Successful Retrocecal Hernia Diagnosis and Treatment: A Case Report

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Introduction: A retrocecal hernia is a rare type of internal hernia that occasionally causes small bowel obstruction and strangulation ileus. We report a case of retrocecal hernia that was preoperatively diagnosed using multidetector raw computed tomography and successfully treated by emergency surgery.

Case Presentation: A 97-year-old woman presented at another hospital with abdominal distension and nausea. She was diagnosed with ileus and was conservatively treated with long intestinal tube placement. However, the symptoms had not improved after 7 days in the hospital. The patient was then referred to our hospital, where a pericecal hernia was diagnosed using multidetector raw computed tomography. We performed emergency surgery and intraoperatively confirmed the presence of a retrocecal hernia. A 30-cm nonviable section of small intestine was resected, and the hernia orifice was closed routinely. Postoperative recovery was uneventful.

Conclusions: Patients with pericecal hernia usually require surgical treatment. Multi-detector raw computed tomography is useful for precise diagnosis of this type of hernia. Precise diagnosis is necessary to select prompt operative intervention for internal hernia.

Key words: Retrocecal hernia – Pericecal hernia – Internal hernia – Elderly patient
Internal hernia is an infrequent cause of small bowel obstruction and strangulation ileus; however, the overall mortality rate exceeds 50% if left untreated.1 An exceptionally rare type of internal hernia is retrocecal hernia, a type of pericecal hernia. Retrocecal hernia is frequently treated via emergency surgery after conservative therapy.2 To our knowledge, only 21 cases of pericecal hernia, including our case, have been reported since 2000. We present a successful case of pericecal hernia in a very elderly female patient that was preoperatively diagnosed before being treated via emergency surgery.

Case Presentation

A 97-year-old woman presented at another hospital with vomiting and abdominal distension. She had no history of surgical treatment, allergic disease, or any tobacco or alcohol use. The patient was admitted and treated conservatively with a long intestinal tube for 1 week; however, her symptoms did not improve, and she was subsequently referred to our hospital.

On physical examination, the patient had a low-grade fever of 37.5°C, blood pressure of 132/65 mmHg, and pulse rate of 100 bpm. Abdominal examination revealed no signs of abdominal trauma, surgical scars, or a palpable mass; however, there was slight distension and tenderness in the lower abdomen. Laboratory investigations showed an elevation of the white blood cell count (12,500 cells/μL) and C-reactive protein (25.33 mg/mL). A multidetector raw computed tomography (MDCT) scan revealed dilated small intestinal loops located at the lateral and dorsal portions of the cecum and ventromedial displacement of the cecum (Fig. 1). Based on these findings, we diagnosed pericecal hernia. A MDCT scan did not suggest small bowel ischemia, ascites, or peritonitis. However, the patient was very elderly, and her symptoms had not resolved after conservative therapy for 1 week. Hence, we decided to perform emergency surgery to explore the cause of the internal hernia and resolve the ileus.

Intraoperatively, we discovered that a segment of the ileum located 80 cm proximal from the end of the ileum was entrapped in the retrocecal fossa (Fig. 2). Retrocecal hernia was definitively confirmed. The trapped ileum was manually reducible; however, the reduced intestine was partially nonviable. Therefore, we resected approximately 30 cm of

Fig. 1 MRCT axial (a) and coronal (b) images. A collapsed efferent small intestine (S1) and a dilated afferent small bowel loop (S2) can be seen in the transition zone (*). The cecum (C) is displaced ventromedially by fluid-filled dilated and edematous small bowel loops (S2).
small intestine and performed intestinal anastomosis. The hernia orifice was closed with absorbable sutures. The postoperative course was uneventful, and the patient was discharged on postoperative day 11.

