

The Laparoscopic Repair of Morgagni's Hernia: Case Report*

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Summary

Background: Morgagni's hernias constitute about 3% of all diaphragmatic hernias. Despite a number of studies advocating thoracoscopic approaches, laparoscopic repair remains to be one of the best treatment methods.

Method: We describe the placement of a double-layer mesh anchored by helicoidal staples to repair the hernia defect via laparoscopy.

Results: Her symptoms completely resolved postoperatively with no evidence of recurrence.

Conclusions: The laparoscopic repair should be considered as an effective and safe procedure for the treatment of Morgagni's hernias.

Key words: Morgagni's hernia, laparoscopy, repair

Turkish Journal of Endoscopic-Laparoscopic & Minimally Invasive Surgery 2006; 13(2): 77-81

Özet

Morgagni Hernisinin Laparoskopik Onarımı: Olgu Sunumu

Amaç: Morgagni hernisi tüm diyafragmatik hernilerin %3'ünü oluşturur. Toraskopik yaklaşımları destekleyen bir kaç çalışmaya rağmen; laparoskopik yaklaşım halen en iyi tedavi yöntemlerinden biridir.

Materyal Metod: Laparoskopik ile sarmal zımbalarla tutturulan çift yönlü yama yerleştirilmesi yöntemiyle herni onarımı anlatılmaktadır.

Bulgular: Olgunun semptomları, nüks olmaksızın, ameliyat sonrası tamamen kaybolmuştur.

Sonuç: Morgagni hernilerinin onarımında laparoskopik yaklaşım etkili ve güvenilir bir girişim olarak değerlendirilmelidir.

Anahtar sözcükler: Morgagni hernisi, laparoskopik, tamir

Endoskopik Laparoskopik & Minimal İnvaziv Cerrahi Dergisi 2006; 13(2): 77-81

Introduction

Congenital diaphragmatic hernias are detected in concerning 1 out of 2110 pregnancies and also diagnosed in 1 out of 4800 live births¹. Morgagni's hernias, having an incidence of approximately 2% to 4% of all non-traumatic diaphragmatic hernias in adults, are located between the sternal and costal diaphragmatic attachments in the retrosternal or parasternal position, and take place because of a failure of the septum transversum to fuse with the thoracic wall^{1,2}. This type of hernia was first described by Giovanni Morgagni in the 18th century. The standard surgical procedure requires a laparotomy or a thoracotomy for symptomatic patients. We report a case of a Morgagni's hernia that had been diagnosed prior to surgery and was repaired by laparoscopic approach.

Case Report

A 55-year-old female admitted to our clinic with the complaints of constipation and right chest pain.

The physical examination revealed decreased respiratory sounds of the lower zones of the right hemithorax by auscultation. Chest x-rays and thoracoabdominal computerized tomography images showed the existence of a Morgagni's hernia including the omental and colonic contents within its hernial sack (Figure 1a-1b).

The patient as brought to the operating room and following the induction and application of appropriate general endotracheal anesthesia, she was given a supine reverse Trendelenburg position with an angle of 30°. A total number of three ports, having a diameter of 10 mm. each, were placed into the abdominal cavity following pneumoperitoneum (Fig. 2). The camera was introduced through the port that had been placed below the umbilicus, away at a point one third of the distance from the umbilicus to the xiphoid process. The two additional ports were positioned at exactly the same level, a few centimeters to the right and left of the midclavicular line.

