

**Case Report**

# Elective Laparoscopic Splenectomy for Giant Cyst: Differential Diagnostics Issues, A Case Report

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Laparoscopic splenectomy is increasingly being advocated as the standard of care in cases where the removal of spleen is necessary for diagnostic and therapeutic purposes. Symptomatic Splenic cysts (SCs) represent a rare incidental finding, which requires surgical treatment, due to high risk of spontaneous rupture. The finding of a splenic lesion often creates apprehension among clinicians because of the many diagnostic hypotheses available and the same difficulties to confirm them. In fact, the known fragility of the spleen excludes the possibility of performing partial biopsies or ago-biopsies. So, we present the case of a 20-year-old male presented to hematology department for a giant SC, with suspicious lymphoproliferative disorder, in order to investigate about differential diagnostics issues, supporting laparoscopy to improve the post-surgical outcome of the patient.

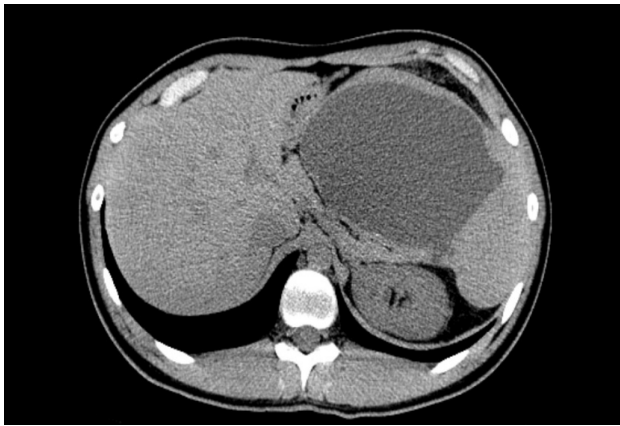
**Keywords:** Laparoscopy; Lymphoma; Lymphoproliferative disorder; Spleen cyst; Splenectomy**Introduction**

Laparoscopic splenectomy is increasingly being advocated as the standard of care in cases where the removal of spleen is necessary for diagnostic and therapeutic purposes. Symptomatic splenic cysts (SCs) represent a rare incidental finding, which requires surgical treatment, due to high risk of spontaneous rupture with massive hemorrhage [1]. Depending on the presence or not of an endothelial wall, we conventionally distinguish two types of cysts, primary or true and secondary or false or pseudocysts. In this regard, true SCs, with a well-defined wall, are those due to Echinococcus granulosus, or non-parasitic cases (congenital or epithelial, vascular, and neoplastic cases). On the contrary, trauma or splenic infarcts characterize false SCs [2,3]. The increased infectious risk in splenectomized pediatric and adult patients has led to some clinicians a preferable organ-saving surgery, as well as partial cyst amputation, partial splenectomy or percutaneous

aspiration of the cyst [4-6]. However, these procedures result in a high risk of relapse, but laparoscopic splenectomy (LS) can be a challenging procedure given the fragile, well-vascularized nature of the spleen and its proximity to the pancreas, stomach and colon [7,8].

**Case Report**

A 20-year-old male presented to hematology department for a giant SC with suspicious lymphoproliferative disorder. The patient reported he was invested in childhood by a car, and a percutaneous aspiration of the same was performed 3 years before. Physical examination revealed splenomegaly, although the patient was negative for systemic symptoms, such as night sweats, fever, weighting or itching, or other clinical signs. In addition, a Computed Tomography (CT) scan showed a splenic cyst of size 15.5 x 11.5cm, that appears 2 cm larger when compared to the previous control, and small lymphadenopathy in the mesentery was reported (Figure 1).

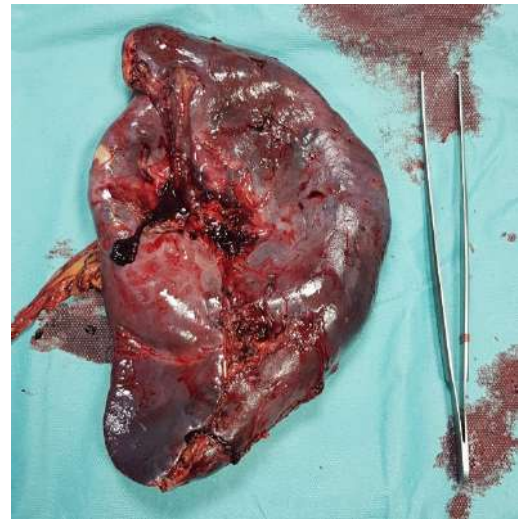


**Figure 1:** Splenic cyst on CT scan.

Preoperative evaluation led to exclude the possible diagnosis of a lymphoproliferative disorder, and a collegial revision of the images was done, deciding to proceed with a diagnostic and therapeutic splenectomy. Blood examination with count cell (CBC) and morphological exam of the blood smear were conducted and, after anesthesiological evaluation, about 2 weeks before the surgery, the patients made the vaccinations against *Neisseria Meningitidis*, *Staphylococcus Pneumoniae*, and *Hemophilus Influenzae* type b, as international guidelines suggested [9].