Discussion

An internal hernia is defined as protrusion of the abdominal viscera into the fossae, foraminae, recesses, or congenital defects within the abdominal or pelvic cavity.1 Internal abdominal hernia can be classified into 6 groups: paraduodenal hernia (55% of all internal hernia cases), hernia through the foramen of Winslow (6%–10%), pericecal hernia (13%), intersigmoid hernia (4%–8%), paravesical hernia (<4%), and transmesenteric and retroanastomotic hernia (6%–10%). An intestinal obstruction caused by an internal hernia is rare, with a reported incidence rate of 0.2% to 5.8% of all cases of intestinal obstruction.1,2 Furthermore, pericecal hernias comprise only 0.1% to 6.6% of all cases of intestinal obstruction.3,4

Several studies have reported that the pericecal fossa can be formed by disruption of internal rotation during embryonic development, age-related tissue fragility, elevation of intra-abdominal pressure, and retroperitoneal adhesion after abdominal surgery.2,3 Mayer et al2 described 6 types of peritoneal recess and classified these into 4 subtypes: (1) internal peritoneal recess including retrocecal recess; (2) retrocecal peritoneal recess including retrocecal recess; (3) lateral peritoneal recess including paracolic sulci; and (4) unclassifiable peritoneal recess including cecal recess.

We searched PubMed and MEDLINE for reports published since 2000 using the following keywords: retrocecal hernia, paracecal hernia, pericecal hernia, paracolic hernia, ileocolic hernia, or ileocecal hernia. All abstracts and relevant articles were carefully reviewed. We found only 21 cases of pericecal hernia in the literature, including our case (Table 1).5–23 The mean patient age was 69 ± 17 years, and our case involved the oldest reported patient. The male:female ratio was 3:4. Sixteen cases had no history of abdominal surgery, and only 3 cases had undergone appendectomy, suggesting that appendectomy was a low risk factor for pericecal hernia. With respect to the pericecal hernia type, there were 8 cases (38%) of the lateral type, 9 cases (43%) of the retrocecal type, and 4 cases (19%) of the internal type. These findings are consistent with previous reports.2,4

The hernia orifice was closed intraoperatively in 11 cases and left open in 7 cases. There were no reports of serious complication or recurrence in either group. A recent study reported a trend to either leave the hernia orifice open or dilated, because this is easier to achieve during laparoscopic surgery.6,24 Laparoscopic surgery is a feasible alternative to laparotomy for acute small bowel obstruction if surgeons are experienced and the dilated bowel is preoperatively decompressed using
a long intestinal tube. In our case, we decided to conduct emergency laparotomy, because preoperative decompression had been unsuccessful.

Previously, internal hernias were difficult to diagnose preoperatively. Successful diagnosis by MDCT occurred in only 6 of 21 cases, including our case. Recent reports suggest that MDCT is an indispensable imaging modality for preoperative diagnosis of internal abdominal hernias.1,10,14,19,22 In particular, the appearance of pericecal hernia on MDCT is very characteristic. In internal or lateral pericecal hernia, the ascending colon is displaced laterally or medially. In the retrocecal type, the cecum and ascending colon are stretched and collapsed ventromedially by the dilated small intestine,1 as seen in our case.

Internal hernias have the potential for rapid progression, resulting in strangulation. If reduction is not achieved, the mortality rate can be as high as 75%.1,11 Furthermore, 1 study reported that continuous therapy without surgery inevitably increased the likelihood of unfavorable outcome.4 Patients diagnosed with pericecal hernia require emergency surgery. Therefore, it is essential for surgeons to definitively diagnose internal hernia, especially pericecal hernia, as soon as possible.

Conclusions

MDCT is indispensable for the diagnosis of pericecal hernia. Making a prompt diagnosis and initiating definitive surgical management is mandatory to avoid severe complications. Surgeons have to precisely diagnose the type of pericecal hernia and rapidly select the most appropriate operation for favorable outcome.

