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Wandering Spleen with Splenic Torsion Presenting as Acute Abdomen in Pregnancy: A Diagnostic Challenge in a Resource-Limited Setting—A Case Report

Bametaw Chalie Emiru
Debremarkos University
Worku Mekonen Sefefe
Debremarkos University
Birhanu Guadie Ashenef
Debremarkos University
Setegn Abebaw Abera
Mekaneselam General Hospital
Atalel Fentahun Awedew
Debre Tabor University
Yohannes Teshome Kassie
yohannesteshome379@gmail.com
Wollo University

Case Report

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Abstract

Background

Wandering spleen is a rare clinical condition resulting from congenital or acquired laxity of the splenic suspensory ligaments. Splenic pedicle torsion is an uncommon but potentially life-threatening complication that may result in splenic infarction. Its occurrence during pregnancy presents a particular diagnostic and therapeutic challenge, highlighting the importance of early recognition and appropriate surgical management.

Case Presentation:

A 28-year-old gravida II, para I woman presented with a 3-day history of abdominal pain. Abdominal examination revealed distension, hypertympany, diffuse tenderness, and guarding. Digital rectal examination revealed an empty rectum. Generalized peritonitis, possibly secondary to gangrenous bowel obstruction, was suspected. Exploratory laparotomy revealed a wandering spleen in an abnormal position, with 360° anticlockwise torsion of its pedicle, splenic infarction, and capsular tear. Associated findings included transverse colonic dilatation and pancreatic edema. Splenectomy was performed, and postsplenectomy vaccination was administered two weeks later.

Conclusion

Wandering spleen with torsion is a rare condition with variable clinical manifestations and can be challenging to diagnose, particularly during pregnancy, when it may mimic gynecological and obstetric emergencies. Imaging modalities, including ultrasonography, Doppler ultrasonography, and computed tomography, can facilitate diagnosis; however, these may be unavailable in resource-limited settings. The diagnostic process may be further complicated by pregnancy and its broad range of differential diagnoses. Despite its rarity, wandering spleen with torsion should be considered in patients presenting with acute abdominal pain, and timely surgical intervention is essential to prevent serious complications. Treatment depends on splenic viability and may involve splenopexy or splenectomy.

BACKGROUND

Wandering spleen (WS), also known as an ectopic spleen, is a rare condition characterized by the absence or laxity of one or more suspensory ligaments responsible for maintaining the spleen in its normal anatomical position [1]. The condition has no established genetic basis and may be congenital or acquired [2]. Congenital defects in the mesogastrium can result in excessive splenic mobility [3]. Acquired causes include hormonal changes associated with pregnancy, splenomegaly, trauma, and previous diaphragmatic hernia repair. These factors can result in an elongated splenic pedicle, predisposing the spleen to torsion [4].

Torsion is one of the most serious complications of WS, although the condition itself is rare, with a reported incidence of approximately 0.2% [5]. Clinical presentations vary from an incidental imaging finding to acute, chronic, or intermittent abdominal symptoms resulting from splenic torsion [6]. Diagnosis is particularly challenging during pregnancy because the condition may mimic gynecological emergencies, such as an adnexal mass or ruptured ectopic pregnancy, as well as other pregnancy-related abdominal symptoms [2, 3, 6]. Diagnostic imaging modalities, including computed tomography (CT), magnetic resonance imaging (MRI), and Doppler ultrasonography, can help establish the diagnosis. CT is particularly useful for identifying splenic torsion and evaluating alternative causes of acute abdominal pain [7]. Surgical management is the preferred approach in symptomatic cases, with splenopexy and splenectomy selected according to splenic viability and the patient's clinical condition [2, 8].

Herein, we report the case of a 28-year-old woman in the first trimester of pregnancy who presented with an acute abdomen, was initially suspected of having gangrenous bowel obstruction, and was subsequently found to have a wandering spleen with torsion and infarction during exploratory laparotomy.

This case is unique and worth reporting because wandering spleen complicated by splenic pedicle torsion during pregnancy is an exceptionally rare clinical presentation with significant diagnostic and therapeutic challenges. It highlights the importance of considering this condition in the differential diagnosis of acute abdomen during pregnancy, particularly in resource-limited settings where diagnostic imaging may be constrained. Furthermore, it emphasizes the importance of early recognition and timely surgical intervention to prevent splenic infarction and potentially life-threatening maternal complications while contributing valuable evidence to the limited existing literature on this rare condition.

This work has been reported in line with the CARE guidelines [11].

