Case Report

# Pancreatic Volvulus with Wandering Spleen and Gastric Volvulus: An Unusual Triad for Acute Abdomen in a Surgical Emergency

Ujjwal Gorsi, Anmol Bhatia, Rajesh Gupta[1], Saranga Bharathi[1], Niranjan Khandelwal

Departments of Radiodiagnosis and Imaging and [1]General Surgery, Post Graduate Institute of Medical Education and Research, Chandigarh, India

**Address for correspondence:**
Dr. Ujjwal Gorsi,
Department of Radiodiagnosis and Imaging,
Post Graduate Institute of Medical Education and Research, Sector-12,
Chandigarh - 160 012, India.
E-mail: ujjwalgorsi@gmail.com

## ABSTRACT

Wandering spleen is a rare clinical condition which occurs due to laxity or absence of the normal intraperitoneal ligaments that hold the spleen in place. Gastric volvulus and wandering spleen share a common etiology of absence or laxity of intraperitoneal ligaments. The occurrence of simultaneous pancreatic volvulus has never been described before in adolescence. Herein, we report a case having wandering spleen with torsion, and gastric and distal pancreatic volvulus, an unusual triad in acute abdomen in an emergency setting, which has never been described before to the best of our knowledge.

**Key Words:** Gastric, pancreatic, spleen, volvulus, wandering

Received: 23-07-2013 Accepted: 28-03-2014

**How to cite this article:** Gorsi U, Bhatia A, Gupta R, Bharathi S, Khandelwal N. Pancreatic volvulus with wandering spleen and gastric volvulus: An unusual triad for acute abdomen in a surgical emergency. Saudi J Gastroenterol 2014;20:195-8.

Wandering spleen has an incidence of less than 0.2% in patients undergoing splenectomy.[1] Its association with gastric volvulus is rare, and both share a common cause of laxity or the absence of the intraperitoneal ligaments that hold them in normal position.[2] The most common complication of both wandering spleen and gastric volvulus is splenic and gastric infarction/ischemia, if not promptly diagnosed and treated.[3] Simultaneous occurrence of pancreatic volvulus involving distal body and tail is more rare. We herein report this rare triad of wandering spleen with torsion, and gastric and pancreatic volvulus in an adolescent male with acute abdomen, which, to the best of our knowledge, has not been previously described.

## CASE REPORT

A 16-year-old male presented to emergency with complaints of severe abdominal pain of around 12 hours duration. The pain was acute in onset, colicky, started in left flank, and gradually involved whole of the abdomen. The patient also had nausea and recurrent episodes of vomiting since the onset of pain. The past history was unremarkable. The patient was afebrile, conscious, and oriented with stable vitals (pulse of 80/min and blood pressure of 110/70 mmHg).

The abdominal X-ray showed massively distended stomach. Ultrasound (US) showed grossly distended fluid-filled stomach. Spleen and pancreatic tail were visualized on the right side between the liver and distended stomach. Based on these findings, possibility of wandering spleen with gastric outlet obstruction (GOO) was predicted. The patient underwent contrast-enhanced computed tomography (CECT) of abdomen. The computed tomography (CT) showed spleen on the right side below the liver and was heterogeneous with ill-defined hypodense areas suggestive of decreased perfusion [Figure 1]. There was a twist involving splenic vessels and distal pancreatic body and tail, which were seen lying between the stomach and spleen [Figure 1b]. Stomach was grossly distended with pylorus lying close to and above the level of gastroesophageal junction, suggestive of volvulus [Figure 2]. Hence, a diagnosis of wandering spleen with associated torsion of vessels resulting in splenic infarction, gastric volvulus (mesenteroaxial) leading to GOO, and associated pancreatic volvulus was given.

Access this article online

Quick Response Code:

Website: www.saudijgastro.com

DOI: 10.4103/1319-3767.133026

The patient underwent an open laparotomy. The stomach was grossly distended and twisted at the fundus and body regions, with the pyloroduodenal junction at the level of gastroesophageal junction [Figure 3a]. Spleen was seen lying freely through the long phrenicosplenic ligament with associated twisting of splenic hilum and was congested. Rotation was seen involving the pancreatic body and tail [Figure 3b]. Saponification was present over pancreas and omentum. Derotation of stomach, spleen, and pancreas was done. Stomach was decompressed through the Ryles tube. Short gastric branches along the greater curvature were ligated. The long phrenicosplenic ligament was cut and splenectomy was done after ligating the splenic vessels at the hilum. Gastropexy was done by fixing the greater curvature to the dome of diaphragm along its left crus. Sham gastrojejunostomy was done with the proximal part of the jejunal loop. The patient had an uneventful recovery in the postoperative period.

## DISCUSSION

Wandering spleen is a term used to describe an abnormally located spleen in the abdomen or pelvis due to absence or laxity of the intraperitoneal ligaments (which hold the spleen in place). This happens when dorsal mesogastrium fails to fuse with posterior peritoneum during fetal development. The various supporting ligaments include gastrosplenic, splenorenal, splenocolic, phrenicosplenic, pancreaticosplenic, pancreaticocolic, and phrenicocolic ligaments.[2] As a result, there is an increased risk of torsion of splenic pedicle, which in turn leads to splenic ischemia and infarction. It has an incidence of less than 0.2% in patients undergoing splenectomy.[1]

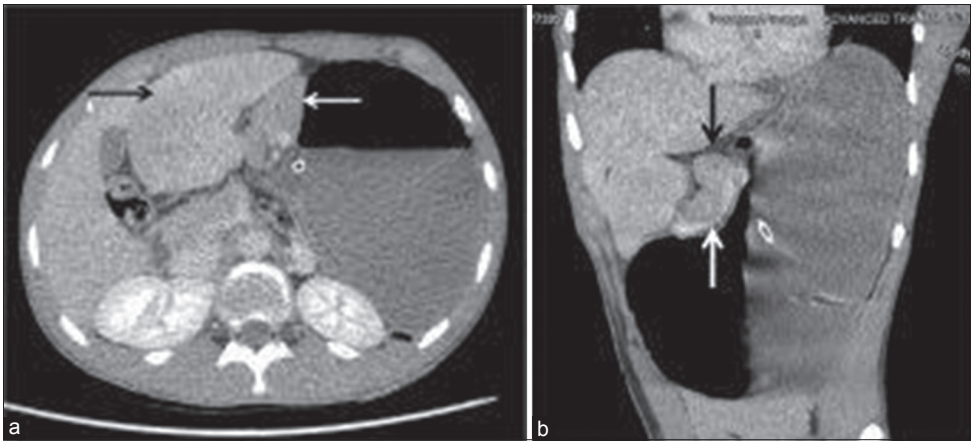


**Figure 1:** (a) Axial multiplanar reformatted (MPR) image showing spleen with heterogeneous attenuation lying on the right side of abdomen (black arrow) and pancreas (white arrow) located between the stomach and spleen. (b) Coronal MPR image showing the twist involving the splenic vessels (white arrow) as well as distal pancreas (black arrow). Also seen is grossly distended stomach in both (a) and (b)

