Case study

Primary Epithelial Splenic Cyst In A Boy –Laparoscopic Management

Abstract

Splenic cysts are a rare condition, with an incidence of only 0.07%, and there have been approximately 800 reported cases in the English literature to date. These cysts can be classified as primary or secondary, depending on whether they have an epithelial lining. They can also be categorized as parasitic or non-parasitic in origin. Primary cysts are also known as true, congenital epithelial, or epidermoid cysts and account for about 10% of all benign, non-parasitic splenic cysts.

They are the most common type of splenic cyst in children. Typically, splenic cysts are asymptomatic and are often discovered incidentally during imaging studies or during surgery. Symptoms associated with splenic cysts are generally related to the size of the cyst. When these cysts grow large, they may cause sensations of fullness in the left abdomen, splenomegaly (enlargement of the spleen), local or referred pain, or in rare cases, thrombocytopenia (low platelet count). Complications can also arise, such as infection, rupture, and haemorrhage.

The preoperative diagnosis of primary splenic cysts is typically made using imaging techniques like ultrasonography, CT scans, and MRI scans. However, a careful histopathological evaluation, along with immunostaining to confirm the presence of an epithelial lining, is essential to arrive at a definitive diagnosis.

We would like to present the case of a 13-year-old boy who came to us with an abdominal lump and associated pain that had persisted for one month. Ultrasonography and a CT scan of the abdomen revealed a unilocular cyst measuring 8x7x6 cm, originating from the upper pole of the spleen. To address this, we performed a partial cystectomy, marsupialization, and omentoplasty to manage the condition.

Key words : Splenic cyst, Primary epithelial cyst, Epidermoid cyst.

Introduction

Splenic cysts are a rare condition, occurring with an incidence of only 0.07%. They are traditionally categorized as either primary (true) splenic cysts or secondary (false or pseudo) splenic cysts, based on the presence or absence of an epithelial lining. True splenic cysts encompass parasitic cases, primarily caused by Echinococcus granulosus, as well as non-parasitic cases like congenital cysts, epithelial or epidermoid cysts, vascular splenic cyst, lymphangioma, haemangioma and neoplastic cysts. [1,3,8]

Primary splenic cysts are an uncommon occurrence and are often discovered incidentally during surgical procedures. According to historical records, the first documented cases of splenic cysts date back to 1929 when Andral reported them. These cysts are predominantly observed in paediatric and adolescent age groups. Typically, primary splenic cysts do not manifest symptoms and are usually detected accidentally through ultrasonography. While the traditional approach has been surgical treatment involving total splenectomy, there has been growing interest in spleen preservation, particularly in younger patients. Laparoscopic partial cystectomy, along with marsupialization and omentoplasty, has emerged as a safe and suitable treatment method for large splenic cysts. [3,5,6,]

Case Report - A laparoscopic approach

On September 1, 2023, a 13-year-old boy was admitted to Jatal hospital & Research centre, Latur, Maharashtra state, with complaints of left hypochondriac abdominal pain and a palpable spleen. A physical examination of the abdomen revealed a non-tender, enlarged splenic mass in the left hypochondrium. Further evaluation through ultrasonography and an abdominal CT scan indicated the presence of a cystic mass located at the upper pole of the spleen, measuring 8x7x6 cm in size. All laboratory investigations yielded normal results. Considering the patient's young age and the desire to preserve as much of the spleen as possible, a decision was made to proceed with a laparoscopic partial cystectomy, marsupialization, and omentoplasty.

Two weeks before the surgery, the patient received preoperative vaccination against pneumococci microorganisms. The surgical procedure began with the patient placed in a left lateral decubitus position, tilted 45 degrees to the right side, with a sandbag placed under the lumbar region to facilitate access. Carbon dioxide insufflation was carried out, and 10 mm supraumbilical ports were employed, with additional 5 mm ports in the right hypochondrium, sub-xiphoid region, and the left anterior axillary line at the level of the umbilicus.

