Morgagni Hernia; the Advantages and Disadvantages of Laparoscopy

Jarmil Safranek1*, Ondrej Bruha1, Jakub Sebek1

1Department of Surgery, Faculty Hospital,  Plzen, Czech Republic

*Corresponding author: Jarmil Safranek, Department of Surgery, Faculty Hospital, Alej Svobody 80, 304 60 Plzeň, Czech Republic, Tel: +420 377 104 276, Fax: +420 377 103 965, E-mail: safranek@fnplzen.cz

Received: 08-07-2017
Accepted: 09-07-2017
Published: 09-09-2017
Copyright: © 2017 Jarmil Safranek

Abstract

Morgagni hernia is a rare (less then 2% of all diaphragmatic hernias) congenital defect of the sternal part of the diaphragm and frequently presents on the right side of the midline. The currently recommended treatment for asymptomatic Morgagni hernia is the laparoscopic approach. We present two case reports of elective laparoscopy surgery of Morgagni hernia from our department of general surgery. The first case, with no hernial sac resection and a mesh used to reduce any hernial defect, was complicated by hemothorax and sac fluid retention. The second case, with sac resection and primary closure, resulted in a successful outcome.

Keywords: Morgagni Hernia - Laparoscopy Repair

Introduction

Morgagni hernia is a rare type of diaphragmatic hernia. It is a congenital defect of the sternal part of the diaphragm and frequently presents on the right side of the midline (passing through the cleft of Morgagni) as the left side is protected by the pericardium. It is a disease caused by the defective development of the sternal attachments of the diaphragm [1]. The etiology is unknown. However, 2% of cases have been noted to be familial and another 15% of patients have associated chromosomal abnormalities. Presentation may vary from non-specific gastrointestinal defects (bowel obstruction, strangulation) or respiratory symptoms (dyspnoea) [2,3]. The majority of patients are diagnosed incidentally during investigations of unrelated problems and most symptomatic cases tend to present acutely [4].

In this article we report two cases of elective laparoscopy surgery of Morgagni hernia that were performed during the last two years at our general surgery department at the University Hospital.

Case Report

Case 1: A 57 year old man was examined due to dyspnoea. The chest X-ray appears to show diaphragm paresis but a CT scan found a very large Morgagni hernia. A laparoscopy approach was indicated. Intra operatively the body of the stomach and transverse colon, along with the omentum, were found herniating into the right hemithorax. A laparoscopy reduction of the contents was performed. Due to prior knowledge of results from other papers and the large size of the hernial sac we left the hernia sac on with no repositioning [2]. There was a hernia defect measuring 10x6 cm in size and tension free primary closure was not possible. A 15x12 cm dual mesh (Prolene+PTFE) was placed over the hernia defect and secured to margins with 5 mm tackers. Post operative recovery was complicated by hemothorax on the left side (tackers to diaphragm) which was only dealt with by using a chest tube the following day. But due to retention of the empty hernia sac, an effusion accumulated to the size of the previous hernia with the same symptoms as before surgery (figure 1). We had to perform a right anterior thoracotomy and hernia sac resection on postoperative day 9 (figure 2). Two years later the man was indicated for a laparoscopic cholecystectomy because of a new biliary etiology disorder, cholecystolithiasis. During this procedure
we also checked the area of hernial closure. Although we found that there were some fine adhesions with the dual mesh, there was a sufficient and tough cover of the hernial defect (figure 3).

**Figure 1.** CT scan of accumulated effusion in hernial sac.

**Figure 2.** Right anterior thoracotomy and hernial sac resection.

**Figure 3.** Finding adhesions to the dual mesh two years later.
Case 2: A 47 year old woman was examined by a chest physician due to the suspicion of tuberculoma and latent TB infection. On the CT scan an incidental finding of Morgagni hernia was made while, later, TB was definitely excluded. We indicated her for surgery and repeated the laparoscopic approach once more. We found a small hernia defect measuring 6x4 cm in size. A simple reduction of omentum was performed with part of transverse colon provided (figure 4). The resected hernial sac-peritonem was then divided from the mediastinum. A small flap of sac was left attached and incorporated into reinforce the suture closure of the hernia defect (figure 5). In this case post operative recovery was uneventful. The patient was discharged on the second postoperative day. She was asymptomatic and there is no evidence of recurrence after six months.