CASE PRESENTATION

A 28-year-old gravida II, para I woman presented to the emergency department of Lumame Primary Hospital, Gojjam, Ethiopia, with a 3-day history of abdominal pain. The pain had a sudden onset, was constant, and initially involved the left upper abdomen before extending to the left flank and back and subsequently becoming generalized. She also reported intermittent vomiting of ingested food and loss of appetite beginning on the day of presentation. Abdominal distension and failure to pass stool or flatus had developed one day before presentation. She had received unspecified medication at a nearby health center without improvement. She had no other preceding complaints. Based on her last normal menstrual period, her gestational age was 10 weeks and 1 day. Her previous pregnancy had been uneventful.

On physical examination, the patient appeared to be in severe pain. Her vital signs were as follows: blood pressure, 110/70 mmHg; pulse rate, 110 beats/min; temperature, 35.4°C; respiratory rate, 24 breaths/min; and oxygen saturation, 94% on room air. Abdominal examination revealed distension, hyper

tympany, diffuse tenderness, and guarding. Digital rectal examination revealed an empty rectum. The remaining physical examination findings were unremarkable.

Laboratory investigations revealed a white blood cell count of 26 × 10^3 cells/μL, granulocytes of 89.1%, hemoglobin of 14 g/dL, and platelet count of 570 × 10^3 cells/μL. Bedside obstetric ultrasonography demonstrated a single viable intrauterine pregnancy with a gestational age of 9 weeks and 4 days.

Generalized peritonitis, possibly secondary to gangrenous bowel obstruction, was suspected. Intravenous access was secured, fluid resuscitation was initiated, a urinary catheter was inserted, and intravenous antibiotics were administered in the emergency outpatient department. Following counseling, the decision was made to proceed with emergency exploratory laparotomy [Table 1].

Intraoperatively, approximately 500 mL of hemolyzed blood was found in the peritoneal cavity. The spleen had no identifiable ligamentous attachments and exhibited 360° anticlockwise torsion of its pedicle, with splenic infarction and capsular rupture [Figure 1] [Figure 2]. The pancreas was mildly edematous, without a peripancreatic fluid collection. The transverse colon was significantly dilated, but no apparent mechanical obstruction was identified. The adnexal structures and other abdominal organs appeared normal.

The intraperitoneal blood was evacuated by suction, and splenectomy was performed. The postoperative course was uneventful, and the patient was discharged on the fifth postoperative day. Postsplenectomy vaccination was administered two weeks after surgery [Table 1].

Table 1
Timeline of important events in the patient's clinical course.

Time point	Important clinical events	Investigations and findings	Management and outcome
3 days before presentation	Sudden-onset, constant left upper abdominal pain, radiating to the left flank and back, later becoming generalized.	—	Received unspecified medication at a nearby health center without improvement.
1 day before presentation	Developed abdominal distension and failure to pass stool or flatus.	—	—
Day of presentation	Presented to Lumame Primary Hospital at 10 weeks and 1 day of gestation, with abdominal pain, vomiting, and loss of appetite. Tachycardia (110 beats/min), abdominal distension, diffuse tenderness, guarding, and hyper tympany were noted.	WBC: 26 × 10^3 cells/μL; granulocytes: 89.1%; Hb: 14 g/dL; platelets: 570 × 10^3 cells/μL. Obstetric ultrasound confirmed a viable intrauterine pregnancy (9 weeks and 4 days).	Suspected generalized peritonitis secondary to bowel obstruction. Intravenous fluid resuscitation, antibiotics, and urinary catheterization were initiated.
Emergency exploratory laparotomy	Intraoperative identification of a wandering spleen with 360° anticlockwise torsion of its pedicle, splenic infarction, and capsular rupture.	Approximately 500 mL of hemolyzed intraperitoneal blood; mildly edematous pancreas and significantly dilated transverse colon without apparent mechanical obstruction.	Evacuation of intraperitoneal blood and splenectomy.
Postoperative period	Uneventful postoperative recovery.	—	Discharged on the fifth postoperative day.
2 weeks after surgery	Postoperative follow-up.	—	Postsplenectomy vaccination administered.

DISCUSSION

Wandering spleen (WS) is a rare condition characterized by the absence or laxity of one or more suspensory ligaments that normally maintain the spleen in the left upper quadrant of the abdomen [1, 4]. Anatomically, the spleen is supported by six primary suspensory ligaments [6]. The absence or laxity of these ligaments allows excessive splenic mobility, and the spleen is frequently found in an ectopic location, including the pelvis [3, 7, 9]. Interestingly, despite the complete absence of identifiable ligamentous attachments in our patient, the spleen was found in its usual anatomical position. This finding is unusual and differs from the typical presentation described in the literature.

