

Laparoscopic Pericystectomy in A Case of Liver Hydatid Cyst

Karaciğer Hidatik Kist Olgusunda Laparoskopik Perikistektomi

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Abstract

Despite the rapid developments in surgical technology and equipment, laparoscopy has not been widely practiced in the treatment of liver hydatidosis (LH). Here, we report a case of LH treated with laparoscopic radical surgery with appropriate selection based on preoperative imaging. A 24-year-old woman was referred to our hospital due to hepatic hydatid cyst. Preoperative computed tomography showed hydatid cyst with detached laminar membranes, 75 mm in size, involving segment 5 - 6 of the liver and attached to gallbladder. She underwent laparoscopic pericystectomy combined with cholecystectomy after a failed puncture-aspiration-injection-reaspiration. The patient was discharged uneventfully on postoperative day one. Total pericystectomy is the only treatment option for complete eradication of the parasites in selected cases. Especially, laparoscopic approach can be safely performed in cases with hepatic hydatid cyst smaller than 10 cm, located peripherally and irrelevant to major ductal structures and vessels.

Key Words: Laparoscopic Pericystectomy, Liver Hydatidosis, Hydatid Cyst, Minimally Invasive Surgery, Echinococcosis, Case Report

Öz

Cerrahi teknoloji ve ekipmanlardaki hızlı gelişmelere rağmen karaciğer hidatozu (LH) tedavisinde laparoskopi yaygın olarak uygulanmamaktadır. Burada preoperatif görüntülemeye dayanarak laparoskopik radikal cerrahi ile tedavi edilen bir LH olgusunu sunuyoruz. 24 yaşında kadın hasta karaciğer kist hidatik nedeniyle hastanemize sevk edildi. Preoperatif bilgisayarlı tomografide 75 mm büyüklüğünde, karaciğer segment 5 - 6'da tutulum gösteren ve safra kesesine adheze laminer membranlı hidatik kist görüldü. Hastaya, ponksiyon-aspirasyon-enjeksiyon-reaspirasyon işleminin başarısız olması üzerine laparoskopik perikistektomi ve kolesistektomi uygulandı. Hasta postoperatif 1. günde sorunsuz taburcu edildi. Seçilmiş olgularda parazitlerin tamamen yok edilmesi için tek tedavi seçeneği total perikistektomidir. Özellikle periferik yerleşimli, majör duktal yapılar ve damarlarla ilişkisi olmayan, 10 cm'den küçük karaciğer kist hidatik olgularında laparoskopik yaklaşım güvenle uygulanabilir.

Anahtar Kelimeler: Laparoskopik Perikistektomi, Karaciğer Hidatozu, Hidatik Kist, Minimal Invaziv Cerrahi, Ekinokokkoz, Olgu Sunumu

Introduction

Echinococcosis, is a zoonosis caused by larvae of the genus Echinococcus. The cyst can appear in any part of the body but liver is the most common organ which cysts occur. Despite considered as a benign condition, if left untreated, liver hydatidosis (LH) might result in complications such as deterioration of life quality or even death. The treatment of LH

aims to eliminate parasite completely with minimal morbidity and to prevent recurrence.

Surgery is the gold standard method in the treatment of LH. Although cyst drainage and omentoplasty is a common surgical technique, it is associated with a high likelihood of recurrence. Therefore, in selected patients, total pericystectomy is the only treatment of choice for complete elimination of the parasite (1,2). Due to the fear of dissemination of the parasite

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or anaphylaxis during the procedure most surgeons avoid the laparoscopic technique despite the advances in laparoscopic technology (3). Moreover, total pericystectomy has high rates of complications such as bleeding and bile leak (4). Therefore, there are only a limited number of patients treated with laparoscopic total pericystectomy technique. In this paper we present a case of LH treated with laparoscopic radical surgery.

Case Presentation

A 24-year-old female patient who was diagnosed with hydatid cyst of the liver was referred to our clinic for further investigation and treatment. The patient had been operated for pulmonary hydatid cyst 13 years prior. On admission to our hospital, she was administered albendazole due to the positivity of hydatid serology (indirect hemagglutination test). All laboratory values, including liver function tests, were within normal ranges. Computed tomography (CT) showed a single thick-walled cystic lesion with detached laminar membranes, 75×45 mm in size, extending from segment 5 to segment 6 of the liver (Figure 1). The cyst was characterised as WHO CE3 (CE; cystic echinococcosis) according to the World Health Organization classification. Based on these findings, hydatid liver cyst was managed with a percutaneous treatment via puncture, aspiration, injection, and reaspiration (PAIR), but failed PAIR was revealed by the three month follow-up with CT and serology. Thus, we planned surgery.

