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ORIGINAL ARTICLE

Radical Surgical Procedure in Management of Hepatic Hydatid Cysts. 10 Years Centre Experience.

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ABSTRACT

Background: Hydatid disease caused by zoonosis. Many ways for treatment have been described depending on cyst number, site, surgeon expertise, and complicated or not. Liver is the most common organ to be affected by Echinococcus. We discuss our results regarding radical surgical management of hepatic hydatid cysts. Methods: a retrospective study regarding radical surgical management of hepatic hydatid cysts at Zagazig University Hospitals, General Surgery Department. From June 2011 to October 2021 on 125 patients presented with hepatic hydatid cyst. Results: Total peri-cystectomy was done in 100 (80%) patients, while liver resection was in 19 (15.2%) patients, laparoscopic procedure used in 6 (4.8%) patients (5 patients with total peri-cystectomy and only one patient needs omento-plasty with sub-total peri-cystectomy). 34 patients developed post-operative complications; 19 patients suffered from biliary leak. We had no mortality. Follow-up period ranged from 6 to 60 months with no recurrence. Conclusion: Hepato-Biliary experienced surgeons favoured for best results in management of hepatic hydatid cysts. Radical surgical procedures carry an efficient and safe results in dealing with hepatic hydatid cysts, with promising data regarding morbidity and recurrence rates.

Keywords: hepatic hydatid cysts, peri-cystectomy, liver resection..

INTRODUCTION

The larval stage of Echinococcus Granulosus Sensu Lato is the cause of liver cystic echinococcosis (CE) as a parasitic zoonosis (1,2). Hydatid disease considered endemic in South America, Central Asia, Far East and Mediterranean (3). It was found that up to 75% of hydatid lesions, present in the liver. Regarding lobe affection, the right lobe involvement was in 60-80% (4). During our study, we found a high incidence of liver hydatid disease in Egypt especially in our government. And astonishingly, some patients had no history of animal contact. Moreover, in some cases camels were the only contact animal (which need more study). Liver hydatid cyst, could be managed by medical, percutaneous drainage or surgical procedures. According to World Health Organization (WHO), surgery used in lesions more than 10cm or in CE stages 2 or 3b (with daughter cysts). However, in some cases as infected cysts, cysts with biliary communication or superficial cysts; surgery is the chosen procedure for management (5). In some literatures surgery also used in huge complicated cysts to get a satisfying outcome (6-8).

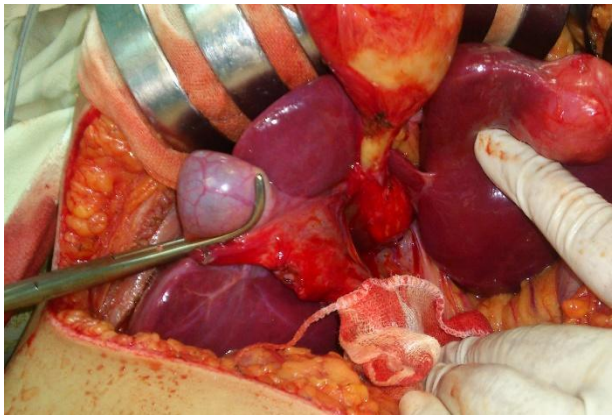
Removal of the cyst content defined as endo-cystectomy, which considered as conservative non-resectional surgical technique. Many modifications later on used including external drainage accompanied with endo-cystectomy, use of omentum to close the cavity and capitonnage (9). Surgery could be open or laparoscopic according to surgeon's experience. The American College of Gastroenterology Guidelines confirmed that surgery indicated in daughter cysts, secondary infection, fistulas, rupture, haemorrhage or multiple lesions (10). Compression of adjacent structures or viscera is the leading cause of symptoms, in the form of inflammation or rupture into the surrounding organs. The size of cysto-biliary communication determines the type of presentation (cholangitis, liver abscess, jaundice, pancreatitis, septicemia and cholecystitis) (11,12).The routine investigations used are ultrasonography and computed tomography (CT). To identify lesions, detect complications and put a strategy plan for management (13). Routine endo-cystectomy carry an incidence of morbidity and recurrence. So, in our study we discuss total peri-cystectomy as a procedure with no recurrence and lower morbidity incidence.

