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Partial Splenectomy in Essential Splenic Cyst in Children: A Case Report

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Abstract **Case Report**

Splenic cysts in the pediatric population are rare and can present with various clinical symptoms, including acute abdominal pain, necessitating evaluation. The classification, pathogenesis, and management of these cysts remain debated due to their rarity. Modern approaches favor spleen-preserving techniques. We report two cases of pediatric splenic cysts treated by partial splenectomy.

Keywords: Splenic cysts, partial splenectomy, children.

INTRODUCTION

Splenic cysts in the pediatric population are infrequent but can exhibit a diverse array of clinical manifestations [1]. Among these, acute abdominal pain, though rare, is a significant presentation that requires evaluation and management [2].

CASE REPORT

Patient n°1:

B.A., an 11-year-old child, was incidentally found to have a cystic formation in the spleen during an ultrasound. Upon abdominal examination, there was slight tenderness in the left hypochondrium.

The patient underwent an abdominal CT scan, revealing a cystic image without a visible wall, rounded, well-defined, located at the upper pole, measuring 117x81 mm (Figure 1).

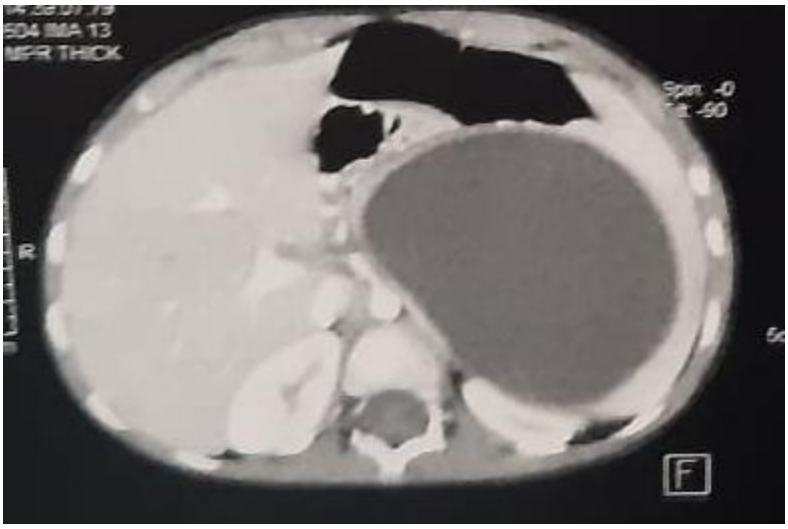

Figure 1: CT scan showing a geant splenic cyst

The patient was admitted to the operating room: after a left supraumbilical transverse laparotomy, the spleen was freed from the splenogastric and splenocolic ligaments, and upon exteriorization of the spleen, a superior pole cyst of the spleen was discovered (Figure 2).

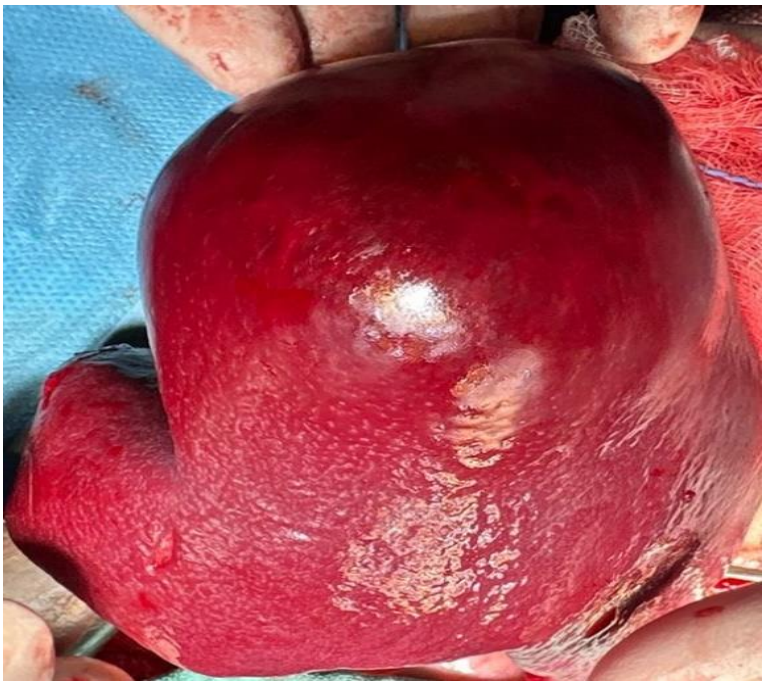

Figure 2: A preoperative view showing the splenic cyst

After controlling the splenic pedicle, the superior polar vessels were ligated, and a partial upper pole splenectomy was performed (Figure 3), using an ultrasonic scalpel (Figure 4).

