



Wandering Spleen Managed with Mesh Splenopexy

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Abstract

A 14-year-old female patient, presented with pain in Left iliac and pelvic region, on and off, for the past 10 days; was admitted to the Emergency Department under the Department of General Surgery on 25/6/25, with suspected pelvic inflammatory disease or urinary tract infection. She underwent an ultrasonography of abdomen and pelvis, which revealed a left iliac mass, possibly the spleen and suggested a contrast-enhanced CT scan (CECT) of the Abdomen and pelvis. It revealed Spleno ptosis (wandering spleen) with splenomegaly. Patient underwent a diagnostic laparoscopy followed by open mesh splenopexy. The patient was discharged uneventfully on postoperative day 4, with normal postoperative splenic Doppler study.

Spleno ptosis (Wandering spleen) is a rare condition, occurring due to lax or absent supporting ligaments around the spleen, which can result in torsion of the splenic pedicle causing Splenic infarction, which, if it occurs, must be treated by Splenectomy followed by postoperative vaccination for encapsulated organisms, to prevent OPSI.

It is usually diagnosed using imaging techniques, and splenopexy can be performed by anchoring the spleen to the left subdiaphragmatic region, either laparoscopically or by an Open technique.

Keywords: Case Report; Wandering Spleen; Spleno ptosis; Splenectomy; Splenopexy; Mesh, Rare Case; Splenic Doppler; Splenic Torsion; Splenic Infarct; Splenomegaly; Supports of Spleen; Ligaments of Spleen; Ectopic Spleen

Introduction

Spleno ptosis, commonly referred to as wandering spleen or ectopic spleen, is a rare clinical condition characterized by abnormal mobility of the spleen resulting from congenital laxity or acquired weakening of its suspensory ligaments. First documented by the Dutch physician Van Horne during an autopsy in 1667, this uncommon entity has been described in fewer than 500 cases throughout medical literature, with an estimated incidence of less than 0.5% among splenectomies performed for various indications. The spleen normally resides in the left upper quadrant of the abdomen, anchored in its anatomical position by several peritoneal reflections including the gastrosplenic, splenorenal, splenocolic and phrenocolic ligaments. These ligamentous attachments maintain the spleen in close proximity to the stomach, left kidney, colon and diaphragm while accommodating its physiological variations in size. In cases of spleno ptosis, however, the absence or elongation of these supporting structures permits excessive splenic mobility, allowing the organ to descend into the lower abdomen or pelvis where it remains attached only by an elongated vascular pedicle. The etiology of wandering spleen encompasses both congenital and acquired factors. Embryologically, failure of the dorsal mesogastrium to fuse properly with the posterior peritoneum during the second month of gestation results in inadequate ligamentous development, predisposing individuals to congenital splenic hypermobility. Acquired cases have been associated with conditions that promote ligamentous laxity, including multiparity, the hormonal

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fluctuations of pregnancy, abdominal wall weakness, trauma and splenomegaly from various hematologic or infectious conditions. Epidemiological data indicate a striking female predominance, with some studies suggesting the condition is up to fifteen times more common in women, particularly those of reproductive age between 20 and 40 years. Children account for approximately one-third of all cases, with congenital etiology predominating in this population. The clinical significance of wandering spleen extends beyond its rarity, as the condition carries potentially catastrophic consequences when complicated by torsion of the vascular pedicle. Understanding this entity is therefore essential for clinicians evaluating patients with abdominal pain, pelvic masses or acute abdominal presentations, as timely recognition directly influences the ability to preserve splenic function and avoid life-threatening complications [1,2].

Case Description

A 14-year-old female patient came to emergency ward on 25/6/2025, with chief complaints of pain in the left iliac fossa and pelvic region for the past 10 days, which is dull aching in character, on and off in nature with radiation of pain to left subcostal and left back region, associated with history of nausea. No history of trauma, burning micturition, pain during micturition, dysmenorrhoea, amenorrhoea, recent onset weight loss or weight gain, vomiting, regurgitation, dyspepsia, melena, abdomen distention, fever with chills, jaundice, hematemesis, altered bowel habits, bleeding tendencies, with her LMP on 10/6/25 (15 days before the hospital visit) with no significant past medical or surgical history. Attained menarche at 12 years of age, regular menstrual cycle with 3/30 days cycles, having no clots or pain. Her vitals were stable, with no tachycardia, general examination is normal, per abdomen examination revealed a freely mobile mass in the left iliac fossa extending into pelvic region, with no guarding or rigidity and no ascites and abdomen distention. Cardiovascular, respiratory and neurological examinations are normal. The Ultrasound abdomen and pelvis reported a mass lesion in the left iliac fossa, possibly spleen and suggested a contract enhanced CT Abdomen and Pelvis, which revealed splenoptosis (wandering spleen) with splenomegaly (Fig. 1,2) [3-6].

