

Keyhole Approach for Hepatic Hydatid Cyst Disease in Haryana

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ABSTRACT

Introduction: Hepatic Hydatid Cyst disease occur as endemic disease in several parts of the world. Surgery is most important modality in its treatment. Our objective is to determine the outcome of Keyhole laparoscopic approach of hepatic hydatid Cyst disease.

Material and Methods: In this retrospective study, 7 patients of hepatic hydatid Cyst disease during January 2013 - January 2015 were taken up. Operative time, clinico-pathologic features, conversion to laparotomy, and recurrence rates were analysed.

Results: The majority of the patients presented in the 4th decade (43.3%) with female sex predisposition (58% females). The right lobe of the liver was most commonly involved. The average operative time was shortened to about 70 minutes. The average postoperative period was 6 days. The average follow-up period is 6 months.

Conclusion: The authors concluded that Keyhole laparoscopic approach for hepatic hydatid Cyst disease is feasible, practical, safe and effective treatment in properly selected patients. It eliminates the disadvantages of big surgical incision, reduces post-operative pain and shortens the hospital stay and offers all the advantages of minimally invasive surgery.

Keywords: Hydatid Cyst, Laparoscopic.

INTRODUCTION

Hydatid disease is caused by the parasite, *Echinococcus granulosus*, that lives in the small intestine of dogs and other canines. Its eggs are eliminated in the feces and after ingestion, liberates their larvae in the intestine of an intermediate host. Humans become accidental intermediate hosts. The larvae via the portal system reach the hepatic sinusoids and develops into cysts. In a World Health Organization study in the central Peruvian Andes, the incidence of hydatid disease was reported in about 9.1% of human beings.¹

In humans, Hydatid cysts occur mainly in the liver (50-75%), then in the lungs (25%), and 5-10% distribute along the arterial system to any organs from the great toe to crown of the head, except hair, nail and teeth.²

With the passage of time, the treatment for hydatid liver cysts has been undergoing revolutionary changes. But surgery is the mainstay of treatment for hydatid disease of the liver. The era of open surgery with its associated large incision and prolonged stay is now being challenged by lesser invasive procedures.³

In the last decade, laparoscopic treatment of hepatic hydatid disease has been increasingly popular due to various advantages over open surgery. With increased use, the technique has been refined and standardized, and laparoscopic treatment has become the gold standard for management of hydatid liver disease. This study presents our experience in seven patients with hydatid cysts of the liver, treated with a keyhole laparoscopic approach in a Haryana.

MATERIAL AND METHODS

Study was done from January 2013 - January 2015 in the Department of Minimally Invasive Surgery, Jaspal Hospital, Ambala, Haryana. Study was done after taking Ethical approval from local bodies and written informed consent from subjects. 7 patients with solitary hepatic hydatid cysts were treated by keyhole laparoscopic approach. The study consisted of 3 men and 4 women. Most commonly presenting complaint was abdominal pain, followed by nausea and dyspepsia. Patients were diagnosed with the help of ultrasonography (US) and computed tomography (CT). We excluded the following cases:

- Cysts less than 3 cms in diameter.
- Interparenchymal location of the cyst.
- Multiple hydatid cysts or a cyst located near vascular liver element, and those located in segment 1,2 and 7 as they are considered in blind area for laparoscopic procedure.
- Gharbi IV.
- Patients unfit for general anaesthesia.
- Preoperatively, all patients were given a tablet of Al-bendazole 15 mg /Kg body weight for two weeks.

All procedures were performed under general anesthesia, in supine position with right tilt, surgeon and camera assistant standing on the left and the scrub nurse standing on the right side of patient. With CO₂ a pneumoperitoneum of 12 mmHg was obtained. Prophylactic antibiotics were administered 30 minutes prior to the surgery. All patients were given 8mg of dexamethasone injection 60 minutes prior to surgery, as prophylaxis for anaphylaxis as an anaphylactic reaction has been reported in a few studies.⁴

keyhole laparoscopic exploration was performed with four ports, one supraumbilical 10 mm port through which a 30° telescope is inserted; another 10 mm working port in the epigastrium as near as possible to the cyst and two additional 5 mm port were inserted according to the cyst location. After locating the cyst, gauzes soaked with 10% povidine-iodine 5% saline (as ascolicidal agent) were introduced into the abdominal cavity from the 10 mm epigastrium port, and was placed surrounding the cyst.

The cyst was punctured with laparoscopic aspiration needle connected to 10cc syringe through the epigastric port to aspirate, identify and confirm the contents. Another suction irrigation apparatus was introduced through the right 5 mm working port to avoid accidental spillage of the cyst content.

