Original Article

Laparoscopic management of hydatid cyst of liver

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Abstract

Introduction: The surgical treatment of liver hydatid disease has evolved dramatically and laparoscopic treatment has shown encouraging results with the advantages of minimally invasive surgery. We conducted this study to determine the outcome of laparoscopic management of hydatid disease of the liver.

Methods: Consecutive patients with this disease reporting to our department from July 2014 to July 2015 were offered laparoscopic management. All patients received pre- and postoperative albendazole. The laparoscopic technique consisted of aspiration of the cyst fluid, sterilization, suction and drainage of the cavity, deroofing and addition of omentoplasty. Age, sex, duration of surgery, surgical morbidity, hospital stay and evidence of hydatid cyst recurrence were measured.

Results: Twenty six patients had laparoscopic treatment for hepatic hydatid cysts. Females were 18 (69.2%) and males were 8 (30.8%). Mean age of patients was 37.46 ± 15.96 years (range 17-74 years). Pain was the commonest presentation occurring in 21 (80.8%).The right lobe of the liver was most commonly involved in 20 patients (76.9%). The mean cyst size was 6.77 cm (range, 5 cm to 12 cm). Minor spillage of cyst contents occurred in 5 patients (19.23%) and major spillage occurred in 1 patient (3.8%). The mean duration of surgery was 84.81 ± 28.93 minutes (range 50 – 150 minutes). Conversion was needed in 2 (7.7%). Complications included port-site infection in 2 (7.7%), bile leak in 3 (11.5 %), fever in 5 (19.2%) and chest infection in 2 (7.7%) cases. Mean hospital stay is 4.58 ± 3.40 days (range 3-16). There was no mortality in the series. The average follow-up period is 7.81 ± 2.57 months. There have been no recurrences to date however 1 patient was lost to follow up.

Conclusion: Laparoscopic management of hydatid cysts of the liver is a safe and effective option with advantage of minimally invasive surgery in properly selected patients.

Key Words: Hydatid cyst, Laparoscopy, Echinococcus.

Introduction

Hydatid cyst is the larval cystic stage of Echinococcus granulosus and man is its accidental intermediate host.[1] Hydatid disease is an endemic condition in several parts of the world. In Nepal, inspite of considerable economic and public health significance, little work has been done to study its impact. Surgery remains the gold standard in terms of therapy despite significant economic costs; advances in medical treatment, and interventional radiology.[2-4] Traditionally hydatid cyst were treated by open surgical method but laparoscopic treatment is becoming popular with the advantages of minimally invasive surgery that is postoperative comfort, minimal pain and short hospital stay.[5] However, many are unconvinced about the role of laparoscopy due to fears of difficulty in controlling spillage and higher complication and recurrence rates.[6] This study was conducted to determine the outcome of laparoscopic management of hydatid disease of the liver in our institute.

