

## Internal Hernia through a Peritoneal Defect of the Pouch of Douglas: A Case Report

더글라스와 내의 복막 결손을 통한 내탈장: 증례 보고

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We report a case of surgically confirmed internal hernia through a peritoneal defect of the pouch of Douglas in a 25-year-old woman. This type of internal hernia is extremely rare, and to the best of our knowledge, only two cases have been reported in the English literature. Computed tomography (CT) showed a cluster of dilated small bowel loops on the posterior portion of the uterus and right side of the rectum, with a closely located proximal and distal transitional zone. We present the CT findings of this case and a literature review about the differential diagnosis of this condition.

### Index terms

Internal Hernia

Pelvic Hernia

Pouch of Douglas

Peritoneal Defect

## INTRODUCTION

An internal hernia is a rare cause of small bowel obstruction, ranging from 0.5% to 4.1% of all hernia cases (1). This condition is rarely diagnosed preoperatively because of the nonspecific signs and symptoms. An internal hernia may be congenital or acquired as well as persistent or intermittent. More than 50% of internal hernias reported in the literature are paraduodenal (left and right), while the other types are quite rare (1, 2).

Pelvic internal hernias include hernias through the broad ligament, perirectal fossa, and pouch of Douglas (1). An internal hernia through a peritoneal defect of the pouch of Douglas is extremely rare, with only two cases reported in the English literature to date (3, 4).

We report a case of small bowel obstruction due to an internal hernia through a peritoneal defect of the pouch of Douglas in a 25-year-old woman with computed tomography (CT) find-

ings, which correlated with the intraoperative findings and review of previous reports.

## CASE REPORT

A 25-year-old woman was admitted to our emergency department for intermittent abdominal pain for the two previous days, and was accompanied by vomiting. She had no history of prior abdominal or pelvic surgery.

Upon physical examination, the abdomen was distended, but without tenderness or palpable masses. The laboratory data were within normal limits.

Plain abdominal radiographs showed several dilated small bowel loops with air-fluid levels in the supine position and the upright position, suggestive of small bowel obstruction.

Coronal reformatted contrast-enhanced CT showed overall dilated, fluid-filled loops of small bowel (Fig. 1A). Axial CT scans

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in the pelvis demonstrated a cluster of dilated small bowel loops on the posterior portion of the uterus and right side of the rectum. A closely located proximal and distal transitional zone was found on CT scan and these findings were suggestive of a closed loop obstruction (Fig. 1B, C).

An exploratory laparotomy was performed 6 hours after CT. Operative findings revealed a short segment of ileum, located about 30 cm from the ileocecal valve, which were herniated through a defect in the pouch of Douglas. Herniated bowel loops were reduced manually and there was no evidence of small bowel infarction or perforation. The peritoneal defect measured 4.0 cm in diameter (Fig. 1D) and was repaired surgically.

## DISCUSSION

An internal hernia is a protrusion of the viscera through the peritoneum or mesentery and is a rare cause of small bowel obstruction. This rarity and nonspecific presentation make the preoperative diagnosis of an internal hernia very difficult. The hernia orifice may be preexisting anatomic structures, such as the foramina, recesses, and fossae. Acquired defects of the mesentery and visceral peritoneum are also potential hernia orific-

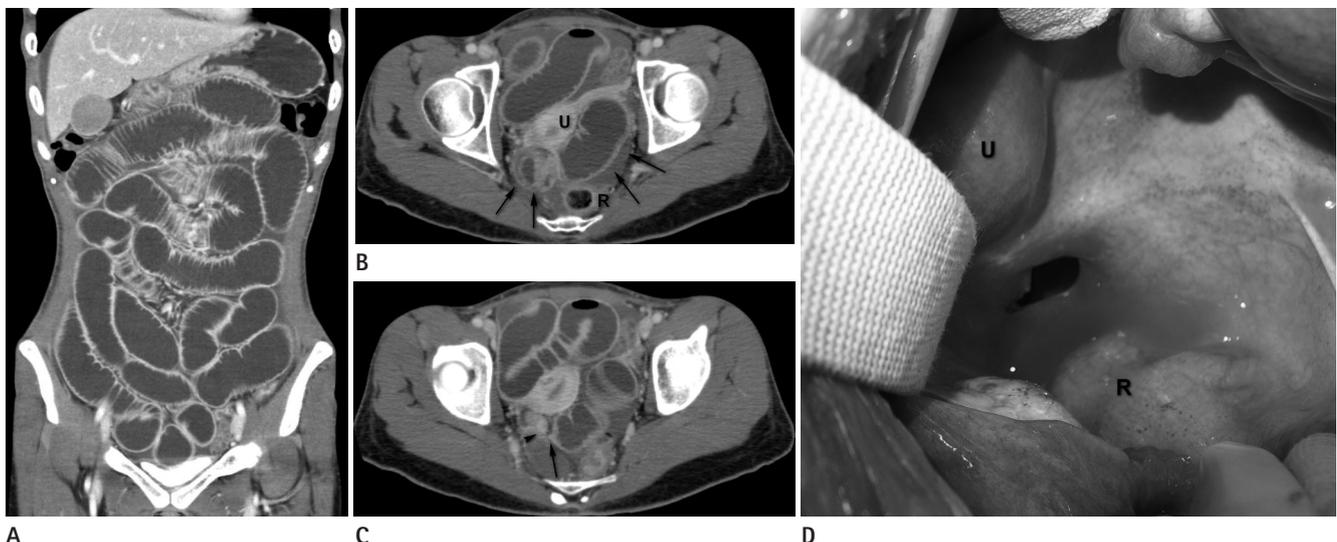
es that are secondary to congenital mechanism, surgery, trauma, or inflammatory processes (1, 2).

