

Laparoscopic Management of a Massive Splenic Cyst

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Splenic cysts are relatively uncommon entities in surgical practice and treatment options vary. We present a case of a young adult woman who presented with a left-sided abdominal mass. A large splenic cyst was diagnosed by abdominal ultrasound and computed tomography. Laparoscopic partial excision with marsupialisation was performed with uneventful recovery and minimal blood loss. Histopathology revealed an epidermoid cyst of the spleen. This report describes the case, and includes a short review of the literature. Laparoscopic partial excision with marsupialisation is a safe and appropriate method of treatment for large splenic cysts. [*Asian J Surg* 2010;33(2):103–6]

Key Words: laparoscopic partial excision, marsupialisation, massive splenic cysts

Introduction

Cysts of the spleen are uncommon, and among these, the epidermoid subtype is considered to be a rarer entity. The incidence of this condition is unknown and there continues to be uncertainty regarding preoperative diagnosis and the best method of treatment. Most patients are diagnosed with an incidental cyst on computed tomography (CT) or abdominal ultrasonography that is usually performed for other reasons. Some patients might have an asymptomatic mass and others present with signs and symptoms due to complications of the cyst. The following case report describes another unusual presentation that was treated using minimally invasive surgery.

Case report

A 25-year-old woman, with no previous medical problems, presented with intermittent burning epigastric pain of 3 weeks duration. She also noted her abdomen to be unusually protuberant and asymmetric (left > right). She had no history of abdominal trauma.

On examination, the only positive finding was a non-tender mass in the left hypochondrium. Sonographic and CT imaging revealed a huge unilocular, homogeneous, solitary cystic lesion in the upper aspect of the spleen, which measured 18 cm × 16 cm, with anterior and medial displacement of the stomach, pancreas and left kidney (Figures 1 and 2). The splenic parenchyma on imaging appeared normal. Haematological assessment excluded sickle cell disease and thalassaemia. Investigation for malaria was negative. The spleen was otherwise normal in appearance and not involved in any identifiable parenchymal disease process, therefore, we decided to attempt subtotal cyst excision with marsupialisation of the small area associated with the splenic surface. Informed consent was obtained after explaining the possibility of total and open splenectomy.

The operation was performed using three ports: one umbilical (Hassan), a 12-mm port in the mid-clavicular line, and a 5-mm port in the epigastrium to the right of the falciform ligament. The hilum of the spleen was dissected initially to facilitate control of bleeding in the event of an emergency, or should there have been a need for

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Figure 1. Computed tomography scan of the abdomen showing a large splenic cyst that displaced intraperitoneal and retroperitoneal anatomical structures from left to right (transverse section).



Figure 2. Sagittal view computed tomography scan of the abdomen showing right-sided displacement of anatomical structures by the splenic cyst.

conversion to open splenectomy. Once the hilum was adequately exposed, the cyst was aspirated. Over 2 L of thick green viscous fluid was withdrawn, which facilitated much easier surgical dissection.

Subtotal excision of the cyst was then started using the Harmonic scalpel (Ethicon Inc., New Brunswick, NJ, USA). The greater curvature of the stomach was found to be extremely adherent to the cyst in the area of the short gastric vessels; this segment was stapled using a 45-mm endoGIA stapler (Ethicon Inc.). The entire roof of the cyst was dissected out; the thickness of which was up to 1 cm in some areas. The inner layer of the cyst was trabeculated (Figure 3). The spleen was viable, appeared healthy, and was left untouched. The excised cystic lesion was placed in an endo-bag (Cook Inc., Bloomington, IN, USA) and



Figure 3. Trabeculated inner aspect of splenic cyst wall.

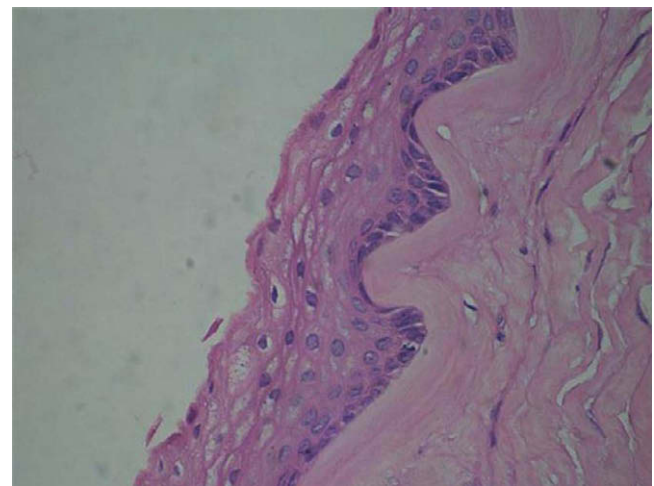


Figure 4. Histology slide of splenic cyst wall showing stratified squamous epithelial lining.

removed via the umbilical port. A drain was left *in situ* for 48 hours. Estimated blood loss was 150 mL. The patient recovered uneventfully and was discharged home on the second postoperative day. Histology confirmed an epidermoid cyst as shown by an epithelial lining (Figure 4). Follow-up ultrasound at 4 months showed no recurrence and the patient was due to have another ultrasound scan at 1 year postoperatively.