Methods

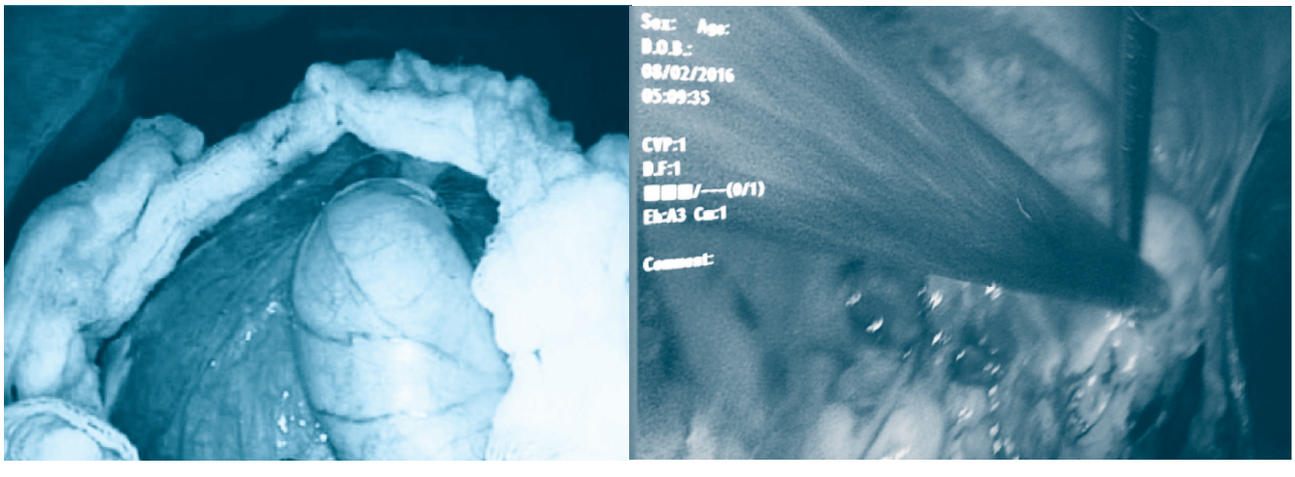
This was a prospectively conducted study in the Department of General and Gastrointestinal surgery, Tribhuvan University Teaching Hospital for a period of 1 year. All consecutive patients with this disease reporting to our department from July 2014 to July 2015 were offered laparoscopic surgery (LS). All patients received pre- and postoperative albendazole. Clinical examination, Enzyme- Linked Immunosorbent Assay (ELISA), abdominal ultrasound (US) and computed tomography (CT) were used to establish the diagnosis.

Exclusion criteria for LS were (1) If deemed unfit for laparoscopy; (2) previous multiple upper abdominal surgeries likely to have adhesions; (3) cysts located more than 1 cm deep from the liver surface, which may prove difficult to identify laparoscopically; (4) Infected hydatid cyst. (5) Multiple liver hydatid cyst or cyst located near vascular liver element, and those located in segment 1, 8 and 7 as they are considered in blind areas for laparoscopic procedure. (5) Cyst other than CL, CE - 1,2,3 according to WHO Classification.[7] Patient's operated in emergency for ruptured Hydatid were also excluded.

Surgery was performed under general anesthesia. All patients received injection Ceftriaxone 1gm and injection Hydrocortisone was given prophylactically before surgery. Patient's position, number of ports and their placements varied according to the location and size of the hydatid cysts. Surgeon and the camera assistant stood on the left side of the patient while the assistant and the scrub nurse stood on the right side of the patient. Pneumoperitoneum was created using CO**2**. Laparoscopic exploration was performed with a 30 degree laparoscope, through a 10 mm supraumbilical port and feasibility for LS was confirmed. A 10-mm port at the epigastrium was used as a working channel and two additional 5-mm ports were placed according to the location of cyst.

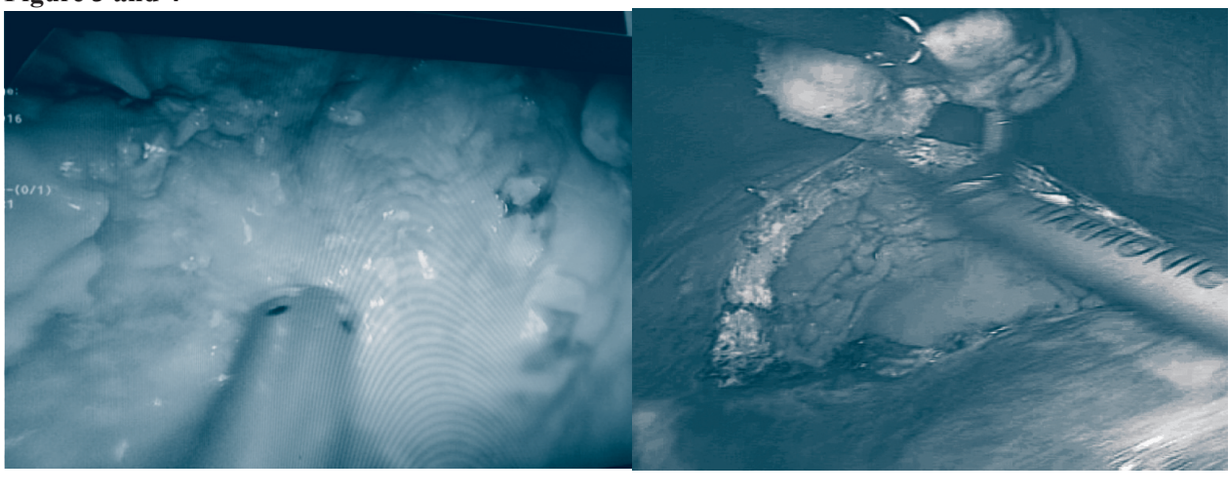
Operating field was isolated by surrounding the cyst with gauzes soaked in Betadine 10% solution or 20% Hypertonic saline. The cyst fluid was evacuated using either an aspirator or Veress needle inserted percutaneously at the cyst pole and color of the fluid noted. A continuous suction cannula was kept around the needle puncture site (Figure 1 and 2). Scolicidal agent, 20% hypertonic saline was injected in to the cyst and aspirated after 10 minutes using high-powered suction.

