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# Splenic torsion with partial colonic obstruction caused by a wandering spleen in a teenager: A case report

Ameerah S Mantawil, John Kristoffer M Japzon, Brent Andrew G Viray, Lito K Chio, Faisal K Romancap

## ABSTRACT

**Introduction:** The wandering or ectopic spleen is a rare condition, reported only in a few case reports and small case series involving children. In wandering spleen, the spleen migrates from its normal anatomic location to another site of the abdomen due to laxity or underdeveloped supporting ligaments. The severity of clinical manifestation depends upon the degree of torsion and varies from intermittent pain to severe pain in infarction.

**Case Report:** This report presents a case of a young teen with chronic abdominal pain with initial work up that was unremarkable. The diagnosis remained elusive for two years and symptoms persisted. However, due to a recent increase in severity of the abdominal pain and its associated changes in bowel habit that a whole abdomen computed tomography was requested and revealed wandering spleen located in the subhepatic area at the right upper quadrant. The patient underwent diagnostic laparoscopy converted to an exploratory laparotomy with splenic detorsion, splenopexy, and colopexy. The postoperative course was unremarkable.

**Conclusion:** A wandering spleen is difficult to diagnose clinically as the signs and symptoms are usually mild. This patient had initially sought consult to multiple physicians and even a sonography revealed unremarkable findings hence the diagnosis remained elusive for a long time. Torsion and infarction usually occur if left untreated with high mortality rate. Along with evolving diagnostic modalities, a high index suspicion is needed to establish the proper diagnosis. This report highlights the investigation and management of the case.

**Keywords:** Pediatric abdominal pain, Splenic torsion, Wandering spleen

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## INTRODUCTION

The wandering or ectopic spleen is a rare condition in which the spleen migrates from its usual site to another

area of the abdomen due to laxity or underdevelopment of the supporting ligaments [1]. Due to the splenic ligaments' or its surrounding ligaments' weakening, it can be acquired or congenitally caused. The degree of spleen torsion causes the symptoms of wandering spleen. Children most frequently present with acute abdominal pain, whereas adults typically present with nonspecific abdominal pain associated with a palpable abdominal mass [2].

Case reports and small case series have been the only sources of information on wandering spleen [3]. Less than 0.5% of large series of splenectomies have documented its frequency, and it is primarily found in youth and women between the ages of 20 and 40 [4]. In the first year of life, males outnumber females by a ratio of 2.5:1 [5]. The etiology of wandering spleen is the laxity of the splenic ligaments and the location depends on the length of the vascular pedicle [1]. Other congenital diseases, such as prune belly syndrome, renal agenesis, gastric volvulus, diaphragmatic eventration, and congenital diaphragmatic hernia, may also be present in pediatric patients with wandering spleen [6].

Wandering spleen is discovered as a result of the level or degree of intermittent torsion of the vascular pedicle [7]. The most often utilized procedures for diagnosing wandering spleen are ultrasonography and computed tomography (CT) [8]. The absence of the spleen in its typical position, as well as a mass situated anywhere in the abdomen or pelvis, is an imaging finding of a wandering spleen [9]. In the event of torsion, a "whirl" appearance of its twisted pedicle and impaired enhancement of the mass may also be beneficial. In splenic torsion, doppler ultrasonography demonstrates no flow within the spleen and a low diastolic velocity with a raised resistive index [10]. Contrast enhanced CT, on the other hand, can indicate a total absence of or a heterogeneous enhancement pattern within the spleen due to a partial or whole infarction [10].

Splenopexy is the treatment of choice for a wandering spleen, and splenectomy is only necessary in cases of splenic infarction. Splenectomy and splenopexy can both be performed laparoscopically [11]. In terms of potential symptoms and risks, many researchers suggest surgery in asymptomatic patients. A study conducted in Japan found the rate of developing complications in asymptomatic patients as 65% [12].

This condition is rare in our community, and there is limited data on this case due to poor health-seeking habits, consultation, and follow-up. With advancement in health care expertise and facilities, successful management of these conditions can be achieved through a multidisciplinary approach that focuses not only on the patient's anatomic and physiologic issues, but also on the psychosocial aspects and long-term outcomes of the disease.

