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CASE REPORT

# INCIDENTAL SPLENIC LESIONS IN A COMPLEX SURGICAL PATIENT: A DIAGNOSIS AND MANAGEMENT DILEMMA

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***Abstract. Introduction:*** *Incidental splenic lesions discovered during unrelated imaging often require additional radiological workup for defining differential diagnosis. This conventional framework may be inadequate for suspicious splenic capsule lesions encountered during unrelated surgery, which pose a diagnostic and management challenge.* ***Case presentation:*** *A 41-year-old female was found to have papular capsular splenic lesions during robotic bilateral salpingo-oophorectomy that was not addressed during the procedure. The patient subsequently underwent a robotic partial splenectomy due to concern for malignancy. Histopathology report revealed benign splenic parenchyma with capsular adhesions.* ***Discussion:*** *Capsular splenic lesions are rare findings during abdominal surgeries and thus may pose diagnostic and management dilemma. In such cases, laparoscopic or robotic-assisted partial splenectomy can provide a safe and effective diagnostic tool while preserving splenic function.* ***Conclusion:*** *This case highlights the importance of including splenic adhesions in the differential for atypical splenic lesions.*

***Key words:*** *splenic adhesions, incidental splenic lesions, partial splenectomy, robotic surgery*

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## INTRODUCTION

The spleen is a common site for incidental findings during abdominal imaging or procedures for unrelated conditions. Spleen lesions are often asymptomatic and can typically be categorized into one of the three types: malignant, benign, and non-neoplastic [1]. Differentiating among these relies primarily on multimodal imaging. Malignant lesions typically demonstrate ill-defined borders, hypovascularity, restricted diffusion on magnetic resonance imaging (MRI), and portal phase hypoenhancement on computed tomography (CT) scans. Benign lesions are more often characterized as cystic, homogeneous, and hypervascular with well-defined borders [2, 3].

However, the imaging modalities used to differentiate intraparenchymal splenic masses are insufficient for characterizing pathologies of the splenic capsule and adjacent peritoneum. Moreover, lesions discovered during other abdominal surgeries, where direct visual inspection is used, pose a unique diagnostic challenge, as imaging criteria cannot be applied. Among these subtle pathologies, which may raise concern for malignancy, are adhesions [4, 5, 6].

This case presents a 41-year-old woman with incidentally discovered asymptomatic atypical adhesions

confined to the splenic capsule without adjacent tissues. It highlights the diagnostic and management challenges that surgeons may face intraoperatively. Robotic assisted laparoscopic surgical biopsy is a safe and valuable approach for obtaining tissue diagnosis in cases of incidentally found suspicious splenic capsular lesions.

## CASE DESCRIPTION

The patient is a 41-year-old female with a complex medical and rich surgical history who was referred to general surgery due to incidentally discovered splenic lesions during a robotic bilateral salpingo-oophorectomy. The lesions were described to the patient as unusual and suspicious. Thus, the patient was evaluated by a hematology-oncology specialist. No definitive diagnosis was made based on the available findings, which led to a referral to general surgery for further evaluation.

The patient's medical history was significant for rheumatoid arthritis (managed with hydroxychloroquine, leflunomide, and monthly subcutaneous abatacept injections), endometriosis, obesity, seizure disorder, migraines, and gastroesophageal reflux disorder (GERD). During surgical evaluation, the patient reported no personal or family history of malignancy. Patient denied any night sweats, fevers, or unintentional weight loss.

The patient additionally presented with an extensive abdominal surgical history, including a cesarean section, laparoscopic hysterectomy, multiple procedures for endometriosis and ovarian cysts removal, and bilateral salpingo-oophorectomy.

The patient was a non-smoker and did not use alcohol or recreational drugs.

On presentation, the patient was grossly asymptomatic. The vital signs were within normal limits. The cardiopulmonary exam was unremarkable. The abdomen was soft, non-tender, non-distended, no hepatosplenomegaly, and without other palpable pathological masses.

A decision was made to proceed with surgery to obtain tissue diagnosis due to concern for malignancy. The patient consented to an exploratory laparoscopy with robotic-assisted partial versus total splenectomy, depending on the intraoperative findings. While core needle biopsy was discussed, it was not considered a good option in this case due to the superficial location of the lesions, per the gynecologist's narrative. The patient underwent a preoperative CT scan that did not show pathological findings on the spleen (Figure 1A and B).

