

# Pericecal herniation of sigmoid colon diagnosed by computed tomography

## Two case reports

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### Abstract

**Introduction:** Computed tomography (CT) plays an important role in diagnosing specific types of internal hernias and their complications. In particular, pericecal hernia of the sigmoid colon has never been reported in the English literature.

**Case presentation:** The first patient was a 46-year-old female presented to our institution due to acute abdominal pain. The second patient was a 55-year-old male presented to our institution with continuous diarrhea. The patient underwent colonoscopy for further evaluation. However, even with sufficient air insufflation and repetitive maneuvers, the colonoscope could not proceed beyond the narrowed level of the sigmoid colon. In both cases, contrast-enhanced abdominal CT was done and a herniated loop of sigmoid colon was noted in the posterolateral aspect of the cecum and ascending colon. Thus, a diagnosis of pericecal herniation of the sigmoid colon was established.

**Conclusion:** This case study indicates that radiologic examination can be helpful in detecting pericecal herniation of the sigmoid colon.

**Abbreviation:** CT = computed tomography.

**Keywords:** computed tomography, pericecal hernia, sigmoid colon

## 1. Introduction

Pericecal or paracecal hernia is a rare type of internal hernia.<sup>[1]</sup> To date, only a few cases of pericecal hernia have been reported,<sup>[2–8]</sup> and the referenced location of herniation in all of these case reports was the small bowel. To the best of our knowledge, there are no published reports in the English literature of pericecal hernia occurring in the sigmoid colon. This case study reports 2 rare cases of pericecal herniation of the sigmoid colon, which was diagnosed with computed tomography (CT).

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All authors declare no conflicts of interest for this article.

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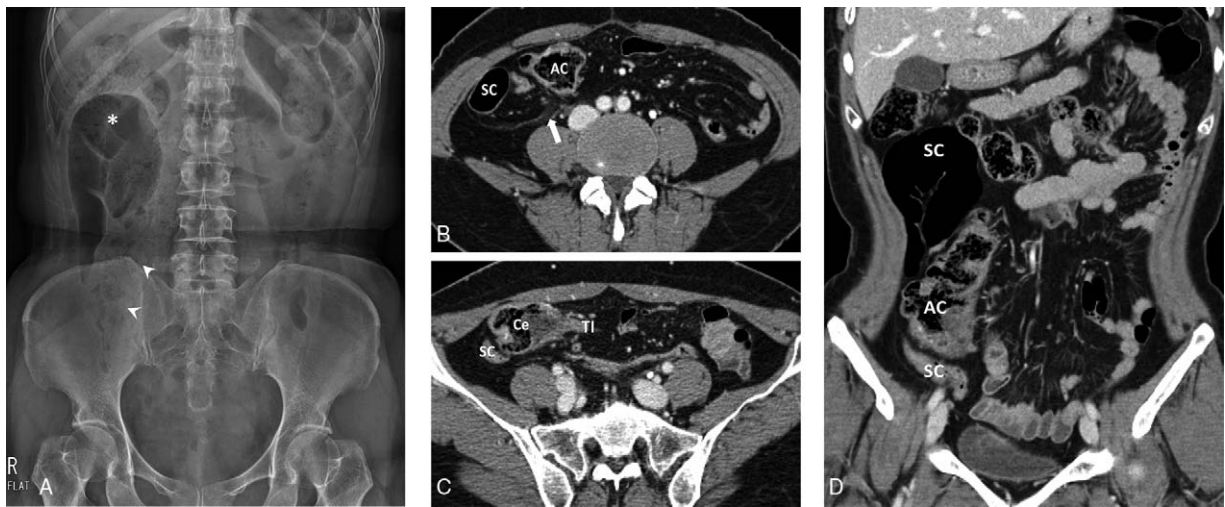
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## 2. Case 1

A 46-year-old female admitted to the emergency department with intermittent right lower quadrant pain, which continued for 7 hours. The patient had no previous medical history. Physical examination of the abdomen revealed tenderness in right lower quadrant of abdomen, but no rebound tenderness was noted. The patient did not complain of any other gastrointestinal symptoms such as nausea, vomiting, or diarrhea. The basic laboratory findings were unremarkable and her vital signs were stable. Supine abdominal radiography revealed an abnormal location of colonic loop, identified by characteristic haustration of colon, in right upper quadrant of abdomen. Accordingly, the ascending colon was displaced medially (Fig. 1A). Contrast-enhanced CT of abdomen was performed and a part of sigmoid colon was demonstrated behind the cecum and ascending colon due to herniation (Fig. 1B–D). The superior rectal vessels were converged at retrocecal area and the attenuation of herniated sigmoid mesocolon was slightly increased, suggesting mesenteric congestion by herniation. However, there were no signs of surgical emergency such as ischemia or infarction. The patient was diagnosed with pericecal herniation of sigmoid colon and was warned of possible complications such as obstruction or strangulation. However, the patient insisted of improved abdominal symptoms and was discharged from the emergency department under consent.