The following case report describes our experience with a patient who had wandering or ectopic spleen, as well as the medical and surgical therapy of this unusual case at our institution. It exemplifies intensive therapy by a committed interdisciplinary health team which resulted in a good postoperative outcome.

## CASE REPORT

A young teen presented with a chronic history of intermittent epigastric pain of two years duration. No other symptoms were noted. A consult was done and ultrasonography was unremarkable. No further treatment was done and symptoms spontaneously resolved. A week prior to consult at our institution, the patient had moderate periumbilical pain, colicky, not associated with food intake, non-radiating and with no other associated symptoms. Consultation with a pediatrician was done and the patient was managed as acute gastritis, given proton pump inhibitors and pain relievers. However, despite treatment, symptoms persisted. Over a few days, symptoms increased in intensity. This was associated with a decreased frequency of bowel movement, nausea, and vomiting. A new consultation was done with another doctor and whole abdomen (WAB) computed tomography was requested revealing an enlarged spleen, measuring 15.2 × 4.8 cm, and is seen in the right subhepatic area (Figure 1). There was no evidence of a normal-looking spleen in the left upper abdomen (Figure 2A and B). There were noted areas of hypoattenuation in the splenic parenchyma, which may represent infarction. There was a whirlpool configuration of the splenic vascular pedicle including the pancreatic tail (Figure 3). The pancreas was normal in size. No focal mass lesion was seen. The patient was subsequently reviewed by the medical team one month following completion of the CT scan.

The patient has no history of other illnesses nor previous hospitalizations. There were no history of congenital anomalies among close family members or known hereditary illnesses. The mother has no maternal illnesses or trauma and denies substance abuse as well as exposure to chemicals and radiation. The patient has been noted to be at par with his developmental milestones.

The patient underwent Diagnostic Laparoscopy converted to an exploratory laparotomy, detorsion of spinning pedicle, splenopexy with colopexy. It was noted intraoperatively that there is a large spleen located on the right upper quadrant and an absence of a spleen in the left upper quadrant of the abdomen. It was also noted that there was splenic torsion, with the splenic pedicle partially twisted on the left hemicolon causing a closed loop obstruction (Figure 4). Both the splenic torsion and the partial colonic obstruction were surgically corrected (Figure 5). Furthermore, splenopexy and colopexy were done to prevent future recurrence (Figure 6).

The postoperative course was unremarkable. A repeat whole abdomen computed tomography was done, showing a normal-positioned spleen in the left upper quadrant region (Figure 7). The patient was subsequently discharged with an uneventful follow-up.

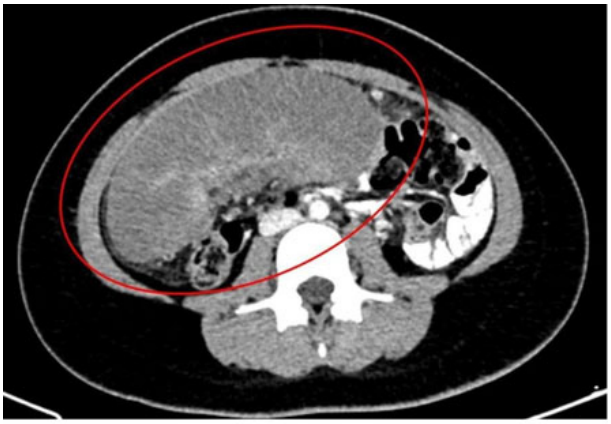

Figure 1: Preoperative WAB CT plain, axial view. Evident enlarged spleen, measuring 15.2 × 4.8 cm, and is seen in the right subhepatic area is seen.

