

LAPAROSCOPIC SIMULTANEOUS PARTIAL PERICYSTECTOMY AND TOTAL CYSTECTOMY FOR HYDATID LIVER CYSTS – CASE REPORT

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Abstract

Surgery remains the gold standard for the treatment of patients with echinococcosis, despite significant economic costs, advances in medical treatment and interventional radiology; in the past decades there has been a tendency toward laparoscopic surgery.

We present a 66-year-old patient, from a rural area, who was admitted to our service complaining of spontaneous and palpatory pains in the right hypocondrium, headaches and dizziness. Abdominal CT scan highlighted 2 round calcified tumors, one of 7.2 cm diameter (VIIIth segment) with liquid densities, and the other one localized higher, with a diameter of 2.3 cm (IVth segment).

Under general anesthesia, after the neutralization of the content of the cyst with hypertonic saline irrigation, we performed laparoscopic partial pericystectomy of the VIIIth segment liver cyst and total laparoscopic cystectomy of the IVth segment liver cyst. Postoperative evolution was favorable without biliary fistula formation, postoperative infections or cystic cavities abscesses.

Laparoscopic surgery seems to be effective and safe for uncomplicated cysts in accessible segments of the liver, combined with adjuvant albendazole therapy to reduce complications and postoperative morbidity, but the procedure has its own disadvantages such as a limited area of surgical manipulation.

Keywords: hydatid liver cyst, pericystectomy, laparoscopic surgery

Introduction

Selection of the most appropriate treatment to obtain the lowest morbidity, mortality, and recurrence rates is mandatory for the hydatid disease of the liver (HDL).

Surgery remains the gold standard for the treatment of patients with echinococcosis, despite of significant economic costs, advances in medical treatment and interventional radiology, and there is a tendency toward laparoscopic surgery (LS) [1,2].

With the explosion of LS, many surgeons have tried laparoscopic intervention for hydatid cysts of the liver and have had results comparable to those of open surgery with the added benefits of minimally invasive surgery. However, many are still unconvinced about the role of laparoscopy in hydatid disease of the liver because of fears of difficulty in controlling spillage, higher complications and recurrence rates [3,4].

Case Report

Patient presentation

We present a patient aged 66 years, from rural area, who was admitted to our service complaining of

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spontaneous and palpatory pains in the right hypocondrium, headaches and dizziness.

Computed tomography imaging

The preoperative workup included abdominal ultrasound and contrast enhanced computed tomography scan of the abdomen.

The abdominal CT scan highlighted 2 round calcified tumors, one of 7.2 cm diameter (VIIIth segment) with liquid densities, and the other one located higher with a diameter of 2.3 cm (IVth segment).

The diagnosis of liver hydatid was in this case based on CT imaging studies and on clinical suspicion because our patient had been operated 30 years ago for a hydatid cyst of the left lung.

We considered as selection criteria for LS: liver cyst not located in segment I or VII (Couinaud's segmentation), with corticalization on the surface and no evidence of intrabiliary rupture.

Under general anesthesia, after the neutralization of the content of the cyst with hypertonic saline irrigation 15%, we performed laparoscopic partial pericystectomy of the VIIIth segment liver cyst and total laparoscopic cystectomy of the IVth segment liver cyst.

Postoperative evolution was favorable and the patient was followed up every 3 months for the first year after the surgical intervention.

Surgery and follow-up

Patient position, the number of ports [4], and their placements were established according to the location and size of the hydatid cysts, and they were similar to the technique for laparoscopic cholecystectomy (Figure 1).

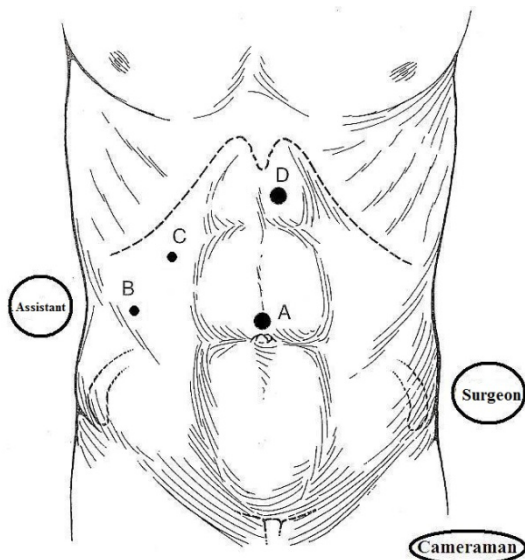


Figure 1. Position of trocars and operators.

The surgeon usually stood between the legs of the patient placed in a "Y" position, but in our case we chose to stand on the left side of the patient because the biggest cyst

was in the right lobe of the liver.

After initial laparoscopic evaluation through a supraumbilical 11 mm port placed in accordance with the lower margin of the liver or the cyst, the suitability of the cyst for LS was confirmed, and the procedure was carried out as established earlier.

At the beginning we performed the retrograde laparoscopic cholecystectomy.