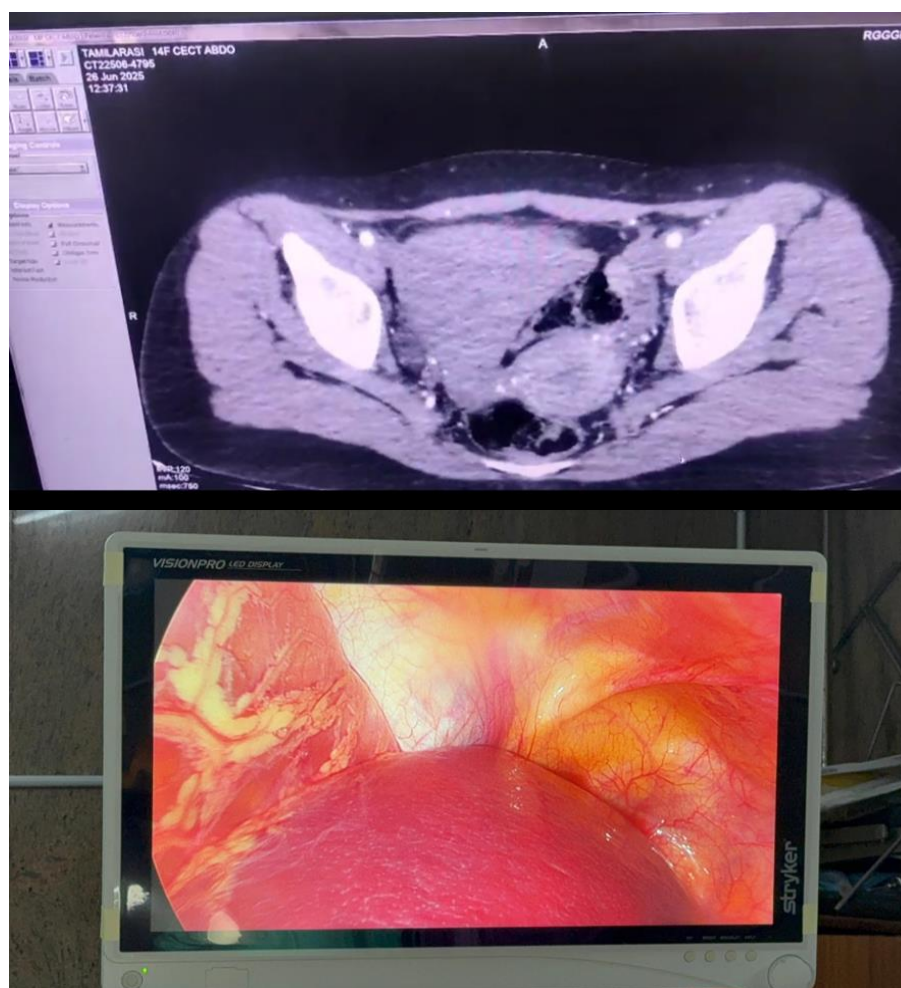


Figure 1: Patient underwent diagnostic laparoscopy and then converted to open mesh splenectomy on 28/6/25.