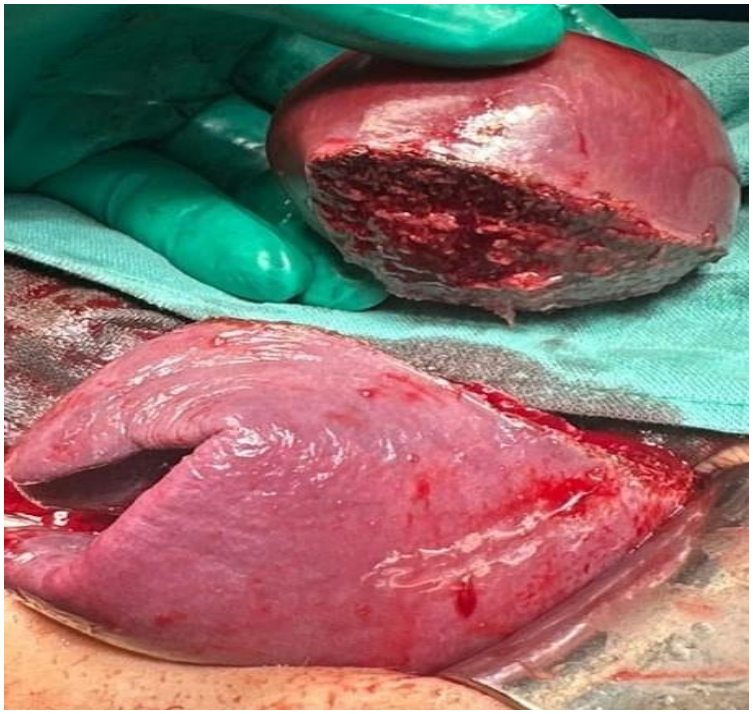

Figure 3: Per-operative view showing the section slice

Figure 4: Ultrasonic scalpel

After verifying hemostasis, the resection surface was covered with the greater omentum (to prevent the sore-fall: a post-splenectomy syndrome), and the abdominal wall was closed layer by layer (Figure 5).

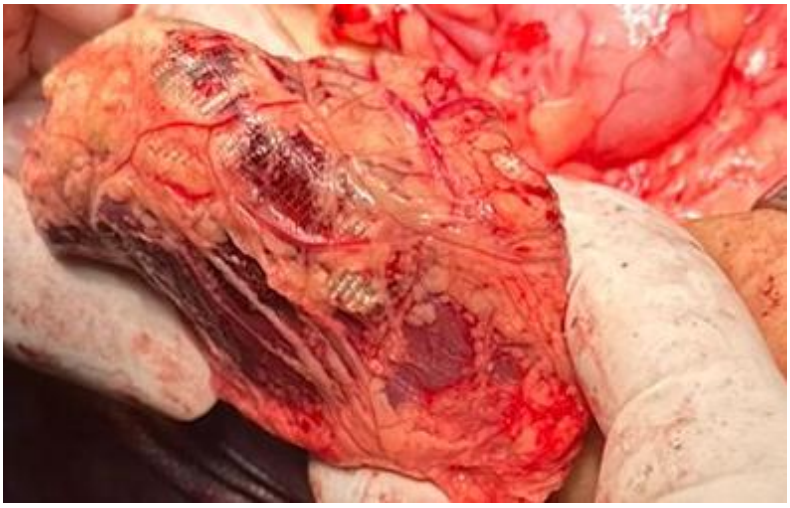

Figure 5: Per-operative view showing greater omentum covering the resection surface

The histological study of the operative specimen revealed a splenic mesothelial cyst.

The postoperative course was uneventful, with good progress and healing observed without any spleen distortion during the 8-month follow-up.

Patient n° 2

N.O., a 15-year-old child was admitted for abdominal pain, accompanied by two episodes of nausea and vomiting. Upon abdominal examination, there was tenderness noted in the left hypochondrium. The patient underwent an abdominal CT scan, revealing intra-parenchymal avascular images, measuring 68x53 mm, hypodense, without visible walls, appearing as multi-lobed cysts, without visible calcifications, and non-enhancing after contrast injection (Figure 6).

