LETTER / Gastrointestinal imaging

CT findings of cecal volvulus following laparoscopic appendectomy

Keywords Laparoscopic appendectomy; Computed tomography; Cecal volvulus; Surgery; Complication

Dear Editor,

Laparoscopic appendectomy has become the standard surgical intervention for acute appendicitis since the early 1990s. This procedure is associated with complications such as intra-abdominal collections, wound infections, and ileus but new postoperative complications following laparoscopic procedures continue to be reported. Of these, cecal volvulus (CV) is a rare entity, accounting for less than 2% of acute intestinal obstructions [1]. Although prior abdominal surgery has been reported as a predisposing factor [2], only a few cases of CV following laparoscopy have been reported [3–5]. We report here a rare case of CV occurring after laparoscopic appendectomy that was diagnosed with computed tomography (CT).

A 47-year-old woman underwent a standard laparoscopic appendectomy for acute appendicitis, followed by an early laparoscopy for a midgut obstruction seemingly due to peritoneal adhesions. She was admitted to our institution six weeks later because of acute right-sided lower abdominal pain, vomiting and abdominal distension. She had no fever and her white blood cell count and C-reactive protein blood level were within the normal range. CT examination obtained after intravenous administration of iodinated contrast material was performed. The scout view showed a dilated cecum running from the right lower quadrant to the mid abdomen (Fig. 1). Enhanced CT showed a “coffee bean” sign, defined as a distended cecum (more than 10 cm), with an air-fluid level (Fig. 2). Involvement of the ileum was also demonstrated by CT, appearing as an ileocecal twist (Fig. 3). CT also revealed gas in the distal colon and fluid effusion in the pelvis and in the right paracolic gutter. No distension of the stomach and the small bowel, no “whirl sign”, no bowel-wall thickening, no lack of parietal enhancement and no cecal pneumatosis were seen. Laparotomy was performed, assessing the diagnosis of cecal volvulus of the axial type. The cecum was infarcted without gangrene. A right hemicolecotomy with ileocolic anastomosis was done, without any postoperative complication.

CV is a rare entity, responsible for 1–1.5% of adult intestinal obstructions and 25–40% of colonic volvulus [1,2]. CV can be divided into axial ileocolic volvulus, accounting for 90% of cases, and cecal bascule, which accounts for the remaining cases [1,6]. The first type is defined by the axial twist of the cecum and terminal ileum around the mesenteric pedicle [2]. In cecal bascule, the distended cecum folds either anteriorly or posteriorly, without any torsion. Clinical presentation of CV is variable, depending on the pattern, severity and duration of intestinal obstruction [1,2]. The most reported symptoms in patients with CV include abdominal pain, nausea, vomiting and abdominal distension [6]. Since most CV patients present with unspecific clinical features of intestinal obstruction, abdominal imaging remains crucial for the preoperative diagnosis. Plain abdominal radiographs show abnormalities in nearly all patients, including cecal dilatation, single air-fluid level, small bowel dilatation and paucity of gas in distal colon [2,7]. Barium enema has been traditionally used for CV confirmation. The most common finding is the “beak sign”, a progressive tapering cut off at the efferent limb of the torsion [8]. Barium enema has recently been replaced by abdominal CT for the diagnosis of CV, because of the longer examination time and possibility of contrast extravasation. The main CT findings include the “whirl sign” (soft-tissue mass composed

Figure 1. Scout view of abdominal computed tomography shows a dilated cecum running from the right lower quadrant to the mid abdomen.
of twisted loop of collapsed cecum and fatty mesentery), the "coffee bean" sign (distended cecum filled with air and fluid), and the "bird beaks" (smooth tapering of afferent and efferent loops terminating at the site of torsion) and involvement of the ileum (ileocecal twist) [2,8]. Visualization of a gas-filled appendix has been reported as an additional finding associated with cecal dilatation due to CV [9]. When the diagnosis of CV is confirmed, immediate surgical reduction must be performed. Resection is mandatory in case of gangrene and perforation [2]. CV is thought to develop in association with an increased cecal mobility due to an abnormal fixation of the cecum to the posterior parietal peritoneum. Predisposing factors may be congenital (anatomical susceptibility) or acquired (prior abdominal surgery, chronic constipation, abdominal masses, late-term pregnancy, high fiber intake) [2]. CV is an extremely rare condition, with only a few reported cases of CV occurring after laparoscopy. In this regard, CV has been reported following laparoscopic cholecystectomy [4], ventral hernia repair [5], or appendectomy [3]. Despite its rarity, CV should therefore be considered as a possible cause of bowel obstruction following laparoscopy.

Disclosure of interest

The authors declare that they have no competing interest.

References


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Figure 2. Contrast-enhanced abdominal computed tomography (CT) shows a distended cecum with an air-fluid level: a: contrast-enhanced CT image in the transverse plane shows a distended cecum with an air-fluid level. Note also the presence of fluid effusion in the right paracolic gutter (arrow); b: contrast-enhanced CT in the coronal plane shows the "coffee bean" sign (distended cecum filled with air and fluid).

Figure 3. Contrast-enhanced abdominal computed tomography (CT) shows an ileocecal twist suggesting ileal involvement (arrow).
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