## 3. Case 2

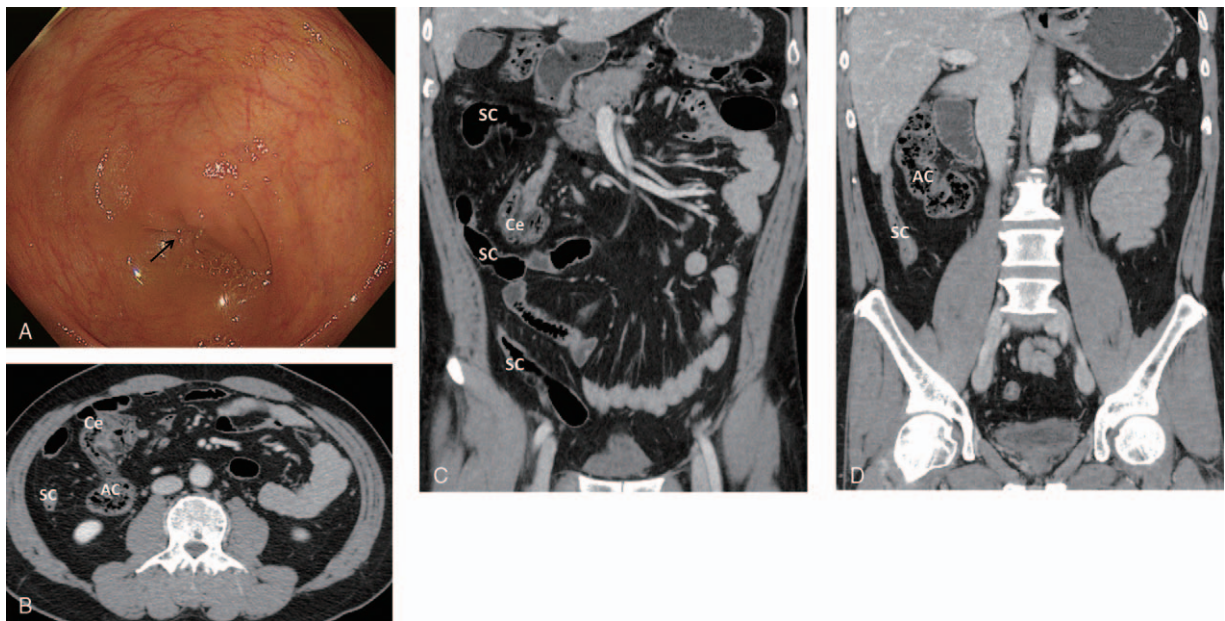
A 55-year-old male patient with a distant history of cerebral infarction visited the hospital with diarrhea that had continued for 3 days. The patient did not have any other gastrointestinal complaints, such as nausea or vomiting. No remarkable findings were noted on physical examination of the abdomen, and basic



**Figure 1.** (A) Supine abdominal radiography shows a loop of colon (asterisk), identified by the colonic haustration, in right upper quadrant of abdomen, medially displacing the ascending colon and cecum (arrowheads). (B, C) On axial and (D) coronal reformatted images of the contrast enhanced abdominal computed tomography, sigmoid colon (SC) is herniated at posterolateral aspect of the cecum (Ce) and ascending colon (AC), with increased density of the sigmoid mesocolon (white arrow) due to congestion.

laboratory results were also unremarkable. The patient underwent gastroduodenoscopy and colonoscopy for further evaluation. On gastroduodenoscopy, mucosal atrophy and thinning were noted on the gastric antrum, and chronic atrophic gastritis was diagnosed. However, on colonoscopy, the colonic lumen was narrowed at the level of the sigmoid colon, with no remarkable mucosal lesion (Fig. 2A). Even with adequate air insufflation and a repetitive, push-forward, and pull-back maneuver, the colonoscope could not advance beyond the sigmoid colon, and the patient complained of severe abdominal discomfort. Thus, the procedure was terminated. There was no other abnormality in the sigmoid colon and rectum in the area evaluated by colonoscopy.

