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(2011) Vol. 15; 4: 38-41

КЛІНІЧНИЙ ВИПАДОК

ГІГАНТСЬКА НЕПАРАЗИТИЧНА КІСТА ПЕЧІНКИ — КЛІНІЧНИЙ ВИПАДОК ТА ТЕХНІКА ЛАПАРОСКОПІЧНОЇ ФЕНЕСТРАЦІЇ

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A Giant Non-Parasitic Liver Cyst: A Case Report and Technique of Laparoscopic Fenestration

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Received: August 3, 2011
Accepted: October 29, 2011

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Summary

We report a case of a giant non-parasitic hepatic cyst in a 68 year old female treated by laparoscopic fenestration. The patient was discharged on postoperative day 1 in good condition. Subsequent outpatient follow-up revealed complete resolution of pain. A description of the key steps in laparoscopic hepatic fenestration is provided.

Key words: liver, cyst, laparoscopy, fenestration.

Introduction

Cystic lesions of the liver are common and usually benign in the Western hemisphere. As a result, asymptomatic hepatic cysts do not typically require any treatment or follow-up [1]. Alternative treatments for liver cysts may also include percutaneous aspiration therapy, alcoholic sclerotherapy, laparoscopic fenestration, fenestration by laparotomy, cystojejunostomy, cystectomy, and hepatectomy [2]. Additionally, single-port surgery is under development and evaluation [3]. Given its minimally invasive nature and short recovery time, laparoscopic fenestration has become the standard of care for symptomatic non-parasitic cysts of the liver (NPCL), both solitary [4] and multiple [5].

The aim of this article is to report a case of NPLC treated with laparoscopic fenestration. We discuss the technical pearls of this procedure.

Materials and Methods

A 68 year old woman presented in significant epigastric abdominal pain to the Foothills Medical Centre, Calgary, Canada. This pain was non-remitting and located

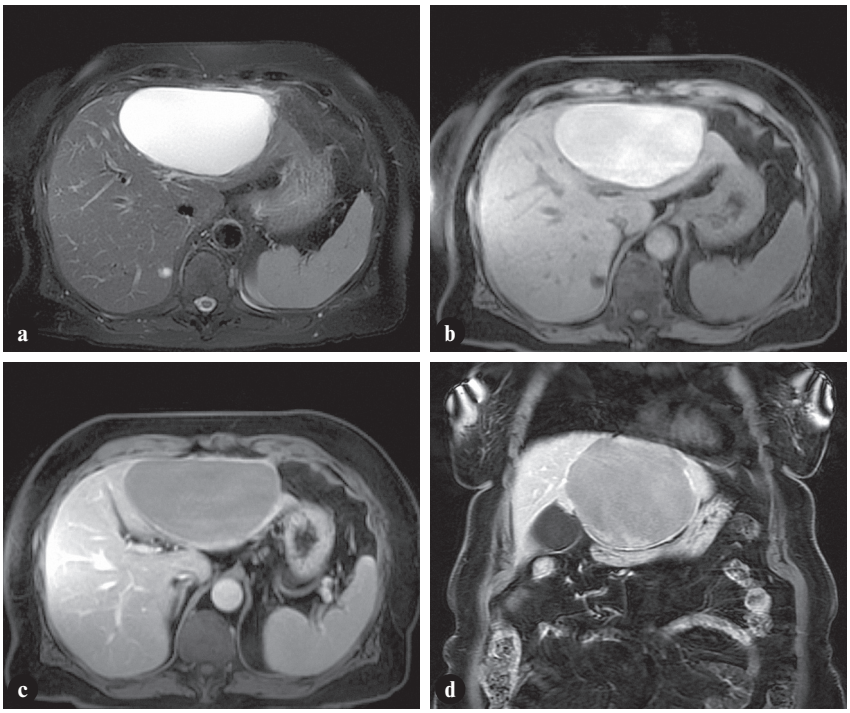

Fig. 1
MRI scan of the liver:
A-B. Maximum size of the cyst in hepatic parenchyma;
C. Relation with the hepatic hilum;
D. Relation with bile ducts and viscera.

primarily in the epigastrium. She had difficulty eating given early satiety and intermittent nausea. Although the echinoccocus serology was negative, she had recently travelled in the Middle East. Her past medical/surgical history was notable for a remote bladder suspension and rectocele repair, hysterectomy and bilateral oophrectomy, inguinal hernia repair, and periumbilical incisional hernia. Her laboratory examinations revealed normal liver function (bilirubin, alkaline phosphatase, alanine and aspartate transaminase, international normalized ratio, albumin). Serology was negative for signs of malignancy or infection (alpha-fetoprotein, carcinoembryonic antigen, hepatitis serology). The remainder of her laboratory tests were unremarkable.

