A 66-Year-Old Man with Postoperative Ogilvie’s Syndrome, One Day after Diaphragmatic Plication Surgery

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Patient: Male, 66-year-old
Final Diagnosis: Acute colonic pseudo-obstruction (Ogilvie’s syndrome)
Symptoms: Abdominal distension • abdominal tenderness • hemodynamic instability • leukocytosis
Clinical Procedure: Colonic decompression • diaphragmatic plication • endoscopy • laparotomy
Specialty: Surgery

Objective: Unusual clinical course

Background: Mechanical and functional intestinal obstruction are serious postoperative complications. Acute colonic pseudo-obstruction (Ogilvie’s syndrome) is an acute functional obstruction of the large intestine with various causes, including electrolyte disturbances, certain drugs, trauma, hypothyroidism, and, less often, certain procedures, such as abdominal, pelvic, orthopedic, cardiac, and, rarely, thoracic surgeries. It presents with abdominal distension without evidence of mechanical obstruction. This report is of a 66-year-old man with postoperative Ogilvie’s syndrome 1 day after diaphragmatic plication surgery.

Case Report: We present a case of a 66-year-old man with no pre-existing chronic diseases who underwent diaphragmatic plication surgery performed to treat symptomatic diaphragmatic eventration, which was associated with chronic colonic dilation. One day after the procedure, the patient experienced hemodynamic instability, abdominal tenderness and distention, leukocytosis, and elevated erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP). An abdominal CT scan revealed massive colonic dilation with interposition of the splenic flexure into the diaphragm. Consequently, the patient underwent emergency exploratory laparoscopy, which was later converted to upper laparotomy, during which colonic decompression was performed without identifying any evidence of incarceration. Subsequently, colonic decompression was repeated via sigmoidoscopy, and no mechanical obstruction was found. Lastly, medical treatment was effective in improving the patient’s condition.

Conclusions: In this complicated case, identifying the definite diagnosis was challenging due to the unusual presentation. This rare case might contribute to recognizing a new risk factor for postoperative colonic obstruction, which is preoperative colonic dilation. Also, this case has highlighted the importance of promptly diagnosing postoperative Ogilvie’s syndrome to prevent large-bowel perforation.

Keywords: Colonic Pseudo-Obstruction • Diaphragmatic Eventration • Intestinal Obstruction • Thoracotomy

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Background

Diaphragmatic eventration (DE) is a condition characterized by permanent elevation of the diaphragm with preservation of its anatomical attachments to the costal margin. It is typically asymptomatic and often does not require treatment. In patients with symptoms, such as cough and dyspnea, diaphragmatic plication is the surgical intervention of choice. DE can be congenital, acquired, or, in some cases, idiopathic, and is further categorized into complete or partial [1,2].

Diaphragmatic plication is done by repositioning the muscle of the diaphragm and shortening it with a few U-stitches to allow lung expansion. Postoperative complications are generally similar to other procedures, and no specific complications were reported [3].

In general, postoperative complications can vary and may include fever, nausea, vomiting, infection, pulmonary embolism (PE), postoperative ileus, and deep vein thrombosis (DVT) [4]. Colonic obstruction is a serious postoperative complication that can be life-threatening if not promptly and effectively treated. It can result either from a mechanical or a functional cause. Mechanical obstruction is the partial or complete blockage of the gastrointestinal tract due to a mechanical barrier, whereas functional obstruction is a provisional impairment of the peristalsis movement of the bowel without any structural barrier [5,6].