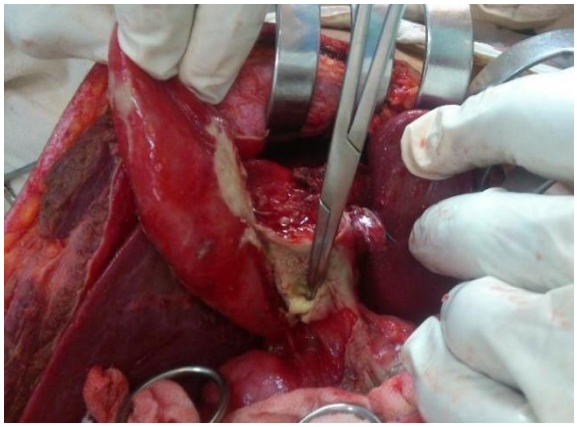
PATIENTS AND METHODS

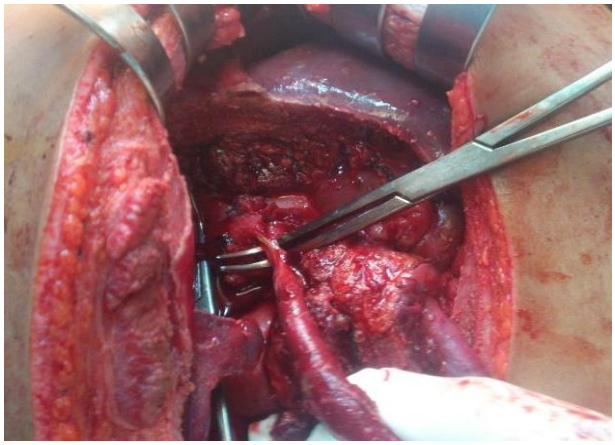
The study was approved by the research ethical committee of Faculty of Medicine, Zagazig

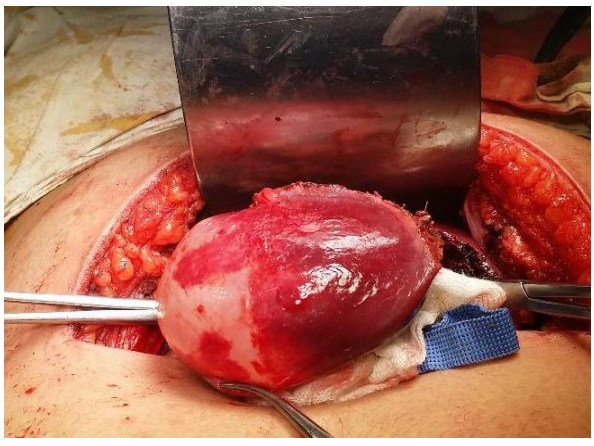
University. The study was done according to The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.A retrospective study, on 125 patients with liver hydatid cyst treated at the Zagazig University Hospitals, from June 2011 till October 2021. Patients' data regarding physical examination, history, investigations, laboratory, operation, and post-operative sequel were analysed. Diagnosis depends on routine ultrasound and computed tomography. Patient profile discussed with multidisciplinary team including surgeons, radiologist internal medicine doctors. We do not depend on serology. CT used to confirm diagnosis (double halo sign), determine site, lesion size and lesions number. Also, to find other cysts in the lung or spleen. We use Magnetic resonance cholangiopancreatography (MRCP) in lesions more than 5 cm diameter to assess cysto-biliary communication. Also, in recurrent and multiple cysts to emphasize the diagnosis.

Preoperative medication Albendazole 400mg (combined with PPI), given to our patents twice daily for two weeks to control the infectious state of the parasite. The same dose prescribed for one month post operative. In complicated and multiple lesions, we continue for 3-6 months. We reduce the dose to 200mg for only one week preoperative, and 2 months postoperative in cirrhotic patients. Surgical technique: (figure 1) Being a major surgery, patient prepared preoperative via central venous access, epidural catheter and urinary catheter applied.Usually Makuuchi incision is a routine (J shaped incision). In huge, complicated or bilobar lesions, bilateral subcostal extension is used.We start with assessment of the site, number and location of lesions. Search for other lesions not detected preoperative by radiology. Complete liver mobilization, surrounding the lesion with towels soaked by hypertonic saline or betadine, to guard against cyst content spillage. We consult a radiologist to do intraoperative ultrasound in deep-seated lesions away from the surface. For parenchymal resection we use routine clamp fracture technique or Harmonic shears. To control liver blood inflow, we do Pringle maneuver.Three types of surgery chosen according to lesion data; liver resection, total peri-cystectomy or sub-total peri-cystectomy.









