CASE REPORT – OPEN ACCESS

International Journal of Surgery Case Reports 39 (2017) 328–331

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Scarless surgery for a huge liver cyst: A case report

Hiroyuki Kashiwagi[a,*], Jun Kawachi[a], Naoko Isogai[a], Masanori Ishii[b], Katsunori Miyake[a], Rai Shimoyama[a], Ryota Fukai[a], Hidemitsu Ogino[a]

[a] Department of Surgery, Shonan Kamakura General Hospital, Kanagawa 247-8533, Japan
[b] Department of Surgery, Fuefuki Chuoh Hospital, Yamanashi 406-0032, Japan

ARTICLE INFO

Article history:
Received 15 June 2017
Received in revised form 23 August 2017
Accepted 23 August 2017
Available online 1 September 2017

Keywords:
Liver cyst
Hybrid NOTES
Wide fenestration
Scarless surgery

ABSTRACT

INTRODUCTION: Symptomatic or complicated liver cysts sometimes require surgical intervention and laparoscopic fenestration is the definitive treatment for these cysts. We performed minimally invasive surgery, hybrid natural orifice transluminal endoscopic surgery (NOTES) without scarring, for a huge liver cyst.

PRESENTATION OF CASE: An 82-year-old female presented with a month-long history of right upper abdominal pain. We diagnosed her condition as a huge liver cyst by morphological studies. She denied any history of abdominal trauma. Her serum CEA and CA19-9 were normal and a serum echinococcus serologic test was negative. Laparoscopic fenestration, using a hybrid NOTES procedure via a transvaginal approach, was performed for a huge liver cyst because we anticipated difficulty with an umbilical approach, such as single incision laparoscopic surgery (SILS). Her post-operative course was uneventful and she was discharged from our hospital three days after surgery. Pain killers were not required during and after hospitalization. No recurrence of the liver cyst or bulging was detected by clinical examination two years later.

DISCUSSION: A recent trend of laparoscopic procedure has been towards minimizing the number of incisions to achieve less invasiveness. This hybrid NOTES, with a small incision for abdominal access, along with vaginal access, enabled painless operation for a huge liver cyst.

CONCLUSION: We report a huge liver cyst treated by hybrid NOTES. This approach is safe, less invasive, and may be the first choice for a huge liver cyst.

1. Introduction

Most liver cysts are found incidentally during imaging investigations and tend to have a benign clinical course [1]. Some large cysts may be symptomatic and cause complications, such as spontaneous hemorrhage, rupture into the peritoneal cavity or bile duct, infection, and compression of the biliary Tree [2]. Venous thrombosis due to compression of the inferior vena cava also may be a life-threatening complication of a huge liver cyst, as we reported previously [3]. Surgical intervention sometimes is required for such complications. A laparoscopic procedure is a safe and definitive treatment for these cysts. We report the fenestration of a huge liver cyst using a novel approach, hybrid NOTES (Natural Orifice Transluminal Endoscopic Surgery). This work has been reported in line with the SCARE criteria [4].

2. Presentation of the case

An 82-year-old female presented with a month-long history of right upper abdominal pain. She had a history of a huge liver cyst and had been treated by aspiration therapy two years previously in another clinic. Her other past history of disease or familial history was unremarkable. She denied any history of abdominal trauma. Physical examination revealed a huge palpable mass in the right upper abdomen, without local tenderness or any peritoneal inflammatory signs.

Serum blood tests showed slight elevations of γGTP and alkaline phosphatase, 180 IU/l and 485 IU/l, respectively. Total bilirubin, asparate aminotransferase and alanine aminotransferase were normal. The white blood cell count and C-reactive protein were not elevated. The serum CEA and CA19-9 were normal and a serum echinococcus serologic test was negative. A CT scan showed a huge cystic mass of the liver, which compressed the right ventricle, inferior vena cava and neighbor abdominal organs, including the right side of the kidney (Fig. 1). There was no sign of local wall thickening, septum or a solid part in this huge cyst. The bottom of the lateral segment of the liver was located near the umbilicus due to compression by the cyst.

* Corresponding author at: Shonan Kamakura General Hospital, Department of Surgery, Okamoto 1370-1, Kamakura, Kanagawa 247-8533, Japan.
E-mail address: hiroyukiwagi1967@yahoo.co.jp (H. Kashiwagi).

http://dx.doi.org/10.1016/j.ijscr.2017.08.053

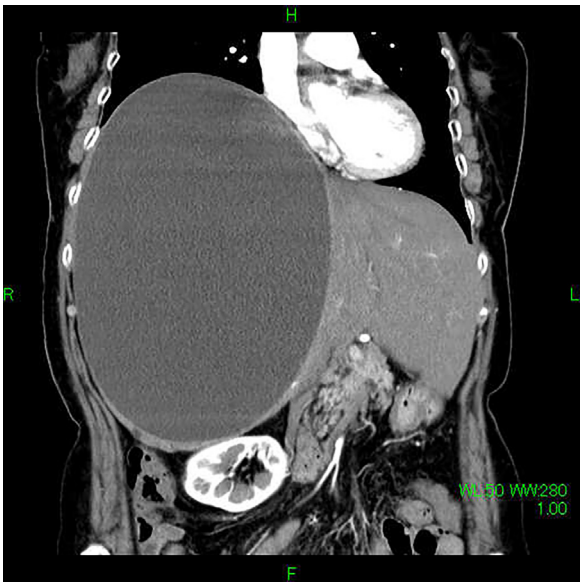

Fig. 1. A CT scan shows a well-demarcated water attenuation of the liver. Partial wall thickening or septum was not seen. The cyst compresses the neighboring organs, such as the right side of the kidney and right atrium.

