

CASE REPORT

## 대장내시경으로 확인된 횡격막탈장 증례

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### An Unexpected Adverse Event during Colonoscopy Screening: Bochdalek Hernia

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Bochdalek hernia (BH) is defined as herniated abdominal contents appearing throughout the posterolateral segment of the diaphragm. It is usually observed during the prenatal or newborn period. Here, we report a case of an adult patient with herniated omentum and colon due to BH that was discovered during a colonoscopy. A 41-year-old woman was referred to our hospital with severe left chest and abdominal pain that began during a colonoscopy. Her chest radiography showed colonic shadow filling in the lower half of the left thoracic cavity. A computed tomography scan revealed an approximately 6-cm-sized left posterolateral diaphragmatic defect and a herniated omentum in the colon. The patient underwent thoracoscopic surgery, during which, the diaphragmatic defect was closed and herniated omentum was repaired. The patient was discharged without further complications. To the best of our knowledge, this case is the first report of BH in an adult found during a routine colonoscopy screening. (**Korean J Gastroenterol 2018;71:290-293**)

**Key Words:** Hernia, diaphragmatic; Colonoscopy; Screening

## INTRODUCTION

Bochdalek hernia (BH) is defined as herniated abdominal contents present through the posterolateral segment of the diaphragm. It is caused by a failure of diaphragmatic closure and is usually presented during the prenatal or newborn period. Mullins et al.<sup>1</sup> reported an incidence of 0.17%, and 68% of them were defects on the right side. It is rare for hernias to go unnoticed until adulthood with vague symptoms. Typical symptoms, such as discomfort or pain, can occur

with increased intra-abdominal pressure.<sup>2</sup> Early diagnosis is crucial as herniated bowel can become strangulated. Computed tomography (CT) is primarily used to detect BH. Once detected, hernia repair is necessary, regardless of symptoms. Here, we report our experience of managing an adult patient with herniated omentum and affected colon due to BH that was unexpectedly discovered during a routine colonoscopy screening.

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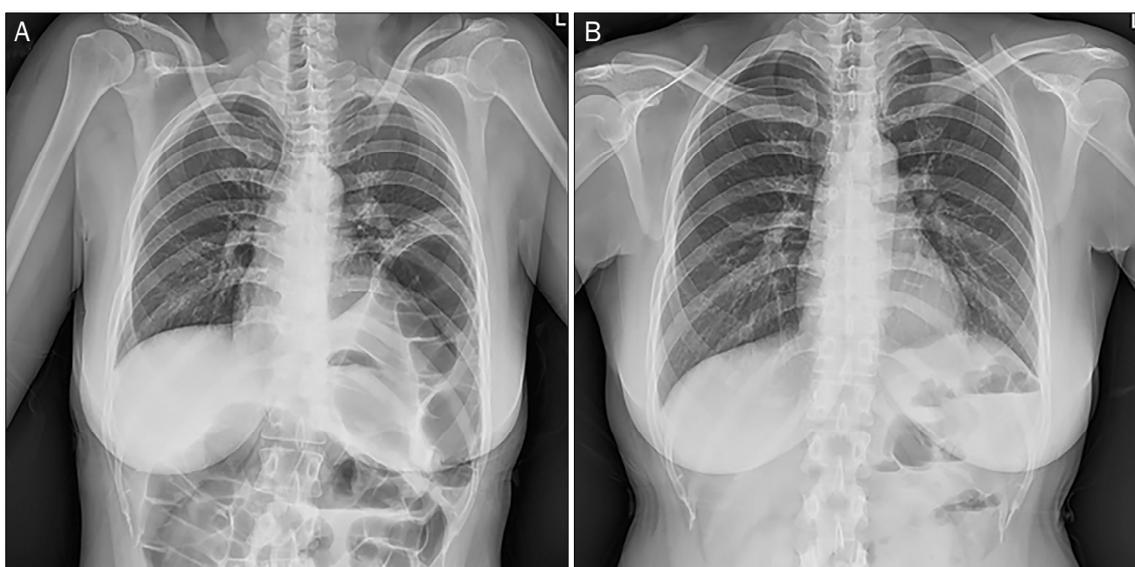
## CASE REPORT

