

## Management of residual cavity of liver hydatid cysts

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### Abstract

**The background** ;After management of the hydatid content during surgery on the liver hydatid cysts, different surgical procedures were use to control the residual cavity like, external drainage, omentoplasty, external drainage+omentoplasty, capilonnage, marsupialization and partial hepatectomy.

**The Aim of the study** ; is to assess and compare the effectiveness of different surgical procedures managing the residual cavity of hydatid liver cyst.and to decrease the incidence of post operative cavity related complications like biliary leak, biliary fistula, biliary peritonitis, residual cavity collection, cavity infections and post-operative hospitalization.

**Patient and methods** ;From the period of Jan. 2001 to the Dec. 2002, a prospective study was carried out on 58 patients with hydatid liver cysts disease treated in the surgical department of Al-Rasheed Military Hospital, 51 (87.9%) were males and 7 (12.1%) were females, their ages ranged between 18-60 years with mean age 30 years. All the patients underwent conventional surgery for management of those cysts.

**The Results** show that the patients treated surgically using the omentoplasty procedure had low incidence of post operative cavity related complications.

**Our Conclusion** that patients treated by omentoplasty had been found superior in comparison with other methods, the method is simple and can be performed on the majority of the cysts.

**Keywords**; liver hydatid, omentoplasty

### Introduction

Hydatid cyst disease constitutes one of the major endemic diseases in Iraq<sup>(1, 2, 3, 4)</sup>. It afflicts all age groups and both sexes with equal frequency<sup>(5)</sup>. The treatment of liver hydatid cyst is surgical, since there is no guaranteed response to medical treatment and the cyst liable for serious complications like. rupture, infections, anaphylactic shock and jaundice<sup>(6, 7)</sup>. Surgical treatment remains the mainstay in the management of hydatid disease<sup>(8,9)</sup>. Therapy consists of removal of the cyst contents without contaminating the

patient followed by proper management of the residual cavity<sup>(10,11)</sup>. One of the problem in hydatid liver surgery is dealing with the residual cavity because mismanagement lead to many post operative cavity related complications<sup>(12)</sup> which include: biliary leakage ,biliary fistula ,cavity infections, long post operative hospitalization and biliary peritonitis .**Surgical treatment of liver hydatid cyst disease includes:** Radical operations removing the cyst completely with the pericyst which include: Cystopericystectomy, Wedge resection and

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Hepatic lobectomies. Conservative operations evacuate the content of the cyst without removal of the pericyst. It is faster and easier to perform with less blood loss<sup>(13,14)</sup>

### Methods of handling residual hepatic cavity:

#### 1. Capsulorrhaphy (Suture without drainage)<sup>(13,14,15)</sup>.

The cavity either filled with normal saline or left empty and the adventitia is closed without drainage by watertight suturing.

#### 2.. Extra peritoneal Drainage<sup>(11)</sup>:

The parietal peritoneum of anterior abdominal wall is sutured to the periphery of capsule to facilitate extra peritoneal drainage of secondary infection.

#### 3. Marsupialization<sup>(13,14)</sup>:

Conservative technique consist of suturing the edges of opened pericystic wall to the skin of anterior abdominal wall-and several drains are inserted into depths of the wound or single drain can be used.

#### 4. Opened to the peritoneal cavity<sup>(13)</sup>:

The edges of the cavity are over sewn with catgut sutures.

**5. Omentoplasty<sup>(13,14)</sup>:** Available patch or pedicle of the greater omentum is mobilized and piece of it is apex is placed into the cavity.

The omentum loosely sutured with 3 or 4 catgut suture to the widely open mouth of the cavity, tube drain near the cavity in the operative area can be used or not. Its **Functions** include fill the residual cavity, seal off small biliary fistulas, promote resorption of serosal fluid and combat infection by immunological effect.its

**Indications** include infected hydatid cyst, bile stained content, intrabiliary rupture of

hydatid cyst with large biliary communication resist to closure due to calcified wall. **Limitations<sup>(14)</sup>**

include Omentum excised in previous surgery, Patient with small omental volume, Children and Recurrent cases.

#### 6. Capitonage<sup>(15,16)</sup>:

Closure of the remaining cavity by approximating the adventitia from the bottom using multiple chromic catgut purse-string sutures.