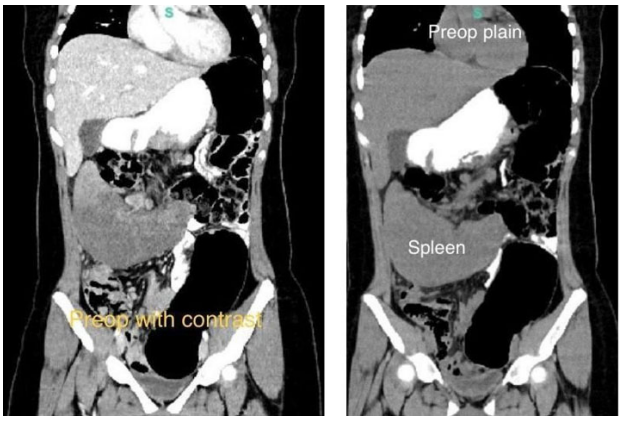


Figure 2: The spleen is enlarged, measuring 15.2 × 4.8 cm and is seen in the right subhepatic area. There is no evidence of normal-looking spleen in the left upper abdomen. There are areas of hypoattenuation (even in postcontrast study) in the splenic parenchyma which may represent infarction. There is whirlpool configuration of the splenic vascular pedicle including the pancreatic tail. Normal studies of other abdominal viscera. (A) Preoperative WAB CT plain, coronal view. (B) Preoperative WAB CT with contrast, coronal view.

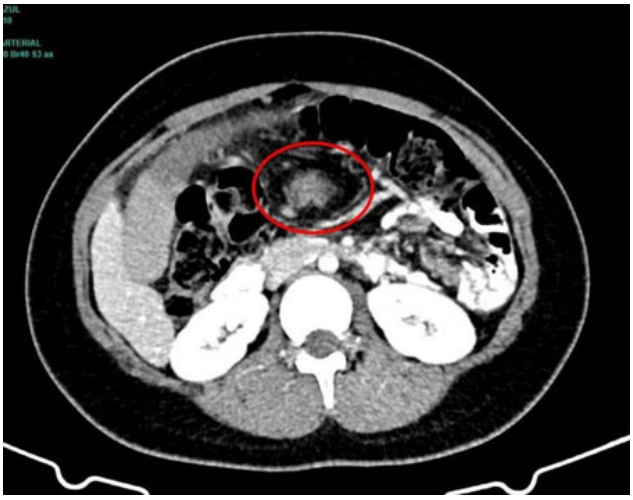

Figure 3: Preoperative WAB CT with contrast, axial view. A "whirlpool" configuration of the splenic vascular pedicle including the pancreatic tail is seen.

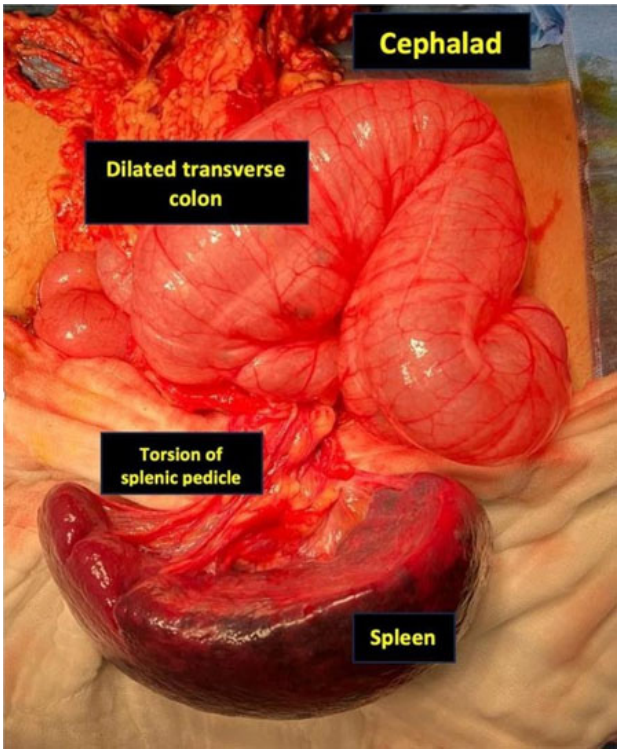


Figure 4: Intraoperative images showing dilated bowel loops, mobile and redundant descending and sigmoid colon and a viable spleen with 720 degree torsion at vascular pedicle with pancreatic tail.

