

Laparoscopic management of hydatid cyst of liver

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ABSTRACT

Background: Hydatid disease is caused by a parasite named *Ecchinococcus granulosus*. This disease is endemic in Pakistan. The disease mostly affects liver forming cysts. The treatment is mainly surgical which can be performed laparoscopically. This study was thus designed to assess the outcomes of the laparoscopic treatment of hydatid cyst of liver in terms of recovery of patient, complications and recurrence.

Subjects and methods: This case series was conducted from March 2015 to December 2020 in Surgical Department of Services Institute of Medical Sciences Lahore. Patients who were planned for laparoscopic surgery for hepatic hydatid cysts (CE2, CE3) were included in the study. Patients who have past history of hepatobiliary surgery, with multiple small cysts or those who has refused for laparoscopic surgery were excluded from study. Demographic data, presenting symptoms, clinicopathological findings, duration of surgery, hospital stay and complications were recorded on pre designed Performa. Data was entered and analyzed by using SPSS 22.

Results: Total of 42 patients were managed laparoscopically for hydatid liver cyst. The mean age of the patients was 39.42 + 12.04 years. There were 20 (47.62%) male and 22 (52.38%) female patients. Thirty patients (71.43%) were from rural areas. Twenty patients (47.62%) had history of close contacts with dogs or domestic animals. Patients mostly presented with symptoms of pain in right hypochondrium and abdominal mass. Majority of the patients had single hydatid cyst in the liver. Right lobe of the liver was more frequently involved than left lobe. Both lobes were involved in 2 (4.8%) patients. The mean duration of surgery was 76 minutes. No patient developed intra or postoperative anaphylactic shock. Biliary leakage was seen in 4 (9.5%), port site infection in 2 (4.8%) patients and conversion to laparotomy was done in 2 patients (4.8%). The mean hospital stay of patients was 3.41+ 2.82 days. There was no mortality of the patients or recurrence of cyst on 12 week follow up.

Conclusion: Laparoscopic surgery for hepatic hydatid cyst is safe and effectual treatment in carefully selected patients. It is a simple technique with lesser postoperative morbidity and potentially decreased risk of complications especially recurrence of disease.

Keywords:

Hydatid disease of liver, Surgical management, Laparoscopy

INTRODUCTION

Hydatid disease is parasitic disease which is endemically distributed in Mediterranean countries, North Africa, Turkey, the Middle East, Australia, North of China, India and Pakistan. However, due to increase trend in travelling and immigration non-endemic areas are also affected.¹ It is caused by *Ecchinococcus granulosus*, commonly called the dog tapeworm. Dog is definitive host of this parasite. The adult parasite resides in the small intestines of dog, lays eggs which are then passed in feces. Close contact with infected dog results in ingestion of these eggs through oral route and results in hydatid disease in intermediate host like humans.²

The parasite mostly effects liver followed by lungs. Occasionally it can also involve brain, ovaries, mesentery and kidneys. In liver, if disease is not treated

then cyst nurtures and pursues one of several courses: develops fistulas with the adjacent organs especially the biliary channel, ruptures into the peritoneum resulting in seedling of daughter cysts all over the peritoneal cavity, forming daughter cysts within the cyst, resolves leaving fibrotic node or develops secondary bacterial infection within the cyst. Older cysts have greater risk of exogenous daughter cyst formation, which is an imperative reason for recurrence of disease.^{3,4}

Various treatment modalities are available for the treatment of hepatic hydatid cyst depending upon the severity of disease and segment of liver involved. Medical therapy consists of albendazole or praziquantal especially useful in multi-organ disease or in patients with multiple co-morbidities. Drug therapy is also given before any surgical intervention of hydatid disease. PAIR (percutaneous aspiration, irrigation and re-aspiration), partial or complete pericystectomy with omentoplasty and hepatic segmentectomy are some of the surgical options.^{5,6}

Conflict of interest: The authors declared no conflict of interest exists.