Discussion

Epidermoid cyst of the spleen is still considered a rare condition. Although this entity has been reviewed since the early 1930s, splenic cysts continue to be an intriguing pathology and there is much speculation regarding their probable mode of origin. Fowler has classified splenic cysts into two major groups: primary or true cysts and

secondary or false cysts, in accordance with the presence or absence of a true epithelial lining, respectively. Primary cysts can be congenital, traumatic, inflammatory, neoplastic or parasitic according to their aetiology. Secondary cysts are categorised into traumatic, inflammatory and degenerative. Epidermoid cyst is classified under the neoplastic cyst category.¹ It has been proposed that the squamous epithelial lining of the epidermoid cyst arises as a result of metaplasia of the cells that line the splenic sinuses, in which trauma plays an important role;^{1,2} however, our patient gave no history of trauma.

Patients with splenic cysts present with a few symptoms that might include left-sided abdominal and/or shoulder pain, and a sensation of postprandial fullness. However, there is little alteration in the general state of health. Surgical consultation is usually requested only after discovery of the abdominal mass,³ which is usually an incidental finding while investigating for other pathology. Our patient had symptoms that were suggestive of gastritis or gastro-oesophageal reflux. As a result of the vague symptomatology and slow growth-rate of epidermoid cysts of the spleen, these tumours can achieve extremely large sizes before presentation. These features predispose the cysts to trauma (which results in rupture and haemorrhage) and infection.

Blank and Campbell³ in their review of epidermoid cysts of the spleen, have cited three cases with such complications. (1) A 19-year-old female patient presented with chills, fever, and severe abdominal pain as a result of infection of the cyst by *Salmonella paratyphi B* 2 years after diagnosis of a splenic cyst. (2) A 15-year-old boy whose spleen had been enlarged for at least 6 years because of a cyst was jostled by a crowd on an amusement ride. Two days later, he became febrile with abdominal pain and jaundice. At operation, a large, infected epidermoid cyst of the spleen was discovered. (3) A 14-year-old girl presented with acute abdomen and haemoglobin of 4.7 g/dL following trauma that resulted in haemorrhage of a splenic epidermoid cyst.

CT scan is the investigation of choice when evaluating a splenic cyst.² This modality has a high degree of sensitivity in differentiating nonparasitic splenic cysts from those with a parasitic aetiology.⁴ Nonparasitic cysts are known to be unilocular fluid-dense lesions, with smooth well-defined margins, as in our patient. Parasitic cysts are usually associated with multiple loculi, the presence of daughter cysts in a large cystic lesion, or concomitant cystic lesions in other organs.^{4,5} The clinical history might

also point to the type of cyst. CT can accurately demonstrate the relationship between the spleen and the contiguous organs, which helps with the planning of surgical treatment.

The size, type and location of the splenic cyst also play a role in determining treatment options. Losanoff et al⁶ have suggested that splenic cysts < 4 cm resolve spontaneously; only those > 5 cm have a higher risk of rupture and infection, and might therefore require surgical intervention. However, all symptomatic cysts should be treated. These authors have also classified the cysts into five types to evaluate the relationship between the cyst and the splenic hilar anatomy, to optimise surgical planning.

Our patient had a marginal (type 1) cyst, hence, a substantial part of the organ was spared. In the past, management of splenic cysts has involved diagnosis at operation, and definitive treatment has entailed splenectomy.^{1,2,6} The risk of overwhelming postsplenectomy infection has favoured adoption of other techniques that can result in the sparing of splenic tissue. These techniques include percutaneous drainage (which has a high rate of reaccumulation, bleeding and infection), open or laparoscopic marsupialisation and hemisplenectomy. More recently, laparoscopic complete excision/partial splenectomy and hand-assisted laparoscopic splenectomy have been described.⁷⁻⁹ Although complete excision of the cyst or partial splenectomy results in removal of the entire cyst wall, and a resultant lower recurrence rate, these procedures might require longer operating times and relatively greater blood loss when compared with partial excision with marsupialisation. This latter technique has excellent results as reported in some recent reviews.^{10,11}

However, two previous studies have reported recurrence rates of 64% and 78%, respectively.^{12,13} It seems that neither coagulation of the splenic surface with an argon laser nor packing with omentum eliminates the risk of recurrence.¹² Recurrent cysts are often smaller, asymptomatic, and lend themselves to repeat laparoscopy or open surgery, therefore, we elected to perform subtotal cyst excision with splenic preservation in our patient. Additionally, in our situation, there was no concern of spillage because this is more of an issue in parasitic cysts or idiopathic thrombocytopenic purpura.

Malignancy is another important consideration when dealing with splenic pathology. In our patient, the lesion had none of the sonographic features of malignancy, such as multifocal/diffuse lesions, hyperechoic/mixed echoic

lesions, or nodules with the target sign.¹⁴ The cyst in our patient was classically benign, solitary, homogeneous and anechoic. However, if malignancy is a consideration, complete cyst excision with splenectomy or cystectomy with frozen section confirmation of its benign nature should be considered.

In summary, when a patient presents with a large unilocular splenic cyst, a diagnosis of epidermoid cyst of the spleen should be considered. Most non-parasitic splenic cysts have specific features on CT scanning to differentiate them from parasitic cysts. Laparoscopic partial excision with marsupialisation is an appropriate method of treatment, which results in safe resolution of the condition, shorter hospital stay, and improved patient satisfaction.

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