Under general anesthesia, the patient was placed in the French and reverse Trendelenburg (20°) position. Because of right sided cyst, the surgeon and assistant surgeon stood between the patient's leg and at the patient's left side, respectively. After pneumoperitoneum, a 30 degree telescope was placed through the 10 mm infraraumbilical port. Additional ports were placed as follows; a 5 mm port was inserted 2 cm below the xiphoid, 10 mm port was inserted from the left upper quadrant used as a working channel and a 5 mm port was placed 3 cm below the the arcus costarum and right anterior axillary line intersection (Figure 2). The exploration revealed approximately 8 cm cyst that involving segment 5-6 of the liver and attached to gallbladder. After lysing the adhesions between the cyst and the neighboring organs, the cyst was isolated (Figure 3A and B). The Calot's triangle was dissected the cystic duct and cystic artery were identified and ligated by using Titanium clips and cut. After dissecting the gallbladder from the gallbladder bed, the liver parenchyma dissection was carried out just adjacent to the pericyst meticulously. Total pericystectomy en block with cholecystectomy was performed using ultrasonic shears (Harmonic Scalpel, Ethicon) without perforation of the cyst wall. Hemostasis was achieved with bipolar cautery and no bile leakage was observed intraoperatively. The 10 mm port

incision on the left upper quadrant was widened to a width of 3 cm and the specimen was retrieved by partially fragmenting in the endobag through this incision without contaminating the peritoneal cavity. A drain was placed before ending the operation (Figure 3C). The operative time and intraoperative blood loss were 70 min and 200 mL, respectively. Patient was discharged on day one without any complications.

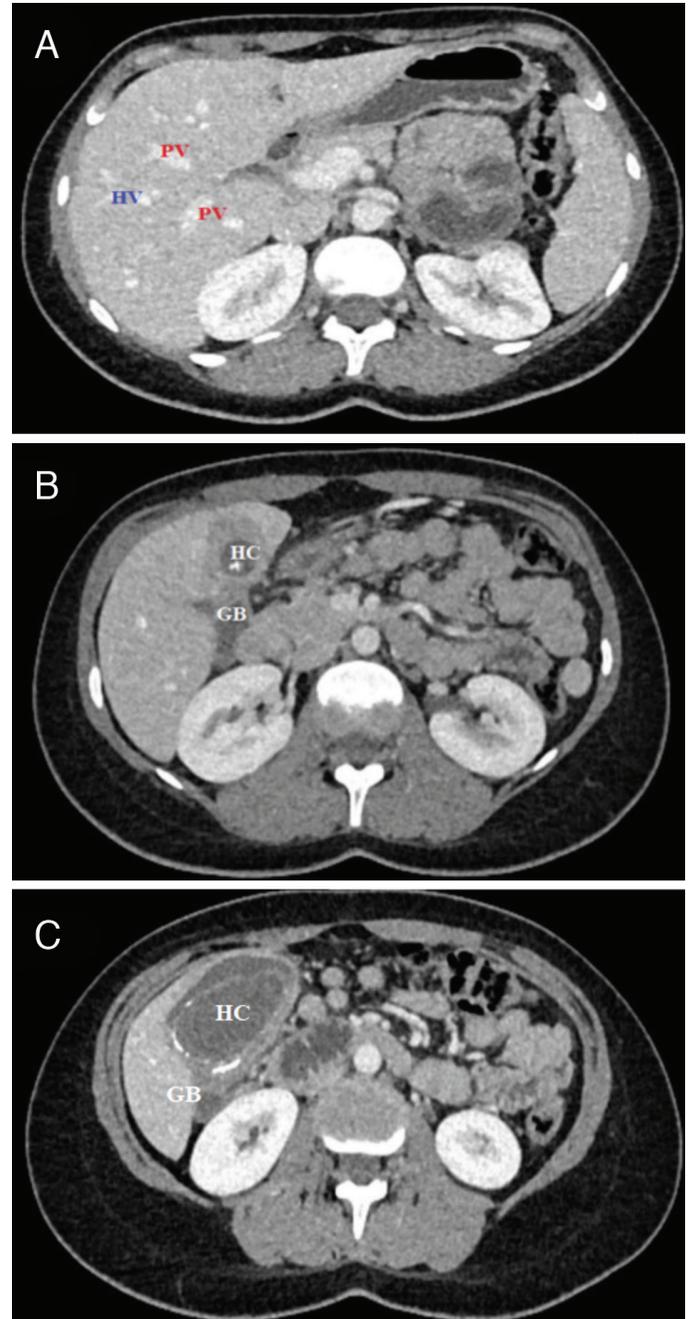


Figure 1: Computed tomography images of liver hydatid cyst. A. Branches of portal vein and hepatic vein, irrelevant to hepatic hydatid cyst. B and C. A single thick-walled cystic lesion with detached laminar membranes placed anteriorly in segment 5-6 and attached to the gallbladder

