

Laparoscopic extracorporeal repair without a mesh of parasternal diaphragmatic hernia in an elderly woman

A case report

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Abstract

Rationale: The case of parasternal diaphragmatic hernia is relatively rare in adults. The best way for the treatment of diaphragmatic hernia is to receive operation, yet which surgical method is the best remains unclear.

Patient concerns: An elderly woman in the hospital was complaining about upper abdominal pain that was complicated by the parasternal diaphragmatic hernia. Such state was found accidentally in a car accident and diagnosed by a computed tomography (CT) scan.

Diagnosis: Parasternal diaphragmatic hernia.

Interventions: Laparoscopic surgery was performed. The hernial component was easily drawn back into the abdominal cavity, and hernia sac was resected. Closure hernia sac underwent full-thickness U-shaped transabdominal wall sutures with 3-0 Prolene (ETHICON) after straightening the needle without a mesh.

Outcomes: The patient recovered quickly without postoperative complication. The hospital stay was 2 days. There was no recurrence and symptoms at a 6-month follow-up.

Lessons: Laparoscopic extracorporeal repair without using a mesh is a safe, quick, and effective approach. It seems to be an effective treatment of the parasternal diaphragmatic hernia, in particular for elderly patients.

Abbreviations: CT = computed tomography, MH = Morgagni hernia.

Keywords: diaphragmatic hernia, extracorporeal repair, laparoscopic, parasternal, traumatic

1. Introduction

The parasternal diaphragmatic hernia, named as Morgagni hernia (MH),^[1] has been rarely reported in elderly adults. Once it is diagnosed, surgery is the preferred treatment in the case of the risks of incarceration, strangulation, as well as pulmonary complication.^[2] MH can be managed successfully at a low recurrent rate. Repair of MH can be achieved by thoracotomy, laparotomy, laparoscopy, and thoracoscopy.^[3] Laparoscopic

extracorporeal repair has a lower complication and descends the abdominal organs easily.^[4] The optimal strategies have not been well established. In this study, a case was shown that an elderly woman with upper abdominal pain complicated by the parasternal diaphragmatic hernia was successfully treated by the laparoscopic extracorporeal repair without a mesh. The short-term follow-up showed that there was no recurrence and symptoms after the operation. Laparoscopic extracorporeal repair without a mesh seems to be a valid strategy.

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The patient gave written informed consent to publish this case report and any accompanying.

The authors have no conflicts of interest to declare.

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2. Case presentation

A 79-year-old patient, complaining about upper abdominal pain after suffering a car accident 2 years ago, was reported. There were no obvious symptoms but occasional abdominal pain. A diaphragmatic hernia was located on the right side by a computed tomography (CT) scan. The herniated mass was the colon (Fig. 1A), and laparoscopic surgery was performed.

After receiving the general anesthesia, the patient was placed in a supine position. The Veress needle was retrieved after establishing pneumoperitoneum in laparoscopy. A 10-mm port was inserted underneath the umbilicus, and a 30° laparoscope was placed (Fig. 1C). One 10-mm trocar was inserted at the right hypochondrium, and another 5-mm trocar was in the left hypochondrium. A hernial orifice' size was 55 × 35 mm on the right side of the hiatus, and the colon partially invaginated into the hernial orifice (Fig. 2A, B). There was no bowel obstruction. Hernia colon was not attached to the sac without incarceration.