After 1 week, contrast-enhanced abdominal CT was performed, and a herniated section of the sigmoid colon was discovered between the anteromedially displaced ascending colon and the right lateral abdominal wall (Fig. 2B–D). The patient was diagnosed with pericecal herniation of the sigmoid colon that resulted in colonoscopy failure. The patient was referred to the general surgery department for consultation and was informed of possible future complications such as strangulation of the bowel. Even with confirmation of pericecal hernia, the patient did not complain of abdominal discomfort, and the CT images showed no signs of complications related to hernia. Thus, after multidisciplinary discussion, the clinician did not recommend



**Figure 2.** (A) Obstruction of the sigmoid colon due to twisting and narrowing of the colonic lumen (black arrow) was noted on colonoscopy, and the colonoscope could no longer proceed. (B) On axial and (C, D) coronal reformatted images of contrast-enhanced abdominal computed tomography (CT), herniated sigmoid colon (SC) is located at the posterolateral aspect of the cecum (Ce) and ascending colon (AC). No signs of complications such as strangulation or obstruction were noted on CT.

prompt surgery, but that the patient be readmitted should he experience any acute abdominal symptoms. As of this writing, this has not occurred.

#### 4. Discussion

Internal hernia occurs when an abdominal organ protrudes through a normal or abnormal mesenteric or peritoneal aperture. The orifice of an internal hernia can be congenital or acquired. Congenital orifices include preexisting anatomical structures such as the foramen of Winslow, unusual peritoneal fossae, or recesses due to anomalies of intestinal rotation and peritoneal fusion. Acquired orifices can result from defects due to previous trauma, surgery, or inflammation. According to the generally accepted classification of internal hernias by Gore and Ghahremani,<sup>[1]</sup> they can be subcategorized as follows: paraduodenal hernia, hernia through the foramen of Winslow, and transmesenteric, pericecal, intersigmoid, or paravesical hernia. Among these subgroups, pericecal hernia is relatively rare and accounts for 10% to 15% of all internal hernias.<sup>[9]</sup>

On abdominal CT, the characteristic location of herniated bowel loops in a posterolateral aspect to the normal cecum and ascending colon leads to accurate diagnosis of pericecal hernia. Displaced, stretched, or engorged mesenteric vasculatures with congestion might also be found.<sup>[10]</sup> In pericecal hernia, the small bowel is the most commonly herniated bowel segment, with a high incidence of mechanical obstruction and fast progression into strangulation.<sup>[10]</sup> Mechanical obstruction of a pericecal hernia is usually a closed-loop obstruction, where segment of distended and fluid-filled bowel loop, occluded at 2 adjacent points, can be seen.<sup>[11]</sup> Dilated afferent bowel loop and collapsed efferent bowel loop might also be found in the transition zone. Strangulation must be suspected when there are findings of absent or reduced enhancement of the herniated bowel mucosa on abdominal CT.<sup>[12]</sup> In the case of strangulation, mortality rates due to pericecal hernia have been reported to be as high as 75%.<sup>[13]</sup> Thus, close observation is essential, and, in the case of strangulation, prompt surgical intervention is necessary.

To date, only a few cases of pericecal hernias have been reported.<sup>[2-8]</sup> In these previous case reports, the location of herniation was the small bowel, namely the ileum. Patients in all reported cases presented with acute abdominal pain due to obstruction with or without strangulation. Although it might be related to underreporting, there are no known, published cases of sigmoid colon as the site of pericecal hernia. Whereas small bowel herniation may manifest itself in bowel obstruction or strangulation, there was no evidence of such complications in our cases of sigmoid colon herniation.

Considering anatomical locations, the most common site for sigmoid colon herniation is through peritoneal defects in the left inguinal region.<sup>[14]</sup> There have been a few case reports of inguinal herniation of the sigmoid colon<sup>[14-18]</sup>; in one such case, it led to colonoscopic failure.<sup>[18]</sup> The sigmoid colon is naturally a difficult loop to navigate due to its redundancy.<sup>[19]</sup> Not to mention, unexpected herniation of the sigmoid colon can lead to failure to advance the endoscope and even complications such as entrapment of the endoscope, bleeding, or perforation. In our first case, the endoscopist was not able to reach the descending colon, as it was impossible to access through the twisted and narrowed colonic lumen. Thus, if there are abdominal CT and/or abdominal radiographic images to refer to, it is beneficial to look

for unusual locations of the colonic loops or associated complications before performing colonoscopy.

To conclude, this is the first report of 2 rare cases of pericecal herniation of the sigmoid colon. As CT is frequently performed in patients with abdominal pain, we should be aware of this rare entity, which characteristic features on CT are sufficient to permit an accurate diagnosis.

#### Author contributions

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**Writing – original draft:** Ji Eun Lee, Seo-Youn Choi.

**Writing – review & editing:** Ji Eun Lee, Seo-Youn Choi.

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