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Laparoscopic Approach to Liver Hydatidosis: Initial Experience☆

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ABSTRACT

Introduction: Hepatic hydatidosis is a pathology that has a worldwide distribution, and is frequent in some rural areas in Argentina. Surgical treatment still offers the best results. The laparoscopic approach is controversial because of lack of experience with this technique.
Objective: To evaluate the feasibility and efficacy of the laparoscopic approach in this pathology and to present the experience obtained in a medical center in Argentina.
Materials and methods: We prospectively evaluated patients with a diagnosis of non complicated hydatidosis, over 15 years of age whose cyst had the following characteristics: unique cyst, size less than 5 cm, located in the anterior segments or easy access. Analyzed data were sex, age, cyst localization, treatment, operating time, morbidity and mortality and recurrence.
Results: Nine patients were operated using a laparoscopic approach. The cysts were localized in the segments III, IV, V and VI. Six patients were operated with pneumoperitoneum and 3 with a parietal traction device; in all the patients the first approach was a laparoscopic PAIR (punction, aspiration, injection and reaspiration).

Seven Mabit-Lagrot procedures were performed and 2 pericystectomies. The operative time was a mean of 89.7 min and a hospital stay of 52 h. The morbidity was 22.2% and the mortality was 0%. Mean follow-up of 19 months showed no recurrences.
Conclusion: A higher number of patients and a longer follow-up are necessary to evaluate the efficacy of approach; the laparoscopic approach seems to be safe. Our results coincide with the majority of other publications.

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Tratamiento laparoscópico de la hidatidosis hepática: experiencia inicial

Palabras clave:
Hidatidosis hepática
Tratamiento quirúrgico
Abordaje laparoscópico

RESUMEN

Introducción: La hidatidosis hepática es una enfermedad que se presenta frecuentemente en algunas provincias de Argentina. El tratamiento quirúrgico sigue siendo aún el que ofrece los mejores resultados. El tratamiento laparoscópico es controvertido debido a la poca experiencia con esta técnica.

Objetivo: Evaluar la factibilidad y eficacia del tratamiento laparoscópico de esta enfermedad y presentar la experiencia obtenida en un centro de Argentina.

Material y métodos: Se evaluó de manera prospectiva a los pacientes con hidatidosis hepática no complicada mayores de 15 años cuyos quistes tenían las siguientes características: quiste único, menor de 5 cm, situado en segmentos anteriores o de fácil exposición. Fueron evaluados los siguientes datos: sexo, edad, localización del quiste, tratamiento, tiempo operatorio, morbimortalidad y recurrencia.

Resultados: Nueve pacientes fueron operados por laparoscopia, los quistes estuvieron localizados en los segmentos III, IV anterior, V y VI. Seis pacientes fueron operados con neumoperitoneo y 3 con un sistema de tracción parietal, en todos ellos el primer gesto fue realizar un PAIR laparoscópico.

Se efectuaron 7 procedimientos de Mabit-Lagrot y 2 periquistectomías. El tiempo operatorio medio fue de 89,7 min y la estancia hospitalaria de 52 h. La morbilidad fue de 22,2% y la mortalidad de 0%. La media de seguimiento fue de 19 meses sin recidivas.

Conclusión: Un mayor número de casos y un seguimiento más prolongado son necesarios para evaluar mejor su eficacia; el abordaje laparoscópico parece ser seguro. Nuestros resultados coinciden con la mayoría de los publicados.

Introduction

Hepatic hydatidosis is a zoonosis caused by *Echinococcus granulosus*. It is frequently observed in some provinces of Argentina, especially Río Negro, the north of Córdoba province, Santiago del Estero and Catamarca.[1–3] Surgical treatment continues to offer the best results in these patients. The use of the laparoscopic approach is controversial due to the limited experience, short follow-up periods of patients treated with this technique, and fear of intraoperative complications (cyst rupture, peritoneal seeding and anaphylactic shock).[4]

Laparoscopic treatment should offer the same results and accessibility as conventional laparotomy techniques. In the case of hydatidosis and according to our experience, these procedures include: pericystectomy, Mabit-Lagrot procedure (cyst deroofing with suture along the edge with or without associated omentoplasty) and liver resections.[1–3]

The objectives of the present study were to evaluate the viability and efficacy of the laparoscopic approach and to present our results.