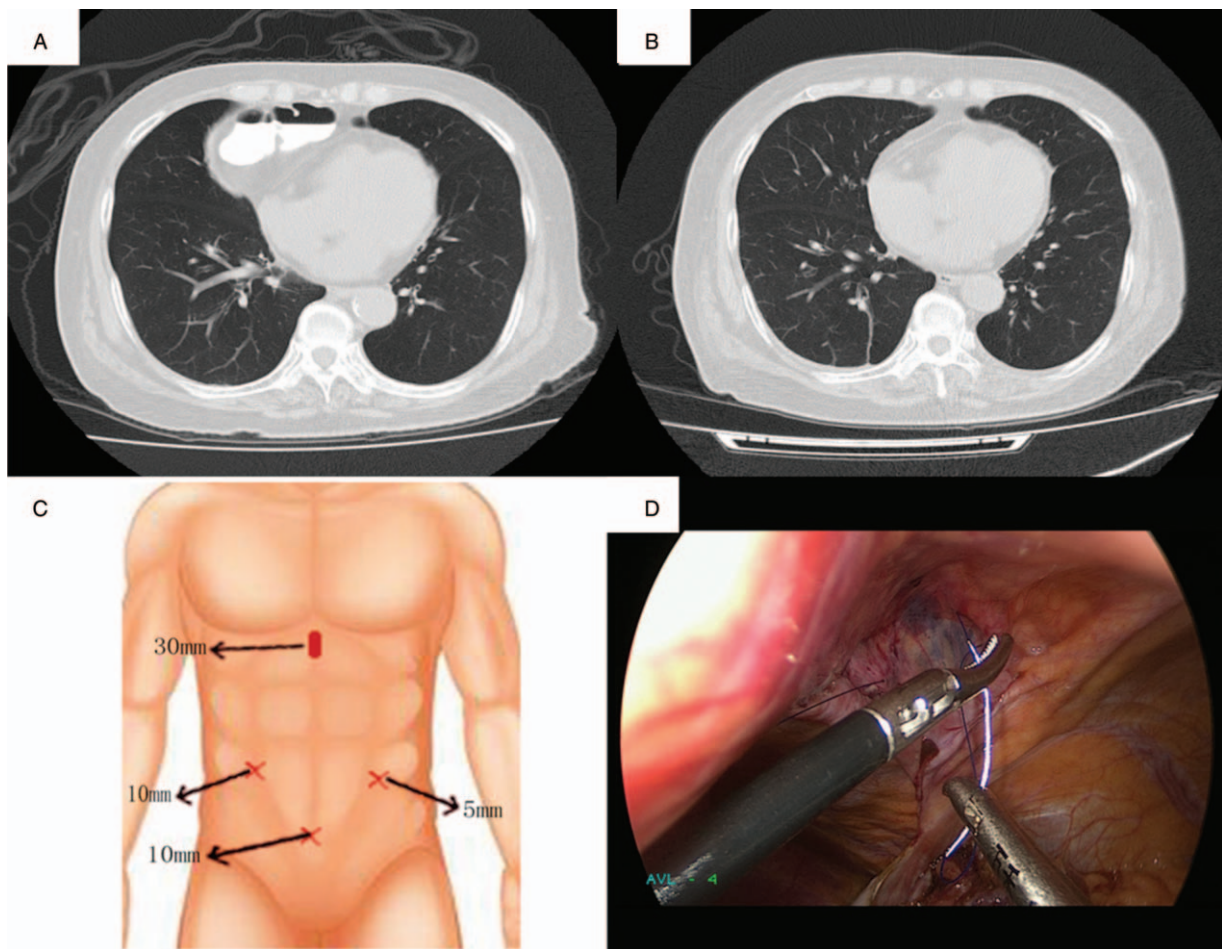


Figure 1. (A) A CT scan showed right side parasternal diaphragmatic hernia and the herniated mass was the colon. (B) A CT examination obtained 2 days after surgery showed that hernial component was completely removed from the pleural space. (C) Trocar and xiphoid incision positioning. (D) Straighten the needle.

The hernial component was drawn back into the abdominal cavity, and hernia sac was resected. A vertical 3-cm cutaneous incision was made just underneath xiphoid (Fig. 1C), and incision was separated into rectus abdominis. Closure hernia sac underwent full-thickness U-shaped transabdominal sutures by using 3-0 Prolene (ETHICON) after straightening the needle (Fig. 2C, D).

The procedure was quickly completed (40 minutes) without bleeding. There was no drainage tube after surgery. After the surgery, the upper abdominal pain disappeared. A CT examination obtained 2 days after the surgery revealed that the hernial component was completely removed from the pleural space (Fig. 1B). The patient recovered quickly without postoperative complication. The period of the hospital was 2 days. No recurrence and symptoms were shown in the 6 months after the operation.