Discussion

LH is managed in a variety of ways, ranging from medical treatment to surgery; however, surgery is still the mainstay of treatment (1,2,5). With the advanced in technology and equipment, laparoscopy has been increased to be used since the first laparoscopic procedure for LH in 1992 (6). However, laparoscopy still has not been widely accepted in the management of hydatid disease due to apprehension that the risk of recurrence and intraperitoneal dissemination (7). Furthermore, various factors may influence management of LH with laparoscopically such as number, size and location of cyst, presence of cystobiliary communication; and the surgical expertise (2).

The risk of recurrence cannot be eliminated by any conservative surgery which is a cause of major concern. Therefore, radical procedures such as liver resection or total pericystectomy may be preferred to conservative procedures in selected cases, as they remove the pericyst and do not create residual adventitia, which is a potential source of recurrence (1,2). But radical procedures have their own limitations including

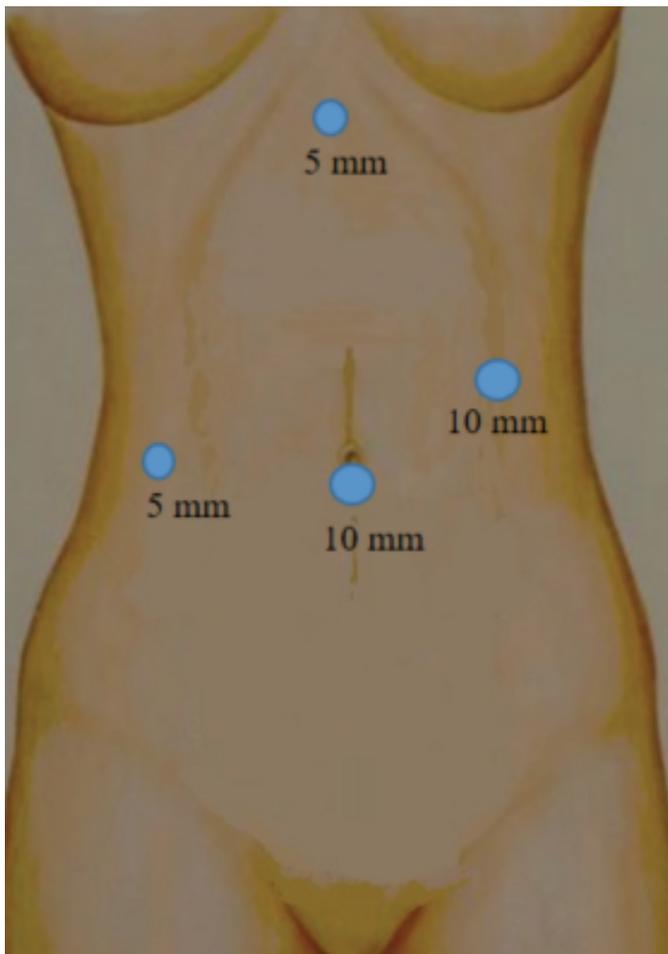


Figure 2: Trocar sites

close abutment of major hepatic veins, the inferior vena cava or adjacent to hepatic hilum (2,8). On the other hand, in selected cases, laparoscopic pericystectomy offers the advantages of both laparoscopy and total pericystectomy. Laparoscopy has advantages including less hemorrhage less surgical wound infection, less postoperative pain, faster postoperative recovery shorter hospital stay in comparison to those in open surgery (9,10). However, laparoscopic total pericystectomy is technically challenging due to anatomical limitation, especially in posteriorly or centrally located cysts, embolism, and difficulty in bleeding control are commonly mentioned disadvantages of laparoscopic technique (11-13). The procedure also requires extensive training in laparoscopic surgery (12). Furthermore theoretically, the laparoscopic management of LH poses risk of hydatid spillage and anaphylaxis. In fact, the short-term recurrence rate is lower after laparoscopy (0-9%) than that of open surgery (0-30%) (14,15). With a mean follow-up of 30 months, Manterola et al. (10) reported neither morbidity nor recurrence was identified in 8 cases of liver hydatid cyst treated