The etiology of WS may be congenital or acquired. Congenital defects in the mesogastrium can result in excessive splenic mobility [8, 10]. Acquired factors include abdominal wall weakness, multiparity, the postpartum period, hormonal changes associated with pregnancy, and splenomegaly [5, 10]. These factors may result in an elongated splenic pedicle that predisposes the spleen to torsion. Splenic torsion can compromise vascular perfusion, leading to congestion, infarction, and, in severe cases, splenic rupture [2, 4, 5, 8]. The degree of torsion reported in the literature ranges from 90° to 720° [2, 3, 7]. In our patient, the splenic pedicle was twisted 360° anticlockwise, resulting in splenic infarction and capsular rupture.

The first reported case of WS with torsion during pregnancy dates back to 1907 [1]. Published reports of WS during pregnancy and the puerperium remain scarce. The literature cited in previous reports includes approximately 20 documented cases [10], highlighting the rarity of this condition in pregnancy. However, the precise number of reported cases should be verified through an updated literature search before publication. The rarity of this condition, particularly during pregnancy, contributes to the diagnostic challenge and underscores the importance of reporting unusual presentations.

The clinical presentation of WS varies considerably. Some patients remain asymptomatic, with the condition discovered incidentally during physical examination or radiological investigations. Others present with an abdominal mass, chronic or intermittent abdominal pain, or an acute abdomen, particularly when torsion compromises splenic blood supply [9, 10]. Compression of adjacent organs by an ectopic or enlarged spleen may also produce gastrointestinal manifestations, including intestinal obstruction [2, 3, 5]. In our patient, significant transverse colonic dilatation and mild pancreatic edema were observed intraoperatively without an identifiable mechanical bowel obstruction or peripancreatic fluid collection. These findings may reflect local effects of the torsed spleen; however, a direct causal relationship cannot be established from the operative findings alone. The initial clinical suspicion of gangrenous bowel obstruction illustrates how WS with torsion can mimic other surgical emergencies.

Diagnosis of splenic torsion during pregnancy is particularly challenging because its manifestations may overlap with those of obstetric and gynecological emergencies, as well as other causes of acute abdominal pain [1]. The differential diagnosis may include adnexal masses, ruptured ectopic pregnancy, and pregnancy-associated gastrointestinal disorders. In our patient, the clinical presentation, including abdominal distension, diffuse tenderness, guarding, and failure to pass stool or flatus, initially suggested intestinal obstruction with generalized peritonitis. The diagnosis of WS with torsion was established only during exploratory laparotomy.

Imaging plays an important role in the diagnosis of WS. Ultrasonography, Doppler ultrasonography, CT, and angiographic techniques have been used to identify an ectopic spleen and assess its vascular supply [2, 5, 7, 10]. CT can demonstrate splenic displacement, torsion of the vascular pedicle, and splenic infarction, while Doppler ultrasonography can help evaluate splenic perfusion. Nevertheless, the choice of imaging modality should consider the patient's clinical condition and pregnancy status. In resource-limited settings where advanced imaging and radiological expertise may be unavailable, diagnosis can

be delayed or established only during surgery. In our case, the absence of preoperative diagnostic imaging contributed to the unexpected intraoperative diagnosis. This experience highlights the importance of maintaining a high index of suspicion for uncommon causes of acute abdomen, even when their characteristic imaging findings cannot be obtained.

Surgery is the definitive treatment for symptomatic WS, particularly when torsion has resulted in vascular compromise. The two principal surgical options are splenopexy and splenectomy, selected according to splenic viability and the patient's clinical condition [2, 7, 9]. Splenopexy is preferred when the spleen remains viable because it preserves splenic immune function [3]. Splenectomy is indicated when the spleen is nonviable or when other relevant indications, such as significant splenomegaly, secondary hypersplenism, or suspected malignancy, are present [6]. In our patient, splenectomy was performed because the spleen was infarcted and had a capsular tear.

Following splenectomy, patients are at increased risk of severe infections caused by encapsulated organisms. Appropriate vaccination against relevant pathogens, together with patient education and other recommended preventive measures, is therefore essential [5, 9]. In our case, postsplenectomy vaccination was administered two weeks after surgery, except for the meningococcal vaccine, which was unavailable. This limitation highlights the practical challenges of delivering comprehensive postsplenectomy preventive care in resource-limited settings.

Overall, this case illustrates the diagnostic difficulty of WS with torsion during early pregnancy, particularly in a setting without advanced imaging facilities. The unusual finding of a spleen in its usual anatomical position despite the absence of identifiable suspensory ligamentous attachments further emphasizes the variable anatomical presentation of this condition. Timely surgical exploration was essential for establishing the diagnosis and treating the nonviable spleen.