Acknowledgments

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal. MS made substantial contributions to the conception and design of the case report. YK was involved in drafting of the manuscript and revised it critically for important intellec-

### Table 1  Summary of the 21 reported cases of pericecal hernia since 2000

| Year    | Authors           | Age (yr) | Sex | Preoperative diagnosis | History of abdominal surgery | Type of pericecal hernia | Operation: laparotomy or laparoscopy | Resection of the small bowel | Treatment of the hernia orifice |
|---------|-------------------|----------|-----|------------------------|------------------------------|-------------------------|---------------------------------------|-------------------------------|-------------------------------|
| 2000    | Patterson et al   | 59       | M   | Ileus                  | None                         | Internal type            | Laparotomy                           | None                          | NA                            |
| 2002    | Lu et al          | 69       | M   | Pericecal hernia       | None                         | Internal type            | Laparotomy                           | None                          | NA                            |
| 2002    | Lu et al          | 67       | F   | Pericecal hernia       | Appendectomy                 | Lateral type             | Laparotomy                           | None                          | NA                            |
| 2003    | Omori et al       | 90       | F   | SBO                    | None                         | Retrocecal type          | Laparoscopy                          | None                          | Closure                       |
| 2005    | Osadchy et al     | 76       | M   | SBO                    | None                         | Retrocecal type          | Laparoscopy                          | None                          | Closure                       |
| 2006    | Fu et al          | 34       | M   | Inferior ileocecal hernia | None                         | Internal type            | Laparotomy                           | None                          | Closure                       |
| 2007    | Hirokawa et al    | 74       | M   | SBO                    | Appendectomy                 | Retrocecal type          | Laparoscopy                          | None                          | Closure                       |
| 2007    | Molto Aguado et al| 59       | F   | Internal hernia        | None                         | Lateral type             | Laparotomy                           | Resection                      | Closure                       |
| 2010    | Kabashima et al   | 43       | F   | SBO                    | Invagination                 | Retrocecal type          | Laparoscopy                          | None                          | Open                          |
| 2010    | Shibuya et al     | 63       | M   | Strangulated hernia    | None                         | Retrocecal type          | Laparoscopy                          | None                          | Closure                       |
| 2010    | Choh et al        | 84       | F   | Pericecal hernia       | None                         | Lateral type             | Laparotomy                           | Resection                      | Closure                       |
| 2011    | Jang et al        | 84       | F   | SBO                    | None                         | Internal type             | Laparotomy                           | None                          | Open                          |
| 2011    | Nishi et al       | 70       | F   | Internal hernia        | None                         | Internal type             | Laparotomy                           | None                          | Open                          |
| 2013    | Kelyman et al     | 34       | M   | SBO                    | None                         | Internal type             | Laparotomy                           | None                          | Open                          |
| 2013    | Yeung et al       | 70       | F   | Pericecal hernia       | Appendectomy                 | Lateral type             | Laparotomy                           | None                          | Open                          |
| 2013    | Dhillon et al     | 72       | F   | Ileus                  | None                         | Lateral type             | Laparotomy                           | None                          | Open                          |
| 2015    | Kumar et al       | 88       | F   | SBO                    | None                         | Internal type             | Laparotomy                           | Resection                      | Closure                       |
| 2016    | Sasaki et al      | 65       | M   | Internal hernia        | None                         | Retrocecal type          | Laparoscopy                          | None                          | Open                          |
| 2016    | Ogami et al       | 92       | M   | SBO                    | Cholecystectomy              | Retrocecal type          | Laparoscopy                          | None                          | Open                          |
| 2016    | Bendjaballah et al| 57       | F   | SBO                    | None                         | Retrocecal type          | Laparoscopy                          | None                          | Open                          |
| 2016    | Our case          | 97       | F   | Pericecal hernia       | None                         | Retrocecal type          | Laparoscopy                          | None                          | Open                          |

F, female; M, male; NA, not available; SBO: small bowel obstruction.
tual content. MT, TT, and SS contributed to surgery in this case.

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