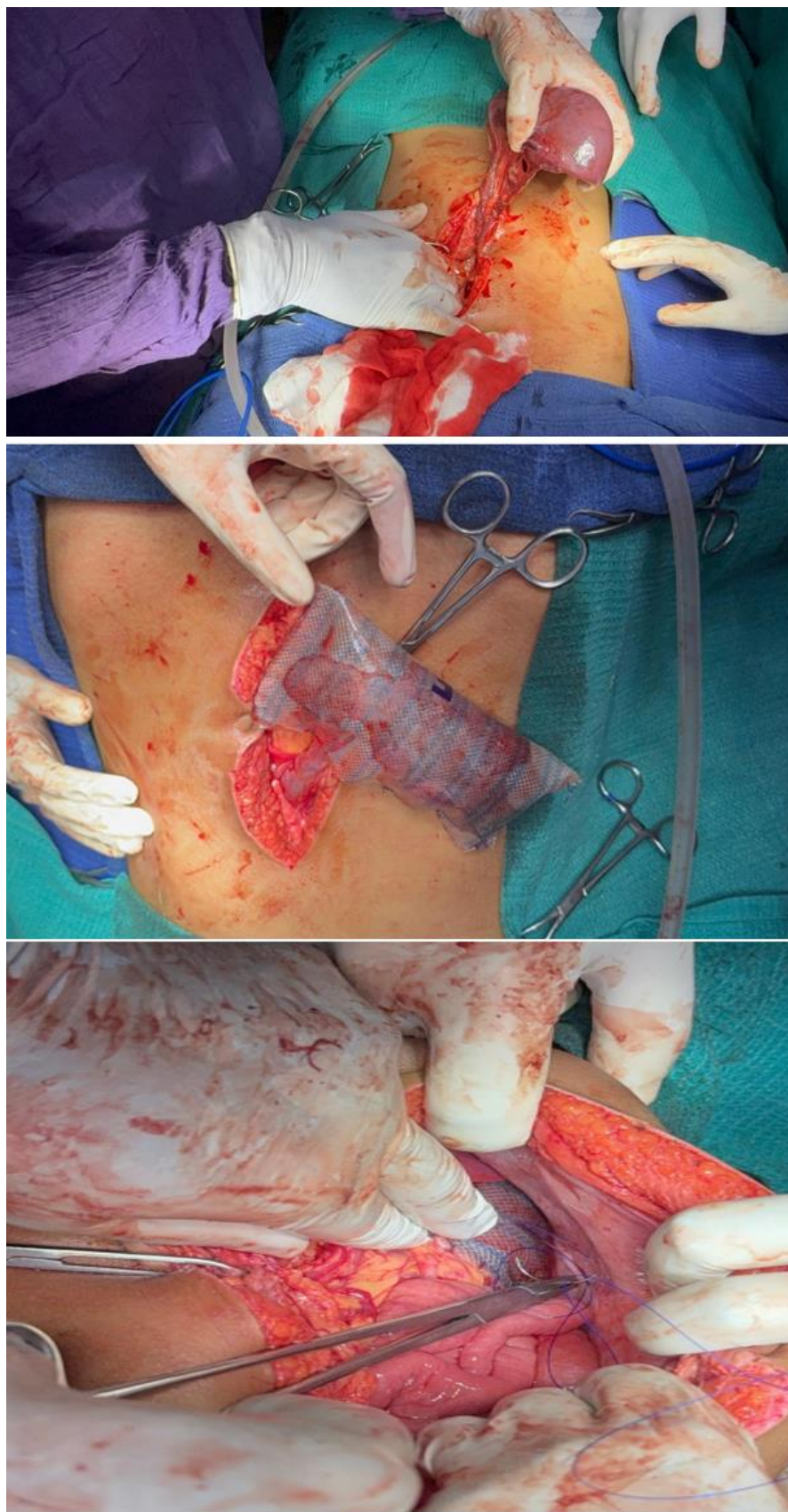
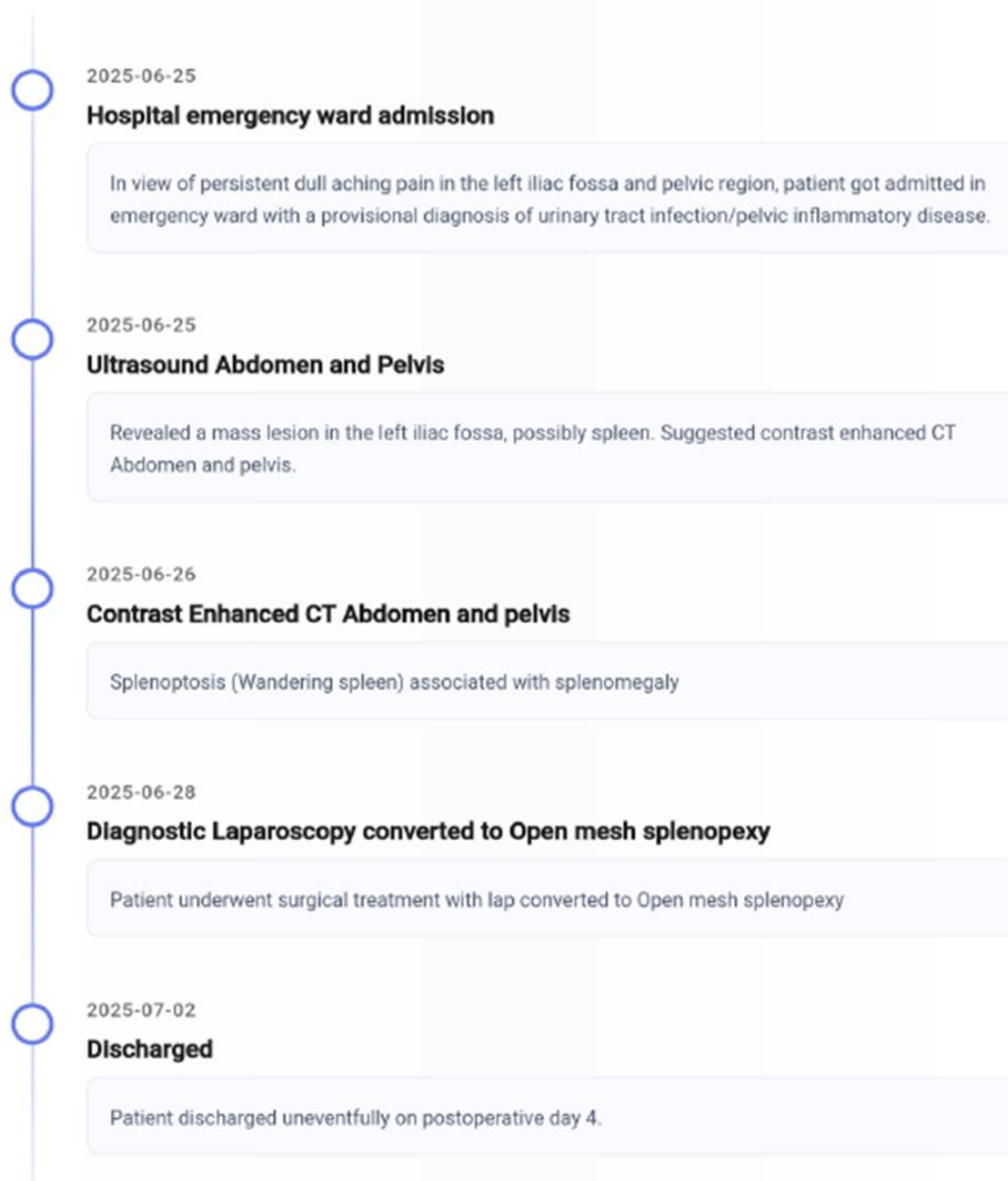


