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Laparoscopic Treatment of Liver Hydatid Cyst

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1. Abstract

1.1. Objective: To determine the outcome of laparoscopic management of liver hydatid disease in terms of complications.

1.2. Material & Methods: This case series study was conducted at Surgical Deptt of Hayatabad Medical Complex Peshawar from January 2017 to March 2021. All patients with 3 or less liver hydatid cysts who underwent laparoscopic treatment for liver hydatid cyst disease were included during the study period. Laparoscopic aspiration, deroofing and evacuation of the liver hydatid cysts was done. Clinicopathologic features, operative time, conversion to laparotomy, morbidity, mortality and recurrence rates were analysed.

1.3. Results: Total 49 cases were included in the study. Age ranged between 18-60 years with a mean age of 39±13.8. There were 17(34.7%) male and 32(65.3%) female patients. Abdominal pain was the commonest presentation symptom in 37(75.5%) cases, 7(14.2%) complained of a swelling in the abdomen, 3(6.1%) with fever and 2(4.1%) presented with jaundice. The right lobe was the commonest affected site 30(61.2%), whereas the left lobe was affected in 12(24.5)% cases. The remaining four 7(14.3%) cases had bilobar affection. The mean size of the detected liver hydatid lesions was 8.5 cm (range, 3 –14). The majority of cysts were single in nature 43(87.8%), whereas the remaining cases had multiple lesions 6(12.2%).

1.4. Conclusion: Laparoscopic liver hydatid cyst surgery was a safe and effective method in selected patients.

2. Introduction

In various places of the world, hydatid disease is an endemic disease. Because of increased travel and immigration, physicians and surgeons in non-endemic locations may encounter the disease on a random basis [1]. Echinococcus granulosus, a cestode that dwells in the small intestine of dogs and other canines, causes the disease. Intermediate hosts, such as sheep, goats, or reindeer eat the eggs that are excreted in their faeces. Humans are unintentionally acting as intermediary hosts. The larvae are released in the duodenum, cross the intestinal wall, and travel through the portal system to the liver sinusoids, where they produce hydatid cysts in the liver. Some larvae pass through the liver without filtering and end up in the lungs and other organs [2, 3].

Hydatid cysts are frequent in the liver (50 to 93 %). If the cysts are not treated, they can enlarge and form fistulas into nearby organs or the biliary system, rupture into the peritoneal cavity, seeding many daughternovo cysts throughout the peritoneal cavity, or even death [4, 5].

In the last two decades, the treatment options for hydatid disease of the liver have expanded to include medicinal treatment, percutaneous drainage, or a combination of the two. Surgery is still the most common form of treatment. The use of various modalities is limited to specific stages of the disease and is associated with mixed results [6].

Laparoscopic surgery for liver hydatid cysts has been the focus of many studies [7, 8]. However, the risk of anaphylactic shock from hydatid fluid spilling during minimally invasive treatment may deter widespread adoption of this procedure [9].

Laparoscopic treatment of liver hydatid disease has been increasingly popular in recent years, and it has gone through a revolution in parallel with advancements in laparoscopic surgery [10]. Although it is a unique and encouraging treatment with low morbidity and mortality, its efficacy in the treatment of liver hydatid cysts has not been reported locally.

The aim of this study was to determine the results of the laparoscopic management of liver hydatid cyst disease in terms of complications.

3. Material and Methods

This study was conducted in Surgical Deptt of Hayatabad Medical Complex, Peshawar from from January 2017 to March 2021. The study included all patients who underwent laparoscopic surgery for liver hydatid cysts. Patients having a history of laparotomy or who refused laparoscopic surgery were excluded from the study. Intraparenchymal cysts, more than three cysts, and cysts with calcified walls were all ruled out for laparoscopic operation. Patients who had a ruptured hydatid and were operated on in an emergency were also excluded. The hydatid cyst was diagnosed in all of the patients based on their medical history, physical examination, ultrasound, CT scan, and serological tests. Albendazole 200 mg, 2 tablets twice daily, was given to all of the patients for two weeks before surgery. The clinicopathologic characteristics, surgical time, conversion to laparotomy, morbidity, mortality, and recurrence were all examined.

Postoperatively ultrasound was used to check the cyst cavity 2 weeks, 1 month, 3 months, and 6 months after surgery. If the ultrasound report was suspect or inconclusive, a CT scan was conducted. All patients received a three-month treatment of albendazole after surgery. Statistical analysis was done using SPSS 27.0 for windows.

4. Results

Total 49 cases were included in the study. Age ranged between 18-60 years with a mean age of 39±13.8. There were 17(34.7%) male and 32(65.3%) female patients.

Abdominal pain was the commonest presentation symptom in 37(75.5%) cases, 7(14.2%) complained of a swelling in the abdomen, 3(6.1%) with fever and 2(4.1%) presented with jaundice (Table 1).

The right lobe was the commonest affected site 30(61.2%), whereas the left lobe was affected in 12(24.5)% cases. The remaining four 7(14.3%) cases had bilobar affection. The mean size of the detected liver hydatid lesions was 8.5 cm (range, 3 –14). The majority of cysts were single in nature 43(87.8%), whereas the remaining cases had multiple lesions 6(12.2%) (Table 2).

