albendazol (Andazol®, Biofarma, İstanbul, Turkey) routinely 1 week before the operation and 3 months after the operation.

**Table II.** Distribution of surgical procedures applied to liver cyst hydatid case series (n: 276)

Surgery	N	%
Cyst drainage + partial cystectomy	196	71.1
Cyst drainage+partial cystectomy+vacuum capitonnage	51	18.4
Laparoscopic cyst drainage+vacuum capitonnage	10	3.6
Cyst drainage	9	3.3
Cyst drainage+omentopexy	8	2.9
Hepatectomy	2	0.7
Total	276	100

There was no mortality in postoperative period. Postoperative morbidity rate was 7.2% (20 patients). Most frequently observed complications were bile fistula (9 cases, 3.2%) and intrabdominal abscess (6 cases, 2.1%) (Table III).

Cases with intraabdominal abscess were treated with percutaneous drainage. In 6 of the cases with bile fistula, healing has been observed following sphincterotomy with ERCP and 3 cases were re-taken under surgery. Sphincteroplasty + primary suture was applied on the fistula in the cyst layer. These three cases taken under operation were operated between 1986-1992 where ERCP was not being used frequently.

**Table III.** Distribution of complications observed after surgical procedure applied to liver cyst hydatid case series (n: 276).

Complications	N	%
Bile fistula	9	3.2
Intraabdominal abscess	6	2.1
Wount entection	4	1.5
Brid ileus	1	0.4
Total	20	7.2

## Discussion

The most widely seen liver cyst in the world is cyst hydatid disease caused by *echinococcus granulosus*. Since hydatid cysts have good capsule, they do not give systemic symptoms such as fever, fatigue and loss of weight. Symptoms generally arise as cysts grow bigger. As cysts grow, depending on the tension of the cyst and pressure on surrounding structures pain in right hypochondria and epigastria, fullness feeling in the stomach, nausea-vomiting, loss of appetite and weight-loss complaints have arisen (6). In our series, stomach pain (38.4%), abdominal fullness (25%) and nausea-vomiting (18.4%) are the most frequently seen symptoms.

In liver cyst hydatid disease, main complications are infection, rupture, anaphylaxis and biliary obstruction. In approximately 5-25% of the subjects, as cysts grew, they enter to bile ducts and female vesicles and germinative membrane can fall into bile ducts or cyst may apply pressure on bile ducts and in this way cholestatic hepatitis can evolve (8-11). In 23 of the subjects (8.3%) cyst was perforated in abdominal cavity and in 45 cases (16.3%) there was fistula in cyst cavity and bile ducts. In 36 of these cases where there are intrabiliary fistula (13%) hepatitis was present clinically.

In diagnosis of cyst hydatid disease, radiological imaging methods and serological tests are used. Even though diagnosis can be made based on serological tests, since no information is given on the size of the cyst and localization and as it give inaccurate positive results from time to time, it is mostly used in follow up period. In the series presented serological tests were not used in the diagnosis. Imaging methods are the most frequently applied methods. USG, CT and MRI are the most applied methods for this purpose. Ease of application and due to being an economical choice, USG is widely used. USG shows 93-98% sensitivity to cyst hydatid, 88-90% specificity however in presence of infection typical symptoms can be lost. Accurate diagnosis rate with CT is equal to USG and also it helps to evaluate localization of the cyst, depth and volume of it in a better way (12, 13). In our series, 96% of the patients were applied USG and 45% of them were applied CT. In 6.4% of the patients to whom USG applied and in 2.4% of the patients to whom CT was applied, it was seen that some surgical exploration findings like radiological symptoms, number of cysts, localization, size were not compatible.

In the treatment of liver cyst hydatid disease medical treatment, percutaneous drainage methods and surgical treatments are being applied. Medical treatment is preferred in patients that cannot tolerate surgery or who are accepted as inoperable due to disseminated hydatidosis however no definite treatment is provided (4). Percutaneous drainage is a treatment method carried out on selected cases and experienced centers (5, 14). In Yorgancı and Sayek's (14) study it was emphasized that in simpler cyst hydatid cases like type 1 and type 2 percutaneous treatment can be used. Surgical treatment can be performed in two different ways such as laparoscopic approach or classic open surgery technique. After 1990s laparoscopic surgical interventions has rapidly developed in liver cyst hydatid treatment as an alternative method. Central or posterior located cysts are not compatible for laparoscopic treatment. To avoid spreading to peritonea which is a major problem of cyst hydatid surgeries, as aspirators having rotatory blades has been developed, success in liver hydatid cyst treatments has been increased laparoscopically (15, 16). In the series presented 10 subjects (3.6%) were applied laparoscopic cyst drainage + vacuum capitonnage.

In surgical treatment of liver cyst hydatid with open methods there are two stages. First stage is disposal of cyst content and the second stage is closing the rest of the cyst cavity. According to this, firstly cyst content is discharged with a closed system aspirator and then cavity is irrigated with a skolosidal agent. Afterwards cyst cavity may be downsized with a method such as introflexion omentoplasti or capitonnage or can be left for free drainage (7, 17, 18). Partial cystectomy and opening to peritoneum is used more in the recent years. It is claimed that opening to peritoneum does not increase the risk of recurrence and not cause adhesions as feared and that can be applied safely after making bile duct inlet control (19). In the series presented, 196 patients (71.1%) was applied cyst drainage + partial cystectomy.

Method of filling cyst cavity with omentum majus has been almost abandoned today. Because calcium is accumulated inside the omentum in time it gives the appearance of foreign particle. Bengisu and his colleagues (20) monitored patients for approximately 36 months in

the study based on a wide clinical series and reported that in most of the cases omentum has left the cavity. It is also stated that omentum that does not leave the cavity closes the opening where cystotomy is made and caused liquid to collect in the cavity and that is perceived as recurring cyst hydatid in the follow up period (20). In the series presented in the period between 1986-1991, cyst drainage + omentopexy was made to 8 cases (2.9%).

As it is a benign disease, radical surgery is not recommended other than specific conditions such as total cystectomy and hepatectomy. Total cystectomy should be preferred in cysts with peripheral located and peduncle. Hepatectomy should be preferred in small multiple cysts localized on a lobe and in alveolar cyst hydatid cases (6). In the series presented two patients (0.7%) was subjected to hepatectomy with multiple cyst hydatid diagnosis located on left lobe.

The best way to struggle with hydatid cyst disease is to protect oneself against the disease by taking preventive medicine technique. The people should be informed using media; sheep and beefs should be slaughtered under the supervision of a veterinarian and unhealthy internal organs should be disposed to avoid being eaten by dogs. Idle dogs should be collected and spayed and anti-helminthic should be administered to all dogs once a year. All these precautions shall help protecting against disease.

Consequently, the first line treatment modality in liver cyst hydatid disease is surgery even though there is development in medical treatment and percutaneous drainage methods. Selection of surgical method should be made by considering general condition of the patient, number and size of current cysts, localization and whether cyst is complex or not.

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