First of all we started by introducing into the abdominal cavity a mesh soaked with hypertonic saline solution which was placed on the diaphragmatic surface of the liver around the cysts to prevent the spillage of fluid. We sectioned the adhesences between the omentum and the cyst's wall (Figure 2).



Figure 2. The hydatid cyst from segment VIII of the liver with omentum adhesences.

Then we performed the decompression of the cyst by aspiration of the cyst fluid using a wide bore needle through one of the 5.5 mm ports under laparoscopic guidance, taking care to avoid spillage, and by the use of at least one continuous suction cannula around the needle puncture site (Figure 3).

We sent the fluid to the laboratory for examination, culture and also for confirmation of scolices by microscopy.

After the initial aspiration of as much of the cyst's fluid as possible, we injected equal amounts of hypertonic saline solution (15%) into the cyst, for "sterilization" of the cyst cavity, without removing the needle, and let the content inside for 10 minutes. After that, we aspirated the solution taking care to avoid spillage.

We opened the cyst using the electrocautery and made a direct inspection of the interior of the cyst by introducing the laparoscope into the cyst to seek for remaining cyst elements and biliary leakage, if any, for subsequent attention. We performed the Lagrot partial

pericystectomy for the hydatid cyst's anterior wall, as much as possible, using diathermy and Ligasure (Figure 4).

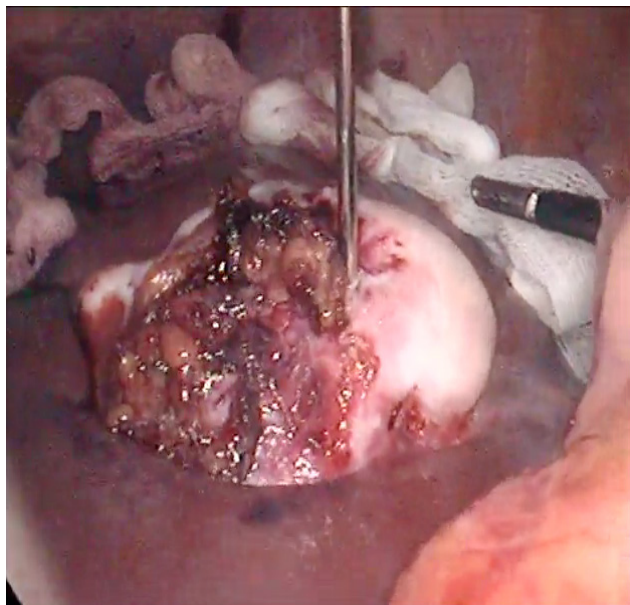


Figure 3. The mesh soaked with hypertonic saline solution around the punctured hydatid cyst.

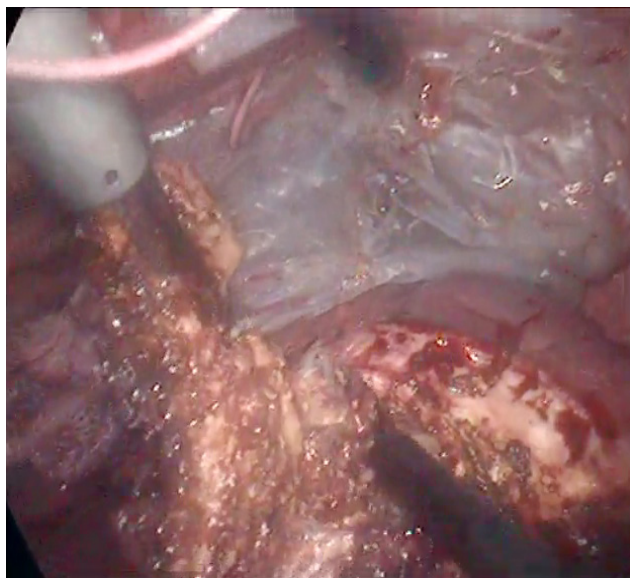


Figure 4. Lagrot partial pericystectomy.

We also performed the total cystectomy for the hydatid cyst from the IVth segment of the liver which required good haemostasis with the electrocautery (Figure 5).

Using an endobag we removed the cyst wall and all the residual elements (remnants of the germinal membrane) from the interior of the cyst, to prevent contamination. By electrocautery we controlled the bleeding points. There were no points of bile leakage (Figure 6).

After the placement of omentum into the residual cavity of the cyst we applied two drainage suction catheters



Figure 5. The hydatid cyst from the IVth segment of the liver.



Figure 6. Removing the cyst wall and all the remnants of the germinal membrane from the interior of the cyst using an endobag.

on the residual cyst cavity and also under the visceral surface of the liver in the gallbladder's place. The total operating time was 105 minutes.

Postoperatively, the patient stayed in the hospital as long as the drains were present (7 days). The postoperative evolution was favorable, without developing biliary fistulas and without postoperative infections or cystic cavities abscesses.

Albendazole was continued postoperatively for 4 weeks. The patient's follow up was done every 3 months for the first year after the surgical intervention.

