



Descending colon interposition in a patient presenting with abdominal pain and acute appendicitis

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ABSTRACT

Interposition of the descending colon between the kidney and the psoas major muscle is a rare hindgut anatomic variant. Presented herein is a case of descending colon interposition in a patient admitted with abdominal pain and acute appendicitis. Internal hernia was ruled out by laparoscopy. © IJAV. 2010; 3: 146–148.

Key words [interposition] [descending colon] [appendicitis] [laparoscopy] [internal hernia]

Introduction

Interposition of the descending colon between the kidney and the psoas major muscle is a rare hindgut anatomic variant, occurring in 0.7% of patients [1]. While patients having this anatomic variant are normally asymptomatic, the resulting finding of small bowel lateral to the interposing colon can be confused with an internal hernia on computed tomography (CT), as described in the following case report.

Case Report

A 21-year-old thin white male, with no significant past medical or surgical history, presented with complaints of periumbilical pain that migrated to the right lower quadrant, associated with anorexia and chills, of 12 hours duration. He was passing flatus and having regular bowel movements. He denied having nausea, vomiting, and previous episodes of similar pain.

Vital signs were stable. He was afebrile. Physical exam was significant for a soft, nondistended abdomen, with active bowel sounds. There was right lower quadrant tenderness greatest over McBurney's point, with guarding and rebound. Labs were notable for a white blood cell count 9.3 K/ μ L with a left shift, and serum CO₂ 28 mmol/L.

CT scan with oral contrast showed acute appendicitis (Figure 1). In addition, the descending colon was noted to be medially displaced, being positioned between the left kidney and psoas major muscle. Small bowel loops were

seen lateral to the descending colon, initially suggesting a possible internal hernia (Figures 2, 3). There were no radiological signs of bowel obstruction or ischemia.

Urgent exploratory laparoscopy to rule out internal hernia and laparoscopic appendectomy were performed. Intra-operative findings included acute appendicitis, and interposition of the descending colon between the kidney and the psoas major muscle. Small bowel loops were found draped over the top of the descending colon, filling the anatomic space normally occupied by the descending colon along the lateral abdominal wall (Figures 4–7). No mesenteric defects, internal hernias, or vascular abnormalities could be found.

The patient had an uneventful postoperative course and was discharged the next day. Follow up in the surgery clinic revealed no further issues. Pathology confirmed acute appendicitis.

Discussion

Anatomic variation of the colon results during embryonic development. The ascending and descending colon derive from the midgut and hindgut, respectively. In particular the midgut undergoes a complicated series of changes including 270 degree counterclockwise rotation around the axis of the superior mesenteric artery, physiologic umbilical herniation, return to the abdomen, and eventual fixation within the abdominal cavity. After reaching their final destinations, the ascending and descending colon fuse their mesenteries with the peritoneum of



Figure 1. Axial contrast enhanced CT through the abdomen shows a thick walled, fluid-filled appendix, measuring up to 9 mm in diameter. The appendix does not fill with contrast, and the walls are hyperemic. A small amount of fluid is seen surrounding the appendix. These findings are consistent with acute appendicitis. (*A: appendix*)

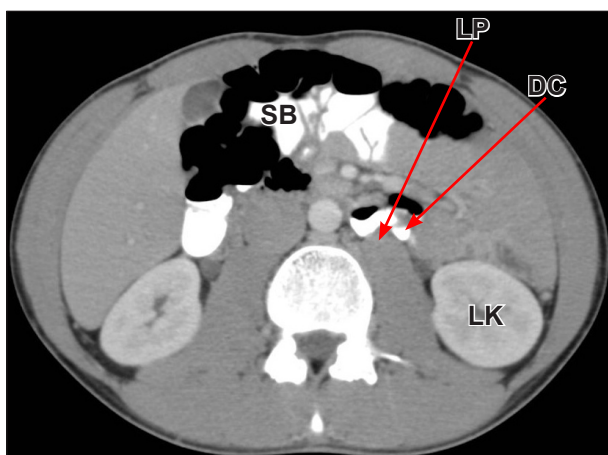


Figure 2. Axial contrast enhanced CT through the abdomen shows the descending colon positioned medially, abutting the left psoas major muscle. The left kidney and small bowel are lateral to it. (*DC: descending colon; LP: left psoas major; LK: left kidney; SB: small bowel*)



Figure 3. Coronal multiplanar reformatted image of the abdomen shows the descending colon positioned medially adjacent to the psoas major muscle. The small bowel is lateral to it. (*DC: descending colon; SB: small bowel*)

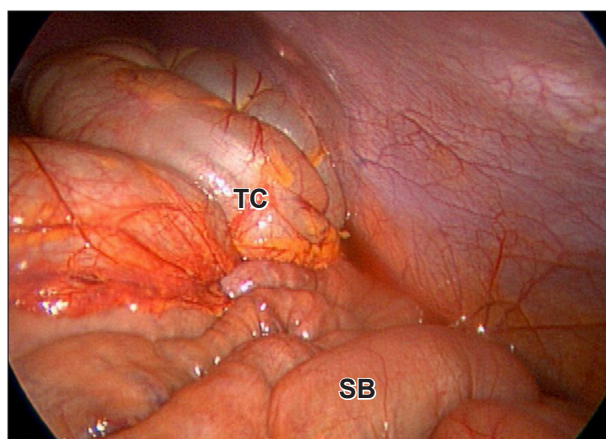


Figure 4. Intra-operative photograph showing left upper quadrant with small bowel draped over descending colon, as found initially on inserting laparoscope. (*TC: transverse colon; SB: small bowel*)

