



## Case Report

# Contrast-Enhanced Computed Tomographic Findings of the Wandering Spleen: A Case Report

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### Abstract

Wandering spleen is a rare entity that defines abnormal localization of spleen due to various causes. Wandering spleen is prone to rotate on its peduncular axis and finally torsion and infarction. Contrast-enhanced computed tomography can visualize the torsioned peduncle and non-enhanced parenchyma with contrast medium. A 60-year-old woman who had abdominal pain was admitted to ER. Contrast-enhanced computed tomography depicts the abnormal localization of spleen and absence of contrast medium in the parenchyma and peduncle. Diagnosis was torsioned wandering spleen. Contrast-enhanced computed tomography is very important useful modality for diagnosis of torsioned wandering spleen.

**Keywords:** Computed tomography; torsion; wandering spleen.

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The "wandering spleen" is a very rare entity. It has an incidence rate estimated to be less than 0.2%. The entity has no gender predilection.<sup>[1]</sup>

Four ligaments stabilize the spleen in the abdominal cavity. These are the gastrosplenic, colicosplenic, phrenocolic, and phrenosplenic ligaments.<sup>[2]</sup> A complete or incomplete embryologic developmental anomaly of these ligaments may give rise to a wandering spleen. Among the other etiological factors are ligamentous laxity and the congenital or acquired defects of the diaphragm.<sup>[3]</sup> The most important ones of the acquired factors are the advanced laxity and abdominal wall fatigue that arise due to the hormonal irregularities caused by multiparity.<sup>[4]</sup> A substantially increased splenic mobility is an important cause of a torsioned wandering spleen.

It is important to remember that if there is a suspicion of

torsion, imaging modalities will be more precious for early diagnosis. Ultrasonography and computed tomography can be used for early diagnosis.

We present a female patient who was admitted to ER with abdominal pain and palpable mass lesion.

### Case Report

A 60-year-old female patient applied to the Emergency Department of our hospital with the complaints of nausea and vomiting during the last 10 days. The patient had undergone a right mastectomy operation due to breast cancer. Her physicals revealed a palpable midline mass in the abdomen, together with the findings of abdominal defense and rebound. Her blood pressure was 140/90 mmHg, her heart rate was 90 bpm, and her blood saturation level was measured as 92%. Her hemogram revealed a white blood

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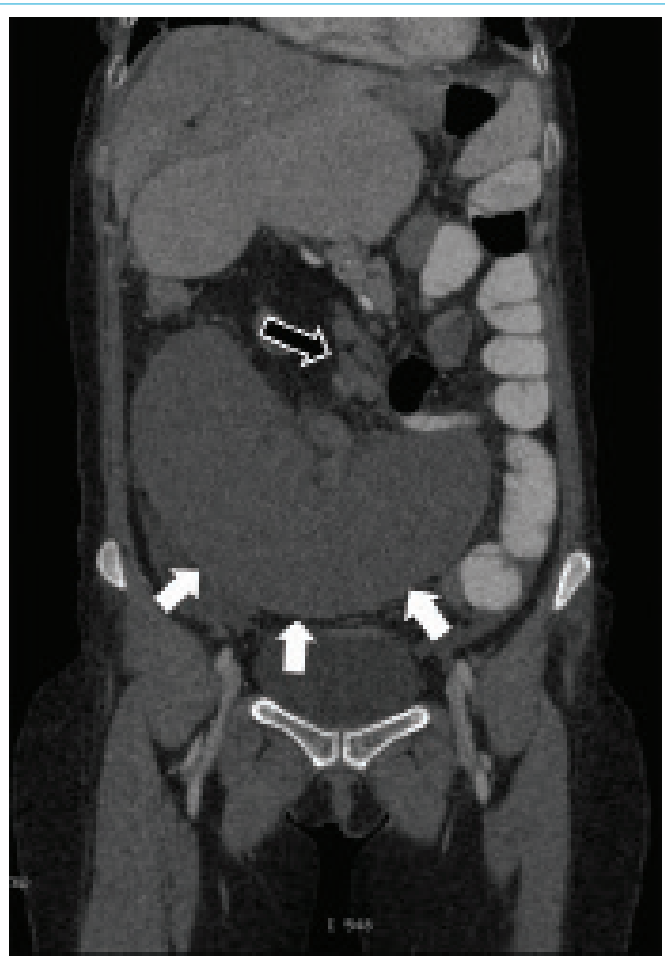
cell count of 6700/mL (reference range being 4400–11000/mL), and a C reactive protein level of 58.5 mg/L (reference range being 0–5 mg/L). A contrast-enhanced computed tomographic (CECT) examination was performed with Toshiba Aquilion 80 (Tokyo, Japan). Iomeprol 300/100 mg (Iomeron 300/100 mg Bracco UK Ltd.) was used as intravenous contrast medium with 4 ml/s injection rate. CECT disclosed that the spleen was not in place, and that there was a soft tissue lesion in the mid-abdomen. This lesion was not enhancing with iodinated contrast, and it was attached to the main vascular structures with a peduncle (Figs. 1, 2). The lesion was compatible with a wandering spleen. There was no well-known disposing factor, such as ligamental laxity or congenital malformation. It was found that the arterial peduncle feeding this wandering spleen had rotated on its axis, and arterial contrast enhancing was present only at the mid-section of this torsioned peduncle (Figs. 3, 4). The patient was operated and underwent an uncomplicated splenectomy procedure. Surgery revealed that the spleen was not in its normal location but was at the midline of the abdomen, and also that the peduncle was torsioned and thus the spleen necrosed.