Figure 2: Discharged uneventfully on 2/7/25. Postoperative splenic Doppler study was normal.

Timeline:



Diagnostics

TEST/INVESTIGATION	RESULT
Contrast enhanced CT Abdomen and Pelvis	Splenoptosis (wandering spleen) with splenomegaly
Ultrasound Abdomen and Pelvis	Left iliac mass, possibility of spleen, suggested cect abdomen and pelvis

Patient Perspective

Patient came with left iliac fossa dull aching pain, on and off for the past 10 days, with no similar complaints in the past. Patient also had history of fatigability on prolonged standing. Because of the chronicity of the pain, patient family brought her to the hospital suspecting a peptic ulcer disease or gynaecological or urological disorder. Patient was astonished with the rarity of her condition and relieved at the same time, knowing a surgical procedure can help her condition. The patient and the family were explained about her condition and the surgical procedure by laparoscopic and open methods by creating mesh pouch around and spleen and anchoring them sutures over the diaphragm and peritoneal layers along the left subdiaphragmatic region. She underwent lap converted to Open mesh splenopexy with normal postoperative period and discharged uneventfully on pod-4. Patient reviewed after a week and sutures removed without any symptom's recurrence.

Discussion

Pathophysiology and Clinical Presentation

The pathophysiological basis of wandering spleen centres on the anatomical derangement of the splenic suspensory apparatus. Under normal circumstances, the gastrosplenic ligament carries the short gastric vessels and left gastroepiploic vessels to the greater curvature of the stomach, while the lienorenal ligament conveys the splenic artery, splenic vein and pancreatic tail. When these ligaments are congenitally absent, underdeveloped or acquired laxity develops, the spleen becomes freely mobile within the peritoneal cavity, tethered only by its vascular pedicle. This elongated pedicle is particularly susceptible to torsion around its longitudinal axis, which can compromise both arterial inflow and venous outflow.