The patient was scheduled and prepared for a robotic-assisted exploratory laparoscopy. Intraoperative inspection revealed irregular, chalky white to pale gray surface plaques on the splenic capsule (Figure 1C and D). There was no evidence of other pathologies. The remainder of the splenic parenchyma appeared overall normal. Given the uncertain nature of the splenic lesions and the patient's autoimmune background, a robotic partial splenectomy was performed. The resected tissue was sent for a histopathological examination. The robotic approach enabled very precise resection of the affected area with minimal blood loss (10 ml).

The operation was otherwise uneventful. The patient tolerated the surgery well and was transported to re-

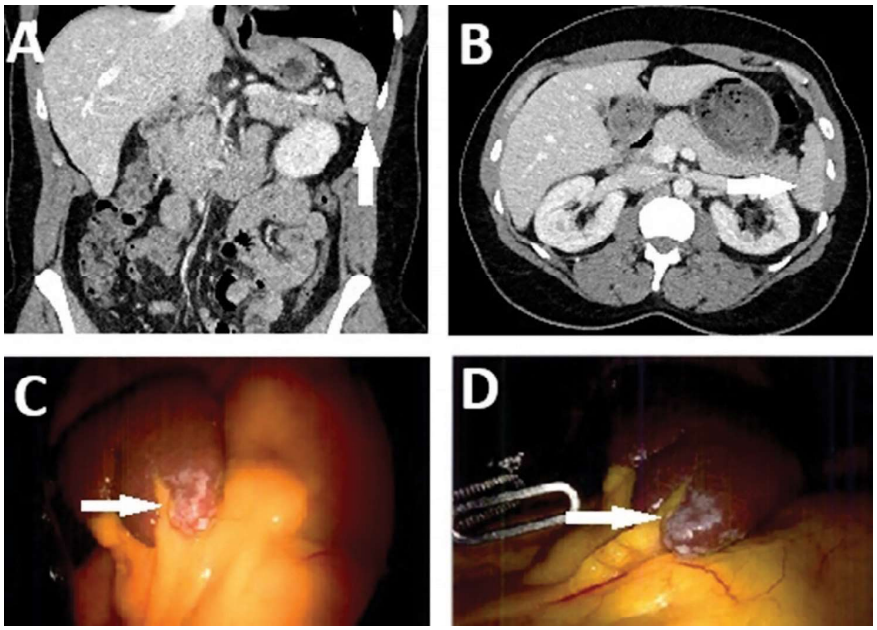


**Fig. 1.** Preoperative imaging and intraoperative findings: **A)** coronal and **B)** axial computed tomography (CT) images with arrows pointing at the lower pole of the spleen with no pathological radiological findings. **C)** and **D)** representative intraoperative images of the lower pole of the spleen with chalky white to pale gray surface plaques on the splenic capsule

covery in stable condition. Postoperative labs and vitals were comparable to the preoperative values. There was mild leukocytosis expected after a surgical procedure and partial splenectomy. The patient was discharged the same day. On the first month follow-up outpatient visit, she was doing well without any complaints and with repeated CBC within normal limits.

## PATHOLOGY REPORT

Gross examination of the specimen revealed an irregularly shaped red-brown soft tissue fragment measuring, consistent with splenic lower pole tissue.

Microscopic examination demonstrated benign splenic parenchyma with normal architecture. The splenic capsule showed dense fibrous adhesions but no evidence of neoplasia, atypia, or granulomatous inflammation (Figure 2 A-D). On immunohistochemistry, CD3 and CD30 highlighted normal T and B cell zones within the spleen. Negative pancytokeratin and CAM 5.2 excluded epithelial malignancy.

The final diagnosis of benign splenic parenchyma with adhesions on the splenic capsule was established.

