Laparoscopic Fenestration of a Simple Hepatic Cyst

C Y Chan, C H J Tan, S P Chew, C H Teh

ABSTRACT

Hepatic cysts are usually asymptomatic, most being detected incidentally during imaging. Distinction has to be made between a simple hepatic cyst from more sinister types such as a parasitic cyst and a cyst occurring as part of a neoplastic process. Intervention in a simple hepatic cyst is only indicated when they become symptomatic or when they grow at a rapid rate. Surgery is the mainstay of treatment, with laparoscopic intervention becoming more and more widely accepted. We present here the first case of laparoscopic fenestration of liver cyst performed in our hospital and also review the literature on this modality of treatment.

Keywords: hepatic cyst, laparoscopic fenestration

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INTRODUCTION

Hepatic cysts are not uncommon. However, most cases are either detected incidentally during imaging or when they become symptomatic. Intervention for simple cysts is indicated only in symptomatic patients. Surgery is the mainstay of therapy. Lin et al[1] first described the technique of fenestration or deroofing of the cysts in 1968 and laparoscopic fenestration was first reported in 1991. We present here the first laparoscopic fenestration performed in our hospital.

CASE REPORT

KMK is a 64-year-old Chinese male who presented with colicky upper abdominal pain and progressive distension for 4 months. The pain and distension were relieved by vomiting. He was actually a known case of simple hepatic cyst, first seen in 1996 for complaints of abdominal distension. CT scan done showed a large liver cyst and was planned for CT guided aspiration. However, the procedure was abandoned as the patient was fairly asymptomatic and the benefits from the aspiration did not weigh favourably against the complications of the procedure as well as the event of recurrence. He subsequently defaulted from follow-up.

On examination, he was thin but was neither pale nor jaundiced. A large mass was noted to be arising from the RHC, extending across the epigastrium and inferiorly to the right lumbar and periumbilical areas. The mass had a smooth surface and regular borders. It was fluctuant, with a positive fluid thrill. It was non-tender and was mobile in an upper left to lower right axis.

Further history obtained did not reveal a significant travel history to countries that practice animal husbandry. The impression was that of a liver cyst or pancreatic pseudocyst. Differentials include renal, adrenal cyst or mesenteric cyst.

Blood investigations showed a normal amylase level. The alkaline phosphatase was marginally raised, while the rest of the liver function panel was normal. He also had microcytic and hypochromic anaemia. The tumour markers were normal. Abdominal XR showed a large mass arising from RHC, pushing bowel shadows to the left and inferiorly. CT abdomen showed a large left liver cyst measuring about 20 cm in largest diameter with secondary bile duct dilatation.

As the patient was symptomatic, decision was made for operative drainage. Laparoscopic deroofing was performed on 21/03/2000. Findings was a large uniloculated simple liver cyst. The roof of the cyst was thinned out whereas the base appeared trabeculated, but there were no intra-cystic papillary lesions seen. The rest of the liver was normal.

Surgical procedure

Subumbilical Hassan's port was inserted via the open method. The cyst was then aspirated with laparoscopic guidance with 3L of clear fluid withdrawn. The thinned-out cyst wall was then excised using laparoscopic scissors (about 50% of total surface area). Hemostasis was secured with diathermy of bleeding spots. A Redivac drain was then inserted. The total duration of the operation was 1 hour, and the patient remained stable throughout.

The patient was started on diet and the drain was removed on the 1st POD. He went home well on the 3rd POD. Histology of the cyst wall revealed a lining of low

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cells with no evidence of malignancy. The fluid from the cyst was essentially acellular.

DISCUSSION

Liver cysts are benign congenital malformations resulting from isolated aberrant biliary ducts. The cyst contents are usually clear serous fluid. They usually neither invade biliary nor vascular elements, but may cause obstruction or compression atrophy of the liver parenchyma when they attain a large size. Other complications include intra cystic hemorrhage, rupture, torsion and infection[2]. Polycystic liver disease as distinct from simple liver cyst is thought to have a genetic basis. The causative gene in polycystic kidney disease has recently been characterised[3] and is likely to be responsible for polycystic disease of the liver and other organs[4].

Asymptomatic simple liver cysts are quite common in the general population with a prevalence of up to 4.7% with a sharp rise in incidence with age[5,6]. The detection of cysts had increased with the advent and routine use of ultrasound and CT scan. Most cases are asymptomatic, with clinical symptoms occurring in only 5% of patients. These symptoms include abdominal pain, feeling of fullness or early satiety. They may also present as a result of complications elucidated above. Even in large cysts, surgical intervention is only necessary in patients who are symptomatic or in those with a rapidly increasing cyst volume. It is mandatory however, to exclude infestation by Ecchinococcus before surgical therapy. Ecchinococcus infestation is suspected in patients residing in endemic areas or has a significant travel history, from radiological characteristics and also from serological evidence. One also has to exclude the rare causes of liver cysts such as cystadenoma and cystadenocarcinoma where cyst septations, papillary structures or multiloculated cystic formation may be seen radiologically[7,8].

Percutaneous aspiration of cyst content is the simplest treatment for symptomatic, non-parasitic cysts. However, this is associated with a high rate of recurrence[7,9,10] as well as a considerable risk of infection. To improve recurrence rates, various sclerosing agents such as Pantopaque[11], ethanol[12-14] and minocycline[15] have been used. The therapeutic effect is based on the destruction of the secreting epithelial layer of the cyst wall. The reported recurrence rate is low[11-15] and is accompanied by only minor side effects. This appears to be a viable alternative to surgical ablation of symptomatic liver cysts.