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Recently, laparoscopy has been adapted for the management of hepatic hydatid disease in carefully selected patients. The laparoscopic technique has well known advantage of being minimally invasive, consequently resulting in a shorter hospital stay and reduced wound complications. Furthermore, the laparoscopic approach provides finer insight of the cavity and adjacent tissue as compared to open surgery. However there are drawbacks with laparoscopic technique such as restricted locale for manipulation, difficulty in limiting spillage of cyst content during the procedure, and struggling in aspirating thick and degenerated content of the cyst. The locality of the cyst in liver and the presence of complications may leave this method tricky in practice.^{2,7}

This study was designed to determine the outcomes of the laparoscopic treatment of hydatid cyst of liver in terms of recovery of patient, complications such as anaphylactic shock and recurrence.

SUBJECTS AND METHODS

This case series was conducted from March 2015 to December 2020 in Surgical Department of Services Institute of Medical Sciences Lahore after taking approval from Institutional Review Board (IRB). A sample size of 42 patients was calculated at 95% confidence level, 5% margin of error and using 2.77% expected percentage of hydatid disease prevalence through non-probability consecutive sampling method [8].⁸ Patients who were planned for laparoscopic surgery for hepatic hydatid cysts (CE2, CE3) were included in the study. Patients who have past history of hepatobiliary surgery, multiple small cysts or those who has refused for laparoscopic surgery were excluded from study. The diagnosis of patients was based on history, clinical examination, ultrasound of abdomen, CECT scan, and serological test (Indirect hemagglutination test or enzyme-linked immunosorbent assay). All the patients were treated with albendazole 200mg twice daily for 2 weeks before the surgery. Hydrocortisone and antibiotic shots were given intravenously prior to induction of general anesthesia. After draping, pneumoperitoneum was created by closed method. Then 10 mm port was inserted infraumbilically (camera port), another 10 mm port was placed in epigastrium (working port) and final 5mm port (working port) was inserted in right hypochondrium two finger breadth below the costal margins in midclavicular line. Initially the cyst was localized and hypertonic saline soaked gauzes were placed all around it. Then 20 ml of solicialal agent (20 % hypertonic saline) was instilled into the

cyst and fluid was aspirated back from cyst. This process was done three times. Then deroofting of cysts was performed with the help of ligaSure™. The cavity was then examined for residual daughter cysts and biliary leakage. A multichannel drain was placed in sub-hepatic region. The drain was removed when there was less than 20ml of fluid per 24 hours in the drain and the patient was discharge after 6 hours of removal of drain. The cyst cavity was monitored by ultrasound at 3 weeks, 8 weeks and 12 weeks postoperatively. CECT scan was done if the ultrasound showed any suspicious lesion in operative site. Albendazole was continued postoperatively for 3 months. Demographic data, presenting symptoms, clinicopathological findings, duration of surgery, hospital stay and intraoperative and postoperative complications were recorded on pre designed performa. Data was entered and analyzed by using SPSS 25.0. Quantitative variables were presented by mean+SD and qualitative variables with frequency and percentages.

RESULTS

Total of 42 patients were treated laparoscopically for hydatid liver cyst. The mean age of the patients was 39.42 + 12.04 years (ranging from 25 to 75 years). There were 20 (47.62%) male and 22 (52.38%) female patients. Thirty patients (71.43%) were from rural areas and 12 (28.57%) patients were from urban areas. Twenty patients (47.62%) had history of close contacts with dogs or domestic animals. The commonest presentation was pain in right hypochondrium. The mode of presentation of the patients is listed in Table 1.

Majority of the patients had single hydatid cyst in the liver. Right lobe was more frequently involved than left lobe of the liver. Both lobes of the liver were

Table 1. Symptoms leading to diagnosis of hydatid disease

Symptoms	N (%)
Right hypochondrium pain	25 (59.5)
Abdominal mass	10 (23.9)
Incidental finding	5 (11.9)
Obstructive jaundice	1 (2.4)
Fever	1 (2.4)

Table 2. Clinico-pathological findings of patients

Parameters	N (%)	
Number of cysts	Single	33 (78.6)
	Multiple	9 (21.4)
Site of cysts	Right lobe	36 (85.7)
	Left Lobe	4 (9.5)
	Bilateral	2 (4.8)
Biliary communication	Yes	2 (4.8)
	No	40 (95.2)
Secondary Bacterial Infection	Yes	1 (2.4)
	No	41(97.6)

Table 3. Postoperative complications

Complications	N (%)
Anaphylactic shock	Nil (0)
Biliary leakage	4 (9.5)
Port site infection	2 (4.8)
Conversion to open	2 (4.8)
Mortality	Nil (0)
Recurrence	Nil (0)

involved in 2 (4.8%) patients. Clinicopathological findings of the patients are summarized in Table 2.