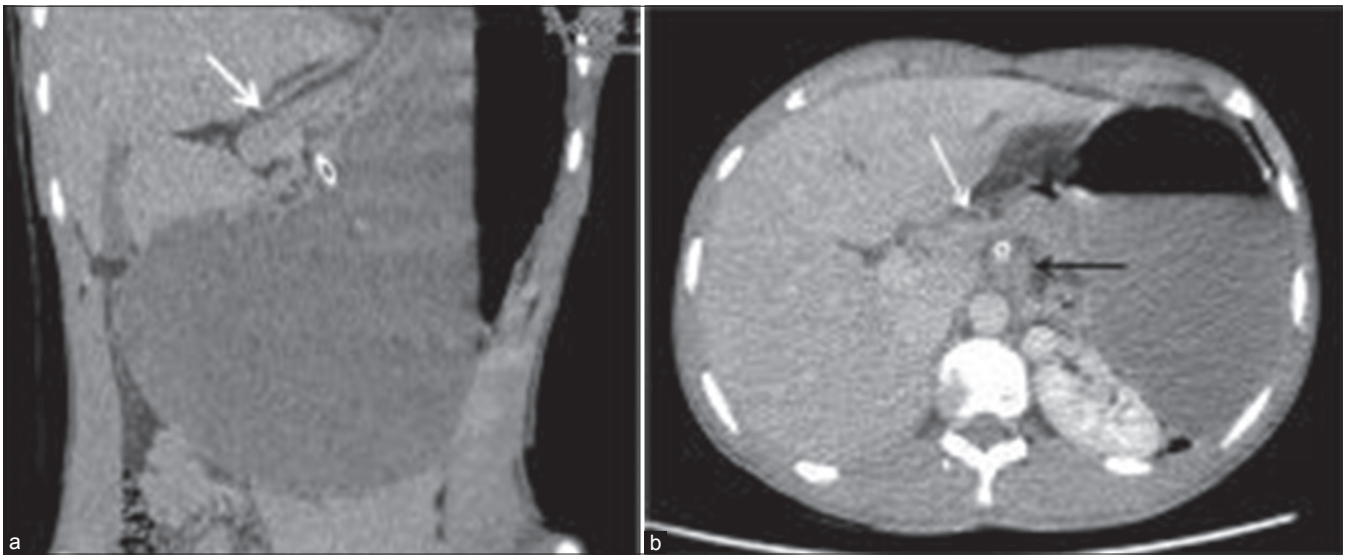


**Figure 2:** (a) Coronal and (b) axial MPR images showing grossly distended stomach with the pyloroduodenal junction lying higher up (white arrow in a) and anterior (white arrow in b) to the gastroesophageal junction (black arrow in b). Ryles tube is seen entering into the stomach in (a)

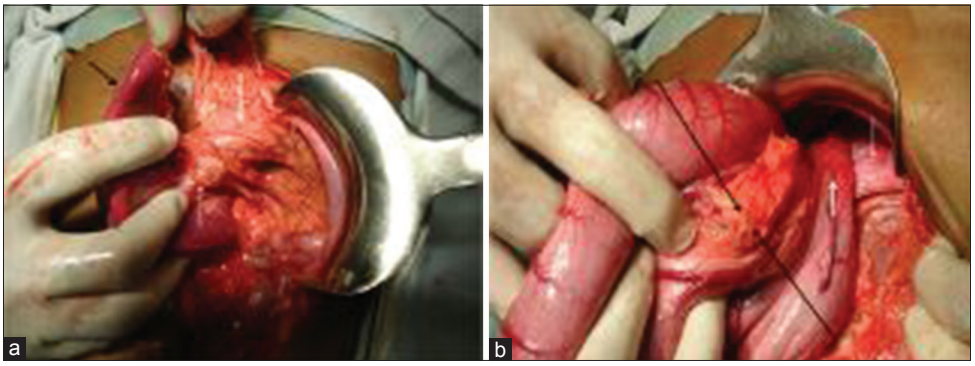


**Figure 3:** (a) Intraoperative photographs. The wandering spleen is seen on the right side of the abdomen (black arrow in a) with associated twisted distal pancreas (thick white arrow in a) and splenic hilum (thin white arrow in a). (b) Decompressed rotated stomach (black arrows is b) is seen with pyloroduodenal junction anterior (thick white arrow in b) to the gastroesophageal junction (thin white arrow in b)

This condition has a bimodal incidence, in children below 10 years of age and in women of childbearing age group.[4,5]

Gastric volvulus is a closed loop type of obstruction which occurs due to rotation of stomach or its part more than 180°. Singleton has described three types of volvulus which include organoaxial, mesenteroaxial, and combination-unclassified.[6] Organoaxial involves rotation of stomach around the longitudinal axis with the greater curvature most often rotating anteriorly. The mesenteroaxial volvulus occurs due to rotation around transgastric axis, a line joining the middle of lesser and greater curvature. The mesenteroaxial volvulus usually occurs without concomitant diaphragmatic hernia, with gastrosplenic ligament laxity being the predisposing factor.[5] Abnormal location of pyloroduodenal junction in conjunction with grossly distended stomach suggesting volvulus leading to GOO is easily demonstrable, especially using multiplanar reconstructions on CT.

