

## Whirl Sign of Midgut Volvulus

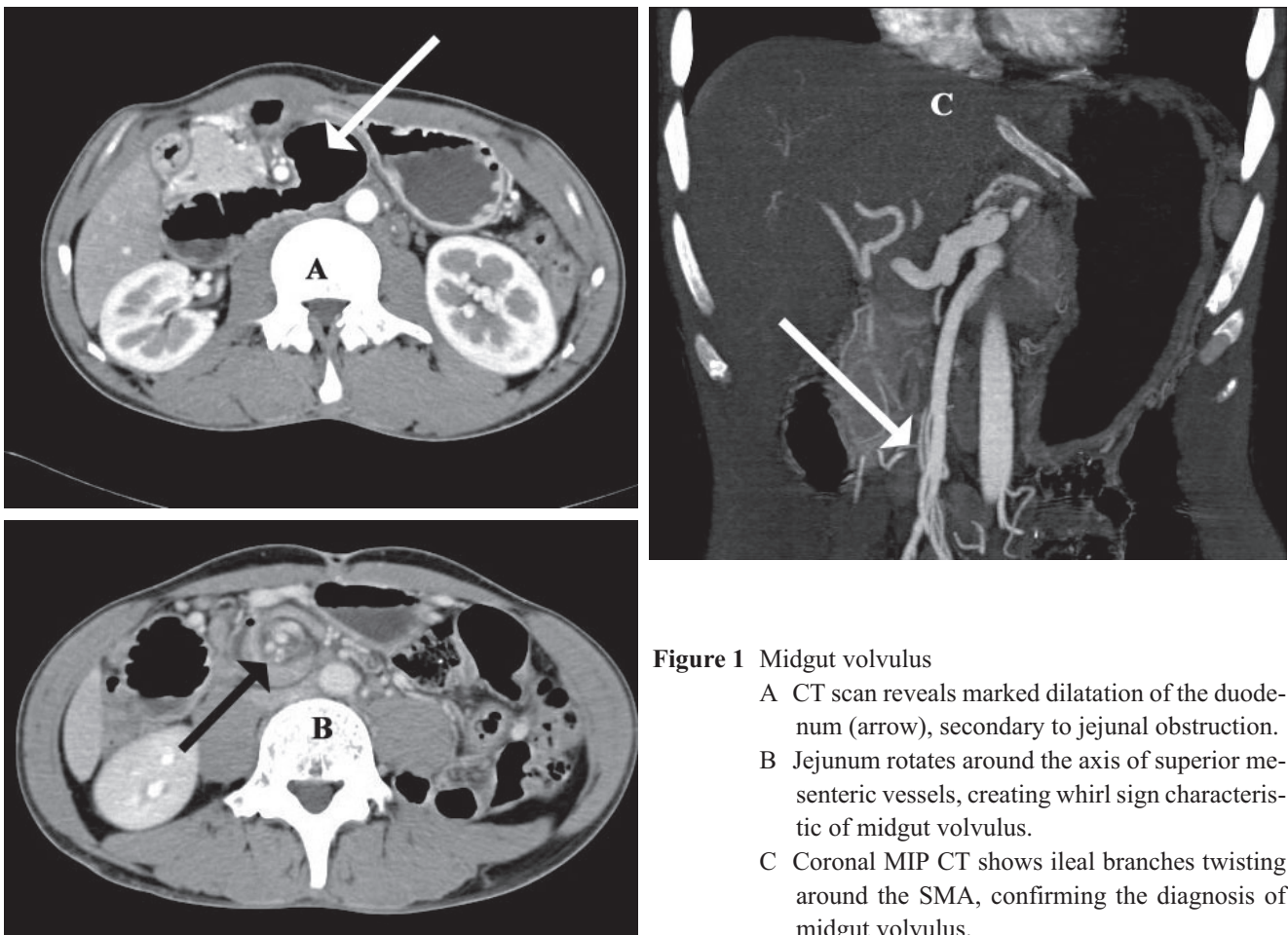
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A 30-year-old man presented with acute abdominal pain, nausea and vomiting. Contrast-enhanced multidetector computerized tomography (MDCT) scans show dilated stomach and duodenum. Proximal jejunum encircles around the axis of superior mesenteric artery and vein, giving the whirl sign appearance characteristic of midgut volvulus (Figures A, B, C).

Coronal MIP image (Figure D) reveals twisted ileal branches around the SMA, confirming the diagnosis of midgut volvulus.

### DISCUSSION

Whirl sign is a CT finding that occurs when bowel



**Figure 1** Midgut volvulus

- A CT scan reveals marked dilatation of the duodenum (arrow), secondary to jejunal obstruction.
- B Jejunum rotates around the axis of superior mesenteric vessels, creating whirl sign characteristic of midgut volvulus.
- C Coronal MIP CT shows ileal branches twisting around the SMA, confirming the diagnosis of midgut volvulus.

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loops rotate around a fixed point, resulting in a tightly twisted mesentery and bowel loops along the axis of rotation. These twisted loops of bowel and branching mesenteric vessels create swirling pattern resembling the appearance of hurricane on a weather map. Whirl sign was originally described by Fisher in a case of midgut volvulus, where the center of the whirl sign was the superior mesenteric vessels and the whirled appearance was created by the encircling bowel loops<sup>(1)</sup>. Subsequently, whirl sign has been used to describe sigmoid volvulus<sup>(2)</sup>, and cecal volvulus<sup>(3-5)</sup>.

Midgut volvulus is usually associated with intestinal malrotation, and mostly seen in pediatric age group, although not uncommon in young adults. In this disorder, there is a malrotation of the intestine in the developing embryo with an associated lack of proper attachment of the gut to the posterior abdomi-

nal wall. This allows the small bowel to encircle the superior mesenteric vessels, leading to volvulus, obstruction and ischemic changes.

In conclusion, whirl sign, detected at CT, is highly suggestive of intestinal volvulus, which could lead to obstruction, strangulation and ischemia.

#### REFERENCES

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