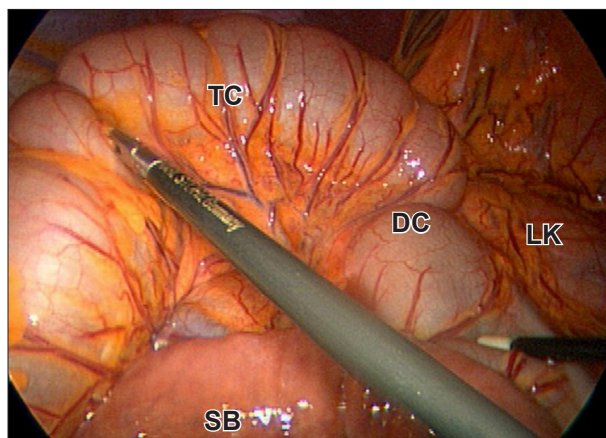


Figure 5. Intra-operative photograph of left upper quadrant with small bowel retracted to patient's right and transverse colon retracted cranially, revealing descending colon travelling a path medial to the left kidney. (*TC: transverse colon; DC: descending colon; LK: left kidney; SB: small bowel*)

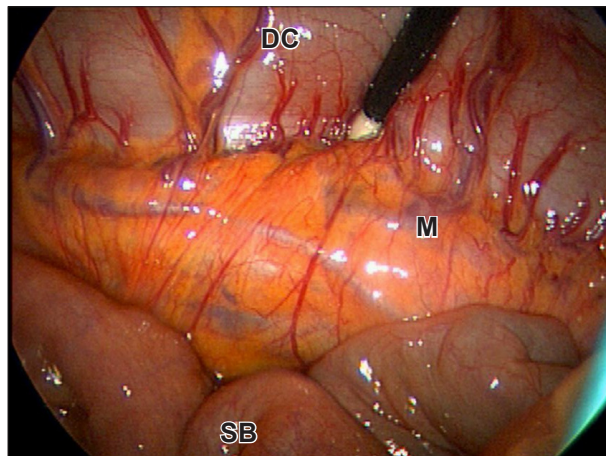


Figure 6. Intra-operative photograph of left side of abdomen showing small bowel retracted to patient's right and descending colon retracted to patient's left, revealing colonic mesentery free of any internal hernia defects. (*DC: descending colon; M: mesentery; SB: small bowel*)

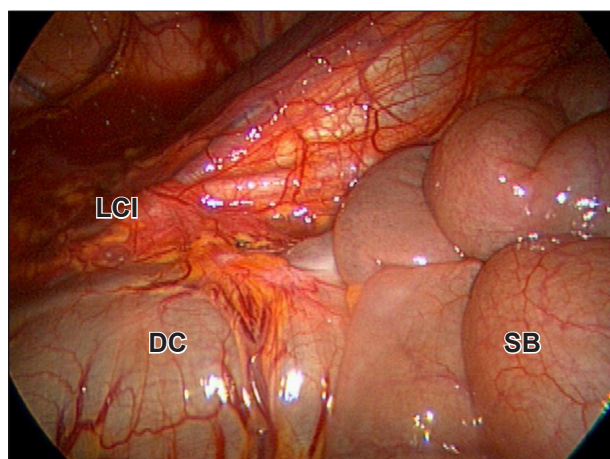


Figure 7. Intra-operative photograph of left lower quadrant showing small bowel retracted to patient's right, revealing the descending colon travelling a medial course and crossing the proximal left common iliac vessels. (DC: descending colon; SB: small bowel; LCI: left common iliac vessels)

the posterior abdominal wall, and thereby become retroperitoneal [2].

Interposition of the colon between the kidney and the psoas muscle is a normal anatomic variant that may result from mild embryological abnormalities of bowel rotation and fixation [3]. It occurs more frequently on the right side [1,4]. In a large review of CT scans, Prassopoulos et al. showed that interposition of the ascending colon between the kidney and the psoas occurred in 1.7% of patients, and interposition of the descending colon

between the kidney and the psoas occurred in 0.7% of patients [1]. This type of interposition was found to be more common in women, young adults, and individuals with less intra-abdominal fat [1]. Although a benign variant and generally asymptomatic, it may lead to lateral displacement of the kidney [5,6].

In the present case, interposition of the descending colon was confused with a possible internal hernia on preoperative CT scan. The presence of small bowel loops lateral to the descending colon raised concern for an internal hernia [7], and was especially worrisome in the setting of abdominal pain. Descending colon interposition was confirmed and internal hernia definitively excluded using diagnostic laparoscopy.

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