Partial malrotation of the bowel in an adult patient presenting with abdominal pain

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DESCRIPTION

A 60-year-old man was presented with colicky upper left abdominal pain and vomiting. Haematology and biochemistry were unremarkable and there had been no recent change in bowel habits.

An initial non-contrast abdominal CT, performed due to the provisional diagnosis of left renal colic, revealed a midline caecum (figure 1) and an absence of small bowel in the left abdomen (figure 2). The superior mesenteric vein was located anterior to the superior mesenteric artery (figure 3) and the duodenal–jejunal junction was present on the right side, failing to cross the midline (figure 4). The findings were consistent with partial malrotation of the bowel. No renal calculi were present.

A subsequent contrast-enhanced CT of the abdomen revealed no evidence of bowel ischaemia, and the superior mesenteric artery and vein were both patent. The pyloric wall was irregularly thickened circumferentially (figure 5) with loss of clarity of the adjacent mesenteric fat and prominent lymph nodes. Subsequent oesophagastroduodenoscopy confirmed gastric carcinoma.

Partial malrotation of the bowel results when the embryonic mid-gut fails to complete the normal 270° of counter clockwise rotation during gestation. Adults are often asymptomatic, and such cases are usually diagnosed as incidental findings when imaged for other conditions. Ultrasound, CT or upper gastrointestinal studies may identify the typical characteristics.

As highlighted in this case, recognition of partial malrotation in symptomatic patients should therefore prompt a thorough search for additional intra-abdominal pathology. In addition, the anatomical variations exhibited in such cases may also be responsible for atypical presentations of common surgical pathology such as appendicitis.

This case report highlights the typical CT findings of partial bowel malrotation that will be of benefit to both surgeons and radiologists alike.

Figure 1 The caecum (arrow) and ileocaecal junction are abnormally located in the central abdomen.

Figure 2 Coronal contrast-enhanced CT of the abdomen. The small bowel loops are abnormally located within the right side of the abdomen.
Learning points

- On axial CT, the normal superior mesenteric vein (SMV) is located ventral and to the right of the superior mesenteric artery. Deviation from this normal anatomical relationship (the SMV rotation sign) should prompt a careful search for further evidence of bowel malrotation.1
- Further signs include an abnormal caecal position, right-sided duodenal–jejunal junction and small bowel, left-sided colon, hypoplasia of the pancreatic uncinated process and an absence of transverse colon crossing the abdomen.2 3
- Partial malrotation of the bowel is commonly asymptomatic. However, the anatomic derangements may result in atypical presentations of common intra-abdominal pathology.2
- It is vital that surgeons are aware of the anatomical features of malrotation, as undiagnosed cases may occasionally present at laparotomy.3

Competing interests None declared.
Patient consent Obtained.
Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES