

## Torted Wondering Spleen

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### Abstract

### Case Report

**Background:** Wandering spleen was first mentioned by Van Horne in 1667. Wandering spleen (floating, ectopic, ptotic, hypermobile or splenoptosis) may float anchored only by its vascular pedicle with no hooking to the nearby structures and it is induced by the lengthening of the spleen's holding ligaments. Although it is rare (less than 0.2%) but it affects mostly children and female adults of active reproductive age. It features as a mass in the abdomen without clinical signs or with intermittent abdominal discomfort due to torsion and spontaneous detorsion of the spleen. **Case Report:** A 34-year-old male presented to the emergency department with complaints of abdominal pain, distension of the abdomen and vomiting with constipation for two days. There was no past history of any surgery. On general examination, patient was afebrile (temperature of 37°C), pulse rate of 80 bpm and blood pressure of 110/70 mmHg. An abdominal examination revealed mild abdominal distension with mild diffuse abdominal tenderness and guarding. A tender lump sizing 10 × 9 cm with smooth surface, well defined margins and firm consistency was found. Digital rectal examination was normal. Laboratory parameters showed hemoglobin 14.5 gm/dl and white blood cells 12000/mm<sup>3</sup>. The platelet count was normal. Ultrasonography (USG) showed a solid mass and the absence of the spleen from its normal location. A computed tomography (CT) scan of the abdomen showed large torted spleen at mid abdomen with partial or no enhancement of splenic shape mass on contrast-enhanced CT scan and the patient was scheduled for an exploratory laparotomy for surgical acute abdomen. During laparotomy, a mass measuring 11 × 9 × 3 cm and weighing approximately 280 g was found. The mass was identified as the spleen by visualizing its notch and the absence of the spleen from its normal position. All splenic ligamentous attachments were completely absent. The spleen was found to be partly infarcted due to twisting of the spleen around its long pedicle. A total open splenectomy was performed due to the extensive necrosis of the spleen parenchyma. Histopathological examination showed multiple infarcted areas. The patient's post-operative recovery was uneventful and the patient was discharged on the 5th post-operative day. Vaccinations against pneumococcal disease, meningococcal disease and hemophilus influenza were given. The patient had uneventful follow-ups for four months.

**Keywords:** Abdomen; spleen; infarction, torted, wandering, splenectomy.

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## INTRODUCTION

Wandering spleen is where the spleen is in the inferior region of the abdomen or the pelvis and not in the left upper quadrant due to the absence or loosening of the ligaments fixing the spleen [1]. It is rare (less than 0.2%) [2]. Clinical features range from without clinical features usually to acute abdomen with torsion. The confirmation follows hazards which are acute life-threatening, with the most frequent torted spleen and acute abdomen [3, 4]. Early confirmation in acute abdomen is vital for the preservation of the spleen. Patients with acute abdomen and no splenic shadow under left hemi diaphragm must be doubted. Surgery is the safest option [5]. Surgery is with splenopexy or

splenectomy according to the spleen's status intraoperatively.

## DISCUSSION

There are around 600 cases of wandering spleen in literature ranging from 3 months to 82 years. The spleen is an intraperitoneal organ in the inferior left abdomen. It is fixed to the abdominal wall in the posterior segment via splenorenal, gastrosplenic and splenocolic ligaments. Wandering spleen has no normal peritoneal attachment leading to splenic ectopy because of the relaxation of ligaments in the spleen, kidney and stomach. The gastrosplenic ligament unites the anterior spleen with the large curvature of the stomach. The long pedicle is likely to tort on itself. The degree of torsion ranges from 90 D to 160 D [4]. Wandering spleen is

congenital or acquired with no genetic background and caused by the absence, mal-development or hyperlaxity of one or more splenic ligaments which keep the spleen static in the left hypochondrium. The congenital causes are the developmental abnormalities of dorsal mesogastrium, which does not unite with posterior peritoneum within the fifth and sixth week of fetal development leading to abnormal development of splenic ligaments. Acquired causes are connective tissue disorders, multiparity, hormonal changes, splenomegaly, trauma and abdominal wall weakness.