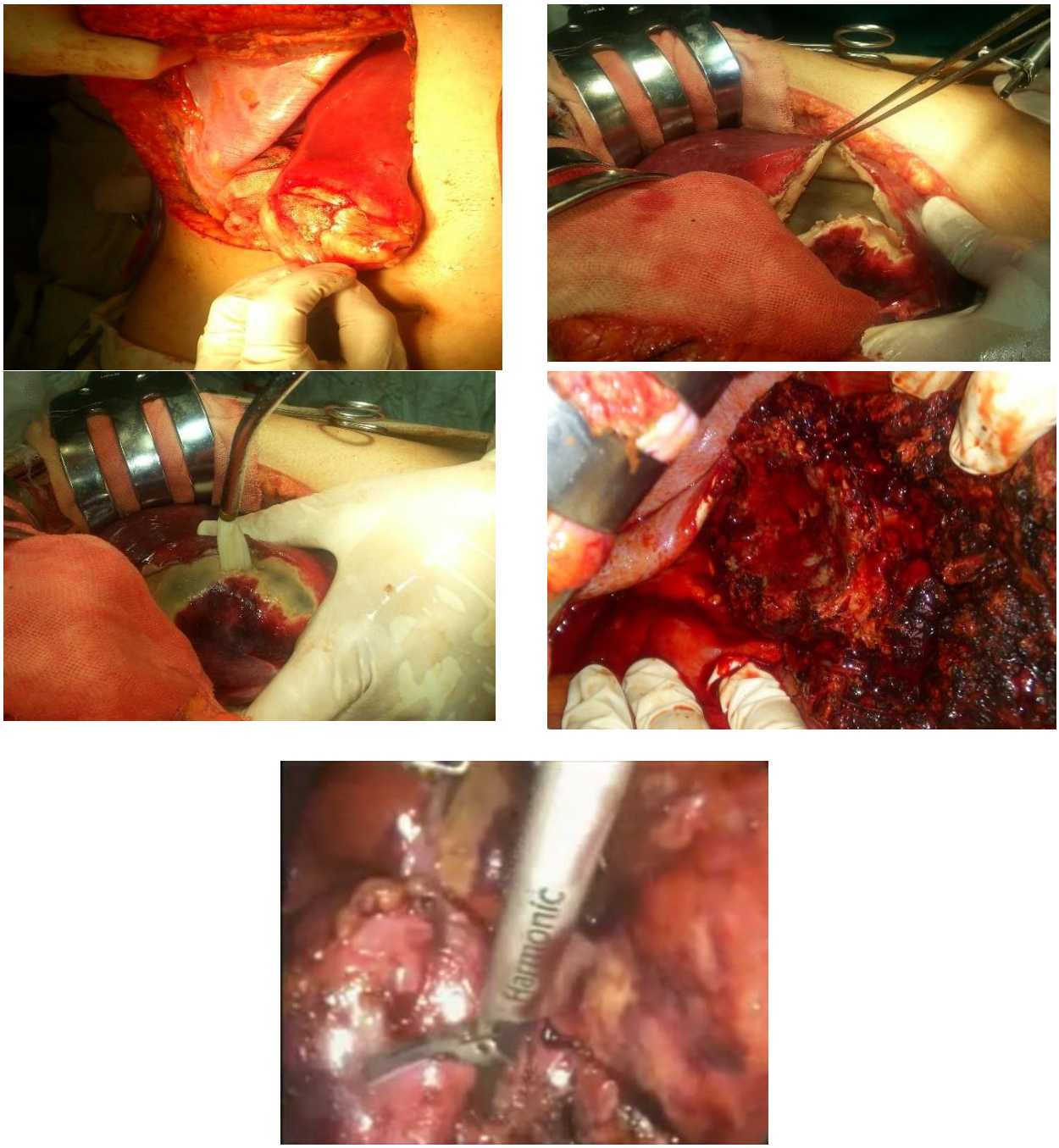


Figure (1): A. Multiple hydatid cysts. **B.** Traumatic hydatid cyst. **C.** Cysto-Biliary communication. **D.** Total closed peri-cystectomy. **E.** Exophytic hydatid cyst. **F.** Opened hydatid cyst. **G.** Aspiration of cyst content. **H.** Remanet part of the cyst wall adherent to IVC. **I.** Laparoscopic deroofing.

