

Thoracoscopic Treatment of Bochdalek Hernia in the Adult: Report of a Case

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Bochdalek hernia is a type of congenital diaphragmatic hernia that mainly occurs in childhood, but is extremely rare in adults.

A case report of Bochdalek hernia in a 17-year-old woman, complaining of left lateral upper abdominal pain is herein reported with a brief review of the literature. The herniated organs into the thoracic cavity in this case were the stomach, large intestine, spleen and greater omentum which was diagnosed using computed tomography, an upper gastrointestinal double contrast study and irrigography. The patient was successfully treated by video-assisted thoracoscopic surgery (VATS) with a pushback method. The post-operating course was uneventful with minimal pain of the surgical wound. This case demonstrated the efficacy of the VATS repair for Bochdalek hernia. (Ann Thorac Cardiovasc Surg 2002; 8: 106–8)

Key words: Bochdalek hernia adults, thoracoscopy

Introduction

Bochdalek hernia is a common congenital anomaly in neonatal and postnatal patients, and the first clinical manifestation of symptoms and a diagnosis of this abnormality in adults are extremely rare.

Computed tomography (CT) is useful for the diagnosis of this anomaly. An upper gastrointestinal double contrast study is also necessary to rule out malrotation. The most common strategy to treat Bochdalek hernia is via a thoracotomy or laparotomy or both. However video-assisted thoracoscopic surgery is fully effective for repairing this diaphragmatic hernia, which is less invasive and also has cosmetic benefits over traditional surgery.

We herein present a case of Bochdalek hernia in the adult, which was successfully treated by video-assisted thoracoscopic surgery (VATS) and its diagnostic and surgical management are also discussed together with a brief review of the literature.

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Case Report

A 17-year-old girl was admitted to our department with a sudden onset of left lateral abdominal pain and vomiting on February 10, 1997. She had experienced a similar but mild episode lasting 2-3 days since childhood but had no previous severe traumatic episodes except for when she fell from a height of almost 2 m at 11 years of age.

The physical examination revealed an absence of any breath sound in the left lower thorax by auscultation. Laboratory data were all normal. Although a chest film, taken almost 2 years earlier presented no abnormality, a shifting of the stomach into the left thoracic cavity was observed at this admission (Fig. 1). An upper gastrointestinal double contrast study demonstrated an incarceration of the stomach into the left thoracic cavity which thus showed the so-called "upside-down stomach" (Fig. 2). A barium-enema also indicated a herniation of the transverse colon, up to almost the level of Th2 (Fig. 3). The herniation of the stomach, transverse colon, spleen and greater omentum was visible on computed tomography (CT). On magnetic resonance imaging (MRI), the left posterior portion of the diaphragm could not be identified. According to such a location, the diagnosis of a Bochdalek hernia was thus suggested.

The operation was performed under general anesthesia with single lung ventilation on June 30, 1997. The



Fig. 1. The chest X-ray on admission. A shifting of the stomach into the left thoracic cavity is identified.

patient was placed in the right decubitus position, a 12-mm port was made through the 7th intercostal space on the posterior axillary line, and then a 30-degree thoracoscope was inserted. Another 2 ports were next placed at the 7th intercostal space on the anterior axillary line and 8th intercostal space on the mid-axillary line. Thoraco-



Fig. 2. The upper gastrointestinal double contrast study. So-called "upside-down stomach" is presented.

scope, showed that a part of the stomach, small intestine, the splenic flexure of the colon, greater omentum and spleen were herniated into the left thoracic cavity through the defect, 5 cm in length approximately, in the posterior region of the left diaphragm. A small amount of pleural effusion was also observed, but no hernia sac was identified. The herniated viscera were pushed back into the peritoneal cavity and the defect of the diaphragm was then completely closed with 10 interrupted sutures using 1-0. No complications were identified throughout this operation.

A plain chest X-ray, an upper gastrointestinal double contrast study, a barium enema and computed tomography (CT) were all performed postoperatively demonstrating a normalized position of the stomach, colon, and spleen. In addition, no malrotation was identified. The postoperative course was uneventful and the patient was discharged 10 days after the operation without any symptoms, and also there have been no objective or subjective symptoms of Bochdalek hernia since then.

Discussion

Bochdalek hernia is a common congenital anomaly in neonatal and postnatal patients and occurs in about one in 2,200 to 12,500 live births,¹⁾ but it is rare in adults.



Fig. 3. The barium enema study showed a herniation of the transverse colon, up to the level of Th2.

Since Kirkland reviewed 39 such cases from 1853 to 1959,²⁾ almost 100 cases have been reported in the English literature. An insufficient development or a defective fusion of the pleuroperitoneal membrane during the embryonic stage is considered to be the cause of Bochdalek hernia. Although, several previous studies have reported the prevalence of a left-sided Bochdalek hernia in 90% of patients, Gale showed a 2:1 frequency for the right-sided cases, and a bilateral instance of 0.9%.³⁾ Our case had no hernia sac, while Thomas et al. reported the presence of a hernia sac in 9 out of 34 patients.⁴⁾

The major symptoms of the Bochdalek hernia tend to consist of upper abdominal or thoracoabdominal pain and dyspnea.⁵⁾ The frequently herniated viscera include the stomach, small intestine, colon, spleen, and greater omentum. Strangulation sometimes occurs. In our case, the major symptom was left upper abdominal pain and the herniated organs included the stomach, small intestine, colon, spleen, and greater omentum.

The diagnosis of our case was ascertained by a combination of chest X-ray, computed tomography (CT), magnetic resonance imaging (MRI), upper gastrointestinal and bowel double contrast study. Several authors have mentioned the difficulty in diagnosis of asymptomatic Bochdalek hernia. Previous normal chest X-ray does not exclude the presence. Computed tomography (CT) is often helpful for diagnosis, showing a mass of fat or soft tissue contour of the upper surface of the diaphragm, and a discontinuity of the diaphragm adjacent to the mass.⁶⁾ An upper gastrointestinal double contrast study is necessary to rule out the presence of malrotation.⁵⁾

The most frequent operation for the Bochdalek hernia is a thoracotomy or laparotomy, and the approach to the repair of the Bochdalek hernia has been thoroughly discussed. For right-sided Bochdalek hernia, many authors agree that a transthoracic or thoracoabdominal approach is preferable.⁷⁾ For left-sided, however, some advocate a transthoracic approach, while others suggest a transperitoneal approach. The transthoracic approach enables a direct observation of the herniated viscera or hilum of the hernia or sac, and it is easier to remove the herniated viscera if there is some adherence and the “push-back” method is also less harmful to the organs if incarceration is not identified, such as in our case. On the other hand, a transperitoneal approach also allows the surgeon to confirm the position of the viscera after “pull-back” and to repair any malrotation if present.

In our case, a video-assisted thoracoscopic repair was performed. This minimally invasive procedure was found

to be effective for the treatment of the herniated viscera in to the peritoneal cavity and to also repair the diaphragmatic defect. Recently, some reported the laparoscopic repair of the posttraumatic diaphragmatic hernia, but this method is thought to be less acceptable for the Bochdalek hernia because of its posterior location.⁵⁾ The contraindications for the VATS are considered such as the presence of excessive pleuropulmonary adhesion and hemodynamic instability.⁸⁾ Acute incarceration or perforation is also a contraindication due to the difficulty in thoracoscopic reduction.

Conclusion

We herein presented a case of Bochdalek hernia, including its diagnosis and repair using the VATS technique. This procedure was found to be completely effective but since it is minimally invasive, and it markedly reduces the degree of postoperative discomfort, it is therefore considered to become the treatment of choice for surgeons in the future.

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