Radiological Evaluation

Ultrasonography identified a solitary cyst (16.8×13.1×14.7 cm) involving the entire left liver. Subsequent cross sectional imaging confirmed a solitary cyst (Figure 1). This cyst occupied all 4 segments of the left hepatic lobe (12.5×10×7.2 cm). It appeared to possess hemorrhagic/clot within it. The left hepatic vein was compressed by the mass.

Preoperative considerations

The American Society of Anesthesiologists (ASA) physical status was class 2 and she had only one variable on Lee's Revised Cardiac Risk Index which provided her with a risk of post-operative cardiac complications approaching 1%. The consent process was extensive and included discussion of both general (pneumonia, urinary tract infection, wound infection, myocardial infarction) and specific (hepatic bleeding, cyst recurrence, intraperitoneal infection) complications. Dalteparin (5000 Units daily) was planned for deep venous thrombophrophyslaxis.

Surgical Technique and Postoperative Period

The patient was in the supine position. The laparoscopic set-up using laparoscopic console *(Stryker, Kalamazoo, USA)* is demonstrated (Figure 2). A 2 cm incision using a #15 scalpel was placed in the supra-umbilical zone. A bladeless trocar was then inserted under direct vision (10 mm 0 degree camera). Once the camera port reached the peritoneal cavity, the abdomen was insufflated (CO_2, 12-16 mm Hg of intraabdominal pressure). Two additional trocars were then inserted under direct vision with a new 30-degree camera (5 mm and 12 mm).

All viscera and intraperitoneal contents were evaluated. The cyst lesion was studied. The cyst appeared intact and concurrent with preoperative imaging. The anterior cyst wall was then punctured using a harmonic scalpel. A suction device was then inserted into the cyst to drain it. Approximately 150 cc was sent for fluid tumor markers and lipase. A complete fenestration was then performed on the anterior surface using the harmonic scalpel energy device. No bile leaks or hemorrhage were noted. The interior of the cyst wall was visually inspected for potential