The cyst was carefully identified, and approximately 200 cc of yellowish-coloured fluid was aspirated using a long aspiration needle. Fenestration of the cyst was then accomplished by partially excising the cyst walls, leaving a 1 cm margin from the splenic rim. Various surgical instruments, including a harmonic scalpel and bipolar electrocautery, were used to excised the cyst wall. Haemostasis was achieved, followed by marsupialization, and omentoplasty was performed. Complete suction of the cystic fluid was ensured, and a drainage tube was inserted. Subsequently, the trocars were removed, and the incisions were closed. The drainage tube was removed on the 4th postoperative day, and the patient was discharged on the 5th postoperative day, having made a good recovery. A segment of the splenic cyst, measuring 4-5 cm in size, was sent for histopathological examination, which revealed an epithelial cyst of the spleen lined by cuboidal epithelium. **(Fig 1-8)**

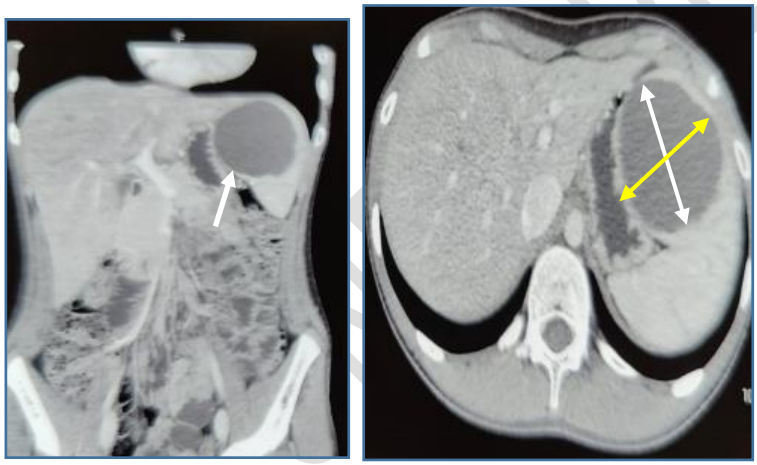


Fig-1 CT abdomen showing large primary splenic cyst at upper pole. Measuring 8x7x6 cm

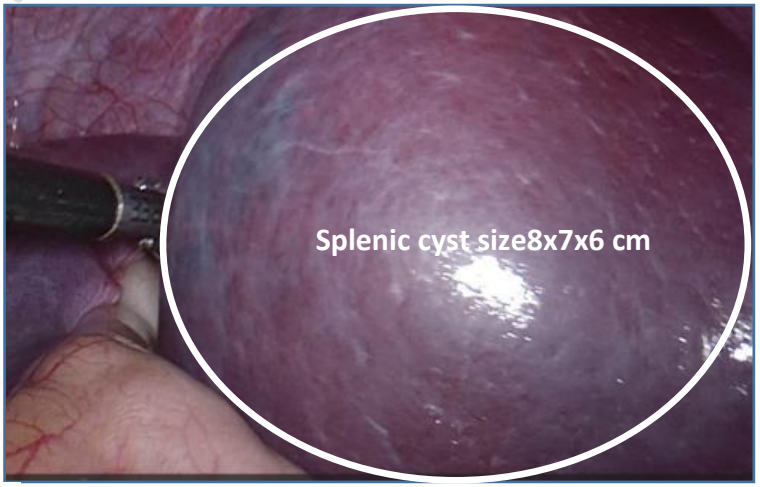
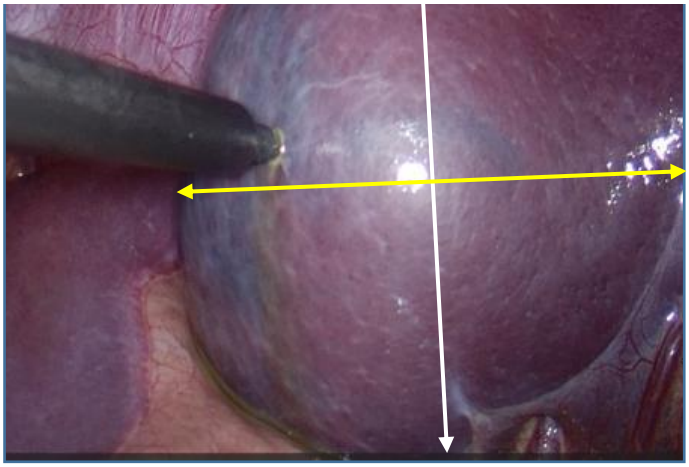


Fig-2 Laparoscopic image showing splenic cyst at upper pole Of size measuring 8x7x6 cm