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After aspirating cystic fluid 10% povidine-iodine / 5% saline (as ascolicidal agent) was injected inside the cyst and then the cyst was aspirated again.

A needle puncture in the cyst was enlarged sufficient enough to accept the suction tip and then the suction tip was introduced inside the cyst cavity; the contents along with germinal membrane were aspirated. The deflated cystic wall was deroofed with the help of a hook by diathermy or Harmonic scarpel. The laminated membrane and daughter cysts were carefully removed and were put into the endobag.

A telescope was put inside the cavity for better visualization and to exclude any biliary communication or retained daughter cysts. One of the patient had biliary communication which was closed by intracorporal suturing with 2-0 vicryl. The cystic cavity was irrigated, washed with povidine-iodine several times. Endobag with contents were carefully removed from 10 mm epigastric port. Omentoplasty was done in all the cases. Two drains were placed, one in the cyst cavity and another in the pelvis. The postoperative period in all the cases was uneventful. Oral fluid intake was allowed on the next day of operation; the cyst drain was removed 72 hours after operation, after confirming no bile in the drain and pelvic drains were removed after 4 days. Patients were discharged on fifth day. All patients were prescribed tablet albendazole for 6 weeks, post-operatively period. The patients were planned to be followed up on one month, three month, and six month by ultrasound.

RESULT

During our study period from January 2013- January 2015, 7 patients with solitary hepatic hydatid cysts were treated by keyhole laparoscopic approach in the Department of Minimally Invasive Surgery. In the study we noticed the female preponderance (4 females) with maximum number of patients in fourth decade of life; The average age of the patient was 37.6 years (range: 23-58years). Of the total, 6 patients (85.7%) had a rural agrarian background while one patients (14.2%) were coming from an urban setting.

The commonest presenting complaint was abdominal pain or heaviness, exacerbated by meals, a symptom reported by 4 (57.2%) of the patients. Nausea and dyspepsia was reported by 2 patients (28.6%). An upper abdominal swelling or mass was noticed only by 1 patients (14.2%). All the patients had a single cyst. The mean cystic diameter was 11 centimeter (range 8 – 15 centimeter). All patients were prescribed a tablet of Albendazole 15 mg /Kg body weight for two weeks before surgery. An abdominal ultrasound and abdominal C.T scan were done to confirm the diagnosis of a hepatic hydatid cyst in all patients. Operative duration ranged from 55 min to 120 min (mean: 86 minutes). No conversion to an open procedure was required. None of our cases developed anaphylaxis during the procedure. One of the patient had biliary communication which was closed intra-operatively by intracorporal suturing with 2-0 vicryl. ly, None of the patients had post-operative port site infection. A minor biliary leak was found in two patients. The hospital stay ranged from 3 to 9 days. During the follow up period the patients were called at intervals of 1 month, 3 months and 6 month. During the follow up period none of the operated patients had

recurrence.

DISCUSSION

Hydatid disease is caused by the parasite, *Echinococcus granulosus*, that lives in the small intestine of dogs and other canines. Its eggs are eliminated in the feces and after ingestion, liberates their larvae in the intestine of an intermediate host. Humans become accidental intermediate hosts. The larvae via the portal system reach the hepatic sinusoids and develops into cysts. In humans, 50-75% of cysts occur in the liver; 25% are located in the lungs and 5-10% distribute along the arterial system. Via systemic circulation, approximately 10-15% may reach any other organs from the great toe to crown of the head, except hair, nail and teeth.²

In this study, 7 patients with hydatid cysts in liver were treated with Keyhole laparoscopic approach, with the principles of conventional surgery like inactivation of scolices with 20% hypertonic saline, aspiration of cysts contents, unroofing the cavity and evacuation of entire cysts contents. A similar study from University Hospital in Turkey has also reported simple drainage of cysts with a special trocar and cannula in 16 patients and unroofing and drainage in another 20 patients with good results and low recurrence.⁵ Ertem et al. has reported successful laparoscopic cystectomy and partial cystectomy with drainage in 33 patients along with omentoplasty in 15 patients with conversion to open surgery in only 2 patients.⁶

In our study the average age of the patient was 37.6 years (range: 23-58 years), which is in keeping with the average age of presentation in other series.^{7,8} Females were predominantly affected in our study as in some other studies.^{8,9} The commonest presenting complaint was abdominal pain or heaviness, exacerbated by meals, a symptom reported by 4 (57.2%) of the patients, which has also been reported by other authors.⁷⁻⁹ In this study, the most common pathology was a solitary cyst in the right lobe of liver. Same was reported in studies from India and Uruguayan community.^{7,10} Ultrasonography (US) and CT are both effective for detection of liver hydatid disease. US is useful in detection of cystic membranes, septa and hydatid sand, while CT exhibits cyst wall calcification and cyst infection are best demonstrated by CT.¹¹