The clinical presentation of wandering spleen varies considerably depending on the degree of torsion and the viability of the splenic parenchyma. Asymptomatic cases may be discovered incidentally during imaging performed for unrelated indications or during routine physical examination as a palpable abdominal or pelvic mass. When symptoms do occur, they generally follow one of three patterns: chronic intermittent discomfort, subacute progressive pain or acute surgical abdomen.

Chronic or intermittent torsion, characterized by milder degrees of vascular compromise that may spontaneously reduce, typically manifests as recurrent episodes of vague abdominal discomfort, early satiety or a sensation of pelvic fullness. These symptoms result from capsular stretching, venous congestion and splenomegaly secondary to impaired venous return. Acute torsion, in contrast, presents dramatically with sudden-onset severe abdominal pain, nausea, vomiting, fever and peritoneal signs. The degree of torsion can range from 90 degrees to as much as 2160 degrees (equivalent to twelve complete rotations), with the severity of symptoms generally correlating with the extent of vascular occlusion. Untreated acute torsion progresses inexorably to splenic infarction, which may be complicated by abscess formation, gangrene, peritonitis or even involvement of adjacent structures including gastric volvulus, intestinal obstruction or pancreatic necrosis.

Diagnostic Approach

Establishing the diagnosis of wandering spleen requires a high index of suspicion, as its nonspecific presentation often mimics more common causes of acute abdomen including appendicitis, ovarian torsion, ruptured ectopic pregnancy, diverticulitis or cholecystitis. Laboratory investigations are generally unrevealing, though leukocytosis and elevated inflammatory markers may accompany acute torsion with infarction.

Imaging studies form the cornerstone of diagnosis. Abdominal ultrasonography with color Doppler assessment typically serves as the initial imaging modality, demonstrating absence of splenic tissue in the left upper quadrant while localizing the ectopic spleen elsewhere in the abdomen or pelvis. Doppler evaluation permits assessment of vascular flow within the splenic parenchyma and pedicle, providing crucial information regarding organ viability. However, ultrasonography has inherent limitations including operator dependence, obscuration by bowel gas and difficulty visualizing the twisted pedicle itself.

Contrast-enhanced computed tomography offers superior anatomical delineation and is considered the imaging modality of choice for comprehensive preoperative assessment. Characteristic CT findings include absence of the spleen in its expected location, presence of an ovoid or comma-shaped soft tissue mass in an ectopic position and in cases of torsion, the pathognomonic "whirl sign" representing the twisted vascular pedicle surrounded by concentric rings of fat. Additional findings may include heterogeneous splenic enhancement or complete absence of enhancement indicating infarction, capsular rim enhancement from collateral circulation, ascites and secondary involvement of adjacent organs.

Magnetic resonance imaging, though less commonly employed in the acute setting, demonstrates similar findings with the ectopic spleen appearing as a soft tissue mass with signal characteristics paralleling normal splenic tissue on T1- and T2-weighted sequences. Nuclear medicine scintigraphy using technetium-99 m sulfur colloid can confirm the presence and location of functional splenic tissue but is rarely necessary given the diagnostic accuracy of cross-sectional imaging.

Differential Diagnosis

The differential diagnosis for wandering spleen depends largely on the clinical presentation. In patients presenting with a pelvic mass, considerations include ovarian neoplasms, uterine fibroids, mesenteric cysts and ectopic kidney. In the acute abdomen setting, the condition must be distinguished from other causes of acute pelvic pain including adnexal torsion, appendicitis, diverticulitis and bowel obstruction. Distinguishing wandering spleen from related splenic anomalies is also essential: ectopic spleen refers to splenic tissue developing at an abnormal site, while accessory spleen denotes additional nodules of splenic tissue separate from the main splenic body and splenosis describes auto implantation of splenic tissue following traumatic rupture.

Management Strategies

The management of wandering spleen is dictated primarily by the viability of the splenic parenchyma at the time of diagnosis. The fundamental principle guiding contemporary surgical decision-making is splenic preservation whenever feasible, particularly in pediatric patients who face a lifetime risk of overwhelming post-splenectomy infection.