Surgical procedures described for treatment for liver cysts include intra-operative aspiration, unroofing, cystojejunostomy, total excision of cyst, partial liver resection, hepatic lobectomy and liver transplantation. Unroofing of liver cysts was first described by Lin and colleagues[1]. This has since been applied successfully in patients with simple hepatic cysts as well as polycystic liver disease[1,7,16,17]. The technique of unroofing is also referred to as fenestration and accomplishes drainage by excision of part of the cyst wall. Encouraged by the success of laparoscopic cholecystectomy, laparoscopic fenestration was first described in 1991 by Paterson-Brown and Garden using a Nd-YAG laser[18]. Since then, numerous articles have been published on laparoscopic treatment of hepatic cysts[19]. Besides achieving similar results as open surgery with fewer complications, shortened hospital stay and reduced sick leave, laparoscopy offers the advantage of inspecting the inner surface of the cyst wall for signs of malignancy and biopsies of suspicious lesions to be taken.

Various authors have described adjuvant methods in addition to laparoscopic fenestration to improve recurrence rates. This includes injection of ethanol into the residual cyst cavity[20,21], fulguration of the cyst cavities by electrocoagulation or argon beam coagulation[22], and placement of an omental transpositional flap onto the cyst cavity itself[23]. Emmerson et al[23] believe that an omental flap performs the function of keeping the cyst cavity open to the

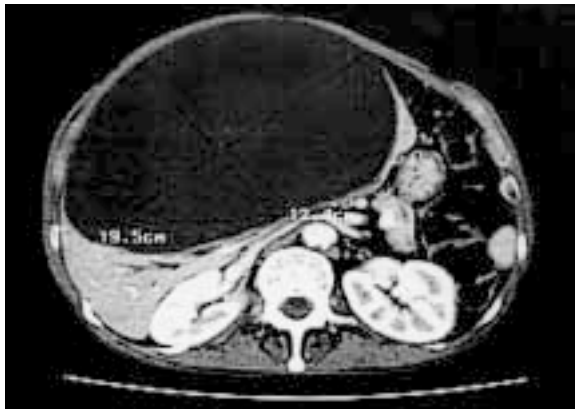

Fig. 1 CT scan showing the 19.5 x 12.4 cm simple liver cyst.

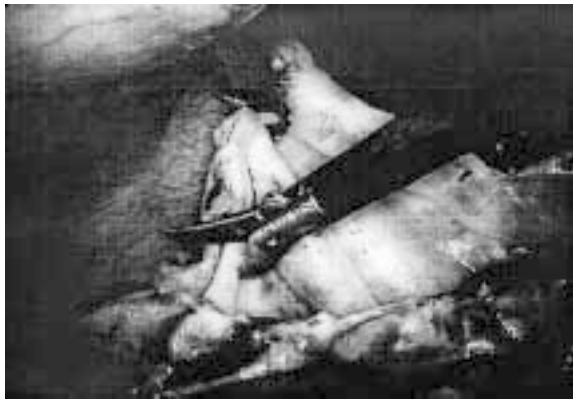

Fig. 2 Laparoscopic photograph showing excision of roof of liver cyst.

abdomen and is competent itself to resorb fluid which is produced by the cystic epithelium. Recurrence of a simple hepatic cyst following laparoscopic deroofing have been attributed to failure in ablating the secreting lining of the cyst wall; and in providing adequate measures to prevent early closure of the cyst such as may occur when the resected window is relatively small as compared to the overall size of the cyst cavity.

Klingler et al[19] in their review article of 21 previously published articles on laparoscopic treatment of hepatic cysts, found a remarkably low complication rate with only a total of 6 reported intra-operative or peri-operative complications. These included bleeding, ascites in two patients, pleural effusion, dyspnoea and biloma. These complications were treated conservatively. These complications represented only 10% of the total cohort, though this low rate may be partly attributed to the pre-selection of patients with cysts in favourable locations for a laparoscopic approach. The major advantages of laparoscopic surgery were also noted in all instances, namely less pain, earlier mobilisation, shorter convalescence and high acceptibility by patients.

Our patient was a rather thin man and was deemed a suitable candidate for laparoscopic fenestration of his liver cyst. The cyst in this case was fairly large and extended to the level of the umbilicus. There was the initial concern of placement of the Hassan's port. However, with the open method of insertion, inadvertent puncture of the cyst wall could thus be avoided. On CT scan as well as through the laparoscope, the cyst though large, was fairly superficial with the roof of the cyst that was projecting into the peritoneal cavity constituting more of the surface as compared to the intra-hepatic area. Thus we believe that wide excision of the roof will provide adequate drainage and prevent pre-mature closure of the remnant cyst cavity. A drain was also inserted to drain the spillage of the cyst contents into the peritoneal cavity.

CONCLUSION

Expertise in both liver as well as laparoscopic surgery is required to determine whether laparoscopic treatment is suitable or adequate with regards to the cyst type, size and location. We feel that laparoscopic wide cyst unroofing is a feasible, advantageous and possibly preferred method in the surgical treatment of symptomatic liver cyst.

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