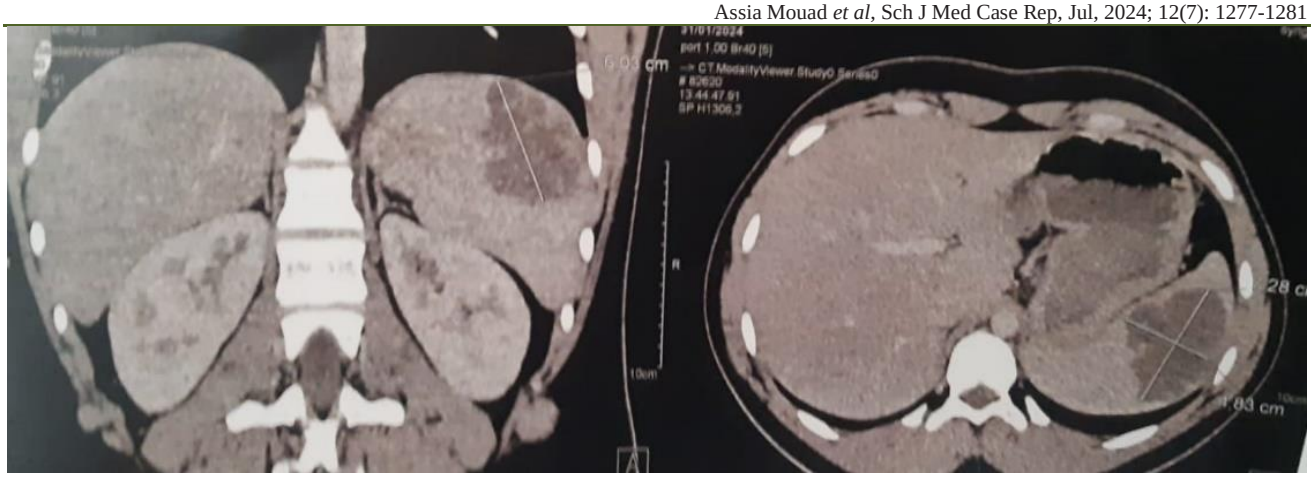

Figure 6: Abdominal CT scan showing a multi-lobed splenic cyst

The patient was admitted to the operating room: after a left subcostal laparotomy, an inferior pole cyst of the spleen was discovered. We proceeded to an inferior pole splenectomy.

The histological study of the operative specimen revealed a splenic epidermoid cyst.

The postoperative course was uneventful, with good progress and healing observed without any spleen distortion during the 8-month follow-up.

DISCUSSION

Splenic cysts are rare clinical findings in pediatric patients [2]. It was first described by Berthelot in 1790 and NPSC in 1829 [9].

Several pathophysiological mechanisms have been proposed to explain the development of splenic cysts in pediatric patients. The mesothelial invagination theory suggests that congenital cysts form from mesothelial lining invasion during development, leading to metaplasia and fluid secretion within the cyst. Congenital cysts may also arise from peritoneal invasion with mesothelial lining after splenic capsule rupture or entrapment of mesothelial cells in splenic sulci [3, 4]. The lymph space theory posits that cysts originate from the spleen's normal lymphatic spaces, while the endodermal inclusion theory proposes that epithelial splenic cysts develop through metaplasia of a heterotopic endodermal inclusion within the spleen. These mechanisms highlight the complex and varied nature of splenic cyst development [4, 5].

Nonparasitic splenic cysts (NPSCs) are rare and can be classified as true cysts, which have an epithelial lining and congenital or neoplastic origins, or pseudocysts, which typically result from posttraumatic splenic hematomas [6]. NPSCs can occur during childhood and are often asymptomatic, with diagnoses usually made incidentally through abdominal imaging such as ultrasonography or computed tomography (CT) [7]. When symptoms do occur, they commonly include left upper quadrant pain, splenomegaly, or a palpable mass. Compression of adjacent organs by the cyst can cause pleuritic pain, nausea, and vomiting. Rupture of the cyst can lead to acute abdomen [8].

During the diagnostic evaluation of splenic cysts, ultrasonography reveals that the cysts are either anechoic or hypoechoic with smooth, thin walls, while solid tumors appear isoechoic or hypoechoic. Computerized tomography (CT) and magnetic resonance imaging (MRI) provide further details on the cyst's morphology, fluid composition, exact location within the spleen, and its anatomical relationship with surrounding abdominal organs [10].

Surgical treatment is recommended for symptomatic cysts or those larger than 5 cm due to the risks of bleeding, rupture, and infection.

Until the 1970s, open splenectomy was a common treatment for splenic cysts. Given the spleen's critical roles in hematopoiesis, immune function, and infection protection, particularly in children, spleen preservation has become essential to avoid life-threatening septicemia. Modern treatments include partial splenectomy, total cystectomy, partial cystectomy (decapsulation or unroofing), and marsupialization, which can be performed via open laparotomy or laparoscopy. However, if the splenic tissue is entirely replaced by the cyst or if large cysts are severely inflamed or infected, a total splenectomy is necessary [10].

To prevent partial splenectomy complications, several recommendations have been put forward: preserving the short gastric vessels helps to prevent ischemia of the splenic remnant during and after surgery, ensuring adequate fixation can prevent torsion of the splenic remnant, and using the argon beam to divide on the ischemic side of the demarcation line to minimize blood loss [11].

CONCLUSION

Although splenic cysts are rare, they are being diagnosed more frequently due to the increased availability and use of imaging techniques. Partial splenectomy is a safe and effective procedure in children

Conflict of Interests: The authors have no conflict of interests to declare.

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