Ogilvie’s syndrome is a type of functional intestinal obstruction that presents as acute distension of the colon without any mechanical cause. The incidence rate is generally reported to be 100 cases per 100 000 hospital admissions annually, with the average age at presentation being around 60 years old. Patients usually present with abdominal discomfort and gradually develop abdominal distension, sometimes associated with nausea and vomiting. Physical examination typically shows a tympanic and distended abdomen. Additionally, bowel sounds are usually present and typically high-pitched [7]. It usually occurs in seriously ill patients and can be due to electrolyte imbalances, certain drugs, trauma, or hypothyroidism. It is an uncommon postoperative complication and is even less common in thoracic surgeries, including diaphragmatic plication surgery [8]. Ogilvie’s syndrome is considered a diagnosis of exclusion. Therefore, a comprehensive assessment is necessary, including laboratory investigations to assess for bowel ischemia and rule out other potential causes of acute abdominal pain. The main diagnostic tools for Ogilvie’s syndrome are imaging studies. Abdominal plain radiography is used initially to show colonic dilation and the absence of mechanical obstruction. Plain radiography is primarily used to monitor the progression or improvement of colonic dilation. Computed tomography (CT) scan with oral and intravenous (IV) contrast is considered superior to plain radiography as it can show the characteristic sign of Ogilvie’s syndrome, which is dilation of the cecum and ascending colon with a transitional point at the splenic flexure. When CT scan is unavailable, a contrast enema should be considered as an alternative diagnostic option [7]. When a patient is diagnosed with uncomplicated Ogilvie’s syndrome, meaning they do not have ischemia, peritonitis, cecal diameter greater than 12 cm, or significant abdominal pain, conservative management is the first-line treatment. This includes discontinuing any triggers, correcting fluid and electrolyte imbalances, using a nasogastric tube for gut decompression, treating infections, and encouraging ambulation. If the patient does not respond to conservative management or if symptoms persist beyond 48 to 72 h, pharmacologic therapy with neostigmine may be necessary. Endoscopic decompression should be considered for patients who have persistent and significant colonic dilation despite conservative and medical management, or in cases where neostigmine is contraindicated. However, if all interventions fail, surgical management becomes the next appropriate step. Patients with peritonitis, ischemia, perforation, clinical deterioration, or cecal diameter greater than 12 cm should also be referred for surgery [9]. This report is of a 66-year-old man with postoperative Ogilvie’s syndrome 1 day after diaphragmatic plication surgery.

Case Report

We report a case of a 66-year-old man with no known chronic diseases who was admitted to the hospital with a left diaphragmatic eventration incidentally diagnosed 1 year ago. He had been experiencing bloating and constipation that had started 1 year earlier, along with shortness of breath that worsened in a sitting position and improved when laying supine. Physical examination revealed bowel sounds on the left side of the chest, and a chest X-ray showed that the left hemidiaphragm was elevated, and the bowel loops were present in the left hemithorax. A chest CT scan confirmed an elevated left hemidiaphragm with gas-distended segments of the colon lying high in the abdomen (Figure 1). Furthermore, esophagogastroduodenoscopy was performed, which revealed mispositioning of the stomach due to the diaphragmatic eventration.

To confirm their findings, the general surgery team opted to perform a diagnostic laparoscopy prior to diaphragmatic plication in the same setting. During the laparoscopy, colonic decompression was performed using a 20-gauge needle inserted in the taenia coli and connected to suction. However, no hialtal hernia or twisting of the stomach was found and the procedure was concluded. Subsequently, diaphragmatic plication was performed through a posterolateral thoracotomy incision, and the diaphragm was plicated using PROlene sutures. Lastly, a chest tube was inserted and connected to an underwater seal.
On postoperative day 1, the patient developed hemodynamic instability with a blood pressure of 85/57 mmHg. Physical examination revealed abdominal tenderness and distention and sluggish bowel sounds. Laboratory results showed leukocytosis with a high count of neutrophils, mild anemia, raised total and direct bilirubin levels, and elevated ESR and CRP. Potassium, magnesium, and calcium were all within normal ranges. As an initial intervention, a nasogastric tube was inserted, and the patient was placed on nothing by mouth (NPO) status. A barium follow-through showed the contrast reaching the splenic flexure. Abdominal X-ray demonstrated multiple dilated bowel loops with contrast collection in the right colon and rectum. The abdominal CT scan with contrast revealed undulated diaphragmatic contour with apparent interdigitation. In addition, it showed massive dilation of the whole colon with reduction in the diameter of the splenic flexure, which was interposed into the diaphragm (Figure 2). The rectum and the distal sigmoid colon were filled with fluid. Incidentally, bilateral inguinal hernias were discovered, with suspected partial herniation of the sigmoid colon.