The mean diameter of cyst was 11cm (ranging from 9 to 20cm). The mean duration of surgery was 76 minutes (ranging from 60 to 130 minutes). No patient developed intra or postoperative anaphylactic shock. Biliary leakage was seen in 4 (9.5%). Port site infection developed in 2 (4.8%) patients. In 2 patients (4.8%), the procedure was converted to laparotomy due to insufficient exposure. The mean hospital stay of patients was 3.41+ 2.82 days. There was no mortality of the patients or recurrence of cyst on 12 week follow up. Postoperative complications are elaborated In Table 3.

DISCUSSION

The management of hydatid liver cyst is mainly surgical. Different surgical techniques have been described in literature to deal with the cyst contents, pericyst, and the residual cavity, and to manage biliary communications and recurrence. Furthermore, with advent of laparoscopy it was inevitable that hydatid liver disease also would come under the umbrella of laparoscopy. Initially reluctance to laparoscopic management exists due to fear of spillage and anaphylactic shock; however reports have shown that laparoscopy is safe with minimal complications.^{9,10} This study was also carries out to assuage the reluctance of minimal invasive approach to hydatid liver disease in our setup.

In this study, the mean age of the patients was 39.4 years. Some studies were consistent with these results,¹¹ others showed the mean age of presentation older than this study.¹² More than half of the patients were women. Preponderance of disease in gender is variable in different studies with some had male prevalence while others had female preponderance.^{11, 12} Furthermore, rural population was more frequently effected by disease. Most studies have shown similar results with rural areas being severely infected by this as compared to rural areas.^{13, 14} In our region rural population has close contact with soil, farms and cattle. This might be reason of greater preponderance of disease in rural areas.

The frequent presentations of disease in this study were abdominal pain and abdominal mass. These results are in consistence with other studies done in endemic areas.^{11, 14} Nonetheless in non-endemic regions the disease is mostly asymptomatic and usually is discovered incidentally.^{1,15}

In the present study, 42 patients with hepatic hydatid cysts were managed with laparoscopic approach, applying the doctrine of conventional surgery including distraction of scolices with antiscolical agent, aspiration of cysts fluid and unroofing the cavity. Regarding complications of surgery no patient had anaphylactic shock during the surgery. Biliary leaked occurred in 4 (9.5%) patients. Three patients with biliary leakage were managed conservatively and discharged on 7th postoperative days while 1 patient required ERCP and stent placement. Other studies showed greater percentage of biliary leakage (such as 9.3% and 13.7%) as compared to this study.^{11, 15} Port site infection was observed in 2 (4.8%) patients. Other studies showed port site infection ranging from 3% to 7% which are consistent with data of this study [11, 15, 16].^{11, 15, 16} Conversion to open surgery was done in 2 (4.8%) patients because of inadequate access and insufficient exposure. Others have reported conversion rates of 4% and 7% due to same reasons.^{11, 17} Finally there was no recurrence in this study. While the recurrence rates after laparoscopic approach were ranging from 4% to 9% in different studies.^{11, 18} Furthermore, the rate of recurrence was ranging from 3% to 10% following open surgery for hydatid cyst of liver [19].¹⁹ Therefore, with laparoscopic treatment, the degree of morbidity and recurrence decreases as compared to conventional open surgery.

CONCLUSION

Laparoscopic surgery for hepatic hydatid cyst is safe and effectual treatment in carefully selected patients. It is a simple technique with lesser postoperative morbidity and potentially decreased risk of complications especially recurrence of disease.

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