Splenopexy

represents the procedure of choice for incidentally detected wandering spleen without evidence of torsion or infarction, as well as for cases of acute torsion where detorsion successfully restores splenic perfusion. This spleen-preserving approach involves detorsion of the vascular pedicle, when necessary, assessment of parenchymal viability through direct inspection and evaluation of arterial pulsation and subsequent fixation of the spleen in the left upper quadrant. Various techniques for splenic fixation have been described, including creation of a retroperitoneal pouch, suture fixation to the lateral abdominal wall or diaphragm and wrapping with omentum or absorbable mesh. Laparoscopic approaches to splenopexy have gained favor in recent years, offering the advantages of reduced postoperative pain, shorter hospitalization and more rapid recovery while achieving comparable outcomes to open techniques.

Splenectomy

is reserved for cases where the spleen is demonstrably nonviable, as evidenced by persistent ischemia following detorsion, established infarction on preoperative imaging or frank necrosis discovered intraoperatively. Both open and laparoscopic splenectomy have been successfully employed, with the choice of approach depending on surgeon expertise, patient stability and spleen size. In the pregnant patient, laparoscopic splenectomy has been demonstrated as feasible and safe when performed by experienced surgeons with appropriate fetal monitoring.

Postoperative considerations differ markedly between these approaches. Patients undergoing successful splenopexy require follow-up imaging to confirm stable splenic position and perfusion but do not require specific immunologic precautions. Conversely, patients subjected to splenectomy must receive appropriate vaccinations against encapsulated organisms including *Streptococcus pneumoniae*, *Haemophilus influenzae* type b and *Neisseria meningitidis*, along with consideration of long-term antibiotic prophylaxis and education regarding the recognition of febrile illness.

The management of wandering spleen in special populations warrants particular attention. In pregnancy, the condition presents unique challenges as the gravid uterus may both exacerbate symptoms and complicate surgical access. A systematic review of cases spanning 1907 to 2022 identified 17 published reports of wandering spleen in pregnant or postpartum patients, with splenectomy performed in 16 cases. While splenopexy has theoretical appeal in this population given the immunologic implications of asplenia for both mother and fetus, no cases of splenopexy during pregnancy have been reported, likely reflecting concerns regarding recurrence risk and the proven safety of splenectomy with appropriate vaccination. In the pediatric population, where congenital etiology predominates and the immunological role of the spleen is paramount, splenopexy should be aggressively pursued whenever any degree of splenic viability remains.

Prognosis and Long-Term Considerations

With timely diagnosis and appropriate intervention, the prognosis for patients with wandering spleen is generally excellent. Splenopexy effectively prevents recurrent torsion while preserving immunologic function, with low reported rates of complications or recurrence. For patients requiring splenectomy, adherence to vaccination protocols and antibiotic prophylaxis substantially mitigates the risk of overwhelming post-splenectomy infection, though lifelong vigilance remains necessary.

Conclusion

Splenoptosis, though rare, represents a clinically significant entity that demands inclusion in the differential diagnosis of abdominal pain and pelvic masses, particularly in women of reproductive age and pediatric patients. The condition arises from congenital or acquired deficiency of the suspensory ligaments of the spleen, permitting excessive splenic mobility and predisposing to torsion of the vascular pedicle with potential progression to infarction and life-threatening complications.

Advances in cross-sectional imaging, particularly contrast-enhanced computed tomography and Doppler ultrasonography, have substantially improved the ability to establish prompt and accurate preoperative diagnosis. The contemporary management paradigm emphasizes splenic preservation through splenopexy whenever viable tissue remains, reserving splenectomy for cases of established infarction or necrosis. This approach is particularly critical in the pediatric population, where preservation of immunologic function carries profound long-term implications.

Despite the rarity of this condition, awareness among clinicians is essential to avoid diagnostic delays that may compromise the opportunity for splenic salvage. Future directions should focus on expanding experience with minimally invasive splenopexy techniques, developing evidence-based guidelines for management in pregnancy and further elucidating the natural history of asymptomatic wandering spleen to inform decisions regarding prophylactic intervention.

Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Ethical Statement

The project did not meet the definition of human subject research under the purview of the IRB according to federal regulations and therefore was exempt.

Informed Consent Statement

Informed consent was obtained from all participants included in the study.

Authors' Contributions

All authors contributed equally to this paper.

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