Splenic Torsion on Ectopic Spleen: a Case Report

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Abstract
Splenic volvulus, a rare torsion of the spleen around its vascular axis, can lead to severe tissue necrosis without prompt treatment. Underlying anatomical factors such as elongation of the splenic pedicle and ligament laxity increase the risk of torsion. Diagnosis is often made during emergency surgical intervention due to the rarity of the condition and the lack of specificity of symptoms. A 30-year-old woman presented with acute abdominal symptoms accompanied by fever, leading to emergency laparotomy revealing splenic volvulus. Imaging, particularly computed tomography, plays a crucial role in diagnosis. Treatment typically involves splenectomy in cases of necrosis. Wandering spleen, usually caused by ligament hyperlaxity, is a rare but important entity to recognize, often requiring surgical intervention to prevent serious complications.

Introduction
Splenic volvulus on a mobile spleen is a rare phenomenon characterized by the torsion of the spleen around its vascular axis [1,2]. This torsion leads to an interruption of blood flow to the spleen, potentially resulting in tissue necrosis and serious complications if not promptly treated [3]. Often, this condition is attributed to underlying anatomical factors, primarily a congenital malformation of the spleen’s fixation system [4,5]. Elongation of the splenic pedicle is one of the main predisposing factors to splenic torsion [6]. This pedicle consists of blood vessels and supporting structures that hold the spleen in place within the abdominal cavity [7]. When this pedicle is abnormally long, it grants more mobility to the spleen, thereby increasing the risk of torsion. This condition may be present from birth, resulting from an anomaly in embryonic development [8]. In addition to pedicle elongation, other anatomical factors may also play a role in the development of splenic volvulus. Ligament laxity, which normally fixes the spleen in its anatomical position, is often observed. In some patients, partial or complete agenesis of these ligaments may allow the spleen to move more freely within the abdominal cavity, thus increasing the risk of torsion [9]. Due to its rarity and the lack of specificity of symptoms, the diagnosis of splenic volvulus is often made during emergency surgical intervention, as in the case we report of a splenic volvulus operated on as an emergency in a fasting woman.

Observation
A 30-year-old woman presented to the emergency department with a febrile abdominal pain syndrome evolving for 48 hours. Her medical history revealed psychiatric follow-up but no surgical history. Initial clinical examination showed a preserved general condition but with hyperthermia at 39.2°C. Additionally, a mobile and tender mass was palpated in the right
hypochondrium, extending beyond the midline. Blood tests revealed anemia with a hemoglobin level of 9.5 g/dL and a white blood cell count of 8500/mm³. Radiological examinations were then performed to evaluate the cause of abdominal pain. Abdominal ultrasound identified a hypoechoic formation in the right flank and hypochondrium, measuring 160 mm by 100 mm, with echoes suggestive of an infected mesenteric cyst (Figure 1). Furthermore, moderate ascites was observed. Abdominal computed tomography confirmed the presence of a mixed-density formation, enhancing after contrast injection, measuring 153.5 mm by 88.4 mm. This formation was located in the right hypochondrium and flank, intraperitoneal, and accompanied by low-abundance ascites (Figure 2).

However, faced with worsening symptoms and a change in the location of the mass to the left, a new ultrasound was performed and revised the initial diagnosis. It instead revealed a large spleen with areas of necrosis inside, suggesting splenic volvulus. Emergency midline laparotomy was performed for intraoperative exploration. During surgical exploration, a large spleen with areas of infarction scattered throughout was observed, twisting around its vascular axis with two turns (Figure 3). Absence of ligamentous attachment and a thrombosed splenic pedicle measuring 8 cm long were noted (Figure 4). Splenectomy was performed, accompanied by drainage of the peritoneal cavity and postoperative antibiotic therapy. Postoperative follow-up was uneventful, and the patient was referred to a hematology service for pneumococcal vaccination. Anatomopathological results confirmed splenic infarction without specific lesions.

**Discussion**

The wandering spleen, first described in 1792 by Riolan, is a rare but clinically significant anatomical entity. Its prevalence is low, estimated at around 0.5%, and it is more common in children and young women, although a female predominance is observed in adults. This condition is generally caused by ligament hyperlaxity or agenesis, which normally fixes the spleen, resulting from either a congenital anomaly or an acquired cause.
In the case of congenital form, a failure of posterior mesogastrium fusion leads to elongation of the splenic pedicle, allowing the spleen to move freely within the abdominal cavity. Acquired risk factors include gastric distension, splenomegaly, abdominal trauma, and pregnancy.

Symptoms of the wandering spleen can vary, ranging from asymptomatic to intermittent abdominal pain due to spontaneous torsions and detorsions of the spleen. In chronic cases, torsion of the splenic pedicle can lead to splenomegaly, hypersplenism, and eventually splenic infarction with peri-splenic adhesions, resulting in chronic abdominal pain. When splenic torsion occurs, it can lead to acute surgical abdomen, characterized by severe abdominal pain, nausea, vomiting, and sometimes fever. Physical examination may reveal peritoneal signs, and palpation may reveal an abdominal or pelvic mass, as observed in our patient.

Imaging plays a crucial role in the diagnosis of the wandering spleen. Abdominal ultrasound is often used as the initial imaging modality, allowing visualization of an abdominal mass and the absence of the spleen in its normal location. Lack of Doppler vascularization can also confirm the diagnosis. However, in some cases, computed tomography (CT) may be necessary, particularly in the presence of limitations to ultrasound such as ileus, obesity, or hypertrophy of the left lobe of the liver. CT is considered the imaging modality of choice for diagnosing the wandering spleen, allowing visualization of the whirl sign of the splenic pedicle and signs of splenic infarction. Once the diagnosis is confirmed, surgical intervention is generally necessary. In the absence of splenic necrosis, splenectomy may be performed to fix the spleen in its normal anatomical position. However, in cases of necrosis, splenectomy is often required.

**Conclusion**

Wandering spleen is a rare but important phenomenon to consider in the presence of recurrent symptoms such as acute abdominal pain, painful splenomegaly, or pelvic mass, especially when clinical examination and blood test results are inconclusive. Resorting to a CT scan is essential to confirm the diagnosis, exclude other diagnoses, detect possible serious complications such as splenic torsion with infarction, and guide treatment choice. In most cases, splenectomy is preferred, but splenectomy may be necessary in the presence of signs of infarction.

**References**