Diaphragmatic hernia of the Morgagni was first described by Giovanni Battista Morgagni, an Italian anatomist and pathologist, in 1769 as anatomical defects in the anterior diaphragm that allow herniation of the abdominal viscera into the thorax. The pathophysiology of this type of hernia is not yet clear. Patients reported to have had previously normal radiographs suggest that these hernias may be acquired through a congenital defect in the diaphragm [5]. It can occur on either side of the sternum through the Larrey muscle-free sterno-costal triangle and is more common on the right side [2]. A CT scan is the most sensitive imaging method and gives excellent results on both the presence of hernia and its content.

Once diagnosed, the requirement for surgery largely depends upon the presentation. Repair avoids further complications. Emergency intervention is not always necessary unless there is evidence of strangulation [2,3]. There is no definitive answer as to which approach should be employed for repair. Both, transabdominal or transthoracic, methods have been shown to have similar and satisfactory results [6]. Currently the abdominal, mainly laparoscopic, approach is preferred. With the advent of miniinvasive techniques laparoscopy repair was also reported by Kustler in 1992 [7]. Laparoscopy is suitable for the repair of non-complicated Morgagni hernia while the hernial content can be easily reduced. The sac is not usually removed as this may result in massive pneumomediastinum or pneumothorax with potential respiratory and circulatory complications [2,7]. We noted an adverse effect of the retained hernial sac which was completely filled by seroma within a few days and showed similar symptoms to those before surgery. The patient’s status forced a thoracotomy sac resection. Mesh tacker fixation may also be complicated by bleeding from the diaphragmatic veins (as in our case – hemothorax) or by

Discussion

Diaphragmatic hernia of the Morgagni was first described by Giovanni Battista Morgagni, an Italian anatomist and pathologist, in 1769 as anatomical defects in the anterior diaphragm that allow herniation of the abdominal viscera into the thorax. The pathophysiology of this type of hernia is not yet clear. Patients reported to have had previously normal radiographs suggest that these hernias may be acquired through a congenital defect in the diaphragm [5]. It can occur on either side of the sternum through the Larrey muscle-free sterno-costal triangle and is more common on the right side [2]. A CT scan is the most sensitive imaging method and gives excellent results on both the presence of hernia and its content.

Once diagnosed, the requirement for surgery largely depends upon the presentation. Repair avoids further complications. Emergency intervention is not always necessary unless there is evidence of strangulation [2,3]. There is no definitive answer as to which approach should be employed for repair. Both, transabdominal or transthoracic, methods have been shown to have similar and satisfactory results [6]. Currently the abdominal, mainly laparoscopic, approach is preferred. With the advent of miniinvasive techniques laparoscopy repair was also reported by Kustler in 1992 [7]. Laparoscopy is suitable for the repair of non-complicated Morgagni hernia while the hernial content can be easily reduced. The sac is not usually removed as this may result in massive pneumomediastinum or pneumothorax with potential respiratory and circulatory complications [2,7]. We noted an adverse effect of the retained hernial sac which was completely filled by seroma within a few days and showed similar symptoms to those before surgery. The patient’s status forced a thoracotomy sac resection. Mesh tacker fixation may also be complicated by bleeding from the diaphragmatic veins (as in our case – hemothorax) or by
hemopericard with the risk of cardiac tamponade. So if the hernial defect is only of a small size primary suture closure without mesh is feasible (case 2), reinforced, for example, by the sac flap. We cannot fully confirm the adhesive protection effect of a dual mesh. Fine adhesions with the omentum or fatty tissue were found, but not with any organs.

**Conclusion**

We have reported two laparoscopic Morgagni hernia procedures performed within a short period. The patient who underwent a hernia sac resection and suture of the hernia showed an excellent recovery. The other patient suffered complications after just a hernia defect mesh cover was used. We would like to draw attention to the possible risks of diaphragmatic hernia laparoscopy surgery (hemothorax, hemopericard, retention of hernial sac).

**References**