Surgery remains the mainstay of treatment for hepatic echinococcosis.^{12,13} Laparoscopy is ideal in patients with superficial and fluid-filled cysts.¹⁴ Laparoscopic pericystectomy can be regarded as the gold standard for management of small, peripherally located hydatid cysts lying away from major vessels.¹⁵ The first report of laparoscopic treatment of hydatid cyst of the liver was published in 1994¹⁶ followed soon thereafter by the first report of anaphylactic shock complicating laparoscopic treatment of hydatid cysts of the liver.⁴ In fact, an exaggerated fear of anaphylaxis seemed to discourage surgeons from more widely adopting minimal access techniques for the treatment of hydatid cysts.¹⁷ However, gradually reports started appearing in the world literature detailing laparoscopic management of liver hydatid disease.¹⁸ Various Laparoscopic techniques described are total pericystectomy, puncture and aspiration of contents followed by marsupialization, unroofing and drainage, unroofing and omentoplas-

ty.^{19,20} Total pericystectomy seems to be the best operative procedure for small and peripherally located cysts. For large and deeply located cysts, the more extensive cystectomy and hepatectomy are accompanied by higher morbidity.⁶ In our study, we have performed procedure laparoscopically, the remnant cyst was dealt with by omentoplasty. We have used the regular Trocar Canula system, to obtain a totally contamination-free management of liver hydatid disease.

Keyhole Laparoscopic surgery has well known advantages, as it offers lower morbidity outcome and shorter hospital stay. The laparoscopic approach is associated with faster surgery recuperation and possible resolution of concomitant abdominal surgical problems.²¹ The Keyhole laparoscopic approach of hepatic hydatid Cyst disease offers an advantage of better visual control of the cyst cavity under magnification, which allows better detection of small open bile ducts that leak bile. These are taken care of by direct suturing or cauterization and better visualization of the remains of germinative layer of the cyst. One of the patient had biliary communication which was closed intraoperatively by intracorporeal suturing with 2-0 vicryl. Despite the above-mentioned advantages, the keyhole laparoscopic evacuation of liver hydatid cyst has its limitations and risks i.e. hydatid dissemination and anaphylaxis mainly at the time of needle insertion through a puncture. The first case report of anaphylactic shock complicating laparoscopic treatment of hydatid cyst has been reported in 1998⁴ the author suggested that anaphylaxis developed secondary to direct contact of the hydatid fluid with blood stream, due to inadvertent laceration of the liver. To avoid such anaphylactic shock during laparoscopic evacuation we should include cysts surfaces into peritoneal cavity laparoscopically. The cyst should be approached through its fibrotic capsule and adequate precaution should still be used to avoid liver parenchymal injury.⁴ In our study, we have performed procedure keyhole laparoscopic approach, the remnant cyst was dealt with by omentoplasty. We used 10% povidine-iodine / 5% saline (as ascolicidal agent) to irrigate the gauze that surrounded the cyst and during aspiration and injection of the cyst cavity but after evacuating all the content we resorted to ascolicidal agent for irrigation. Another important issue in laparoscopic hydatid cyst surgery is the removal of the germinative membrane.⁶ Several techniques and instruments have been used, i.e. aspiration-grinding apparatus others used a large – bore suction catheter.¹⁸ We used a wide bore suction catheter without valve system for evacuating the cyst content. Some groups have reported a 23% to 27% conversion rate^{5,22} and 4% to 25% morbidity rate.^{5,22,23} The incidence of conversion from laparoscopic to open surgery is variable and can be reduced by proper selection of cases. Cases with calcified cysts, those located in the deeper portions of the liver and those with biliary communications are not suitable for laparoscopic management. Due to proper case selection in our study, there was no incidence of conversion.

CONCLUSION

The authors have no doubt to conclude that Keyhole laparoscopic approach for hepatic hydatid Cyst disease with regular trocar canula system is feasible, practical, safe and

effective treatment in properly selected patients. Its efficacy was found to be optimum for preventing spillage, evacuating contents of hydatid cysts and visualization of cyst-biliary communication. It shortens the postoperative hospitalization period, reduces the number of complications as well as the overall costs. Keyhole Laparoscopic approach eliminates the disadvantages of big surgical incision, reduces post-operative pain and shortens the hospital stay and offers all the advantages of minimally invasive surgery.

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