Materials and Methods

Out of a total of 76 patients with hepatic hydatidosis, 9 cases were chosen for laparoscopic management as the cysts were located in anterior liver segments, with easy laparoscopic access. The patients had no previous laparotomies. The inclusion criteria for our study also included: patients over the age of 15 with solitary hydatid cysts that were smaller than 5 cm in diameter (measured by ultrasound), either located in the anterior segments or clearly visible, and no ultrasound signs of complications. Pregnancy was considered an exclusion criterion, regardless of the fact of whether surgery was done with pneumoperitoneum or with an abdominal wall traction system.

The first step of surgery was to locate the cyst by laparoscopy and, through the abdominal wall, we inserted a metal subclavian puncture trocar (Enelsen-Rivero No. 10) connected to the suction system for puncture of the cyst, aspiration of liquid contents, and injection of hydrogen peroxide (as a parasiticide), which remained in the cyst for 5 min before reaspiration (puncture–aspiration–injection–reaspiration [PAIR]). The surgical field around the cyst was protected with dry dressings.

We began through an umbilical port with the Hasson technique and distribution of the working ports was done in such a way that triangulation was preserved around the location of the cyst; 12, 10 and 5 mm reusable metal trocars were used. The chosen laparoscopic approach was performed with 4 trocars in most cases.

The patient was placed in the supine decubitus position, with open legs, and the surgeon operated from this position; the assistant and surgical nurse were situated on the right or left, depending on the technical requirements.

The study period was 6 years. None of the patients included in the present study received parasite treatment.

The data evaluated were sex, age, liver segment of the cyst location, treatment used, associated surgical steps, conversion to open surgery, surgical time measured in minutes

(from the first incision until the last suture), hospital stay, morbidity/mortality and relapse.

Results

Out of a total of 76 cysts treated over a period of 6 years, 9 (11.8%) were treated laparoscopically; 6 were women and the remaining 3 were men. Mean age was 55 (range 43–64). The ultrasound locations of the cysts, which were later confirmed during surgery, were as follows: segment III in 2 patients, anterior IV in 2 patients, V in 2 and VI in 3 patients. Mean cyst diameter was 34.8 mm (range: 21–47). In 6 patients, surgery was performed with pneumoperitoneum, while in the other 3 we used an abdominal wall traction system that had been developed by our department.

Each patient underwent laparoscopic PAIR, which allowed us to safely empty the cyst. We did not observe obstruction of the trocar by the membranes in any of these cases.

In 7 patients, the definitive treatment included a Mabit-Lagrot procedure, and total pericystectomy was done including a small portion of liver parenchyma in the remaining 2 patients. The surgical specimens were removed in plastic laparoscopic extraction bags. Five patients underwent associated cholecystectomy due to lithiasis, and intraoperative cholangiography was only performed in these 5 patients.

Mean operative time was 89.7 min, with a range between 63 and 120 min. When we independently analyzed the time used in those patients with pneumoperitoneum and those with the traction system, the mean was 86.2 min in the former and 97 min in the latter. There was no need to convert surgery to laparotomy in any of the procedures. Mean hospital stay was 52 h (range: 36–96 h).

The morbidity rate of the series was 22.2%, including 2 superficial wound infections (Dindo-Clavien classification type 1). Mortality rate was 0%. Mean follow-up was 19 months (range: 3–39), with no recurrences seen on ultrasound.