Figure 1 and 2



Cyst cavity was opened big enough to let the suction tube enter the cyst cavity. The fluid and daughter cyst were suctioned and cyst cavity profusely irrigated. At the end, the cyst cavity was explored under direct view, to exclude unsuspected biliary communication. The laminated membrane and spilled daughter cyst were collected in glove bag. Pericystectomy was performed using harmonic, ligasure or hook (Figure 3 and 4). Omentopexy was done whenever feasible and a drain was inserted in the cyst cavity for all the cases.

Figure 3 and 4



Oral liquid intake was allowed on the same day of operation. If no bile was draining through the drain, the drain was removed 48 hours post operation, and the patient was discharged home. If bile in drain then drain was continued at surgeon's discretion. If biliary fistula persisted ERCP was planned. Patients were planned to be followed up at one week, one month and then at three months, when an ultrasound was planned. Serological tests were not done in follow up period.

Results

Twenty six patients underwent laparoscopic management for hydatid cyst. The mean age was 37.46 ± 15.5 years (ranging from 17 to 74 years). There were 30.8% male and 69.2% female patients. Pain was the commonest presentation found in 21 (80.8%) cases, while 9 (20.93%) patients complained of a mass with pain. It was diagnosed incidentally in 4 (9.30%) patients on ultrasound performed for other reasons. Type of cysts has been shown in Fig 1. The size of the cysts varied from 5 cm to 12 cm (mean 6.77 cm) with right lobe of liver being most commonly involved. Twenty cysts (76.9%) were located in the right lobe and only 6 cysts in the left lobe, while cysts were bilateral in 2 (4.65%) cases.

Fig 1: Types of cyst according to WHO Classification

The operating time ranged from 50 to 150 minutes with a mean of 84.81±28.93minutes. In one patient a single cyst was found in the liver and1 cysts in pelvis. The most common cyst localization was in segment IV and VII. Minor spillage (escape of less than 5 mL of clear fluid) of cyst contents occurred in 5 patients (19.23%) and major spillage occurred in 1 patient (3.8%). Cystobiliary communication was observed in 2 patients; in both patient the cystobiliary communication was thought to be from minor duct and managed conservatively by drain. No other intraoperative complication occurred.

Conversion was needed in 2 (7.7%). None of the patients experienced intra or postoperative anaphylactic shock. Complications are listed in Table 1 which included port site infection, fever and chest infection which was managed by antibiotics and chest physiotherapy.Bile leak was seen in 3 (11.5 %). One patient had a bile leak persisting beyond 7 days, which was managed by endoscopic biliary stenting for 6 weeks, while the other two cases drain decreased eventually and was removed on 8th and 9th post operative day.

Table 1. Post operative complications of surgery

Anaphylaxis	none
Fever	5(19.2%)
Urticaria	2(7.7%)
Chest infection	2(7.7%)
Bile leak	3(11.5%)
Mortality	none

Mean hospital stay is 4.58 ± 3.40 days (range 3-16). There was no mortality in the series. The average follow-up period is 7.81 ± 2.57 months. There have

been no recurrences at 3 months follow up however 1 patient was lost to follow up. All patients have remained asymptomatic.