3. Discussion

Parasternal diaphragmatic hernia, named as MH, was first reported by Giovanni Morgagni in 1761.^[1] Due to viscera incarceration, it is usually accompanied with chest pain, vomiting, pulmonary complaints, palpitation, or intestinal obstruction. It may be exacerbated during trauma or pregnancy, while some patients may be asymptomatic. MHs are primarily

located on the right side, more often in a female, which are usually diagnosed by the incidental radiologic investigation.^[5] The hernia sac mostly consists of the stomach, small bowel, omentum, or liver.^[6] In the case of this study, hernia sac contained the colon. The old woman was often complaining about upper abdominal pain.

Parasternal diaphragmatic hernia is a rare disease for the parasternal diaphragmatic hernia in adults. Surgical operation is often preferred treatment regardless of the types of MHs. The aim of the operation was to descend the abdominal organs, remove hernia sac, and repair hernia defect. Whether the approach is transabdominal or transthoracic remains controversial.^[1] Transthoracic approach separates pleural and pericardial adhesions easily. Also, it can provide a better exposure and closure hernia defect. The postoperative effect is clear. The disadvantages of this approach are that it has many postoperative complications and it is not suitable for the patient with abdominal organs injury. However, transabdominal approach has a lower complication and descends the abdominal organs easily. It is strongly recommended for cases with peritonitis and abdominal organs injury. Abdominal approach can repair bilateral MHs using 1 incision.^[3] The difficulty of this route is to separate pleural adhesions and treat thoracic organs injury.^[7] Transabdominal approach, however, seems to be the most common approach for repair.^[1,8] On the basis of the

