

Three Simple Hepatic Cysts Successfully Managed Using a Laparoscopic Approach

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Abstract

Hepatic cysts are not an uncommon condition, and most are simple cysts, which cause no symptoms and are usually diagnosed incidentally during imaging for other diseases. However, problems may occur if they grow above a certain size. Complications, such as hemorrhage, infection or rupture are rare, but can be life-threatening or emergency conditions. The author reported three cases of simple hepatic cysts, each with a different clinical presentation. The first patient presented as an emergency condition due to ruptured hepatic cyst. The second patient was asymptomatic and was incidentally diagnosed while imaging for gallstones. The last patient had symptoms of pressure effect from a large cyst. All patients could be managed by a laparoscopic approach without conversion to open surgery.

Keywords: Simple hepatic cyst, Laparoscopic fenestration

INTRODUCTION

Hepatic cyst is not a rare condition. The prevalence of the cyst could be as high as 4.7% in the general population.¹⁻² However, most are asymptomatic, with only 5% having clinical symptoms.³ Intervention for the cyst is indicated when it is large enough to create a pressure effect on adjacent organs. Complications such as hemorrhage, rupture or infection, may occur and may require emergency interventions. There are many treatment options for hepatic cysts but laparoscopic surgery is probably the most effective.⁴⁻⁶ The present article reports three patients with hepatics cysts.

CASE REPORT

During April 2010 - July 2019, three cases of simple hepatic cysts which were treated using laparoscopic surgery at Sawanpracharak Hospital were reviewed. Medical records, medical imaging, operative and histopathology reports associated with all three cases were reviewed.

Case 1

A 72 year-old woman with hypertension, Alzheimer's disease, simple goiter, with stable cerebrovascular disease was diagnosed with simple hepatic cysts three years earlier but was lost to follow up. She was referred from a rural hospital with acute abdomen. She experienced abdominal distention with constipation for 5 days before a sudden epigastric pain, which progressed to generalized abdominal pain. On arrival, her blood pressure was 120/68 mmHg, pulse, 74 beats per minute, respiratory rate, 20 per minute with a temperature of 38.4 degree Celsius. She was confused and looked pale. Her blood test showed mild anemia and leukocytosis (hematocrit, 33%, hemoglobin, 11.2 mg/dL, white blood count, 12,000/mm³ with 78% neutrophils and a platelet count of 123,000/mm³).

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Examination of the abdomen showed generalized tenderness with guarding. She was diagnosed with peritonitis of unknown cause. Differential diagnosis included peptic ulcer perforation, complicated cholecystitis and complicated liver cyst. After resuscitation, laparoscopic diagnosis was performed. A 10 mm camera port was placed at sub-umbilicus. There was 1,500 mL of chocolate-colored fluid in the abdomen, and a ruptured large hepatic cyst at right lobe of liver was found (Figure 1). Two more instrument ports were placed at the epigastrium (10 mm) and at the right subcostal area (5 mm). The inner surface of cyst wall was smooth, with no abnormal lesions or active bleeding. The cyst was

unroofed, beginning at the rupture site to the junction of the cyst wall and normal liver parenchyma. The cyst wall was removed as much as possible. The operation took 80 minutes. She had an uneventful recovery and was discharged on the 4th post-op day. Pathological diagnosis was simple cyst with no malignancy.

Case 2

A 42 year-old woman presented with epigastric pain for 1 month. Ultrasonography revealed a 2 cm gallstone and one 4 cm liver cyst at right lobe of liver. She was diagnosed with symptomatic gallstone and incidental liver cyst. She was scheduled for elective laparoscopic cholecystectomy and concomitant laparoscopic unroofing of liver cyst. Three ports were placed at the sub-umbilicus (10 mm), epigastrium (10 mm) and right subcostal area, mid-clavicular line (5 mm). Operative findings revealed a thin walled gallbladder and a 4 cm hepatic cyst at right lobe of liver (Figure 2). The gallbladder was removed followed by cyst wall unroofing. The operative time was 65 minutes. She had a good recovery and was discharged on the 3rd post-op day. The pathological report was chronic cholecystitis with simple liver cyst.

