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CASE REPORT

Laparoscopic Spleen-Preserving Decapsulation of the Splenic Cyst: A Case Report

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Abstract

Worldwide the Incidence of Primary nonparasitic splenic cysts are rare. They were incidentally diagnosed while evaluating other diseases by imaging. We here by present our experience of a case of 23-year-old woman, with a primary nonparasitic splenic cyst. The patient underwent laparoscopic spleen-preserving decapsulation of the splenic cyst. The patient recovered well and had no postoperative complications.

Keywords: primary splenic cyst, laparoscopic decapsulation, spleen-preserving surgery

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Introduction

Splenic cysts are rare and are discovered incidentally during workup for other diseases. According to Martin's classification [1], a primary or true splenic cyst lined by the epithelial lining, whereas a secondary or pseudocyst lacks the epithelial lining. Primary cysts may be parasitic (75%) or nonparasitic (25%). Secondary cysts are mainly due to trauma.

Most patients are asymptomatic unless the cyst enlarges to the point of compressing surrounding structures. Splenic cysts are diagnosed by imaging, primarily abdominal ultrasonography and computed tomography (CT), with CT playing an important role in diagnosis. Splenectomy was once considered the treatment of choice but was associated with post-splenectomy complications, with OPSI (overwhelming post-splenectomy infection) being the most feared. In recent years, spleen-preserving surgery has emerged as a viable treatment modality that avoids post-splenectomy complications. With the advent of laparoscopy and increasing experience in laparoscopic surgery, laparoscopic spleen-preserving surgery is increasing worldwide.

Case Report

A 23-year-old young woman with hypothyroidism presented with complaints of generalized weakness and back pain for one year. The pain was intermittent, dull, and worsened with physical activity. History revealed early satiety and weight loss. The patient gave no history of fever, altered bowel habits, or trauma.

On examination, the patient was pale. Abdominal fullness was visible in the left hypochondric region. A palpable intra-abdominal mass with four-finger widths below the left costal margin, which is well defined and was not painful. On further investigation with contrast-enhanced computed tomography (CECT) of the abdomen (Figure 1), the spleen was enlarged and measured 17.4 cm with a large, well-defined cyst measuring 14x15x12 cm (anterior-posterior x cephalo-caudal x medio-lateral), displacing on the adjacent fundus and proximal body of the stomach to the right. Inferiorly, the lesion was closely abutting and exerted a mass effect on the superior border of the distal body and tail of the pancreas, preserving the intervening fat plane. Carcinoembryonic antigen (CEA) and cancer antigen (CA) 19.9 levels were within the normal range, and serologic testing for hydatid was negative.

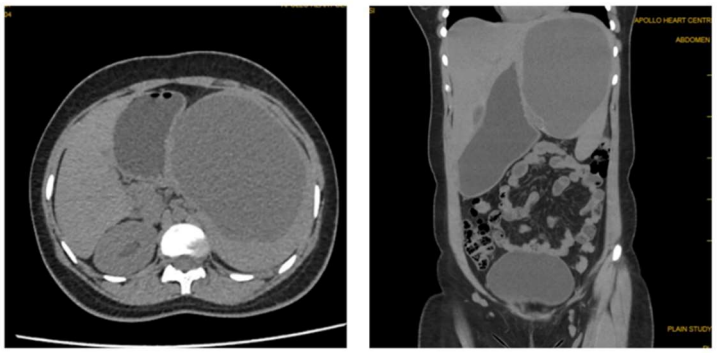

Figure 1. CT SCAN -axial and coronal plane showing splenic cyst

Because of the size of the cyst, a detailed discussion was held with the patient about the risks and possible complications after splenectomy. We proceeded with the spleen-preserving surgery.

Under general anesthesia, the patient was positioned in the modified recumbent right lateral position. After standard preoperative maneuverers, inserting a Veress needle at the level of the umbilicus and created a pneumoperitoneum. A 10-mm camera port was inserted at the level of the umbilicus. A 5-mm working port for the left hand was inserted into the epigastrium, a 12-mm port for the right hand at the midclavicular line, and a 5-mm port for retraction were placed in the left anterior axillary line, as shown in (Figure 2). On entering the abdomen, a large solitary splenic cyst, about 15x12 cm in size, arising from the superior pole of the spleen and pushing the stomach to the right side (Figure 3). 1200 ml of hemorrhagic fluid was aspirated. Using a harmonic shear (Ethicon) most of the cyst wall is excised by decapsulation (Figure 4); preserving the remaining part of the spleen, and hemostasis is achieved. Placing the omentum into the residual cyst cavity (Figure 4) performed omentopexy. A size 16 Fr Romovac suction drain was placed in the cyst cavity. On postoperative day 1 the abdominal drain were removed, and on the same day patient was discharged. The patient recovered well postoperatively and was asymptomatic at later follow-up visits.