Deroofing and endocystectomy was the commonest performed surgery 23(46.9%), followed by pericystectomy 10(20.4%). Other procedures included left lateral sectionectomy 7(14.3%), wedge resection 5(10%) and deroofing with endocystectomy and pericystectomy in only one 3(6.1%). No case required conversion to open surgery. Also there was no mortality noted (Table 3).

The mean duration of operation was 78.2 min (range, 40–110 min), whereas intraoperative blood loss had a mean value of 53.6 ml (range, 20–100 ml).

Postoperative complication were noted in 18(36.7%) cases, amongst which port site infection was the commonest 6(12.2%), bile leak in 5(10.2%), peritonitis 3(6.1%), Purulent drainage 2(4%) and Anaphylaxis in 2(5%) cases respectively (Table 4).

Table 1: Presenting signs & Symptoms

Features	Frequency	Percentage (%)
Symptoms		
Abdominal pain	37	75.50%
Swelling	7	14.30%
Fever	3	6.10%
Jaundice	2	4.10%

Table 2: Lesions criteria

Lesion status	Frequency	Percentage
Site of lesions		
Right lobe	30	61.20%
Left lobe	12	24.50%
Bilobar	7	14.30%
Multiplicity		
Single lesion	43	87.80%
Multiple lesions	6	12.20%

Table 3: Operative data

Procedure	Frequency	Percentage
Deroofing + endocystectomy	23	46.90%
Pericystectomy	10	20.40%
Lateral sectionectomy	7	14.30%
Wedge resection	5	10%
Deroofing with endocystectomy + pericystectomy	3	6.10%

Table 4: Post-operative complications (n=18)

Complications	Frequency	Percentage (%)
Port site infection	6	12.20%
Billiary leakage	5	10.20%
Peritonitis	3	6.10%
Prulent drainage	2	4.10%
Anaphylaxis	2	4.10%

5. Discussion

The results of a less invasive surgical procedure called laparoscopy in the treatment of liver hydatid cysts were evaluated in this study. The age range in this study was 18-60 years, with a mean age of 39, which is consistent with previous series' average age of presentation [11, 12]. In certain cases, however, all age groups are impacted similarly, with the average age of presentation being older. Females were predominantly affected in this study which is quite similar to a study conducted by Chautems R et al with female predominc [13].

In this study, abdominal pain was the most common presenting symptom, occurring in 75.5 %, which is similar to the findings of Muqim RU et al [14].

Patients with abdominal swelling, pain, fever, or jaundice should be suspected of having a liver hydatid cyst; however, in non-endemic locations, the majority of cases are asymptomatic and are found accidently. The right lobe of the liver was the most prevalent site of cyst in this study (61.2%), which was similar to the findings of Ozgur B et al (62%) [15]. Ultrasonography (US) and Computed

Tomography (CT) are both useful for detecting liver hydatid disease. Ultrasound can detect cystic membranes, septa, and hydatid sand, but CT is the best way to see cyst wall calcification and infection [16].

Liver hydatid cysts are usually treated with surgery. In 1994, the first report of laparoscopic liver disease treatment was published. It has gained popularity in the recent decade due to promising preliminary outcomes; nonetheless, there are few data on the long-term effects of this approach. Total pericystectomy, puncture and aspiration of contents followed by marsupialization, deroofing and drainage, and deroofing with omentoplasty are some of the Laparoscopic procedures mentioned. For small and peripherally located cysts, total pericystectomy appears to be the best operative approach. The more comprehensive cystectomy and hepatectomy are associated with increased morbidity for large and deeply situated cysts.

In this study, 49 patients with hydatid cysts in the liver were treated with laparoscopic surgery, which included deactivation of scolices with 20% hypertonic saline, aspiration of cyst contents, deroofing of the cavity, and evacuation of the entire cyst contents. A comparable study from University Hospital in Turkey found that simple cyst drainage with a customised trocar and cannula in 16 patients, as well as deroofing and drainage in another 20 patients, had good results and little recurrence [17]. In 33 patients, Ertern M, et al reported successful laparoscopic cystectomy and partial cystectomy with drainage, as well as omentoplasty in 15 patients, with only two patients requiring open surgery [18]. In another study by Palnivelu C, et al reported that evacuation and marsupialization, trans-cystic fenestration and lobectomy were performed laparoscopically using a Palanivelu Hydatid System (PHS), especially designed trocar for contamination-free management of liver hydatid disease [19].

One of the most impressive conclusion of this study is that all cases were performed successfully using laparoscopic technique and no case required conversion to open surgery. There was no mortality in this series. In our study post-operative complications were noted in 37% which was almost similar to the results of Huseyin KB et al 42% [20].

6. Conclusion

Liver hydatid cysts treated laparoscopically is a safe and effective procedure. It's a straightforward procedure with a lower chance of intra-abdominal leakage, as well as lesser compications and recurrence rate. It also has all of the benefits of a minimally invasive procedure. However, because there is no globally approved standard technique in this subject, more research is required.

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