Case 3

A 65 year-old woman presented with tightness at the right upper quadrant for 6 months. She had no other GI symptoms. Physical examination revealed a huge mass at the right upper abdomen, without local tenderness or peritoneal signs (Figure 3).

Date of operation	16/04/53	Time started	01:00	Time ended	03:20
Surgeon		First assistant			
Second assistant		Surgical nurse			
Clinical diagnosis	Ruptured Liver Cyst				
Post-operative diagnosis	The Same				
Operative procedure	Lap drainage (Unroof)				
Anesthesia	GA	Anesthesia			

DESCRIPTION OF OPERATION

3 ports application Blunt trocar technique
 Findings - Chocolate fluid ~ 1500 cc
 - Large collapsed cyst at R lobe of liver. Smooth inner cyst wall, no mass
 - Hypertrophy R lobe

Procedure
 - Partial Cyst wall excision (Unroof)



Figure 1 Operative notes for case 1

Date of operation	1/10/79	Time started	5:30	Time ended	10:05
Surgeon		First assistant			
Second assistant		Surgical nurse			
Clinical diagnosis	Symptomatic GS				
Post-operative diagnosis	The Same - Liver Cyst				
Operative procedure	L.C.C. drainage liver cyst (Unroof)				
Anesthesia	GA	Anesthesia			

DESCRIPTION OF OPERATION

3 ports application Blunt trocar tech
 Findings - Thin wall, distended
 - Cystic duct ~ 4 mm CBD not ident.
 - Cystic mass of 4 cm @ lobe
 - Numerous contents