A 41-year-old woman visited a local health care clinic for her medical appointment, including her first colonoscopy screening. The patient reported no trauma or surgical history and did not have any existing chest symptoms or other medical conditions. There were no significant findings during her physical examination. During the colonoscopy, the endoscopist could not insert the scope beyond the splenic flexure due to a twisted lumen and severe resistance during the in-

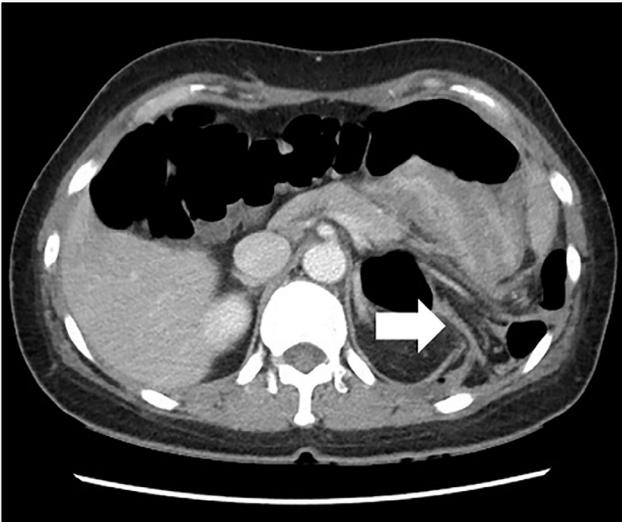


**Fig. 1.** Colonoscopic view showing a narrowed and twisted lumen at the splenic flexure.

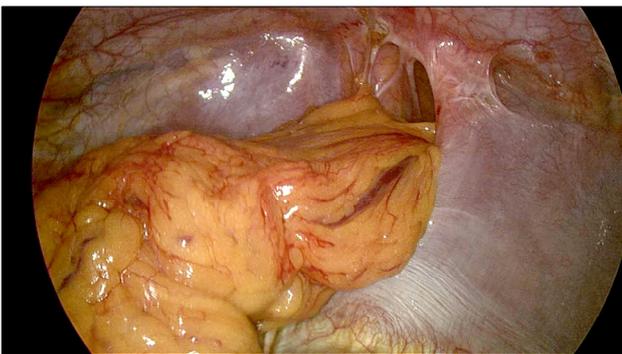
sertion process (Fig. 1); the endoscopist decided to stop the examination due to severe left chest and abdominal pain. The patient subsequently underwent an X-ray to rule out serious adverse events, such as a bowel perforation. Surprisingly, the chest X-ray showed colonic air shadow filling the lower half of the left thoracic cavity, despite normal pre-colonoscopy chest X-ray (Fig. 2). After referral to our hospital for management, the patient reported persistent pain persisted on the left side of the chest and abdomen; but reported slight improvement. The patient reported a moderate degree of tenderness without rebound tenderness in the upper abdomen. The patient demonstrated shallow breathing in the left lower lung. Laboratory results based on complete blood count, chemistry, and arterial blood gas analysis were all within normal range. A CT scan revealed a 6-cm-sized left posterolateral diaphragmatic defect and herniated omentum in the colon. Atelectasis was also detected in the left basal portion of the lung (Fig. 3). Because there were no signs indicating strangulation, elective thoracoscopic surgery was performed. During surgery, the diaphragmatic defect in the left posterolateral region and the herniated omentum were noted, indicating BH (Fig. 4). These findings were crucial in the diagnosis of diaphragmatic hernia, which was the result of chronic processing, not induced during colonoscopy. Following cautious reduction surgery of the omentum and colon, the defect was completely closed with suturing. After successful surgery and confirmation of normal chest radiography,



**Fig. 2.** (A) Chest radiography after colonoscopy showing colonic air shadow protruding into the left thoracic cavity. (B) Chest radiography before colonoscopy with normal results.