Discussion

Surgery remains the gold standard therapy despite the increased interest in nonsurgical techniques. Because the open procedures are followed by significant morbidity, especially in terms of wound infection, the laparoscopic approach has become increasingly popular, although controversies regarding the role of laparoscopy in the management of HDL have not been resolved to date [5].

Most of the reports on laparoscopic treatment of HDL consist of case reports or small patient series. They could give the misleading impression that they are oriented to publish successful results with this technique, but the difference detected in favor of the minimally invasive approach could be due to the limited number of patients and the rigorous selection criteria (central location of the cyst, cyst size exceeding 10 cm, cysts with thickened and calcified walls) [2,6].

There are some exclusion criteria for LS for HDL in the literature, such as severe cardiopulmonary disease unlikely to tolerate prolonged pneumoperitoneum with CO₂ and other associated cardiovascular diseases as contraindications for general anesthesia. Previous abdominal surgery is likely to have adhesions limiting the visibility and increasing the difficulty of laparoscopic dissection [3,7].

The recurrent hydatid cyst and cysts located more than 1 cm deep from the liver surface, which may be difficult to identify laparoscopically, are likely to result in significant bleeding when the overlying hepatic parenchyma is cut with laparoscopic instruments using electrical diathermy [8].

There are cases reported in literature with cystobiliary communication that were successfully sutured laparoscopically by applying an X-shaped wire or a clip, but there are situations where the procedure was converted into an open procedure due to the difficulty in laparoscopic suturing owing to dense calcification of the wall.

A great advantage of laparoscopic treatment is that the laparoscope can be inserted inside the cystic cavity, allowing its inspection. Also, remnants of the germinal membrane can be identified and removed, reducing the incidence of recurrence or suppurative complications [2,9].

There are also cysts located in segments I or VII that needed to be converted to an open procedure because of their anatomical location, which made approach difficult [5].

The spillage of fluid or of the daughter cysts is a severe complication because of the risk of spreading the cyst into the whole peritoneal cavity. The direct trocar entry into the hydatid cysts reported by some authors may also lead to the spillage, if the trocar is not fitted tightly through the entry site [10].

The omentoplasty of the hydatid cyst cavity was added to the standard procedure by all authors.

The surgical treatment must always be combined

with adjuvant albendazole therapy to reduce complications and postoperative morbidity.

The literature reveals that laparoscopic management of hydatid cysts predominantly consists of aspiration of the cyst contents either alone or in combination with Lagrot partial pericystectomy. Laparoscopic pericystectomy or even liver resections have been shown to be viable options with good results [11].

Lagrot partial pericystectomy involves resection of the corticalized pericyst (externalized extrahepatic) up to the border with the liver parenchyma. After this procedure, the part of the intrahepatic pericyst (residual cavity) communicating with the remainder of the peritoneal cavity remains in situ [2,12].

The known surgical complications include intraoperative spillage of cyst contents, anaphylaxis, hemorrhage, postoperative bile leak, bile collection in the cavity, infection of the cyst, and wound infection.)

Postoperative morbidity ranges from 8 to 25% in laparoscopic studies and from 12 to 63% in open series. Treatment-related death after laparoscopy is almost zero in laparoscopic series, whereas it ranges from 0 to 3% in open series [2,13].

The rate of conversion to open procedures varies. Conversion is required due to inaccessibility, calcification, or other complications of the cyst, and occasionally due to technical factors. Both the rate of conversion and complications can be reduced by proper selection of cases: selection of cases with cysts only in the easily approachable area of the liver, like segments II, III, IVb, V, and VI, avoiding calcified cysts and those in deeper portions of the liver, or those with biliary communications [1,14].

The most difficult problem associated with both open and laparoscopic surgical treatment of HDL is the recurrence of the hydatid cyst with persistence of the parasitic infection.

With nonradical and radical laparoscopic treatment of HDL, a number of authors have shown recurrence rates comparable to those of open operations, thereby establishing the safety of LS.

Postoperatively, our patient stayed in the hospital as long as the drains were present (7 days). There are studies where the mean hospital stay was 6.42 days (range, 1–21 days) in the laparoscopic group, and 11.7 days (range, 4–80 days) in the open group [2].

Laparoscopic treatment of liver hydatidosis should not be regarded as a new surgical technique but rather as a new and minimally invasive access (with all its benefits) for performing a popularly established surgical intervention [2,15].

Conclusions

Like any other surgical intervention, laparoscopic treatment of liver hydatidosis complies with the basic

surgical principles of treating liver hydatid cysts by an open approach including prevention of hydatid spillage, sterilization and evacuation of the parasite, and management of the residual cavity.

The known surgical complications include intraoperative spillage of cyst contents, anaphylaxis, hemorrhage, postoperative bile leak, bile collection in the cavity, infection of the cyst, and wound infection.

Conversion is required due to inaccessibility, limited area of surgical manipulation, calcification, or other complications of the cyst, and sometimes it is due to technical factors.

With a proper patient selection, laparoscopic surgery seems to be effective and safe for uncomplicated cysts in accessible segments of the liver, as in our patient's case.

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