## Discussion

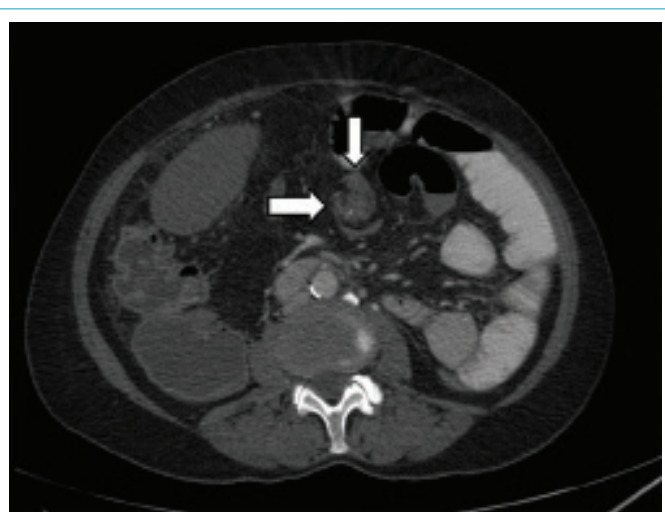
Van Horne first described the entity “wandering spleen” in 1667 in an autopsy specimen.<sup>[5]</sup> Hatfield et al.,<sup>[6]</sup> on the other hand, were the first to define the ectopic spleen using selective angiography pre-operatively, in 1976. Congenital and acquired reasons can cause wandering spleen. Congenital causes are complete or incomplete development of the ligaments of spleen. Acquired causes are increased laxity of ligaments due to hormonal changes secondary to multiparity, lymphoma, and myeloproliferative disorders.<sup>[7]</sup>

Patients with a wandering spleen may present with intermittent pain attacks secondary to peduncular torsion. Cases with complete torsion may present with acute abdomen findings. Besides abdominal pain, patients may develop abdominal distension, nausea, and vomiting. Due to torsion/detorsion, the pain can be present as intermittent.<sup>[4]</sup> One paper reported that the wandering spleen could lead to complaints of enuresis due to the ectopic spleen’s indenting pressure on the bladder. In the paper’s presented patient, the cause of the wandering spleen phenomenon was a defect in the diaphragm, and the patient’s enuresis complaints had ceased following the repair of this defect.<sup>[8]</sup>

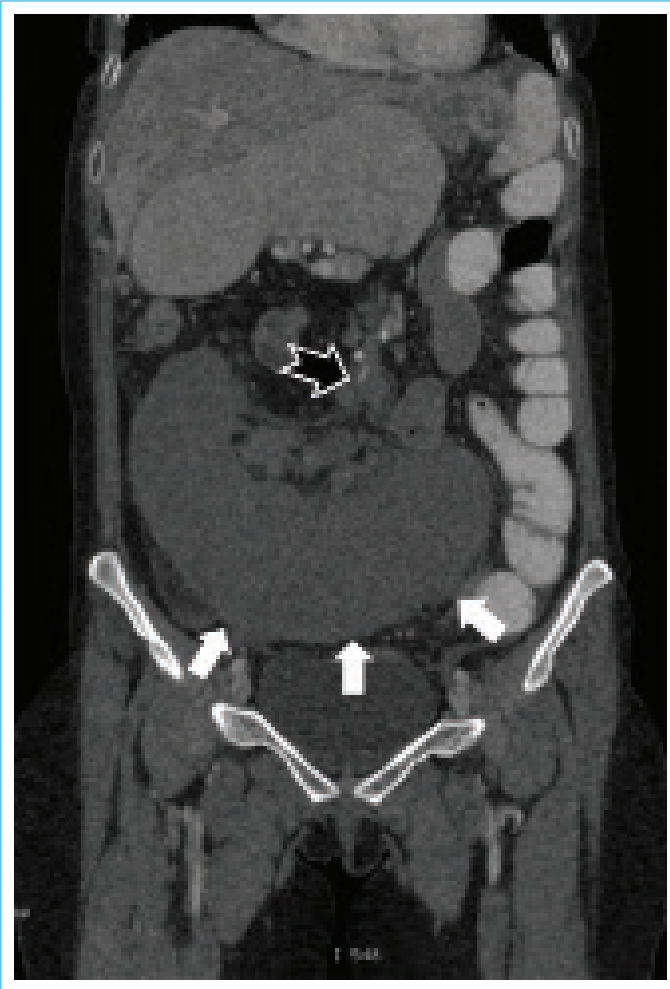
The critical question to be solved in wandering spleen cases is if there is a peduncular torsion and thus a secondary splenic ischemia and infarction. This is exactly why an early diagnosis is so vital. Various imaging modalities may