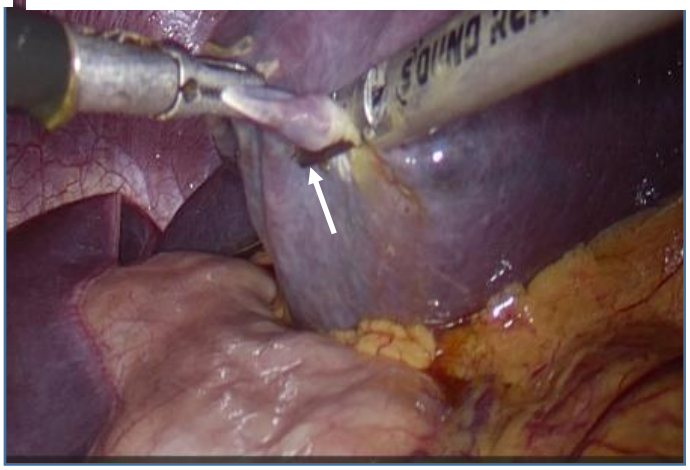


Fig-3 Laparoscopic image showing splenic cyst size measuring 8x7x6 cm and splenic cyst aspiration with needle

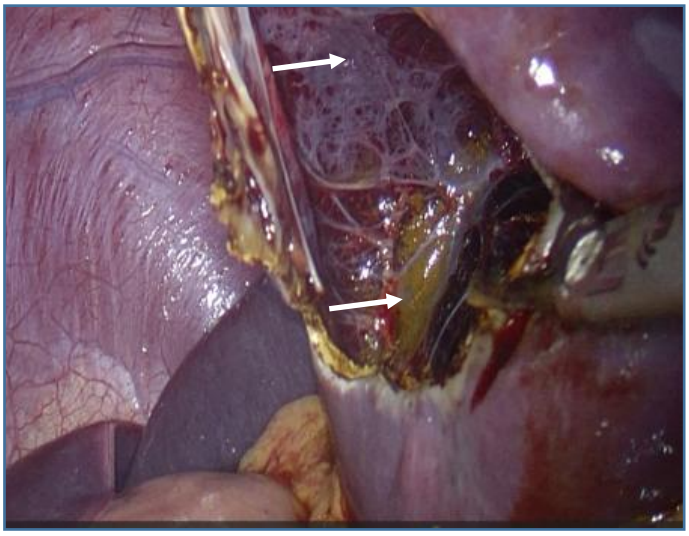


Fig-4 Laparoscopic image showing excision of splenic cyst with harmonic

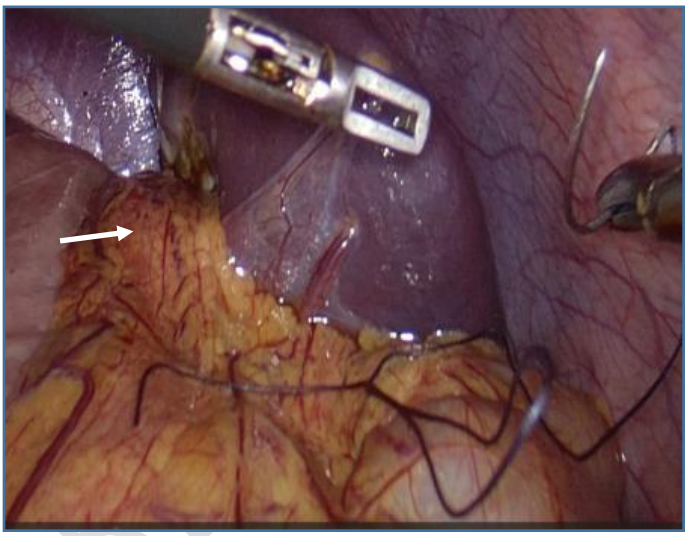


Fig-5 Laparoscopic image showing partial cystectomy of splenic cyst

Fig-6 Laparoscopic image showing partial cystectomy, marsupialization, and omentoplasty

