

## A Rare Cause of Strangulated Ileus in an Adult: Right-sided Bochdalek Hernia

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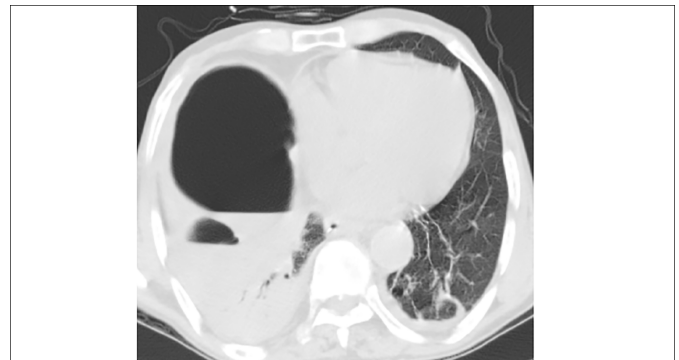
Bochdalek hernia is one type of congenital diaphragmatic hernia caused by embryonic developmental failure of the diaphragm.<sup>1</sup> Bochdalek hernia is normally diagnosed in neonatal and postnatal periods and is distinctly rare in adults.<sup>2</sup> Most of the Bochdalek hernias occur on the left side.<sup>3</sup> Right-sided Bochdalek hernias are more rare owing to the early closure of the right pleuroperitoneal canal and the buttressing effect of the liver.

Abdominal pain, vomiting, chest pain, and respiratory distress are the most common presentations of Bochdalek hernias in adults. Less common presentations include intestinal incarceration, ileus, and perforation. Computerized tomography (CT) scan is the most useful examination for making the diagnosis of Bochdalek hernias. Other diagnostic modalities include upper gastrointestinal contrast series and magnetic resonance imaging. Because of possible strangulation of the hernia contents, surgery is always indicated to reduce the hernia contents and repair the defect of the diaphragm. The mortality rate for emergency surgical treatment of Bochdalek hernias is 32%, whereas, it is <4% for elective surgery.<sup>4,5</sup> Surgical approaches include laparotomy, thoracotomy, laparoscopy, and thoracoscopy.

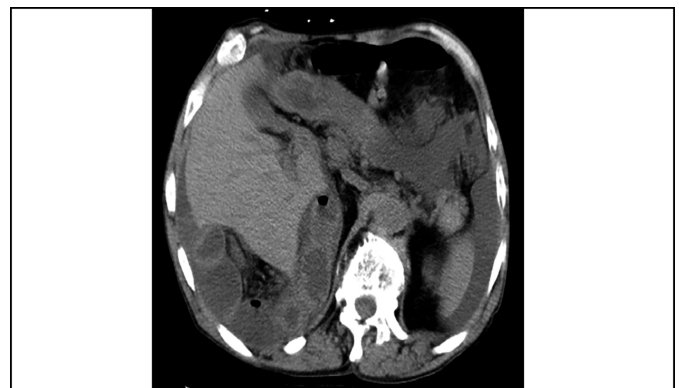
A 67-year male patient presented with complaints of abdominal pain and vomiting. He had undergone peritoneal dialysis for 1 year because of chronic renal failure due to urinary calculi. There was no history of previous trauma or surgical operations other than catheterisation for peritoneal dialysis. His body temperature was 38.2°C, heart rate, 102/min, respiratory rate, 19/min, and blood pressure, 100/62 mmHg. Physical examination findings were decreased breath sounds on the right side of the chest and abdominal tenderness in the epigastric and right upper quadrant area. Laboratory analysis showed elevated leukocytes ( $13.9 \times 10^9/L$ ) and C-reactive protein (132.4 mg/L). Chest CT scan showed air-fluid levels in the right thorax with right lung compression (Figure 1). Abdominal CT scan revealed herniation of small intestine into the right thorax through the posterolateral portion of the right diaphragm (Figure 2).

Emergency laparotomy was performed under a diagnosis of strangulated ileus due to Bochdalek hernia. The herniated small intestine was moved back to the abdominal cavity with traction, and ischemic changes were found. Resection of 10 cm of small intestine followed by jejunostomy was performed. A 3×4 cm diaphragmatic defect at the right posterolateral portion was closed with interrupted sutures. Unfortunately, the patient's

general condition gradually aggravated due to septic shock after surgery. Despite aggressive therapy in the intensive care unit, the patient died of multiple organ failure one month after the operation.



**Figure 1:** Chest computerised tomography scan showing air-fluid levels in the right thorax with right lung compression.



**Figure 2:** Abdominal computerised tomography scan demonstrating herniation of small intestine into the right thorax through the posterolateral portion of the right diaphragm.

The purpose of reporting this case is to raise awareness of Bochdalek hernias in adults. Although rare in adults, they may present with fatal complications from strangulation of the contents. Early diagnosis and timely management of the disease are paramount to preventing unfavourable outcomes. We suggest that Bochdalek hernia should be considered in the differential diagnosis for adult patients who have gastrointestinal or respiratory symptoms.

### COMPETING INTEREST:

The authors declared no competing interest.

### AUTHORS' CONTRIBUTION:

MC, YL: Surgery, paper writing.

FC: Literature review, manuscript revision.

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