#### 7. External drainage<sup>(15,16,17)</sup>:

The pericystic cavity opening closed and intra cystic drain inserted. It is main drawback is continuous bile leakage and therefore no longer recommended.

#### 8. Overlapping<sup>(15)</sup>:

Obliteration of hepatic cystic cavity without drainage

**9. Myoplasty<sup>(13)</sup>:** New method for obliteration of the residual cavity of liver hydatid cyst through right lateral thoracotomy incision, after evacuation of it's content using the right hemi diaphragm by protruding its edges into the residual cavity of the cyst. With this procedure, the diaphragm plays a similar role as the omentum in omentoplasty.

#### 10. Hepatic resection (Total pericystectomy)<sup>(16, 17)</sup>.

It is complete removal of the pericyst. Which includes Cysto-pericystectomy, Wedge resection and Hepatic lobectomies. **Indications:** Multiple cysts involving the same lobe. and Giant hydatid cyst replaces the lobe

### .Patients & Methods

Prospective study of 58 patients with hydatid liver cysts had been admitted to the surgical ward in Al-Rasheed Military Hospital over the period from Jan. 2001 to Dec. 2002. 51 (87.9%) were males and 7 (12.1%) were females, their age range from 19-60 years (a mean age of 30 years), Surgery Of 58 patients undergone laparotomy for treating the

. disease different surgical procedures had been done and individualized to the patient according to the number, location of the cyst, the presence of cyst infection and complications. Most of the surgical procedures was conservative operations i.e. evacuate the content of the cyst without removal of the pericyst, only one patient managed by radical operation i.e. remove the cyst completely with the pericyst.

(Table 1)

| Types of surgical methods used for handling the residual cavity | No. of patient | Percent (%) |
|---|----------------|-------------|
| External drainage   | 20             | 34.48       |
| Omentoplasty  | 17             | 29.32       |
| Omentoplasty + External drainage                                | 16             | 27.58       |
| Capitonnage   | 3              | 5.18        |
| Marsupialization  | 1              | 1.72        |
| Partial hepatectomy (wedge resection)                           | 1              | 1.72        |
| <b>Total</b>  | <b>58</b>      | <b>100%</b> |

-Table (2) Total number of patient's undergone elective and emergency

| Type of operation | No. of patient | (%)        |
|-------------------|----------------|------------|
| - Elective        | 55             | 94.82      |
| - Emergency       | 3              | 5.17       |
| Rupture           | 2              | 3.45       |
| Infection         | 1              | 1.72       |
| <b>Total</b>      | <b>58</b>      | <b>100</b> |

**Results:****Table (3) surgical procedures and attending complications**

| Surgical procedure                     | No. of patient | Infection | Biliary leak and fistula | Jaundice | Cholangitis | P value |
|--|----------------|-----------|--------------------------|----------|-------------|---------|
| -External drainage                     | 20             | 6 (30%)   | 3 (15%)                  | 1 (5%)   | 1 (5%)      | Ns*     |
| -Omentoplasty                          | 17             | 2 (11.7%) | --                       | --       | --          | > 0.05  |
| -Omentol.+Ext drainage                 | 16             | 5 (31.2%) | 2 (12.5%)                | 1 (6.2%) | --          | 0.05    |
| -Capitonnage                           | 3              | 1 (33%)   | 1 (33%)                  | --       | --          | Ns*     |
| -Marsupialization                      | 1              | --        | 1 (100%)                 | --       | --          | Ns*     |
| -Partial hepatectomy (wedge resection) | 1              | --        | --                       | --       | --          | Ns*     |

Pis >0.05 significant using ANOVA test

\* Not significant

**1. External drainage group:** after careful inspection of the cavity, any biliary leak was closed with absorbable suture, then external drainage of the cavity done, the drain usually left 5-15 days, mean 10 days, this procedure was performed for 20 patients (34.48%). The complications were infection in 6 patients, biliary leak and fistula in 3 patients, jaundice in one patient and cholangitis in one patient.

**2. Omentoplasty group:**

Omentoplasty or omental patch used in 17 patients (29.32%) to obliterate the remaining cavity, secured by absorbable suture to the margin of the pericyst, bile stained hydatid fluid was found in five of them and the communicating biliary channels had to be secured with absorbable suture only 2 patients develop infection and all patients left hospital within 10 days.