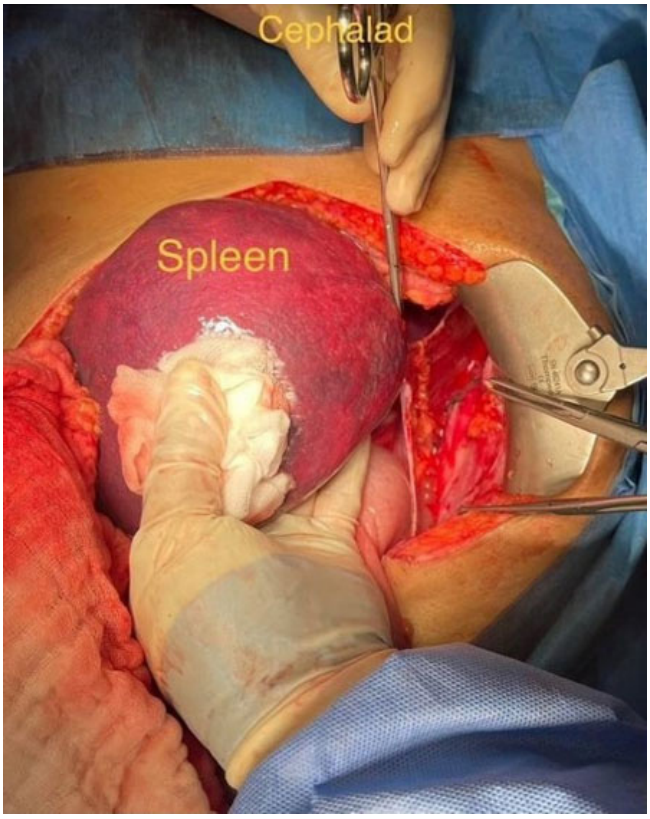


Figure 5: Intraoperative images demonstrating detorsion of the spleen showing signs of splenic torsion with congestion and discoloration.

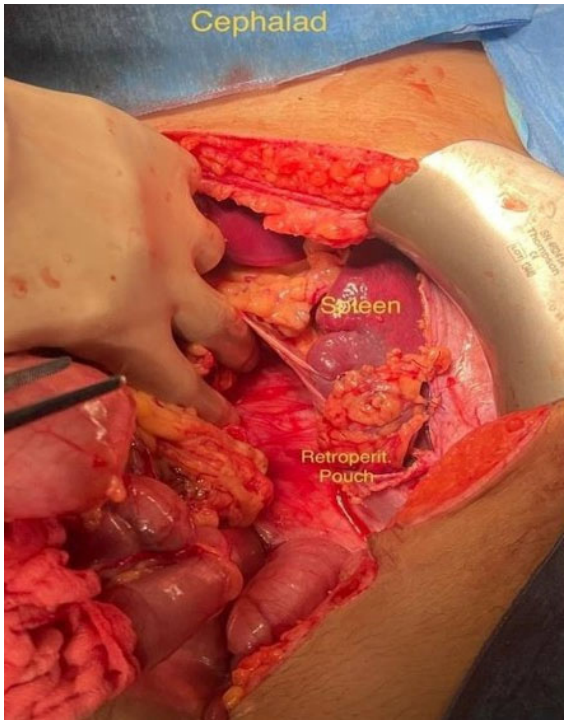


Figure 6: Intraoperative images demonstrating surgical correction following splenopexy and colopexy, with the spleen secured in its anatomical position.

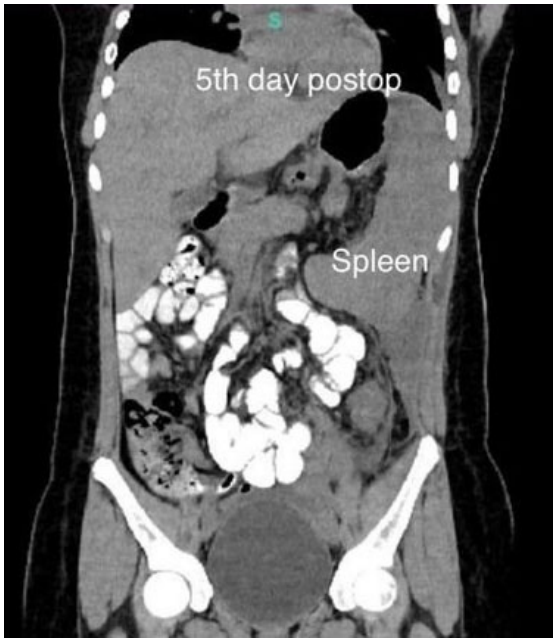


Figure 7: Postoperative computed tomography (CT) scan demonstrating the spleen in its normal anatomical position following surgical correction of wandering spleen. (A) Postoperative WAB CT plain, coronal view. (B) Postoperative WAB CT contrast, coronal view.