Discussion

Due to its frequency, hydatidosis is considered a public health problem in some provinces of Argentina.[1–3] Surgical treatment continues to provide the best results in these patients. We have observed that pericystectomy, liver resections and the Mabit-Lagrot procedure are most widely used in these cases.[1–3]

The laparoscopic approach in these situations is still controversial because of the limited experience in its use, short follow-up periods of most series and, mainly, fear of intraoperative complications, such as cyst rupture and later peritoneal seeding, anaphylactic shock and hemorrhage.[4–7]

We have used the laparoscopic approach in 9 out of a total of 76 surgeries to treat this disease. These patients had been carefully selected; we chose those with small cysts that were preferably located in the anterior segments. We concur with other authors and the fact that the procedure is easier and safer in anterior than in posterior segments, where management and visibility are more complicated, along with the associated risk factor of the proximity to the suprahepatic vena cava.[4,8]

Other authors[9] have used this approach in cysts larger than 5 cm with good results. It is our opinion, however, that in larger cysts there is a definite possibility of a cyst-bile duct communication that could condition the appearance of a postoperative biliary fistula.

In all patients, we performed a laparoscopic PAIR technique in order to sterilize the cyst for later exeresis. This was done, as suggested by different authors, by means of puncture of the cyst at its point closest to the abdominal wall followed by hydrogen peroxide injection.[4,5,9,10]

The injection was done slowly and without completely filling the cyst because not all the patients were operated on with intraoperative cholangiography to rule out cyst-bile duct communication; any passage of hydrogen peroxide to the biliary tree could lead to cholangitis after injection. In those patients who did not undergo cholangiography, the absence of bile staining of the extracted liquid from the cyst puncture/PAIR technique was considered an indirect sign of absence of cyst-bile duct communication. Thus, we coincide with some authors who suggest that, in cyst-bile duct communications, it is more frequent for the flow to go from the bile duct toward the cyst and not vice versa, evidence for which would be the presence of bile staining in the intracystic liquid.[11]

In 2 cysts, the puncture was transparenchymal as they were almost completely included in the liver. The puncture through the liver parenchyma provides added safety since it is less likely that the cyst could be ruptured or lacerated by the trocar.

We performed 7 Mabit-Lagrot procedures and 2 pericystectomies to treat the cysts. We agree with reports in the literature that the Mabit-Lagrot procedure is technically simpler and easier. Pericystectomy is more complex, especially when becoming initiated in laparoscopic surgery, as is our case. Therefore, we only applied the latter technique in 2 opportunities in cysts that almost completely surpassed Glisson's capsule.[4,5,8–12]

The operative time coincides with times published by other authors.[11,12] When we compared the time required for pneumoperitoneum or wall traction, the latter technique took 10 min longer; this datum differs from the publications of other authors.[10]

Abdominal wall traction avoids the complications associated with pneumoperitoneum. It also has the added benefit of being used without restrictions for aspiration, which is so important for the treatment of this disease.[13,14]

It was not necessary to convert to open surgery in any of the cases, which coincides with the publications of other authors.[5,9,10]

Mean hospital stay was 52 h. This also coincides with other authors,[9,12] although some reported a mean of 2 days.[4]

The morbidity rate of the series was 22.2% due to infection of the umbilical wound in patients operated with pneumoperitoneum. Other publications reported percentages that ranged between 0 and 25%.[4,5,9,12] Mortality was 0%. Mean follow-up was 19 months, with no recurrences. We coincide with the literature in the opinion that the follow-up times are short and longer periods are necessary to make any conclusions about recurrence.

Lastly, we can conclude that the laparoscopic approach to hydatidosis is feasible and safe when patients are properly

selected. It results in lower risk for perioperative complications. The Mabit-Lagrot procedure is highly recommended in cysts of this size. However, as previously stated, we favor radical procedures in cysts that are larger, multiple, or have communicated with the bile duct.[1] In this situation, we believe that the distinction between which procedure to perform (radical vs non-radical), should be dictated by the characteristics of the cyst/patient association and not by theories either in favor or against radical surgeries.[15–17]

The use of an abdominal wall traction system to avoid pneumoperitoneum has the extra advantage of being able to use aspiration freely, which is so important in the treatment of cysts. Last of all, a longer follow-up period, a greater number of cases and randomized studies are necessary to confirm this promising tendency.

Conflict of Interest

The authors have no conflict of interest to declare.

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