### **Surgical Technique**

The patient was subjected to laparoscopy, which demonstrated a giant cyst of the spleen. The cyst was drained by ultrasound, and laparoscopic splenectomy was performed. Operative time was 65 minutes, postoperative recovery was uneventful, and the drain was removed on the second postoperative day. Antibiotic prophylaxis with amoxicilline and clavulanic acid 1 g bid and s.c. enoxaparin 0.4 ml were started, and the patients was discharged at home. Histologic examination showed wall cyst lined by cubic-type epithelium, chronic xanthogranulomatous giant cell inflammation (CK7 +, CEA +, p40 +) (Figure 2).



**Figure 2:** Surgical specimen.

### **Hematological Management**

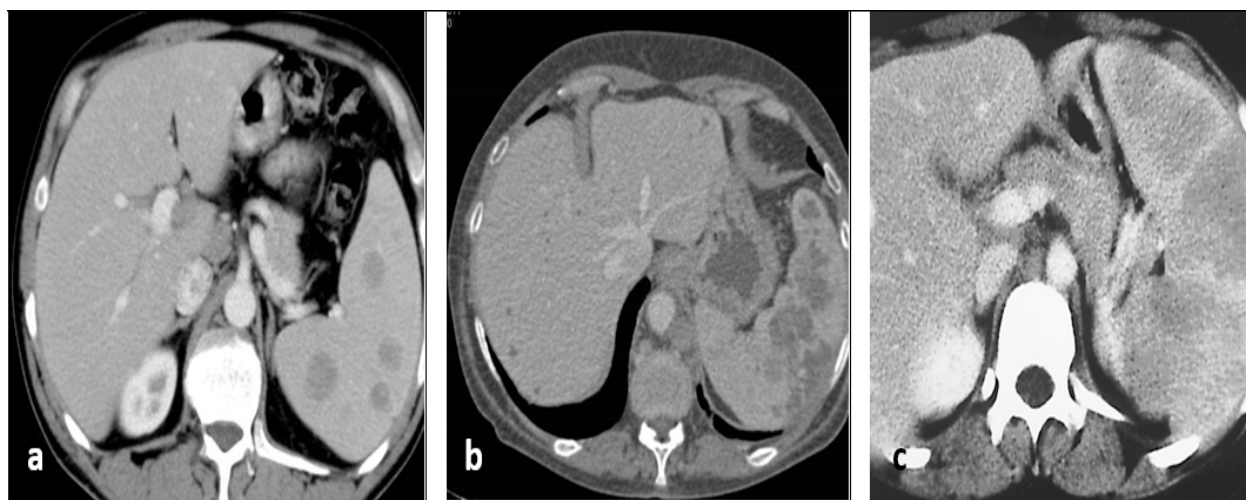
The hematological assessment of a splenic lesion poses the problem of differential diagnosis between a low or high grade lymphoproliferative disorder with primitive splenic onset, a secondary involvement of the spleen [10], without excluding the metastatic nature of the same due to known or unknown solid tumor. In rare cases, the histological examination revealed undifferentiated sarcoma, and cases lymphangioma are reported in literature [11,12]. In the case of our patient, CBC was normal, such as LDH and Beta2-microglobuline, monoclonal protein was absent and the patient didn't refer systemic symptoms. In addition, the radiologic images evaluated by different radiologists, supported the cystic nature of the lesion, such as the clinical history with a relapse after percutaneous aspiration. These elements conducted collegially the clinicians to made a diagnostic and therapeutical splenectomy, and the histological examination confirmed the cystic nature of the lesion. Two weeks after the discharge, the patient come back at hematological visit in good conditions, not referring

post-operative late adverse events. CBC reveals mild leukocytosis and thrombocytosis, so heparin therapy was switched into aspirin, recommending to continue antibiotic therapy for one or two years after the surgery.