Discussion

Parasitic zoonoses (PZ) present a significant burden for public health, particularly in poor and marginalized communities. In a study by Brecht et al, the authors studied the relevance and importance of PZs in Nepal. It was found that PZs are imposing an impact higher than that of malaria and comparable to that of HIV/AIDS. Between 2000 and 2012, the highest annual burden was imposed by neurocysticercosis and congenital toxoplasmosis followed by cystic echinococcosis.[8]

The age range in this study was 17-74 years with mean age of 37.46 years, which is similar to the average age of presentation in other studies.[9] Females were predominantly affected in this study while other studies have reported male predominance or reported equal infestation in either gender.[10] In non endemic areas most cases are detected incidentally but though Nepal being an endemic zone, our incidental detection rate was 11.5%. However like in other studies, pain abdomen was the most common presentation and right lobe of the liver was most commonly involved with 76.5%.[11]

Various treatment options are available for the treatment of hydatid cyst but surgery remains the mainstay for management of hydatid disease. In surgery too, laparoscopic treatment of hepatic hydatid disease has been increasingly popular and has undergone a revaluation parallel to the progress in laparoscopic surgery.[12] However, reports concerning long-term results of this technique are limited.[5] This study was conducted to evaluate the short term outcomes in laparoscopic management of Hydatid cyst of Liver at our centre.

Ertem *et al.* reported successful laparoscopic cystectomy and partial cystectomy with drainage in 33 patients with conversion to open surgery in 2 patients.[5] We treated 26 patients with laparoscopic method with conversion rate of 7.7%. The reason for conversion was due to inability to puncture the hydatid cyst. Some groups have reported a conversion rate of 23 to 27%.[13]A study from India described the use of Palanivelu Hydatid System (PHS), [9] especially designed trocar for contamination-free management of liver hydatid disease. PHS not only prevents spillage, but also assists complete evacuation and allows intra cystic magnified visualization for cyst-biliary communication. In our centre, we used Veress needle for puncture and two strong suction catheters to aspirate the cyst fluid and daughter cysts. Major spillage was seen in 3.8% in our study.

Laparoscopic approach offers better visual control of cyst, CBC better identified and we can also identify other lesions and manage simultaneously but its major disadvantages include high cost and there would still be a chance of spillage or bleeding which might be a challenge to the surgeon to control and laparoscopy would not be suitable for cases where the hydatid cyst is located in the blind area or near the vascular elements or if deep seated.[14] The mean duration of surgery was 84.81 minutes and the operative duration significantly decreased with increasing experience. The average lengths of hospital stay of 4.58 days which was also similar to the other studies.[15]

Complications included, port site infection, biliary leakage and chest infections. A study by Seven R et al reported 4% perioperative, 17% postoperative complications with recurrence in 1 (9%) cases.[16] In our study, post operative morbidity occurred in 53.8% of our patients and was managed conservatively except for one case which had to undergo ERCP and stenting for persistent bile leak. The recurrence rate ranges from 3% to 10% following open surgery for hepatic hydatid cysts.[5] There were no recurrence at 3 months follow up and no mortality in our series.

The main limitations of our study are its small sample size, a randomized trial comparing Laparoscopic versus Open would have been desired and since the follow up was just 3 months, in order to know the actual recurrence, patient's has to be kept on long follow up. However considering the well-known benefits of minimally invasive surgery, the laparoscopic approach offers a viable alternative to conventional surgery for the treatment of liver hydatid cysts and is worthy to be considered for selected patients. A meta analysis published in 2013 has concluded that laparoscopic technique is feasible and safe.[17] Laparoscopic management should not be regarded as a new surgical technique but minimally invasive access to perform an established surgical intervention however randomized controlled trials with longer follow ups are needed before it can be recommended as the gold standard for treatment of hydatid cyst of liver.

Conclusion

We conclude that the laparoscopic treatment of hepatic hydatid cysts is safe and effective option with advantage of minimally invasive surgery in properly selected patients.

Conflict of interest: None declared

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