CONCLUSION

Wandering spleen with torsion is a rare, potentially life-threatening cause of acute abdomen that may mimic intestinal obstruction and obstetric or gynecological emergencies, particularly during pregnancy. Diagnosis can be challenging in resource-limited settings where advanced imaging facilities are unavailable. This case highlights an unusual presentation in which the spleen remained in its usual anatomical position despite the absence of identifiable suspensory ligamentous attachments. A high index of clinical suspicion, prompt surgical intervention when indicated, and appropriate postsplenectomy preventive care are essential to optimize patient outcomes.

Patient’s Perspective

The patient expressed that the sudden onset and progressive worsening of abdominal pain were distressing, particularly during pregnancy. She appreciated the timely surgical intervention and the care provided by the healthcare team. She was satisfied with her postoperative recovery and grateful for the favorable outcome.

Abbreviations

CT
Computerized Tomography
^{o}C
degree centigrade
g/dL
gram per deciliter
ml
milliliter
mmHg
millimeter mercury
MRI
Magnetic resonance imaging
SCARE
Surgical case reports
WMA
World medication
WS
Wandering spleen.

Declarations

Ethical approval

All procedures performed in this study involving human participants were in accordance with the declaration of Helsinki developed by The World Medical Association (WMA) and the ethical standards of the institutional and national research committee.

Consent for publication

Informed consent was obtained from the patient and her attendants for this study. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

Competing interests

Authors declare that they have no competing interests.

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Author Contribution

Conceptualization: BC,SA. Data collection and Methodology development: BC,WM,BG. Data analysis: YT,WM,BG Manuscript Draft: WM,BC,BG. Manuscript review and editing; YT,SA,BC,WM,BG,AF. All authors have read and approved the manuscript.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from corresponding authors on reasonable request.

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Figures

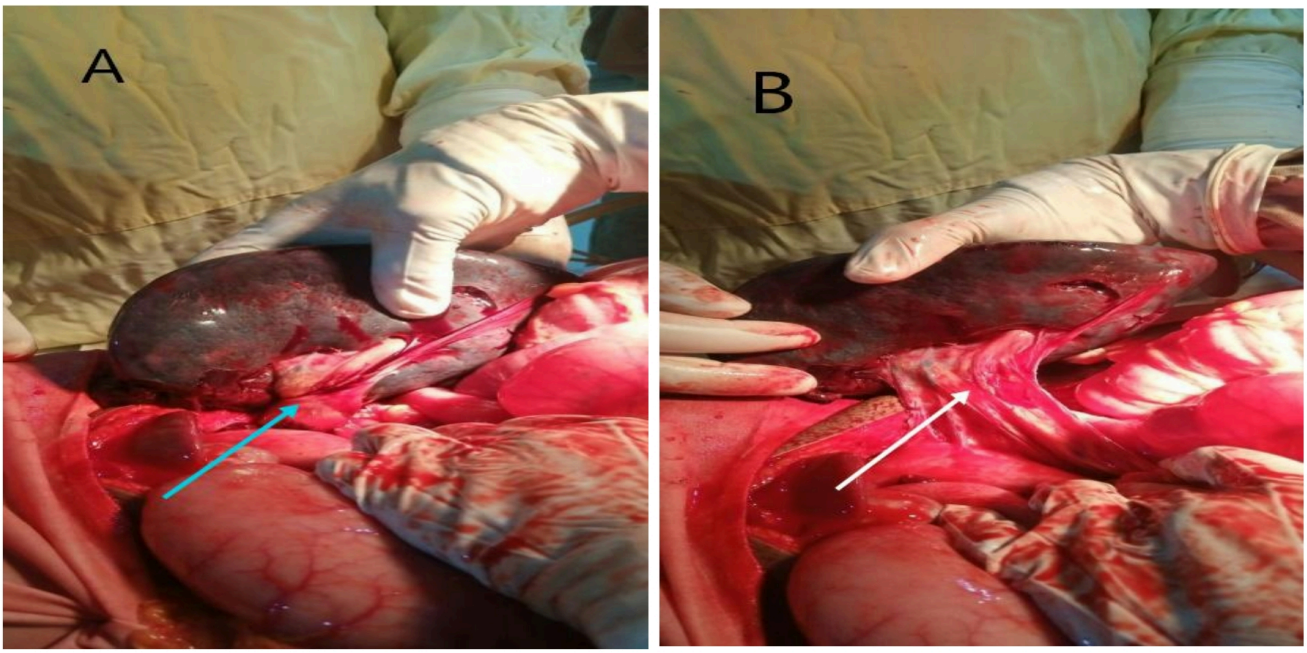


Figure 1

Intraoperative finding of torsed spleen (A) (Green line) and detorsion with long pedicle and no ligamentous attachment (B)(White arrow).



Figure 2

Specimen of the infarcted spleen after removal