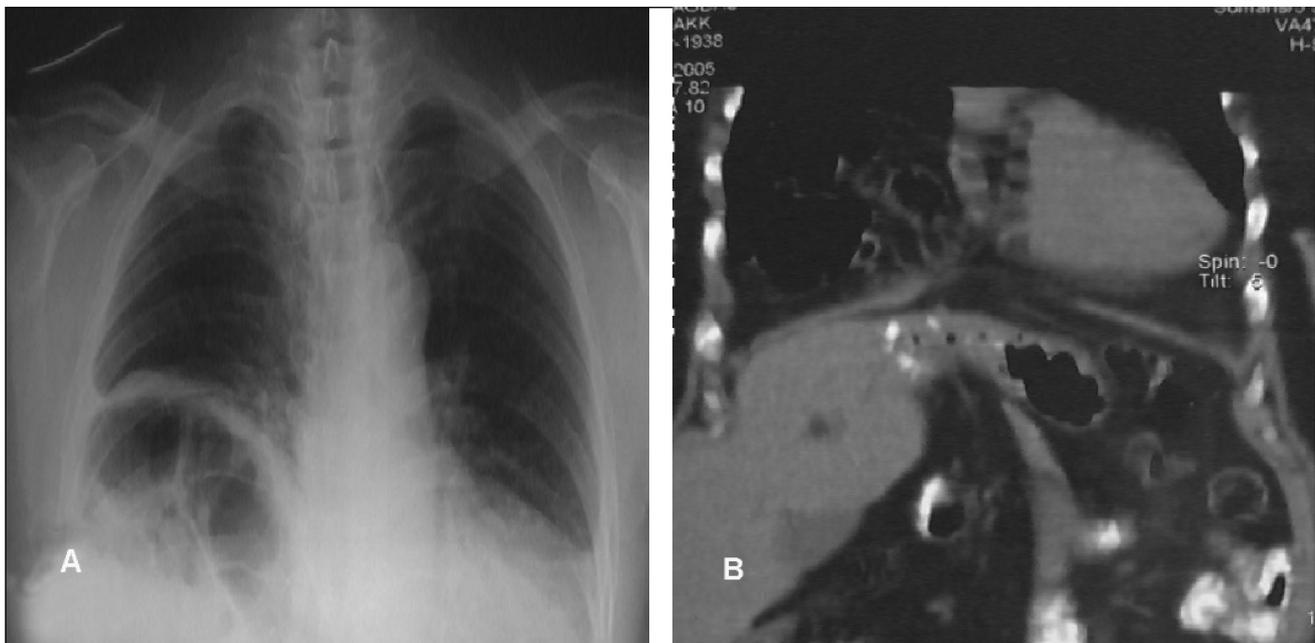


Figure 1
Radiological aspects of the patient prior to surgery
A- X-ray image, B- Coronal section CT view

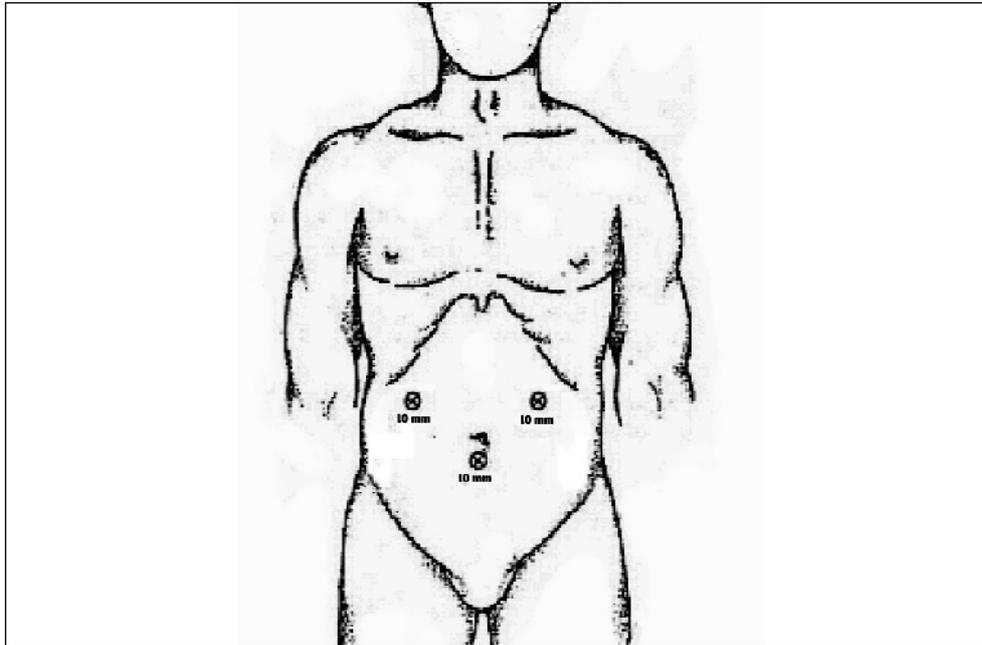


Figure 2
Trocar sites



Figure 3
Intra-operative view of the hernia defect and its content

Laparoscopic exploration revealed a right sided unilateral hernia that consisted of the entire omentum and partially of the transverse colon. The whole hernia content was carefully reduced into the abdomen avoiding any visceral damage (Figure 3). The hernial defects size was visualized to be approximately 7x5 cm. Neither the resection of the hernial sack, nor the repair of the defect with primary sutures was attempted. A tension-free repair by the application of a 15x20 cm sized hyaluronic acid-carboxymethylcellulose (HA-CMC, Sepramesh, Genzyme corporation, Cambridge, MA, USA) coated polypropylene mesh was performed. Helical anchoring fasteners (Pro Tack 5 mm, United States Surgical, Norwalk, CT, USA) were applied to fix the mesh. The operating time was 40 minutes.

The patient was discharged on the 4th postoperative day. During the follow-up period of the patient, in the postoperative 5th month, no significant problems were encountered.

Discussion

Morgagni's hernia is defined as a defect of the diaphragm that takes place as the result of a lack of the ventral fusion of the pleuroperitoneal laminae, the septum transversum, and the dorsal mesentery during the embryologic developmental phase³. Although the most commonly used term for these type of hernias is "Morgagni's hernias", there still remains a controversy in the terminology since they're also referred to as "Larrey's hernias"⁴. The diaphragmatic hernias are detected to be right sided in 90% of all cases and they have an overall incidence of 1% to 6% of all surgically repaired diaphragmatic hernias⁵. They are rarely located on the left side since this anatomic area is supported by the heart intrathoracically. They have also been reported to have a higher incidence in females³. In adults, there may be a great variety of symptoms especially when the hernial sack contains luminal viscera. The herniating organs are usually the transverse colon and omentum, but also the stomach, small bowel and liver may occasionally be involved⁶.