**Figure 1.** Coronal oblique reformatted CECT shows the wandering spleen that is located in lower abdomen, an abnormal localization for spleen (white arrows). It can be clearly seen that wandering spleen is associated with a torsioned peduncle (black arrow).



**Figure 2.** Axial CECT shows the torsioned splenic peduncle that shows “swirling” (white arrows).

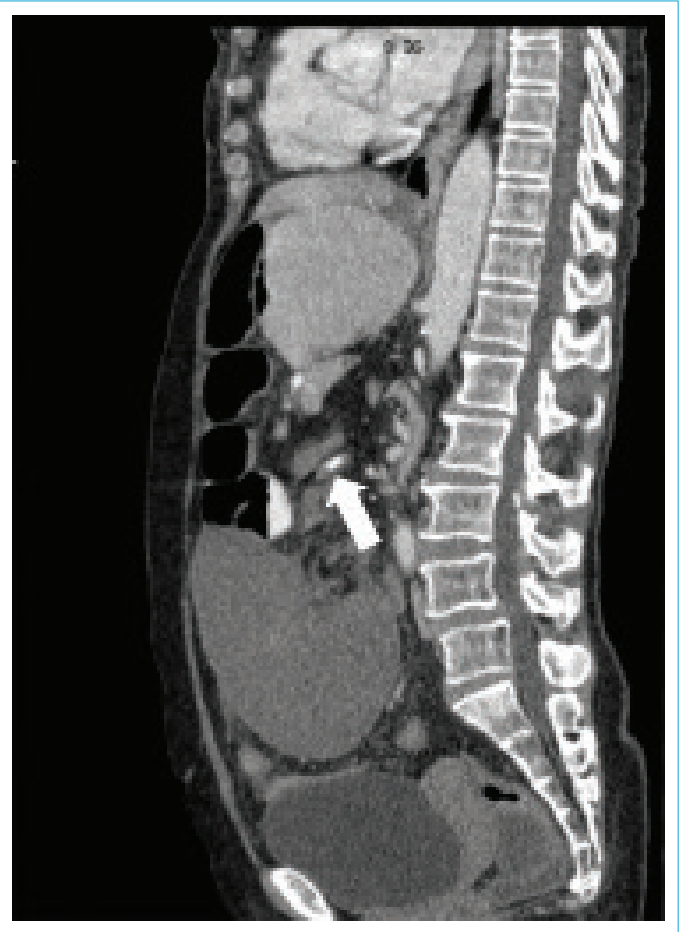


**Figure 3.** In arterial phase coronal oblique reformatted CECT image depicts that wandering spleen cannot take up contrast medium and has lost density when compared with liver. The contrast medium is discontinued in the torsioned splenic artery (black arrow).

be used for the diagnosis. Conventional radiography, ultrasonography (US), color Doppler ultrasonography (CDUS), CT, and CECT are among these modalities.<sup>[7]</sup>

Direct radiograms may show that the spleen density is missing in the normal location and there are intestinal segments there instead. Besides, a scanogram, as was the case in our patient, may reveal the presence of the wandering spleen as an ectopic density (Fig. 5).

US, on the other hand, may not only demonstrate that the spleen is not in place, but it may also reveal the very location of the wandering spleen. US may also disclose the rotation and torsion of the splenic peduncle. With Doppler US, one can examine the vascular supply condition of both the peduncle and the splenic parenchyma. US is a cheap and easy-applied modality with no ionizing radiation. But US is a user-dependent modality; therefore, US must be performed by experienced sonographers.