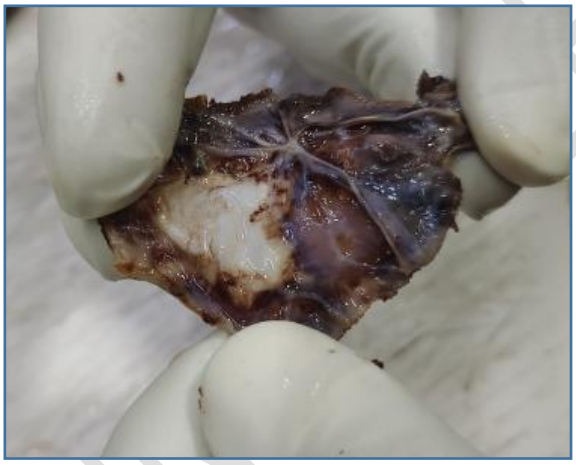


Fig-7 Gross piece of splenic cyst of size 4x5 cm

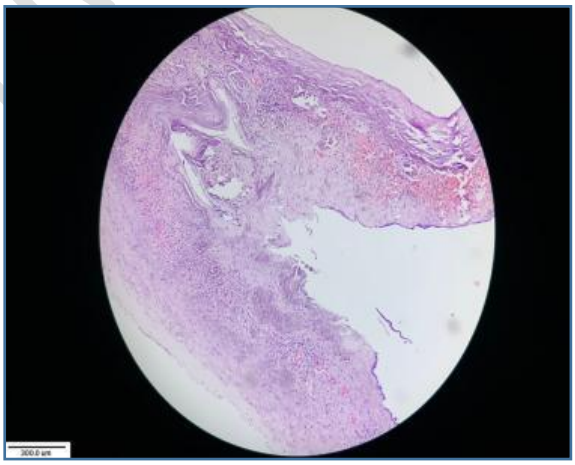


Fig-8 Histopathological examination showing Primary epithelial splenic cyst

Discussion

Splenic epithelial cysts, which are considered true splenic cysts due to their characteristic epithelial lining, are further categorized into three subgroups based on the type of epithelial lining they possess. Epidermoid cysts: These cysts are covered with stratified squamous epithelium and often contain structures like hair follicles, sebaceous glands, and skin appendages. True or primary epithelial cysts fall into this category and make up about 25% of all splenic cysts. Congenital splenic

epithelial cysts are benign and sporadic, primarily occurring in females between the second and third decades of life, although they can also be found in paediatric patients. [1,10]

The exact pathogenesis of primary splenic cysts remains unclear, and several hypotheses have been proposed: 1. Mesothelial invagination theory. 2. Lymph space theory: Primary cysts may originate from normal lymph spaces within the spleen. 3. Endodermal inclusion theory. [3,8]

Most splenic cysts are clinically asymptomatic, although some individuals may experience mild abdominal pain and a palpable mass in the left upper abdomen. Complications such as acute abdomen due to intra-cystic bleeding, infection, or rupture are rare. Most primary cysts are incidentally diagnosed or detected through non-invasive imaging techniques. On ultrasonography, epithelial cysts typically appear as well-defined, thin-walled, anechoic, and unilocular cysts. CT and MRI imaging provide additional insights into the cyst's morphology, fluid content, precise location, and its relationship with adjacent structures. Histopathologically, primary splenic cysts exhibit an epithelial lining, which can be flattened, low cuboidal, low columnar, or squamous, with benign nuclear features. [2,3,4]

Traditionally, treatment for these cysts has involved either partial or total splenectomy. The goal of partial splenectomy is to preserve more than 25% of the splenic parenchyma, thus maintaining the patient's immunological protection. Symptomatic or large cysts, typically exceeding 5 cm in size, are candidates for surgical management. However, some cysts may spontaneously resolve or remain asymptomatic, warranting regular radiological follow-up. [5,6,8]

The choice of treatment depends on factors such as the cyst's size, type, and location. More recently, conservative management options for superficially located splenic cysts have emerged, including marsupialization, de-capsulation, partial cystectomy with omentoplasty, and spleen preservation through laparoscopic partial splenectomy, de-roofing, or fenestration. These approaches are suitable when the cyst is superficial and situated at the upper or lower poles of the spleen. Total splenectomy is considered when the cyst is near the hilum, located intra-splenic, or when multiple cysts are present. Laparoscopic surgery offers advantages such as reduced pain and faster recovery, but it is associated with a recurrence rate of 22%. [3,6,8,9]

Conclusion

Laparoscopic procedures like partial splenectomy, partial cystectomy, fenestration, de-roofing, and marsupialization with omentoplasty are considered viable options when dealing with cystic lesions located in the upper or lower pole of the spleen, especially in young patients, including children. These techniques aim to preserve the spleen's immunological function. In the present era, the preference leans towards laparoscopic spleen-sparing techniques as the treatment of choice.

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