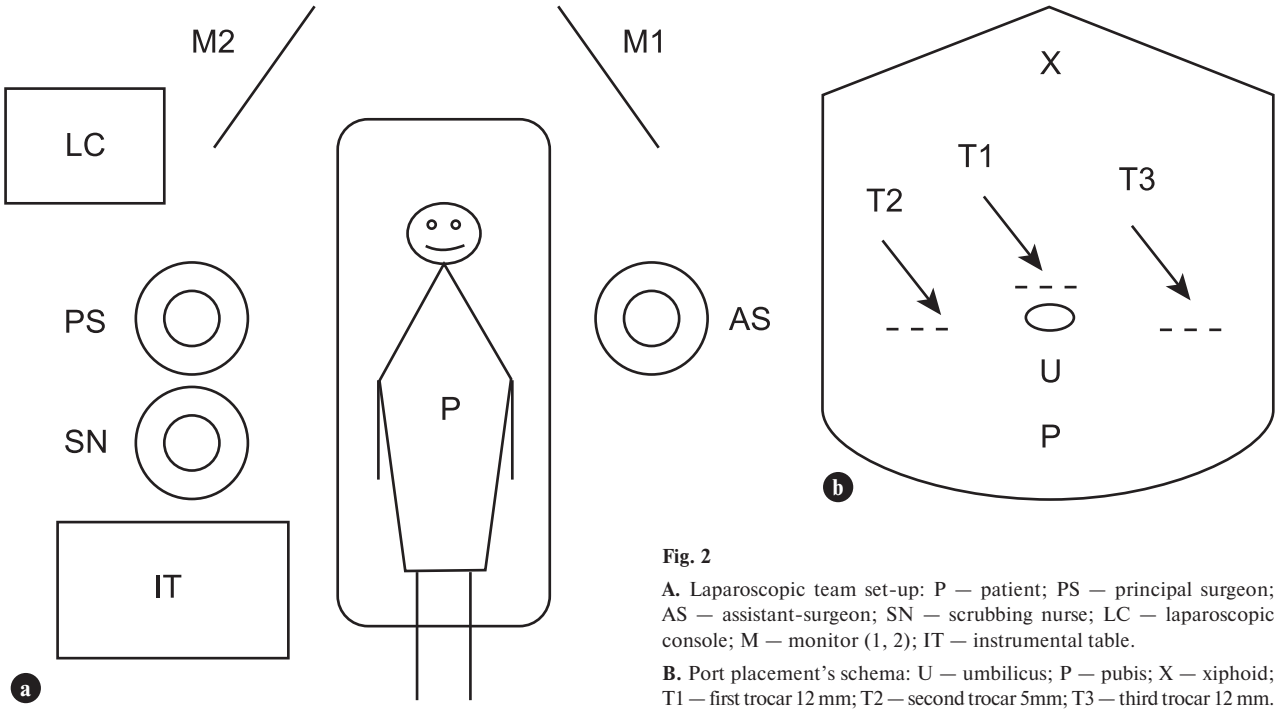

Fig. 2

A. Laparoscopic team set-up: P — patient; PS — principal surgeon; AS — assistant-surgeon; SN — scrubbing nurse; LC — laparoscopic console; M — monitor (1, 2); IT — instrumental table.

B. Port placement's schema: U — umbilicus; P — pubis; X — xiphoid; T1 — first trocar 12 mm; T2 — second trocar 5mm; T3 — third trocar 12 mm.

signs of malignancy. A large portion of the cyst wall was excised and removed through a 12 mm trocar for intraoperative frozen section analysis by a faculty pathologist. There were no signs of malignancy. The abdominal wall fascia was closed with running 0 vicryl sutures at both 12 mm trohar sites. All skin incisions were then closed with 4-0 monocryl and steri-strip dressings. Estimated blood loss was 10 ml. The operation was 52 minutes in length. Postoperatively, she had minimal pain on day 1, and was discharged home with oral analgesics only.

Discussion

Upon evaluation of the patient's radiological and biochemical hepatic cyst features, it was evident that the lesion was benign and non-parasitic. The differential diagnosis of a large hepatic cyst must always include a hydatid liver cyst. This should be considered before laparoscopic fenestration is performed [6].

Monteferrante E. et al. [7] note that posterior hepatic segments, VI and VII, and the segment IVa, are often difficult to approach laparoscopically, although fenestration of hepatic cysts may be a simple laparoscopic operation. Additionally, a laparoscopic technique allows wide access for surgical treatment of cysts localized in segments II, III, IVb, V, and VIII of the liver. If laparoscopy is considered for NPCL, a lateral position may be necessary to gain access to cysts located in the posterior segments of the liver. In this position, mobilization of the right hepatic lobe is typically not necessary [7,8]. Port type and placement for fenestration is variable in the literature. A 4-port technique using two 5-mm trocars and two 10-mm trocars [9] is most common.

It is essential to deroof and excise a large portion of the cyst wall widely to minimize the chances of recurrence [10]. Furthermore, intraoperative aspiration of cyst fluid before fenestration can minimize this risk of misdiagnosis [6]. Although the risk of conversion to an open procedure is minimal [11], an incidental finding of biliary cystadenoma after laparoscopic fenestration of a cystic hepatic lesion requires a subsequent hepatic resection [12]. Conversion to a laparotomy can be required for hemorrhage [13].

Köckerling F. et al. [14] recommended that a portion of the greater omentum be placed in the floor of the cyst, thus filling the cystic cavity in order to prevent a recurrence. In terms of packing of the cystic cavity, laparoscopic fenestration and placement of a falciform ligament pedicle graft shows promising early results as a treatment for the simple hepatic cyst [15]. A cholecystectomy may also be performed if gallstones are present or if the cyst is located in the right hepatic lobe adjacent to the gallbladder wall [4].

Gigot J.F. et al. [16] reported that factors which could predict a less satisfactory result for fenestration of simple hepatic cysts include: inadequate deroofing; laparoscopic fenestration of recurrent cysts, where adhesion formation occurs more rapidly; deep seated cysts; and cysts in the posterior segments of the liver. Post-operative complications have a low incidence after the laparoscopic cyst fenestration, but can include cyst recurrence, hemorrhage, bile leakage or pulmonary edema [17,18].

Conclusions

In conclusion, we suggest that laparoscopic fenestration is an adequate surgical procedure for selected uncomplicated patients with a solitary symptomatic NPLC. Further study is required to compare various treatments of benign liver cysts, particularly open versus laparoscopic, sclerotherapy or combined techniques.

Disclosure Statement

S. V. Kharchenko conducted research under an Alberta-Ukraine Scholarship Program during case data collection and editing of this publication. All other authors have no conflict of interests to disclose.

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