## DISCUSSION

Wandering spleen is a rare disorder in which the spleen migrates to any abdominal or pelvic position [13].

One of the first case reports of a wandering spleen in a child was published in the Polish journal *Diary of the Warsaw Medical Society* in 1854 by the Polish physician named Józef Dietl [14]. He published his second case of wandering spleen two years later, but this time he included the postmortem investigation. Years later, he published a third case of a wandering spleen in a journal, indicating that the illness was potentially fatal because it caused peritonitis and, as a result, mortality [14].

The etiology of wandering spleen is generally unknown. The spleen develops in the dorsal mesogastrium and shifts posterolaterally to the left when the gut rotates. The lienorenal ligament, which connects the dorsal mesogastrium to the posterior abdominal wall and the left kidney, contains the pancreatic tail and the splenic artery. Failure to fuse results in an excessively lengthy pedicle. This condition is linked to some congenital malformations, such as hypermobile colon and prune belly syndrome [13].

Symptoms of wandering spleen varies with the degree of torsion. Patients may show no symptoms, may present with pelvic mass, or experience intermittent colicky abdomen pain. Other vague symptoms include vomiting, dizziness, and moderate abdominal cramps [5]. The patient presented with signs of obstructions such as changes in bowel habit and does not tolerate food intake. The patient showed a rare clinical feature with different presentations and represent a diagnostic challenge. The patient described here had a clinical suspicion of bowel obstruction. Hence, emergency diagnostic laparoscopy was done to provide us better understanding of the patient's condition.

The only treatment for wandering spleen is operative. Currently, laparoscopic splenic surgery is the gold-standard of care for patients with wandering spleen requiring surgery and is widely utilized since it is less painful and allows for improved cosmesis, early ambulation, overall less morbidity, and a quicker return to work [11]. The patient initially underwent diagnostic laparoscopy, however, due to difficulty identifying the structures, we proceeded with open splenopexy.

Clinical suspicion, as well as prompt diagnosis and management, is required to save the spleen and avoid sequelae. Wandering spleen can cause torsion and subsequent splenic infarction or rupture if not treated promptly [15]. Intraoperatively, we noted torsion of the splenic pedicle which supports the symptom of chronic abdominal pain [8].

Splenic preservation is strongly advised for individuals aged one year and up until their thirties, especially those at high risk of post-splenectomy infections. In our case, findings of well-vascularized spleen at the right upper quadrant, hence, detorsion of splenic pedicle, splenopexy, and colopexy was done to preserve the spleen. Furthermore, splenectomy is only recommended for infarcted spleens [16].

Splenectomy increases the frequency of adverse events, including death, in the immediate postoperative period. Infections, particularly pulmonary and abdominal sepsis, constitute the majority of the complications.

The mortality rate from postoperative sepsis is substantial [17–19]. However, the patient surgical procedure has maintained the physiologic function of the spleen resulting to a better prognosis and outcome. Managing these issues is feasible and should be done in a timely and organized manner.

## CONCLUSION

Wandering spleen is a rare clinical condition. A surgeon needs a high index of suspicion, early investigations, immediate surgical intervention, and strict follow-up for the patient so as complications may be prevented and splenic function is preserved.

This rare condition is the first case documented in our institution. This case report would be a great help in expanding our knowledge and improving our expertise in the diagnosis and management of this condition.

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## Author Contributions

Ameerah S Mantawil – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

John Kristoffer M Japzon – Design of the work, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

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## Guarantor of Submission

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## Conflict of Interest

Authors declare no conflict of interest.

## Data Availability

All relevant data are within the paper and its Supporting Information files.

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