Due to the possibility of incarceration, the patient underwent an emergency exploratory laparoscopy in the operating room (OR). During the procedure, a minor left inguinal defect was visible where the bowel could herniate through. The area was covered, with suspected partial herniation of the sigmoid colon. During the procedure, the rectum was filled with fluid, and the colon was dilated, but no mechanical obstruction was observed. Lastly, colonic decompression was done for the second time, and a rectal tube was placed.

Sigmoidoscopy and colonic decompression did not relieve the distension, which was associated with dyspnea, dizziness, nausea, and elevated procalcitonin. As it was suspected to be medication adverse effects, metronidazole and ciprofloxacin were replaced with Tazocin. Infection was considered as a possible underlying cause of the patient’s condition; however, urine, blood, and stool cultures, as well as Clostridium difficile PCR, were all negative.

Seven days after onset of the intestinal obstruction symptoms, a single intravenous dose of neostigmine 2 mg was administered due to a high suspicion of Ogilvie’s syndrome. As a result, the patient’s symptoms improved after 24 h of neostigmine administration, and the patient passed stool for the first time since the diaphragmatic plication procedure. Also, his abdominal tenderness and distension improved, and he was partially tolerating an oral diet. ESR and CRP were still elevated but declining. Abdominal X-ray showed regression of the dilated bowel loops. To facilitate bowel movement, polyethylene glycol was administered orally.

After 4 days of neostigmine administration, the patient was tolerating a complete oral diet and had no concerns. Prior to discharge, the abdominal CT scan was repeated. The previously documented interposition of bowel loops between the interdigitation of diaphragmatic plication was no longer present, and the colonic dilation had resolved (Figure 3). Lastly, the patient was prescribed paracetamol, pantoprazole, levofloxacin, amoxicillin, and cefuroxime as discharge medications, and he was scheduled for thoracic and general surgery follow-ups in 1 and 2 weeks, respectively.

**Discussion**

This case of postoperative Ogilvie’s syndrome emphasizes the importance of beginning treatment without necessarily reaching a specific diagnosis of functional intestinal obstruction.

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**Figure 1.** Computed tomography (CT) scan of the chest (coronal view) showing the left intact hemidiaphragm is markedly elevated (white arrow) together with distended segments of the colon (red arrow).
Figure 2. Abdominal computed tomography (CT) scan with contrast sagittal (B, D) and coronal views (A, C) showing dilation of the whole colon with a reduction in the caliber of the splenic flexure, which is interposed in the diaphragm (yellow arrows).
Delaying intervention in such cases could potentially result in bowel perforation. Postoperative intestinal obstruction could result from a wide variety of underlying conditions, which can be categorized as mechanical or functional obstruction [10,11]. They share multiple common clinical manifestations, such as abdominal pain and distention, constipation, vomiting, and tympanic percussion tone. However, mechanical bowel obstruction can be differentiated from functional bowel obstruction by certain characteristics, such as the colicky nature of abdominal pain in mechanical obstruction and the radiological findings. In functional obstruction, the intestine appears diffusely dilated from the small intestine to the rectum. However, mechanical obstruction presents with intestinal dilation proximal to the obstruction, and the distal bowel loops appear collapsed. Radiological studies, including abdominal X-rays, CT scans, and contrast studies, are the main diagnostic tools. Moreover, endoscopic procedures play diagnostic and therapeutic roles.

Laboratory investigations might show electrolyte disturbances, usually potassium, magnesium, or calcium. Management of both types of obstruction may involve medical, surgical, or endoscopic interventions [5,11].

Bowel adhesions are both the most common cause of postoperative mechanical obstruction and small bowel obstruction. However, it is not present soon after surgery [6]. Paralytic ileus, chronic colonic pseudo-obstruction, and acute colonic pseudo-obstruction (Ogilvie’s syndrome) are all functional intestinal obstructions in which no mechanical cause of obstruction can be identified [11]. An important differential diagnosis of colonic dilation is toxic megacolon, which presents with similar radiological findings as intestinal obstruction and should be ruled out [12].