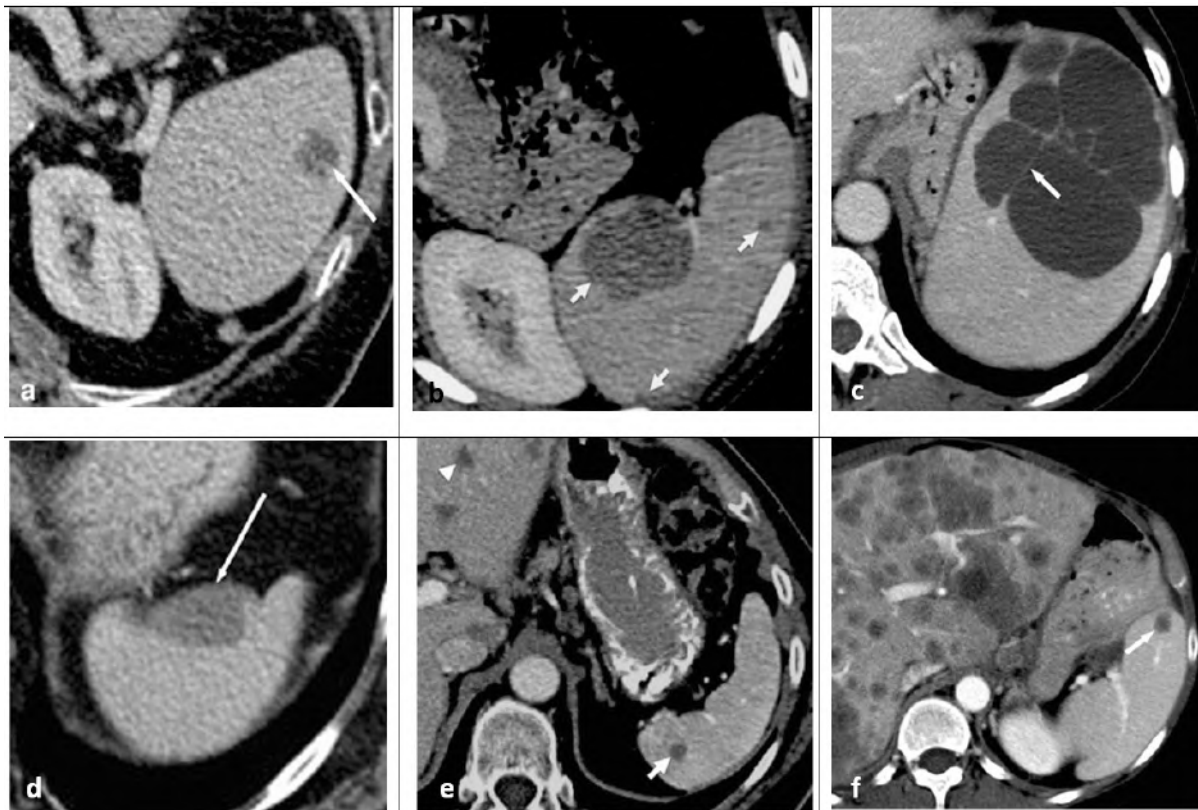
## Discussion

The splenic cysts they can be divided into three types: 1) congenital cysts that are present since birth, do not have a well-defined cause and are asymptomatic; 2) pseudocysts, that are similar to cysts but do not have a well-defined wall and are usually caused by trauma to the spleen with “self-contained” bleeding near the organ; 3) echinococcus cysts: they are caused by a parasite that is contracted by eating foods contaminated by feces of farm animals or, more rarely, domestic animals with this parasitosis; they

are the most dangerous ones as they can become super-infected, they can bleed and they can even. The 25% of splenic cysts are true splenic cyst, they are subclassified into epithelial, endodermoid, and parasitic cyst. Of these three types of cysts, epithelial cysts comprise epidermoid and dermoid cysts [13]. Hematological diseases, in some cases, are associated with splenomegaly. CD5-negative, CD10-negative low-grade B-cell lymphoproliferative disorders of the spleen comprise a group of indolent, neoplastic, mature B-cell proliferations that are difficult to diagnose, due to due to exclusively multifaceted splenic localization (Figure 3). Central localization or increase in size of splenic cysts represents an indication for total splenectomy [10,14]. In Figure 4 we report computed tomographic images of splenic lesions of various nature.



**Figure 3:** Computed Tomographic images of splenic lymphomas. Transverse contrast-enhanced CT images acquired during the portal-venous phase revealed heterogeneous splenic lesions due to primary splenic lymphoma (Splenic Marginal Zone Lymphoma, SMZL), or secondary to nodal or extranodal lymphomas.



**Figure 4:** Computed Tomographic images of splenic lesions of various nature. Transverse contrast-enhanced CT images acquired during the portal-venous phase illustrating the differences between various cystic lesions: a. hydatid disease of the spleen (arrow); b. multiple pyogenic splenic abscesses in a immunosuppressed patient with haematogenous spread of *Staphylococcus aureus* (short arrows); c. lymphangioma of the spleen, with lesion's septations (arrow) and homogeneous water-like content, similar to a hydatid (echinococcal) cyst; d. false cyst, presumably after trauma (arrow); e. sarcoidosis of the liver (arrow head) and the spleen (short arrow, long arrows); f. metastatic ovarian cancer.

Laparoscopy provides a minimal access method of obtaining pathological confirmation of diagnosis, reduction of cyst complications, and a short hospital stay [8]. Recurrence of the splenic cyst can be avoided with partial splenectomy in polar localization of the cyst, or complete removal of the cyst by “peeling” it off the splenic parenchyma. Marsupialization of the cyst, either via a laparoscopic or an open approach, is often ineffective [4-6].

## Conclusion

With this case we want demonstrate the importance of a careful pre-operative evaluation in the presence of splenic neoformations with the concomitant presence of lymphadenopathy. For large recurrent splenic cysts, surgery is indicated especially due to the high risk of rupture. The increase in mortality in splenectomized patients, mainly due to infectious or thrombotic causes, has led over the years to prefer conservative strategies in

the treatment of splenic cysts. However, the high risk of relapse as well as spontaneous or post-traumatic rupture, led clinicians to prefer full splenectomy for cysts larger than 5 cm [15,16].

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