Figure 2 Operative notes for case 2

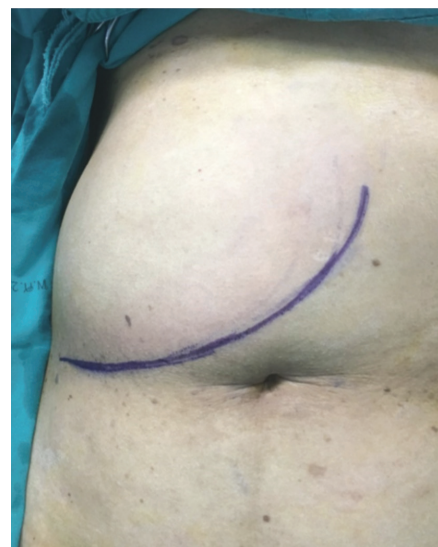


Figure 3 Skin outline of the cyst in case 3

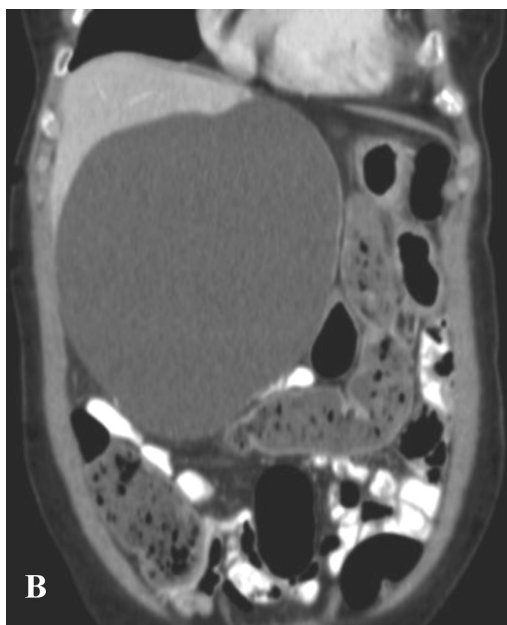


Figure 4 Cystic mass from CT scan of case 3

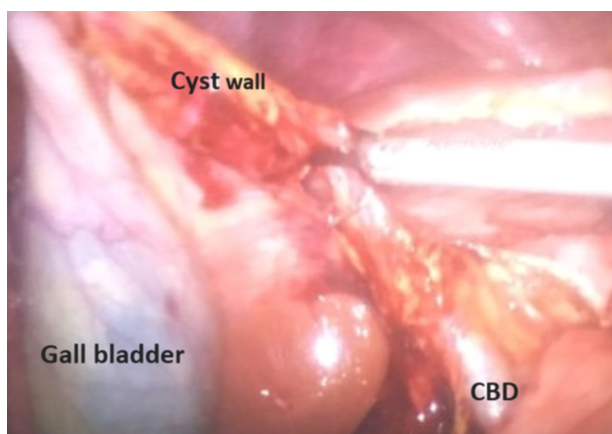


Figure 5 En bloc resection of the cyst and gall bladder

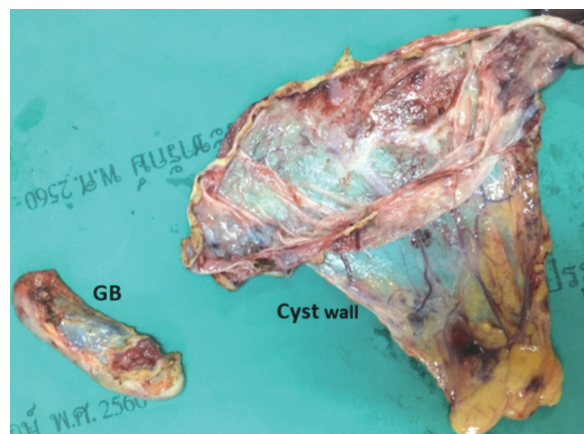


Figure 7 Gallbladder and cyst wall



Figure 6 Individual removal of specimens



Figure 8 Complete recovery with near-invisible scar

CT scan showed a large cystic mass 19 cm × 11 cm × 12 cm at the right upper quadrant (Figure 4). The nature of the cyst could not be determined. Differential diagnosis included liver cyst, pancreatic pseudocyst and mesenteric cyst. Laparoscopic diagnosis was planned. Because of the size of the lesion, ports were placed at the sub-umbilicus (10 mm), mid suprapubic (10 mm) and left subcostal (5 mm). Operative findings revealed a huge cystic mass at the right lobe of liver, abutting the gallbladder and extended to left lobe. The content inside the cyst was serous fluid. To facilitate the approach to the lesion, the cyst wall was punctured and decompressed with suction. Once the cyst collapsed, the dissection started at left lobe, by trimmed along the junction until the gallbladder was reached. The gallbladder was dissected and removed en bloc with the cyst (Figure 5). However, it is impossible to remove both specimens via the 10 mm port. They were therefore separated and removed individually (Figures 6 and 7).

One Jackson-Pratt drain was placed at the surgical site. The operation took 80 minutes. The patient recovered very well and could be discharged home with drain on the 2nd post-operative day. The patient gained a full recovery (Figure 8). The pathological diagnosis were mild chronic inflammation of gallbladder and simple cyst.

DISCUSSION

Simple hepatic cysts are congenital malformations of biliary ducts and the contents within the cyst are usually clear serous fluid⁷. With routine use of ultrasound for abdominal symptoms or for screening, the diagnosis of liver cyst has inevitably increased⁸. Patients with liver cysts are usually asymptomatic, especially those whose liver cysts are of less than 4 cm in size. The management of these patients is wit and see. If complications of the cyst such as intracystic hemorrhage, cyst rupture, infection or compression of adjacent organs occur⁹⁻¹¹ then some form of intervention is indicated. Therapeutic procedures include needle aspiration or percutaneous drainage with or without injection of sclerosing agents¹², unroofing [fenestration], cystojejunostomy¹³ and varying degree of liver resection¹⁴. Needle aspiration is safe, least invasive, and provides rapid relief of symptoms and tissue samples for pathology. However, it is associated with a high failure rate and rapid recurrence¹⁵⁻¹⁹. Needle aspiration is usually reserved for patients who are not candidates for surgery and general anesthesia⁵.

Laparoscopic fenestration was first described in 1991 by Paterson-Brown and Garden using a ND-YAG laser²⁰ and has been proven to be safe and shown to have a lower recurrence rate, ranging from 0 to 14.3%²¹⁻²². Laparoscopy can be used to directly examine the interior surface of the cyst, thus ruling out other lesions.²³⁻²⁴ Treatment of the cyst is based on the destruction of the secreting epithelial layer of cyst wall. The surgical principle is to remove the cyst wall completely or detach it as much as possible, to prevent recurrence. However complete resection of the cyst is not recommended because of the high risk of complications.²⁵ Complications associated with the operation include hemorrhage and bile leakage.