In this reported case, we considered 4 main differential diagnoses: accidental bowel ligation during diaphragmatic plication,
mechanical bowel obstruction, toxic megacolon, and Ogilvie’s syndrome. Since the patient developed symptoms of intestinal obstruction within 48 h after the surgery and the CT scan showed interdigitation of the splenic flexure into the plicated diaphragm, we could not rule out intestinal incarceration due to diaphragmatic plication procedure without exploratory laparotomy. Nevertheless, during exploratory laparotomy, it was found that the bowel loops were free and not incarcerated due to the earlier procedure. The incidentally discovered left inguinal hernia in the CT scan raised suspicion of mechanical obstruction. To rule out mechanical obstruction and to perform colonic decompression, the patient underwent sigmoidoscopy, which did not reveal any mechanical cause of obstruction. In addition to the symptoms of intestinal obstruction, as evidenced by colonic dilation in the CT scan images, the patient had leucocytosis, mild anemia, electrolyte disturbance, hypotension, and ESR and CRP elevation, which were suggestive of toxic megacolon [12]. However, our patient did not have bloody diarrhea, which is typically one of the hallmark symptoms of toxic megacolon. In addition, toxic megacolon is usually associated with inflammatory bowel disease, which our patient did not have, or with C. difficile infection, which was ruled out by PCR and stool culture [12].

The most suspected and most likely differential diagnosis in this case was Ogilvie’s syndrome. Ogilvie’s syndrome is a condition in which the colon becomes acutely dilated in the absence of any anatomical cause. The dilation typically involves the cecum and the ascending colon with a transitional point at the splenic flexure. It is commonly seen in elderly patients with multiple comorbidities, but can also result from trauma, severe infection, electrolyte disturbance, cardiovascular diseases, and major surgeries, including orthopedic and obstetric surgeries [13]. Colonic decompression is the main goal of treatment, which can be accomplished surgically or endoscopically. Neostigmine is the primary pharmacological treatment of Ogilvie’s syndrome [14]. In this syndrome, the colon exhibits a transitional zone at the splenic flexure with pre- and post-colonic dilation, which was clearly seen in the CT scans of our patient. Also, while auscultating our patient’s abdomen, bowel sounds were present, which is typically found in Ogilvie’s syndrome [13]. Furthermore, colonoscopy did not identify any cause of obstruction. Our patient’s condition improved considerably after the administration of neostigmine, supporting the possibility of Ogilvie’s syndrome [14], but confirming the diagnosis was also challenging because it was opposed by certain characteristics that did not support Ogilvie’s syndrome. Firstly, Ogilvie’s syndrome rarely presents as a postoperative complication of certain procedures that do not involve thoracic surgeries. Secondly, it typically occurs in patients diagnosed with multiple illnesses, whereas our patient did not have any comorbidities [15].

This indefinite case illustrates the importance of timely intervention, even in the absence of a specific diagnosis, to potentially save a patient’s life. Colonic ischemia and perforation could have complicated the case if colonic decompression was delayed until reaching a definite diagnosis [14]. Furthermore, the development of postoperative functional large-bowel obstruction in addition to preoperative colonic dilation in this case suggests an additional risk factor to consider in future cases.

**Conclusions**

Postoperative functional bowel obstruction is one of the preventable complications that can have serious consequences, including prolonged hospitalization, increased morbidity, and financial burden on the patient and the institution. Although Ogilvie’s syndrome can rarely occur as a postsurgical complication, particularly after certain types of surgeries, it is extremely rare after thoracic surgery. This case has highlighted the importance of promptly diagnosing postoperative Ogilvie’s syndrome to prevent large-bowel perforation. In addition, multiple consultations were required in this case to rule out other differential diagnoses, highlighting the importance of multidisciplinary teamwork in such complicated cases.

**Declaration of Figures’ Authenticity**

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**References:**


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