The presentation is nonspecific. Asymptomatic condition may be unconfirmed or confirmed coincidentally. Symptomatic condition may have acute, intermittent or chronic pain because of torsion and detorsion of the splenic pedicle, vomiting, abdominal distention, constipation, palpable, movable mass in the abdomen or pelvis and confirmed by complications like torsion of the spleen which might cause splenomegaly, infarction, splenic rupture, hemoperitoneum and peritonitis. If there is a wandering spleen with intestinal obstruction, pain, abdominal distention, vomiting and constipation may be found. If there is torsion of the pedicle with infarction or splenic rupture, peritonitis and shock induced hemoperitoneum may be found. If there is gastric volvulus, pancreatic volvulus, portal hypertension, mesenteric varices and horseshoe kidney were reported. The acute pain is induced by torsion of the splenic pedicle with ischemia of the spleen. Abdominal distention, nausea, vomiting and constipation with hypoactive bowel sounds on auscultation are caused by paralytic ileus. Peritonitis might not be found if the spleen was not infarcted or ruptured. Peritonitis may happen due to torsion. The torted wandering spleen is rare in acute abdominal pain.

There is no characteristic age of onset. Children make 33% of all wandering spleen entity. Under the age of ten, there is no sex discrepancy. In adults, it is more frequent in females than males. Most of females were of childbearing age, ranging from 21 to 40 years, and the death rate was 17.6% in patients with splenectomy [6]. The increased frequency in females of childbearing age is correlated with hormonal modifications, multiple pregnancies and abdominal wall weakness. CT was the first radiological test used. Plain x-ray, Doppler ultrasonography, magnetic resonance imaging, scintigraphy and splenic angiogram are very helpful in diagnosis to save the spleen. The absence of

the spleen from its normal anatomical location and the presence of soft tissue splenic shape mass in the abdomen or pelvis on a CT scan is suggestive of a wandering spleen. A "whirl sign" with no or partial enhancement of the splenic shape mass on i.v. contrast-enhanced CT scan is strongly indicative of pedicle torsion of the wandering spleen.

The confirmation of wandering spleen must be performed before the appearance of life-threatening hazards. Emergency surgery must be done in splenic infarction. Open or laparoscopic surgery is the corner of management for ectopic spleen. Splenopexy is done when there is no infarction, splenomegaly or hypersplenism and splenectomy is done when any of these complications are present. It accounts for 0.002% splenectomies [5]. Surgery is the first option for the treatment of wandering spleen as conservative treatment will increase hazards. Conservative management of asymptomatic wandering spleen has 65% complication rate [3]. The best technique for splenopexy is Bardenheuer's method, where the spleen is in the retroperitoneal pouch with the body hanging from the tenth rib and the pedicle attached to the peritoneal incision. Laparoscopic splenopexy is performed when the wandering spleen is of normal size, not infarcted and has no signs of hypersplenism. The sandwich technique where two meshes are used to sandwich the spleen is included in laparoscopic splenopexy. When the spleen is enlarged, infarcted, ruptured or there is hypersplenism, the choice of treatment is splenectomy, totally removed either laparoscopically or through laparotomy. If splenic pedicle torsion leads to splenic infarction, then splenectomy is mandatory.

We must not always relate the cause of acute abdomen to appendicitis; instead other anomalies must be taken into account to enhance the precision of anticipation and planning. Surgeons cannot depend solely on radiological tests. It is indicated that young patients keep their spleen as long as possible due to the risks of *Haemophilus influenzae*, pneumococcus and *Neisseria meningitidis* following splenectomy, sepsis and high cancer frequency with increased thrombosis [6]. Preventive antibiotics must be given and the pneumococcal vaccine scheduled 14 days following surgery [6]. Thrombocytopenia is a rare complication usually induced by torsion of elongated splenic pedicle.



**Fig 1: CT scan of a 34 year old female patient complaining of abdominal pain**



**Fig 2: No splenic attachments to any other organs**



**Fig 3: Tortured splenic hilum result in splenic infarction**



**Fig 4: Splendid infarction result in ischemia and ended with splenectomy**

## CONCLUSION

The main cause of acute abdomen was wandering spleen with splenic pedicle torsion and splenectomy was the best option. Wandering spleen has nonspecific features ranging from mild chronic discomfort to an acute abdomen. An increased index of clinical doubt is needed for confirmation. Surgery with spleen preservation such as splenopexy is recommended if the spleen is viable.

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