In this report, the first case was operated under emergency condition. Diagnostic laparoscopy was performed to determine the cause of peritonitis prior to definitive surgery. Furthermore, if the causes were peptic ulcer perforation, complicated cholecystitis or complicated liver cyst, these conditions could be treated

laparoscopically (laparoscopic simple closure, laparoscopic cholecystectomy and laparoscopic unroofing). These operations could be carried out without difficulty.

In the second case, the small hepatic cyst (4 cm) was an incidental finding and did not cause symptoms. Although there was no indication for surgical treatment of a small and asymptomatic liver cyst, incidental laparoscopic unroofing could be justified for the following reasons. First, the lesion was small and superficial, and unroofing could be done quickly after cholecystectomy. Second, once the lesion has been removed, there would be no need for long term follow-up with imaging studies. She would be anxiety-free about her cyst. If the lesion progressed, or if complications occur, she would need another operation.

In the third case, imaging studies could not identify the diseased organ. Diagnostic laparoscopy could provide more information or yield a diagnosis and help plan further treatment. The huge cystic lesion in the liver seen on laparoscopy confirmed a liver cyst, and the serous content within the cyst suggested a benign condition. Draining the content at an early stage was crucial. It offered a clear outline of the lesion and suggested that laparoscopic unroofing was feasible. A vessel sealing device (Harmonic, Ethicon, and Johnson & Johnson) was used at certain areas of hyper-vascularization. The combined operation of unroofing and cholecystectomy was performed without much difficulty.

In all three cases, the epithelial lining of the intra-hepatic part of the cyst was left alone while the free part of the cyst wall was removed as much as possible, which should prevent recurrence. There was no conversion to open surgery. No post-operative complications occurred. With the benefit of minimally invasive surgery, patients had a rapid recovery and a short hospital stay. These procedures did not require suturing or anastomosing or the use of advanced laparoscopic instruments. Surgeons should be encouraged to perform this operation.

CONCLUSION

Three cases of simple hepatic cysts were reported. Each had different clinical presentations. One presented with an emergency condition, one was asymptomatic and one had pressure-effect symptoms. All patients could be managed successfully using basic laparoscopic surgical techniques.

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บทคัดย่อ รายงานการรักษาผู้ป่วยถุงน้ำในตับชนิดธรรมดาที่มาด้วยอาการแตกต่างกัน จำนวนสามรายและสามารถให้การรักษาด้วยวิธีการผ่าตัดผ่านกล้อง

วันชัย มานะกิจศิริสุทธิ, พบ.

กลุ่มงานศัลยกรรม โรงพยาบาลสวรรค์ประชารักษ์ จังหวัดนครสวรรค์

โรคถุงน้ำในตับชนิดธรรมดาเป็นภาวะที่อาจพบได้ ผู้ป่วยส่วนใหญ่ไม่มีอาการและมักจะตรวจพบโดยบังเอิญ ในขณะที่การตรวจวินิจฉัยโรคอื่น อย่างไรก็ตามโรคนี้อาจทำให้เกิดอาการได้ถ้าถุงน้ำมีขนาดใหญ่ขึ้นหรือเกิดภาวะแทรกซ้อน เช่น ถุงน้ำแตกหรือมีเลือดออกในถุงน้ำ ผู้นิพนธ์ได้รายงานผู้ป่วยโรคถุงน้ำในตับชนิดธรรมดาจำนวน 3 รายที่มาด้วยอาการแตกต่างกัน รายแรกมาด้วยภาวะฉุกเฉินคือถุงน้ำในตับแตก รายที่สองมาด้วยอาการนิวในถุงน้ำดี ตรวจพบถุงน้ำโดยบังเอิญ รายสุดท้ายมาด้วยอาการแน่นท้องจากถุงน้ำที่มีขนาดใหญ่ ผู้ป่วยทุกรายได้รับการรักษาด้วยวิธีการผ่าตัดผ่านกล้องเป็นผลสำเร็จโดยไม่ต้องเปลี่ยนการผ่าตัดเป็นแบบแผลเปิดและไม่พบภาวะแทรกซ้อน
