Case: A 15-year-old female was transferred to the emergency department with a chief complaint of low abdominal pain, nausea, and severe abdominal distension that began two days ago. She had no past medical history. She denied any family history of genetic diseases.

On arrival, her body temperature, pulse rate, respiration rate, and blood pressure were 36.8℃, 104/min, 18/min, and 110/90 mmHg, respectively. Physical examination revealed a mass-like lesion in the left-lower quadrant of the abdomen. The abdomen was distended and rigid. There were tenderness and rebound tenderness on the left-lower quadrant of the abdomen.

Blood analysis showed the following: white blood cell count, 13,110/mm³ (neutrophil 72%); platelet, 558,000/mm³; C-reactive protein, 14.07 mg/dL; erythrocyte sedimentation rate, 86 mm/hr. The disseminated intravascular coagulation profiles were as follow: PT INR, 0.98; D-dimer >20 mg/mL; fibrinogen degradation product, 77.78 µg/mL; and fibrinogen, 565 mg/dL. Antithrombin III was within the normal range.

Supine chest and abdominal radiography demonstrated severe distension of the stomach and small bowel with air-fluid level (Fig. 1).

On computerized tomography (CT) scan, the ‘whirl sign’ of twisting vascular tissue over the lower abdomen were revealed, and accompanying findings showed marked twisting of the small bowel mesentery causing small bowel obstruction (Fig. 2). Intravenous contrast CT showed that the spleen in the left pelvis was global splenic ischemia, with no enhancement in either the arterial or venous phase (Fig. 3).

Blood cultures were performed and intravenous antibiotics were started (piperacillin + tazobactam 3.375 g thrice daily).

An urgent exploratory laparotomy was performed; it presented a giant, congestive, and twisted spleen, with small bowel adhesion to the splenic pedicle. The splenic pedicle turned three turns (Fig. 4).

After loosening the twisted splenic pedicle, the pedicle was transected using a vascular stapler. The histological study showed 18×12×7.5 cm sized congestive splenomegaly (Fig. 5).

The postoperative course was uneventful. No microorganism was found on the culture. The patient was discharged on the seventh postoperative day. Systemic antibiotic therapy was continued for 1 week and substituted with...
oral antibiotics (amoxicillin 250 mg thrice daily), which was administered for one week.

The patient had pneumococcal and meningococcal vaccination two weeks after splenectomy to prevent overwhelming of postsplenectomy sepsis.

**Diagnosis: Torsion of wandering spleen causing small bowel obstruction**

Wandering spleen is a rare, unusual disease, that can occur in both sexes and at any age. However, it is more frequently observed in women of reproductive age and in children.\(^1\)

Literature review demonstrated that wandering spleen occurs in less than 0.25% of splenectomy. To the best of our knowledge, its true incidence has not been clearly documented.\(^2\)

The etiology of wandering spleen is multifactorial, and it can be congenital or acquired. In the former, the peritoneal attachments fail to develop. During embryonic development, the dorsal mesogastrium fuses with the posterior abdominal wall. Interruption of this process results in an absence of the splenocolic, splenorenal, and splenophrenic ligaments.\(^3\) The spleen has a long mobile mesenteric vascular pedicle, which
Fig. 3. Contrast-enhanced CT showing a large wandering spleen in the pelvis that is suspended by an elongated and tortuous vascular pedicle (white arrows). CT, computerized tomography.

Fig. 4. At laparotomy, a long twisted splenic pedicle is visible. The splenic pedicle turned three turns.

Fig. 5. The histological study showed 18×12×7.5 cm sized congestive splenomegaly.
is prone to torsion and ischemia. Other acquired factors causing laxity of the supporting ligaments include splenomegaly, trauma, and gastric distension.

Clinical features can be variable. Patients may be asymptomatic. When symptomatic, the most common complaint is abdominal pain, with or without a mass. This mass is usually painful and mobile. Abdominal pain can be chronic and intermittent, due to the kinking or torsion of the splenic pedicle that causes splenic congestion and capsular tension. Pain can also be improved when the pedicle returns to its original position, improving blood flow. When spontaneous loosening does not occur, splenic infarction may occur and acute abdominal pain with ischemic features may be caused. Other symptoms, such as vomiting, fever, intestinal obstruction, and pancreatitis, all have been described in the literature.

Because a clinical diagnosis is difficult, imaging studies are necessary. CT and ultrasonography are frequently used. According to CT scans in our case the absence of the spleen in its normal position was found. A circular structure of bands at splenic hilum, the whirl sign is a specific finding of pedicle torsion.

In past years, splenectomy was the standard treatment for wandering spleen with or without the presence of torsion. Recently, however, splenopexy cases have been reported when the spleen is viable.

Based on the accurate knowledge of this disease, ultrasonography and CT scans can be used in a timely manner for prompt and accurate diagnosis and treatment.

REFERENCES