We did total or subtotal peri-cystectomy either closed or open. In total closed peri-cystectomy we remove the cyst without opening it with or without liver resection. This technique used in superficial cysts or exophytic cysts. While in open total peri-cystectomy; we open the cyst remove its content by suction irrigate the cyst with betadine remove the end-ocyst then remove the cyst wall. This done in deep-seated cysts or cysts closely related to the hepatic veins or inferior vena cava (IVC). In rare cases; cyst was adherent to major hepatic vein; we did open peri-cystectomy and leave a small part of the cyst wall adherent to the major veins to avoid massive bleeding and apply haemostatic agent on the remaining part. Only in six patients we did laparoscopic cyst resection which was in small less than 5 cm lesions located superficial and peripheral and also in non-cirrhotic liver.

In laparoscopy we put the patient in semi-lateral position with head elevated to take the benefit of the gravity in mobilization. Torcher's position applied according to liver hydatid lesion. Usually,

we use 4-5 ports. 12mm port in the umbilicus for the camera. About 5cm from both sides of the camera we put another 2 10mm torchers. And one or two ports 5mm below the right or left costal margins used when needed. In left lesions, the same technique is put with a slight shift to the left side (2-4cm). Finally, we do histopathology for all lesions, and follow up the patient by CT for 6-60 months. Statistical Analysis Data: was analyzed using IBM SPSS advanced statistics version 22 (SPSS Inc., Chicago, IL).

RESULTS

We studied 125 patients who had liver hydatid cysts. Female patients (86 (68.8%)) were more than males (39 (31.2%)). Median age was 35 ranging from (10-65) years. Complaining patients were 85 (68%) presented with abdominal pain, while others discovered accidentally. Cysts were single in (70.04%) patients. In 75 (60%) patients the size of the cyst ranged from 6-10 cm. in only 5 patients, cyst size was huge up to 20 cm. regarding site, the right lobe carries the highest incidence in 87 (69.6%) patients. Complicated cysts were present in 43 patients. Also, we had 7 patients presented with rupture cysts. Regarding infected cysts it was in 19 patients (most of them (13) was due to percutaneous aspiration guided by ultrasound. We faced recurrent cysts (managed before outside our department) in 23 patients (6 M & 17 F); 14 cases were managed by US guided drainage and 9 cases were managed surgically (conservative surgery endo-cystectomy). In our study, we did total peri-cystectomy in 100 (80%) patients [open method in 61 patients and closed method in 39 patients]. Hepatic resection done in 19 (15.2%) patients. Laparoscopic management used only in 6 (4.8%) patients (total peri-cystectomy in 5 patients and subtotal peri-cystectomy and omento-plasty in one patient). We consult our intervention radiologist for intra-operative US diagnosis in 17 patients with deeply seated lesions (not palpable). Also, intra-operative cholangiography needed 11 patients. While intra-operative ERCP and stenting mange 3 female patients. Cysto-biliary communications proved by MRCP were in 87 (69.6%) patients. Major communications were in 48 patients and minor were in 39 patients. We had no recurrence no mortality during our follow up period. post-operative complications were in 34 (27.2%) patients. We had only female patient with postoperative bleeding occurred after 10 h post-operative which re-explored (this patient had both hydatid in liver and spleen, bleeding was from liver bed and slipped ligature from one of the varices at the splenic bed). Most common morbidity was bile leaks in 19 patients. Non need re-exploration, percutaneous US guided pigtail catheter drainage in 6 patients removed after 2 weeks. The other 13 were managed conservatively). We faced wound infection in 5 patients. While incisional hernia in 9 patients developed 6-12 months after surgery.