**Fig. 3.** Computed tomography scan showing a 6-cm-sized left posterolateral diaphragmatic defect and herniated omentum in the colon (arrow).



**Fig. 4.** Thoracoscopic view of the diaphragm. A diaphragmatic defect with herniated omentum in the colon in the thoracic cavity is observed.

the patient was discharged. At 3-month follow-up at our out-patient clinic, the patient did not report any symptoms in the chest and abdomen regions.

## DISCUSSION

BH is considered to be a neonatal disease because the majority of cases are recognized during the prenatal or newborn period. Therefore, incidence of symptomatic BH during adulthood is very low. The presence of a protruding colon and omentum due to BH is rare and is usually observed in left-sided hernias, as was the case in our experience.<sup>3</sup> Moreover, symptomatic BH in adults can predominate on the left side, whereas asymptomatic cases can occur incidentally on the

right side due to the right portion of the diaphragm being compressed by the liver. Adult cases often present symptoms of pain (66%) and obstruction (38%).<sup>4</sup> However, some patients complain of vague symptoms, including nausea and dyspepsia. A precipitating factor related to the onset of symptoms is found in 25% of cases. Patients who report increasing intra-abdominal pressure, such as constipation, pregnancy, vigorous physical activity, and severe coughing can also present with similar symptoms of Bochdalek hernia.<sup>4</sup> Our patient denied having any previous history of colonoscopy and other symptoms. Therefore, we can conclude that this case is asymptomatic congenital Bochdalek hernia detected during colonoscopy.

Radiologic evaluations should be performed in cases of suspected BH. Chest radiographs can detect BH as they reveal herniated bowel loops with air-fluid buildup and an elevation of the affected diaphragm. However, as in our case, a normal chest radiography does not rule out the presence of BH. A CT scan may offer greater accuracy and should be considered as the standard method of detecting BH.<sup>5</sup> By using coronal and horizontal views, CT scans can reveal diaphragm defects with great accuracy. The typical findings on a CT scan are herniated fat and the presence of bowel that extends into the thoracic cavity. In our case, left posterolateral diaphragmatic defect, protruded fat, and extended bowel were shown on CT scan. Magnetic resonance imaging is an alternative method for diagnosing BH and offers the benefit of multi-directional imaging.<sup>6</sup> Ultrasound has also been reported as a useful initial screening method in the diagnosis of BH. Representative findings include diaphragmatic defect, accordion-like spleen, and not capturing the spleen and kidney simultaneously.<sup>7</sup>

Some studies suggest that surgical intervention to repair hernias should be undertaken regardless of symptoms to prevent complications such as strangulation and incarceration.<sup>8,9</sup> In emergent cases, laparotomy is the most common method of hernia repair. In cases reporting large defects, primary closure may not be possible, and those cases may result in repair with mesh.<sup>10</sup> In more recent cases, treatment of BH has been reported using minimally invasive techniques, such as thoracoscopy and laparoscopy, especially in elective settings.<sup>11</sup> According to recent studies, these newer techniques may replace the traditional open methods as a treatment of choice, due to its merits, including less postoperative pain, minimal

surgical wounding, rapid recovery, and faster discharge times.<sup>12,13</sup> To date, only one case of complicated Morgagni hernia from colonoscopy has been reported.<sup>14</sup> Therefore, to our knowledge, this case is the first report of BH in an adult that was found as a result of routine colonoscopy screening.

If clinicians experience a case where endoscopy does not extend into the splenic flexure due to resistance during the insertion process, paired with complaints of severe chest and abdominal pain, then a high index of suspicion is needed to find BH. Once BH is confirmed, it should be managed surgically, regardless of symptoms, to prevent future complications.

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