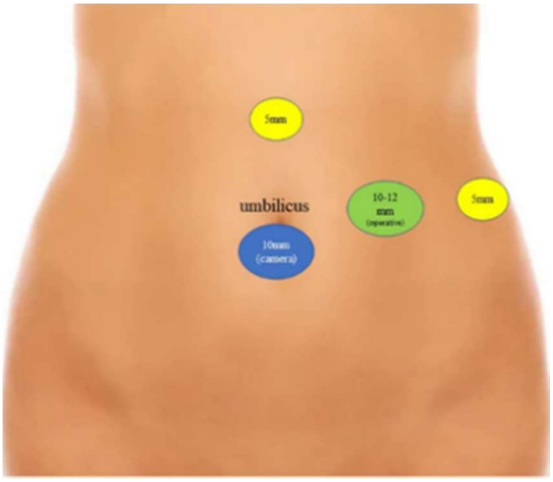

Figure 2. Port positions

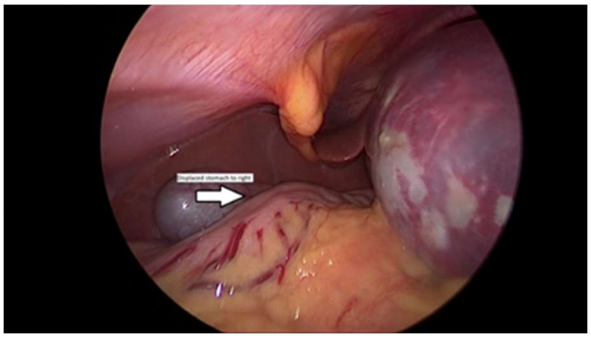

Figure 3. Splenic cyst pushing the stomach to the right

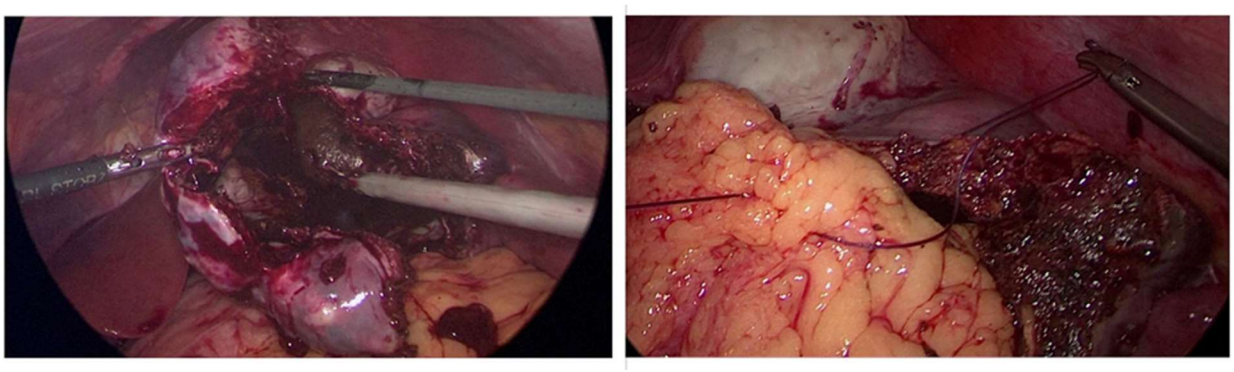

Figure 4. Laparoscopic splenic cyst deroofing and Omentopexy

Histopathologic examination revealed a densely fibrotic cyst wall with fibro collagenous stromal tissue and dystrophic calcification (Figure 5). The final impression was a hemorrhagic cyst wall with focal calcification and nonspecific chronic inflammation.