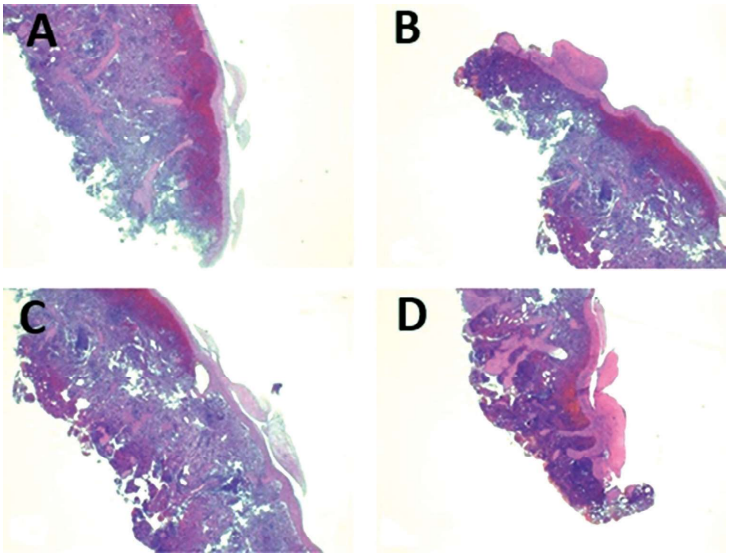


**Fig. 2.** Histopathology of the surgical specimen. **(A-D)** Low-power hematoxylin and eosin–stained sections demonstrate fibroinflammatory adhesions along the splenic capsule. The capsule is markedly thickened with adherent fibrin, granulation-type tissue, and organizing inflammatory exudate. Variable degrees of hemorrhage and inflammatory cell infiltration are present. No discrete abscess, neoplasm, or parenchymal involvement is identified

## DISCUSSION

Incidental abdominal and specifically splenic findings are increasingly encountered due to the rise of imaging and minimally invasive surgical techniques. In the case of the spleen, these pose additional challenges as intraoperative findings differ from the imaging characteristics used to differentiate between benign, malignant, and non-neoplastic lesions. In this case, we present a 41-year-old female with an autoimmune disease, as well as a history of multiple abdominal surgeries with incidental findings of white fibrinous lesions on the spleen. Initially, these lesions raised concern of possible malignancy, which led to a surgical evaluation and eventual partial robotic splenectomy.

Intra-abdominal adhesions usually present as fibrous bands of scar tissue connecting separated organs [7]. In this patient, however, splenic adhesions were limited to the splenic capsule with a white fibrinous appearance. We hypothesize that the atypical appearance could be due to the influence of the patient's chronic inflammatory state associated with her autoimmune disease and endometriosis on the healing process post previous surgeries.

New studies report that adhesions are more than simply inert scar tissue as previously thought. Histologically, they consist of tortuous bands of collagen lined by adipose tissue with some level of fibrosis, alongside vascular and neuronal elements [8]. In this case, the histopathology report revealed dense fibrous adhesions with negative immunohistochemical staining.

The decision to perform a partial splenectomy versus a total splenectomy was made based on the uncertain nature of the splenic lesions to preserve as much splenic function as possible. Total splenectomy increases lifelong risk of severe infections and thromboembolic events [9]. This was particularly important to avoid in our patient with rheumatoid arthritis, as the goal was to retain sufficient tissue for immunologic functions. The usage of the robotic approach was also preferred to enhance visualization of the lesions, allowing careful resection of the capsular lesion with minimal blood loss, optimal preservation of healthy tissue, and minimal postoperative complications. This was supported by the patient recovering uneventfully.

This case highlights multiple important considerations for splenic lesions. First, splenic surface irregularities should not be presumed malignant without histological confirmation, specifically in patients with a history of surgery or chronic autoimmune conditions. Second, splenic adhesions may mimic more malignant pathology visually. Third, robotic partial

splenectomy is a valuable diagnostic and therapeutic tool, as it combines both minimally invasive surgery with splenic function preservation.

While considering these principles, it is important to acknowledge the limitations of this report, namely the short follow-up period. Future cases would benefit from longer surveillance periods to better describe and study the long-term outcomes, complications, and evaluation of splenic adhesions.

## CONCLUSION

This case underscores the multiple challenges in the diagnosis and management of incidental splenic findings, particularly in cases where imaging criteria cannot be employed. Intraoperative findings of irregular white fibrinous structures initially raised suspicion for malignancy, but an autoimmune condition and multiple abdominal surgeries most likely contributed to the atypical presentation of these adhesions. Robotic partial splenectomy allowed for a safe and effective approach for diagnosis while maintaining splenic function. It is important to recognize adhesions as a potential splenic lesion that may mimic malignant pathology.

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***Ethical statement:*** *This study has been performed in accordance with the ethical standards as laid down in the Declaration of Helsinki.*

***Consent for publication:*** *Consent form for publication was signed by the patient and collected.*

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