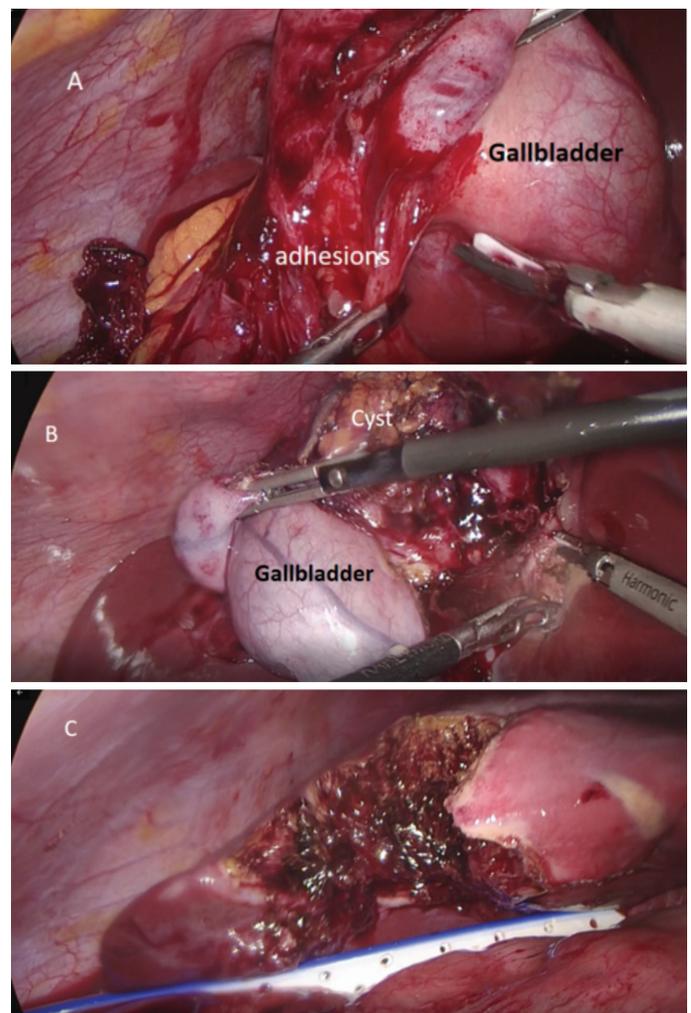


Figure 3: The photographs show intraoperative findings. A and B. The hydatid cyst is tightly attached to the gallbladder. C. Operation site after removal of the specimen

by laparoscopic pericystectomy. Besides, treatment-related mortality after laparoscopy is almost absent in previous series, whereas open surgical series have shown mortality ranges from 0% to 3% (15-17). Likewise, in our case no morbidity was observed and the patient was discharged on postoperative day one uneventfully.

The size of the cyst is also important for the selection of the right treatment. In a case series of 9 patients with an average cyst size of 8.1 cm (5 to 15 cm), whom underwent laparoscopic pericystectomy, only 2 of them were required conversion to open surgery. It was reported that in these 2 patients cysts were large in size (11 and 15 cm, respectively) (2). Also a case series of 8 patients treated with laparoscopic pericystectomy and completed successfully without conversion indicated that ≤ 7 cm and anteriorly placed liver hydatid cyst was better selection for the laparoscopic technique (10). Similar to these findings, in this report, hepatic hydatid cyst was 8 cm in diameter and placed anteriorly without cystobiliary communication.

In the literature mean operative time of laparoscopic approach is slightly longer than the time of open surgery (16). This challenge can be easily solved with more surgical team expertise. In this report laparoscopic pericystectomy procedure took 70 min which comply with the literature results.

Conclusion

Laparoscopic pericystectomy can be safely performed in selected cases where the cysts are located close to the liver surface, in the anterior segments of the liver, and distant from major vessels and ducts. Large series are needed to compare laparoscopic pericystectomy with the conventional open surgical treatments.

Ethics

Informed Consent: Informed consent was obtained from the patient who participated in this study.

Peer-reviewed: Externally and internally peer-reviewed.

Authorship Contributions

Concept: M.A.T., U.İ.E., N.B., O.M., Design: M.A.T., U.İ.E., N.B., O.M., Literature Search: M.A.T., U.İ.E., N.B., O.M., Writing: M.A.T., U.İ.E., N.B., O.M.

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