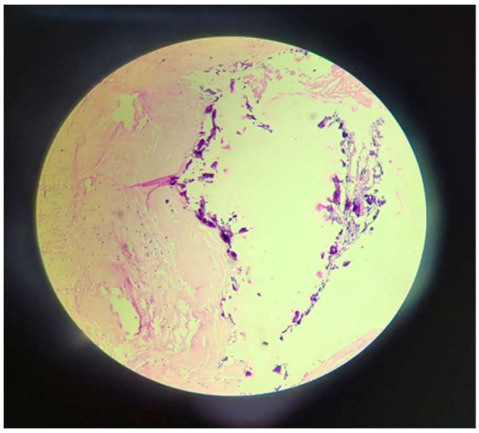

Figure 5. Histopathology showing fibro collagenous stromal tissue

Discussion

The true incidence of splenic cysts is unknown. Splenic cysts are more common in the younger age groups of the second and third decades. The first case of splenic cyst was reported by Andral in 1929 [2]. After studying the patterns and findings of more than 400 cases, Fowler was the first to classify splenic cysts.

In 1958, Martin et al. [1] on the basis of the histopathological findings classified splenic cysts: (a) True/type 1 cysts are primary cysts characterized by the presence of inner epithelial lining of the stratified squamous epithelium. They account for 20% of all cysts, which are sub-classified into congenital and neoplastic cysts. Congenital cyst is thought due to the entrapment of peritoneal mesothelial cells into the splenic parenchyma during embryogenesis [3]. Neoplastic cysts of the spleen consist of hemangiomas and lymphangiomas. The other is parasitic and is most commonly caused by the tapeworm Echinococcosis granulosus infestation. (b) False splenic cysts/type 2 are secondary cysts; they lack epithelium lining and are called pseudocysts. False splenic cysts are more common than the true cysts, account for 80% of all splenic cysts. These false cysts are secondary to trauma, disorganized hematoma, splenic infarction, and splenic abscess.

Although most patients are asymptomatic, symptoms result from the compressive effect of the enlarging cyst on surrounding structures. In our case, the patient suffers from early satiety due to the compressive effect on the stomach. In the primary splenic cysts levels of CEA and CA 19-9 may be elevated [4]. In our case, CEA and CA 19-9 are in the normal range. The splenic cysts are mainly diagnosed by imaging modality, which include ultrasonography, computed tomography, and magnetic resonance imaging (MRI). CT and MRI can provide detailed information about the size, morphological features of the splenic cyst and its relationship to the adjacent organs [5].

Because of the rare incidence of primary splenic cysts, there is no standardized protocol for the management cysts and its controversial. Aim of the Surgical treatment is to remove the cyst and prevent a recurrence. Surgical options include both open and laparoscopic techniques. These includes open or laparoscopic total splenectomy, partial splenectomy (preserving more than 25% of the spleen), deroofing, and marsupialization [6].

Asymptomatic cysts, which is less than 5 cm is managed by regular follow-up. Surgical treatment is mainly for the Cysts more than 5 cm and are symptomatic. Spleen preserving surgery is mainly preferred for the upper pole and lateral cysts. For the cysts which are located in the lower pole or at the hilum, Splenectomy is recommended [7]. Indications for splenectomy include multiple cysts, very large cysts, cysts in the hilum of the spleen, intrasplenic cysts completely covered by splenic parenchyma, and intraoperative uncontrollable hemorrhage [8]. Other non-surgical options include image-guided drainage / aspiration of the cysts. But the recurrence rate following the drainage / aspiration has been reported to be as high as 100%. For this reason, surgery is considered the treatment of choice [9].

In this era of laparoscopic surgery, laparoscopic deroofing of splenic cysts was performed with shorter stay in hospital, less complications, and better outcomes [6]. It also prevents the potential post operative complications of the splenectomy by preserving the splenic parenchyma. To reduce the recurrence risk, most of the cyst wall should be excised while preserving the parenchyma, as done in our case. An omentopexy helps to prevent the risk of cyst recurrence [10].

Conclusion

In conclusion, treatment options for primary splenic cysts focus mainly on the laparoscopic approaches with spleen presevation. Because of the important immunologic functions of the spleen in inducing peripheral tolerance through its various immune components, phagocytosis of the capsulated microorganism and the risk of overwhelming infection after splenectomy, the trend has shifted toward the conservative spleen preserving surgery with minimal invasive approaches.

Statements and Declarations

Conflicts of interest

The authors declares that they do not have conflict of interest.

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