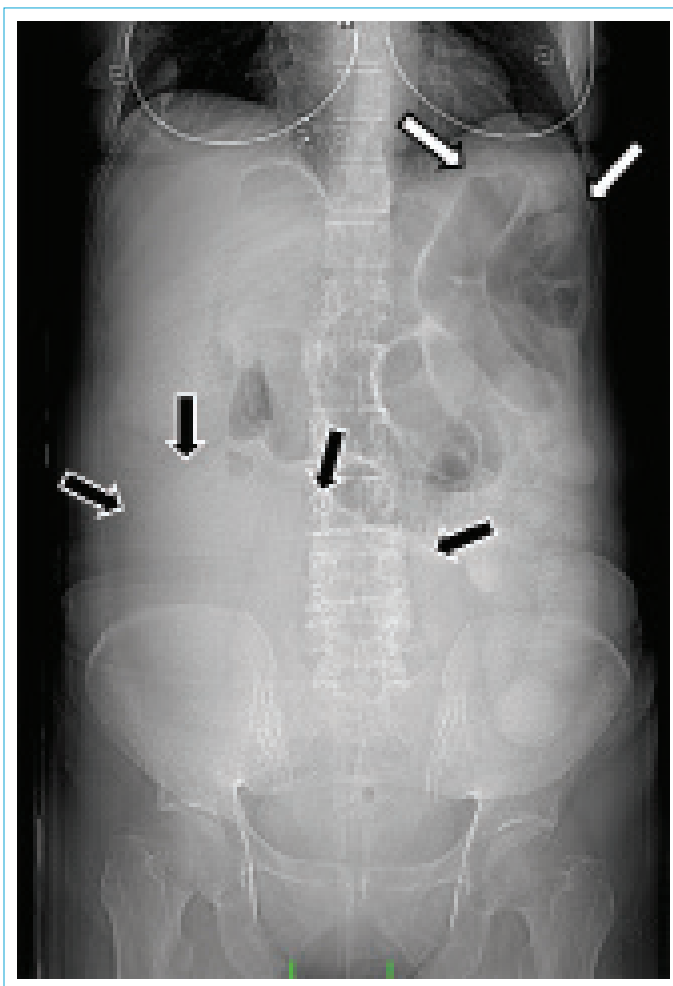


**Figure 4.** Sagittal reformatted image also shows the torsioned wandering spleen (white arrows). Torsioned peduncle (black arrow) and outcome of arterial contrast is well depicted (notched white arrow).

As was the case in our patient, a CECT examination may demonstrate the ectopic location of the wandering spleen, together with its increased size due to congestion secondary to torsion, and the lack of parenchymal contrast enhancement. CECT may also delineate the status of the arterial and venous vascularization and the devascularized segment of the peduncle with high accuracy. CECT has the highest contrast resolution, and therefore has the high diagnostic capability. Sagittal and coronal reformation increases the diagnostic evaluation. CT cause ionizing radiation, and this is the major disadvantage of this modality. IV contrast medium can cause side effects, such as renal impairment and anaphylaxis.

## Conclusion

The torsion of the wandering spleen is a rare but a very important clinical entity. It is a serious cause of acute abdomen. CECT is a very effective modality in the diagnosis of this entity, providing a fast and accurate management of the emergency.



**Figure 5.** Scanogram shows the intestinal structures at the spleen region (white arrows), and a soft tissue structure is associated with wandering spleen (black arrows).

### Disclosures

**Informed consent:** Written informed consent was obtained from the patient for the publication of the case report and the accompanying images.

**Peer-review:** Externally peer-reviewed.

**Conflict of Interest:** None declared.

### References

1. Feroci F, Miranda E, Moraldi L, Moretti R. The torsion of a wandering pelvic spleen: A case report. *Cases J* 2008;1:149.
2. Ostermann PA, Schreiber HW, Lierse W. The ligament system of the spleen and its significance for surgical interventions. [Article in German]. *Langenbecks Arch Chir* 1987;371:207–16.
3. Cantone N, Gulia C, Miele V, Trinci M, Briganti V. Wandering Spleen and Organoaxial Gastric Volvulus after Morgagni Hernia Repair: A Case Report and Review of the Literature. *Case Rep Surg* 2016;2016:6450765.
4. Yakan S, Telciler KE, Denecli AG. Acute torsion of a wandering spleen causing acute abdomen. *Hong Kong J Emerg Med* 2011;18:34–6.
5. Makhlof NA, Morsy KH, Ammar S, Mohammed RA, Yousef HA, Mostafa MG. Wandering spleen in the pelvic region in an adult man with symptoms of acute abdomen. *Arab J Gastroenterol* 2016;17:49–52.
6. Hatfield PM, Clouse ME, Cady B. Ectopic pelvic spleen. *Arch Surg* 1976;111:603–5.
7. Chauhan NS, Kumar S. Torsion of a Wandering Spleen Presenting as Acute Abdomen. *Pol J Radiol* 2016;81:110–3.
8. Emir H, Yeşildağ E, Yeker Y, Söylet Y, Senyüz OF. A case of wandering spleen causing urinary symptoms after correction of a posterolateral diaphragmatic hernia. *Pediatr Surg Int* 2000;16:602–3.