Pancreatic volvulus is a rare entity, with only a few isolated cases described in conjunction with wandering spleen.[7-9] It occurs because of entrapment of the tail in the twisted splenorenal ligament during torsion of spleen.

The index case was unique in a few aspects. Wandering spleen is more common either in children (<10 years of age) or in women of childbearing age group, while our patient was an adolescent male. Also, the triad of simultaneous occurrence of wandering spleen with gastric and pancreatic volvulus has not been described before.

Wandering spleen with torsion and gastric volvulus-both are potentially life threatening if not managed surgically on an emergency basis. Imaging plays an important role in diagnosis. Abdominal US done initially in a patient with acute abdomen may show presence of spleen in an anomalous position, as seen in our case. Grossly distended stomach in a patient with recurrent vomiting points to presence of GOO and warrants a further cross-sectional imaging. CT shows abnormal position of spleen with associated torsion of the hilum containing the vessels and pancreatic tail. The whirl appearance of pedicle in wandering spleen suggesting the diagnosis of splenic torsion[3] was also seen in our case. Depending upon the viability of the splenic tissue seen during surgery, splenopexy or splenectomy is done.[3] Splenopexy is the process of surgically fixing a viable ectopic or floating spleen. Splenectomy is the surgical option in cases of splenic infarct.[10] Our patient had congested spleen on laparotomy, hence splenectomy was performed to prevent further complications.

Acute pancreatitis complicating the migration of the pancreas through a hernial sac has been described, and may occur due to repetitive trauma as it crosses the hernia, ischemia due to stretching of its vascular pedicle, or intermittent folding of the main pancreatic duct.[11] Though definite features of pancreatitis were not seen on CT in our case, saponification seen during surgery pointed toward associated changes of pancreatitis. It was likely due to ischemia caused by stretching of its vascular pedicle.

## CONCLUSION

The triad of wandering spleen with torsion, gastric volvulus, and pancreatic volvulus causing acute abdomen in an emergency setting is a rare occurrence in an adolescent male patient. Imaging plays an important role in the diagnosis, which is to be managed surgically on an emergency basis to reduce morbidity.

## REFERENCES

1. Raisssaki M, Prassopoulos P, Daskalogiannaki M, Magkanas E, Gourtsoyiannis N. Acute abdomen due to torsion of wandering spleen: CT diagnosis. Eur Radiol 1998;8:1409-12.
2. Liu HT, Lau KK. Wandering Spleen: An unusual association with gastric volvulus. AJR Am J Roentgenol 2007;188:W328-30.
3. Priyadarshi RN, Anand U, Kumar B, Prakash V. Torsion in wandering spleen: CT demonstration of whirl sign. Abdom Imaging 2012;38:835-8.

4. Qazi SA, Mirza SM, Muhammad AA, Al Arrawi MH, Al-Suhaibani YA. Wandering spleen. Saudi J Gastroenterol 2004;10:1-7.
5. Sodhi KS, Saggar K, Sood BP, Sandhu P. Torsion of a wandering spleen: Acute abdominal presentation. J Emerg Med 2003;25:133-7.
6. Sevcik WE, Steiner IP. Acute gastric volvulus: Case report and review of the literature. CJEM 1999;1:200-3.
7. Choudhary R, Ghazanfari A. Wandering spleen with pancreatic volvulus and colonic obstruction in an elderly patient. Int J Case Rep Imag 2012;3:15-8.
8. Shirani S. Torsion of wandering spleen and tail of pancreas. Arch Iran Med 2002;5:124-5.
9. Sheflin JR, Lee CM, Kretchmar KA. Torsion of wandering spleen and distal pancreas. AJR Am J Roentgenol 1984;142:100-1.
10. Palanivelu C, Rangarajan M, Senthilkumar R, Parthasarathi R, Kavalakat AJ. Laparoscopic Mesh Splenopexy (Sandwich Technique) for Wandering Spleen. JSLS 2007;11:246-51.
11. Henkinbrant A, Decoster O, Farchakh E, Khalek W. Une pancréatite aiguë causée par une volumineuse hernie ombilicale: Observation d'un cas. Acta Gastroenterol Belg 1989;52:441-7.

**Source of Support:** Nil, **Conflict of Interest:** None declared.