Various types of internal hernias have been reported and classified based on the location of the potential defect. The most common internal hernias are paraduodenal (left and right) types accounting for over 50% of the reported cases. The other types of internal hernia that have been described include, transmesenteric, foramen of Winslow, transomental, pericecal, intersigmoid and supra- and/or perivesical and pelvic hernias (1, 2, 5).

Strangulating of small bowel obstruction is the most common manifestation of internal hernias, therefore, early detection and surgical intervention is crucial for reducing the morbidity and mortality rates.

CT plays an important role in the diagnosis and differentiation of various types of internal hernias. CT findings common to all types of internal hernias include evidence of small-bowel obstruction, which commonly shows closed-loop obstruction, a sac-like mass or clustering of small-bowel loops. In addition, mesenteric vessels were stretched, displaced, or engorged and other bowel segments were displaced, especially the colon and duodenum (1, 2, 5-7).

A pelvic internal hernia is quite rare, representing 6% of all



**Fig. 1.** Internal hernia through a peritoneal defect of the pouch of Douglas in a 25-year-old woman.

- A.** Contrast-enhanced coronal reformatted CT image demonstrates a most small-bowel loops are dilated and filled with fluid.
- B.** Contrast-enhanced axial CT image shows a cluster of dilated small bowel loops (arrows) between the uterus (U) and rectum (R), and a fluid collection in the pelvic cavity. Note the edematous wall thickening of the small bowel loops (arrows), located to the right side of the rectum and behind the uterine cervix.
- C.** Contrast-enhanced axial CT image shows a closely located proximal (arrow) and distal (arrowhead) transition zone of the herniated ileum suggestive of a closed loop obstruction.
- D.** Intraoperative photograph clearly shows the peritoneal defect of the pouch of Douglas, which was 4 cm in diameter, between the uterus (U) and rectum (R).

internal hernias. It includes hernias through the broad ligament, the pouch of Douglas, and perirectal fossa. Among them, broad ligament hernias appear to be most frequently reported, accounting for 4-5% of all internal hernias (1, 8).

The pouch of Douglas is a peritoneal reflection between the uterus and the rectum and its depth varies among individuals. We have found just two case reports of an internal hernia through the peritoneal defect of the pouch of Douglas in the English literature. Fiirgaard and Agertoft (3) described surgical findings in which a segment of the small bowel was herniated and incarcerated through a defect of the pouch of Douglas in a 17-year-old girl. The cause of the peritoneal defect of the pouch of Douglas was believed to be congenital. Another similar case was reported by Inoue et al. (4), where they described CT findings in which a cluster of collapsed small bowel loops was found between the uterine cervix and rectum, and in this case a peritoneal defect in the pouch of Douglas might have been associated with a previous hysterectomy.

Distinguishing a hernia through a peritoneal defect of the pouch of Douglas from other similar pelvic internal hernias, including through the perirectal fossa and the broad ligament, is difficult, because of similar CT findings, wherein herniated loops of small bowel were observed behind the uterine cervix (9).

In the reports of hernia through the perirectal fossa (1, 9), herniated loops were located on the lateral side of the rectum, which were similar to CT findings in our case, but different from the case by Inoue et al. (4).

However, for hernias through the broad ligament, several authors mentioned the displacement of the uterus or broad ligament and a cluster of dilated small bowel loops located lateral to the uterus on CT, which were not observed in our case or the previous reports (1, 7, 8, 10).

Therefore, there are some clues in the CT findings for making an accurate diagnosis of hernias through the defect of the pouch of Douglas from other pelvic internal hernias, although the CT findings resemble hernias through the perirectal fossa.

In conclusion, hernias through a peritoneal defect of the pouch of Douglas are extremely rare, however should be considered in the differential diagnosis of pelvic internal hernia.

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## 더글라스와 내의 복막 결손을 통한 내탈장: 증례 보고

이광진 · 김용훈 · 황윤준 · 김수영 · 이병훈 · 이지영 · 김유성

저자들은 수술적으로 확인된 25세 여자에서 발생한 더글라스와 내의 복막 결손을 통한 내탈장 증례를 보고한다. 이런 형태의 내탈장은 매우 드물게 보고가 되어 있으며 저자들의 지식으로는 지금까지 2예만이 보고되었다. CT에서 늘어난 소장은 자궁의 뒤쪽 그리고 직장의 오른쪽에 모여 있었고 근위부와 원위부 이행대는 서로 가깝게 위치하였다. 이에 저자들은 이번 증례의 CT 소견과 함께 감별진단에 대하여 문헌고찰과 함께 보고하는 바이다.

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