70% of the patients are asymptomatic and a majority of them are incidentally diagnosed by chest x-rays taken for other reasons. Surgical repair is recommended for symptomatic cases or for suspected strangulation⁴. CT scan is also a useful diagnostic tool, especially for patients with fatty or solid organ herniation. Magnetic resonance imaging (MRI) seems to be the best diagnostic modality when mediastinal tumors are being considered for the differential diagnosis, and when lower anterior mediastinal masses demonstrate a fatty density on CT¹⁷.

The first laparoscopic treatment of Morgagni's hernia was performed by Kuster in 1992⁸. These hernias were traditionally repaired by open abdominal or thoracic approaches. In the recent years, there have been various reports of repairs performed by minimally invasive surgical techniques. In adults, these methods include video-assisted thoracoscopic primary repair with interrupted sutures, laparoscopic repair with a mesh laparoscopic primary closure and reinforcement with prolene mesh, laparoscopic primary repair with staples and laparoscopic primarily sutured repair⁹⁻¹¹. There are a plenty of case reports about Morgagni's hernia repair. Minneci et al, retrospectively evaluated 12 patients with a mean age of 45 years in the last 15 years period. Two thoracoscopic and two laparoscopic repairs were performed in his group and no recurrences have been reported during the 6 months to 10 years follow-up period¹². In conclusion, it is mentioned that repair with laparotomy was the method of choice, but if the diagnosis is uncertain, laparoscopic repair can be useful for both diagnosis and treatment.

Although there are some reports that mention the use of tension free repair of the Morgagni's hernias, most of them used polypropylene meshes that carry the risk of fistula. Since the intraabdominal organs are exposed to the onlayed meshes, they should have antiadhesive properties like as the mesh that was used in our laparoscopic surgical repair.

In conclusion, it can be stated that the use of laparoscopy for the repair of Morgagni's hernias is a safe and effective method. As in all minimally inva-

sive procedures, an excellent view of the surgical field, minimal surgical trauma, excellent cosmetic results, rapid recovery and shorter period stand to be its major advantages.

References

1. Ipek T, Altinli E, Yuceyar S, et al. Laparoscopic Repair of a Morgagni-Larrey Hernia: Report of Three Cases. *Surg Today* 2002; 32: 902-5.
2. Scott DJ, Jones DB. Hernias and abdominal wall defects. In: Norton JA, et al., editors. *Surgery: basic sciences and clinic evidence*. New York: Springer; 2001. p. 787-823.
3. Marin-Blazquez AA, Candel MF, Parra PA, et al. Morgagni hernia: Repair with a mesh using laparoscopic surgery. *Hernia* 2004; 8: 70-2.
4. Greca G, Fisichella P, Greco L, Stefano A, Rusello D, Latteri F. A new simple laparoscopic-extracorporeal technique for the repair of a Morgagni diaphragmatic hernia. *Surg Endosc* 2001;15: 99
5. Vancloster P, Lefevre A, Nijs S, de Gheldere C. Laparoscopic repair of a Morgagni hernia. *Acta Chir Belg* 1997; 97: 84-5.
6. Yildirim B, Ozaras R, Tahan V, Artis T. Diaphragmatic Morgagni hernia in adulthood: correct preoperative diagnosis is possible with newer imaging techniques. *Acta Chir Belg* 2000; 100: 31-3.
7. Vancloster P, Lefevre A, Nijs S, de Gheldere C. Laparoscopic repair of a Morgagni hernia. *Acta Chir Belg* 1997; 97: 84-5.
8. Kuster GG, Klein LE, Garzo G. Diaphragmatic hernia through the foramen of Morgagni: laparoscopic repair case report. *Laparoendosc Surg* 1992; 2: 93-100.
9. Azzie G, Maoate K, Beasley S, Retief W, Bensoussan A. A Simple Technique of Laparoscopic Full-Thickness Anterior Abdominal Wall Repair of Retrosternal (Morgagni) Hernias. *Journal of Pediatric Surgery* 2003; 38: 768-70.
10. Hussong RL, Landreneau RJ, Cole FH. Diagnosis and repair of a Morgagni hernia with video-assisted thoracic surgery. *Ann Thorac Surg* 1997; 63:1474-5.
11. Ramachandran CS, Arora V. Laparoscopic transabdominal repair of hernia of Morgagni-Larrey. *Surg Laparosc Endosc Percut Techn* 1999; 9: 358-61.
12. Minneci PC, Diens KJ, Kim P, Mathisen DJ. Foramen of Morgagni hernia: Changes in diagnosis and treatment. *Ann Thorac Surg* 2004; 77 :1956-9.