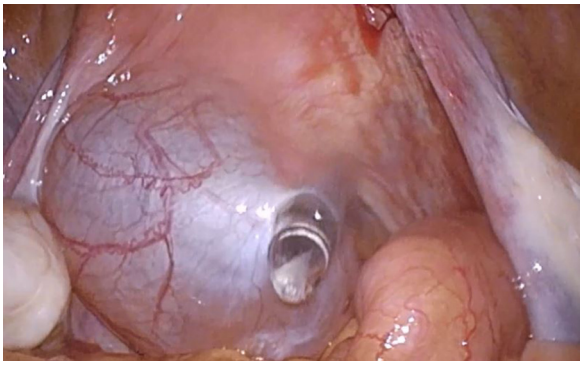

Fig. 2. The 2nd port is inserted into the posterior of the vagina.

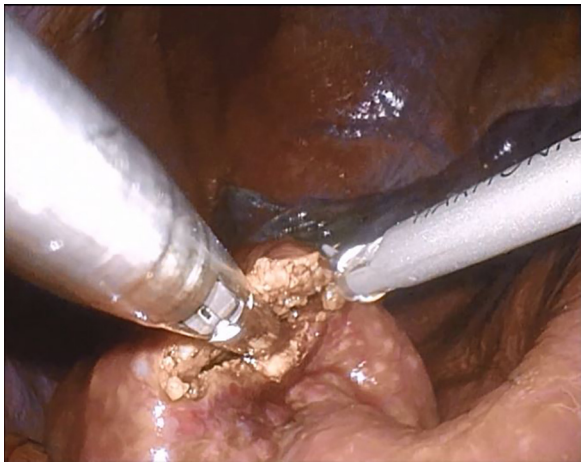

Fig. 3. Intra-operative findings of fenestration. A harmonic scalpel was used to cut the cyst wall.

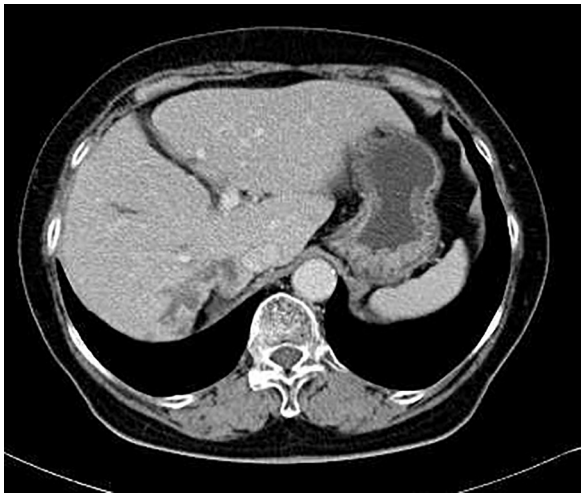

Fig. 4. A CT scan demonstrates no recurrence of the liver cyst two years later.

We performed fenestration of the cyst using a hybrid NOTES procedure with a transvaginal approach because we anticipated technical difficulty with a trans-umbilicus approach such as single incision laparoscopic surgery (SILS), due to the proximity of the umbilicus and procedure area. Under general anesthesia in the lithotomy position, a 5 mm size port (STEP, Covidien, Tokyo, JAPAN) was inserted into the lower umbilicus using a closed technique. After CO_2 inflation of the peritoneal cavity, an Endo-Relief (Hope Denshi Co., Chiba, JAPAN) was inserted as an assistant instrument, using a 2 mm incision. A 5 mm port (XCEL, Johnson and Johnson, Tokyo, JAPAN) was then inserted into the posterior wall of the vagina under laparoscopic observation (Fig. 2). A 5 mm flexible scope (Olympus, Tokyo, JAPAN) was switched from the umbilical port to the vaginal port and the fenestration maneuver was initiated. Before cutting the cyst wall, the cyst contents, 3700 ml of slightly serous, brownish fluid, were aspirated using a 19 G percutaneous needle. A harmonic scalpel (Johnson and Johnson, Tokyo, JAPAN) was used to cut the cyst wall (Fig. 3). After wide fenestration, the remnant membrane of the cyst wall was ablated using an argon-laser device as we reported previously [3]. The surgical specimen was extracted via the vaginal port site and the port site was closed manually at the vaginal side using absorbable ligatures. The operation time was 191 min and total blood loss was 50 ml. The post-operative course was uneventful and she was relieved immediately of any discomfort. She was discharged from our hospital three days after surgery. Surprisingly, she refused any pain killers during and after hospitalization. An additional treatment was not required after surgery. No recurrence of the liver cyst or bulging was detected by clinical examination two years later at clinic (Fig. 4).

3. Discussion

Hepatic cysts are a common congenital malformation. These cysts are usually small, and even large cysts may remain asymptomatic. If the diagnosis is certain, patients with cysts in the liver do not require treatment unless symptoms develop or a complication occurs. Complications of liver cysts include intracystic hemorrhage [5], rupture [6], infection, and compression of adjacent structures [3]. Several therapeutic options have been reported for these cysts, including needle aspiration with or without injection of sclerosing agents [7], internal drainage with cyst-jejunostomy [8], wide fenestration (unroofing), and varying degrees of liver resection [9]. Generally, cyst-jejunostomy or liver resection requires open invasive procedures. On the other hand, needle aspiration is safe and can be the least invasive procedure. Decompression of the cyst contents can relieve those symptoms attributable to compression. This procedure may be valuable as a diagnostic tool to confirm the cyst contents and provide rapid relief from any discomfort. However, needle aspiration is associated with a high failure rate and rapid recurrence [10].