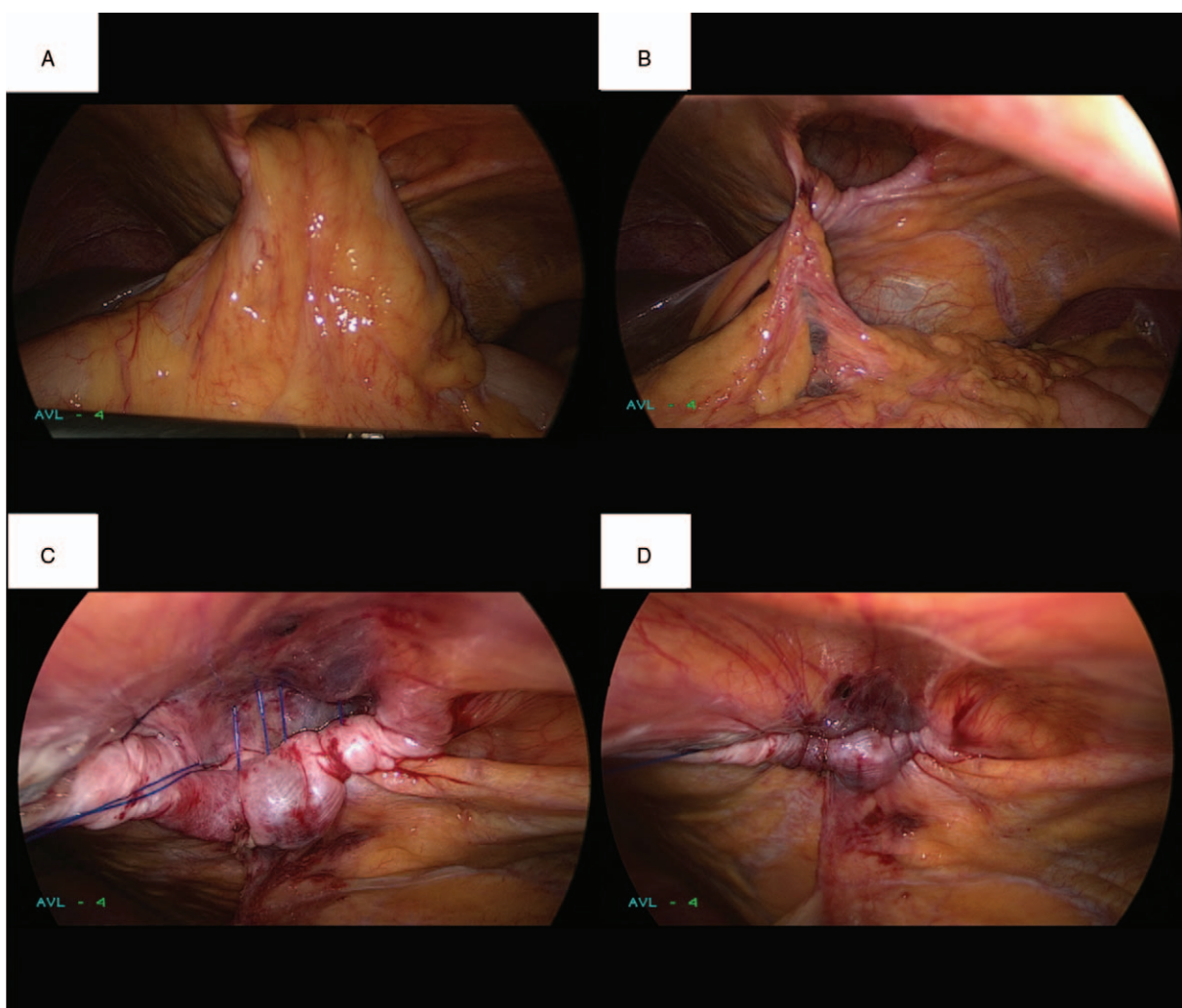


Figure 2. (A) Part of the colon had invaginated into the hernial orifice. (B) A hernial orifice size was 55×35 mm and the hernial component was successfully and easily drawn back into the abdominal cavity with resection of hernia sac. (C, D) hernia sac was closed by 3-0 Prolene (ETHICON) using full-thickness U-shaped transabdominal wall sutures without a mesh.

case here, this study holds the same perspective with several others that MH can be managed successfully and easily using the transabdominal approach.^[1,8,9]

The case of this study was an elderly woman so that transabdominal approach was used. Traditional laparotomy causes a big injury and has slow recovery. With the improvement of skills of endoscopic technique, laparoscopic surgery has been recently more popular in the treatment for diaphragmatic hernia.^[4,10] It can provide an equally safe and effective outcome with fewer complications and fewer hospital days.^[4] The conventional laparoscopic technique was to use patch repair.^[11] There were few direct clinical trial comparison patches with nonpatch. According to other literature of abdominal wall hernia,^[12,13] the patch repaired was tension-free, with fewer postoperative complications and rapid recovery, whereas there exists a risk of graft infection and patch disruption.^[14] van Niekerk reported that no patch repairing could provide an alternative way in closure MH defects. For small hernial sac,^[15] less than 20 to 30 cm², tension repair can also be achieved with good results and reduced costs. The major complication of tension repair is recurrence. The use of a patch in closure defects

remains controversial.^[14,16] The strategy of operation depends on the hernia and the surgeons.

The anterior upper abdominal wall lacks good fixation points, which requires high skills for laparoscopic suture and knot tying. In fact, laparoscopic extracorporeal repair without a mesh is tension repair. Some scholars have reported laparoscopic extracorporeal repair in hernia without using a mesh, whereas it was rarely reported in parasternal diaphragmatic hernia.^[17,18] Greca et al^[9] also reported laparoscopic extracorporeal repair without a mesh as a safe and effective method for repairing MH. In this case, the hernia sac was not large, so laparoscopic extracorporeal repair could be considered without a mesh. This similar method was used in this study to closure parasternal diaphragmatic hernia without using a mesh. Laparoscopic extracorporeal repair without a mesh is simple and easy, which can reduce the trauma of surgery and scar. Operation time is short, and the patient's pain and medical expense are lower.

In brief, this study believes that laparoscopic extracorporeal repair without using a mesh is a safe, easy, and effective approach. It can be an alternative method to treat the parasternal diaphragmatic hernia, especially for elderly patients.

Author contributions

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Formal analysis: Chen-Hui Ni.

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