**3. Omentoplasty + external drainage**

in 16 (27.58%) patients, 5 patients developed infection, 2 patients develop biliary leak and fistula and 1 patient develop jaundice.

**4. Capitonnage group:-** Three patients with deep cyst in the liver, de roofing of the cyst, removing it's content leaving apportion of the pericyst behind, careful inspection of the pericyst for any communication with bile ducts which should be sutured with absorbable suture. Final sterilization of the pericyst with scolicial agent and the edge of the removing pericyst are oversewn to prevent leakage of bile and re-approximated (capitonnage) is done.

- One patient develops infection and one patient develop biliary leak.

### 5. Marsupialization:

One patient with cyst in close relation with the vascular structure, marsupialization is done this patient develop external bile fistula with long hospitalization (30) days.

### 6. Partial hepatectomy

(wedge resection). One patient had giant cyst replace most of the segment II of left lobe of the liver, wedge resection is done, it is time consuming with considerable blood loss during operations.

### Discussion

Hydatid liver disease continues to be a major health problem throughout the world<sup>(1, 2, 3, 18)</sup>. Treatment of the disease is mainly surgical and it is directed toward the cyst and the remaining cavity, management of the latter is the main surgical problem<sup>(17, 18)</sup>. The surgical approaches (conservative or radical) may be chosen on the basis of local expertise and the characteristics of each individual case (e.g. number, size and location of the cysts). Generally speaking, the more radical the intervention, the higher the intraoperative risk but the fewer late complication. On the other hand, the more conservative the approach, the lower the interventional risk but the more common the late complication<sup>(18)</sup> In our series, patients treated by many surgical procedures to deal with the residual cavity, these include:

**1. External drainage:** The results of our study are similar to the results obtained by Papadimitriou (1970)<sup>(3)</sup> and Ogata (2005)<sup>(23)</sup>

**2. Omentoplasty:** Obliteration of the cavity with an omental pedicle which was done in 17 patients had been found superior in compared with the other methods because omentoplasty Obliterate the residual cavity, assist healing of raw surfaces, Promote resorption of serosal fluid and macrophagic migration in septic foci<sup>(25)</sup> and Provide absorptive capacity for the bile. So omentoplasty decrease the biliary leakage, fistula, infections and decrease post operative hospitalization, our results is similar to previous studies done by Papadimitriou (1970)<sup>(3)</sup>, Ogata (2005)<sup>(23)</sup> and Dziri-C (2003)<sup>(14)</sup> and different from study done by Jain, (2000)<sup>(22)</sup>. The presence of communicating bile channels or occult biliary communication did not preclude omentoplasty, the omentum seems to prevent infection and bile leakage. A careful search of such communicating channels is essential; we found that a yellowish discoloration of the pericyst, when present, is a useful guide to their identification<sup>(19)</sup>

**.3. Omentoplasty + external drainage:** The rate of complications was higher especially infection and biliary leak and fistula when compared with omentoplasty alone our results is similar to previous studies done by Ogata (2005)<sup>(23)</sup> and different from study done by Jain, (2000)<sup>(22)</sup>

**.4. Capitonnage:** This method applied for 3 patients in whom the cysts location was deep in the liver, it is associated with increase incidence of complication and hospital stay<sup>(16,20,23)</sup>

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**5. Marsupialization:** It is applied only to one patient who led to prolong hospital stay about 28 days with biliary fistula. This result is similar to study done by Ogata (2005)<sup>(23)</sup> and different from study done by Jain, (2000)<sup>(22)</sup>, which show that period of hospitalization is around 36 days

**.6. Partial hepatectomy (wedge resection):** It is applied to one patient with multiple cysts located in the segment II of left lobe of the liver, it was time consuming with considerable blood loss, it is associated with tube drainage and hospital stay about 12 days which was similar to result of similar to previous studies done by Ogata (2005)<sup>(23)</sup>. And Dziri-C (2003)<sup>(14)</sup> and different from study done by Jain, (2000)<sup>(22)</sup> With mean hospital stay 15 days<sup>(14, 20, 21)</sup>

### **.Conclusion**

The residual cavity is the main surgical problem which leads to many complication and increase hospitalization period, The cyst content in hydatid liver surgery can be consider as a determinant of postoperative cavity related complication .Patients treated by omentoplasty have been found superior in comparison with other methods, the method is simple and can be performed on the majority of cases.

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