DISCUSSION

Hydatid disease usually present in sheep raising areas. In EGYPT, we face an increasing incidence ratio mainly due to people returned from contaminated areas as Iraq and Syria after war and also from contamination of vegetables by dogs' excreta. Cystic echinococcosis (CE) considered as a healthcare burden as mentioned in [14,15]. Accordingly, WHO classified CE as a neglected disease which necessitates control or elimination in the next years [15,16]. Especially hepatic hydatid cysts which carry a high incidence of morbidity and mortality rate if not managed probably [17]. The main task of CE treatment is to eliminate the germinal layer and to avoid recurrence [18]. There are three main lines for treatment medical, interventional radiology (percutaneous aspiration) and surgical [19,20]. To diagnose hepatic hydatid cysts, we can use one of US, CT or MRI. Us is sheep tool used for screening and follow up [21]. Its advantage is to determine the site, size daughter cyst presence and wall calcification [22,23]. Ct and MRI used to confirm the diagnosis and in difficult site localization [24,25]. Treatment of hepatic hydatid cysts nowadays according to WHO based on cyst stage [19,26,27]. So, for stage CE4 and CE5 cysts wait and watch. CE1, CE2, CE3a, and CE3b cysts managed medically. Surgery for CE2 and CE3b cysts and percutaneous aspiration for CE1, CE2, CE3a, and CE3b cysts [19]. Treatment options were only surgery before appearance of anthelmintic drugs. But radical surgery carries higher rate of morbidity and mortality. So, physicians tried to find other options less harmful. [28,29,30]. But still invasive surgery, used in complicated hepatic cysts to eliminate parasitic infection or treat non responding medical cases. Lately conservative surgery takes a chance among surgeons [31,32]. In a meta-analysis hepatic hydatid cyst morbidity was higher in radical surgery compared to conservative [33]. Comparing morbidity between surgery and PAIR the rate was 25.1% vs 7.9% following [34]. We had 34 patients developed post-operative complications; 19 patients among them suffered from biliary leak. Regarding mortality we had no mortality during follow up period. Another study mentioned mortality rate of 0.1% after hepatic hydatid cyst management by PAIR and endo-cystectomy [34]. Al-Saeedi et al. [35], mentioned that recurrence rates varied between 0% and 51% (average from 0% to 15%) in different studies. Also said that 19/54 studies have 0% recurrence during follow-

up. We had no recurrence also. Different studies share their recurrence rate [36,37,38], incidence was 1.5% post conservative surgery, 6.3% after radical surgery and 5%-6.6 post PAIR.

We found that using albendazole pre-operative for two weeks and for one month post operative in uncomplicated cases and for three months in complicated cases give us the best results regarding morbidity and recurrence. Keshmiri et al. [39], has the same results but for using medications for three months.

Many studies Compare morbidity and recurrence rate between radical and conservative surgery. Among these studies Yüksel et al. [40], mentioned that radical better than conservative. Aydin et al. [41] study was on 242 patients, morbidity and recurrence rates higher in conservative surgery (11% vs. 3%; 24% vs. 3%). In another study by Tagliacozzo et al. [42], 214 managed via conservative surgery, while 240 managed via radical surgery. Again, morbidity and recurrence were higher in conservative group. In our study no recurrence was detected during the follow up period. We support these results so much especially that we managed 23 patients with recurrent hepatic cysts.

We searched for studies discussing benefits of laparoscopic hydatid cysts management. We found Zaharie et al. [43], study with small sample size (62 patients) as we had only 6 patients manged laparoscopically. Zaharie et al. [43] support our idea about using laparoscopic approach in small peripheral lesions.

Total peri-cystectomy was done in 100 (80%) patients, while liver resection was in 19 (15.2%) patients, laparoscopic procedure used in 6 (4.8%) patients. Marco et al. [44] study perform radical surgery in 93%, and for 81% of these patients, total or near total cystectomy was done. We found that blood loss, ICU and hospital stay were more in open total peri-cystectomy than in closed total peri-cystectomy.

CONCLUSION

Radical surgery is better than conservative surgery regarding morbidity and recurrence rate. When these operations done by experienced surgeons' mortality and recurrence rate jump to zero. Combination of surgery and medical albendazole gives a better result in managing hepatic hydatid cysts. Total closed peri-cystectomy has less rate of bleeding and morbidity.

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