Transabdominal subcostal approach in surgical management of Morgagni hernia

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Received 9 June 2010; received in revised form 16 September 2010; accepted 19 September 2010; Available online 26 January 2011

Abstract

Objective: Morgagni hernia is an uncommon type of diaphragmatic hernias whose pathophysiology is not clear. We aimed to retrospectively evaluate morbidity, mortality, and treatment outcomes in 13 cases of Morgagni hernia treated with the subcostal approach.

Material and methods: Between 1993 and 2009, 13 patients with Morgagni hernia were operated in our department. Of the 13 patients with a median age of 65 years (range: 13—78), 12 were female. Chest roentgenograms, thorax computed tomography (CT), and barium enema roentgenographic studies were used as diagnostic utilities. The contents of the hernia, as diagnosed with CT and confirmed at surgery, were omentum and colon in all patients.

Results: All the patients were operated electively except one patient on ventilation treatment. Transabdominal repair with the subcostal approach was performed in all patients. There was no operative morbidity and mortality. The median hospital stay was 8 days (range: 6—14 days). There was no recurrence during the follow-up of 48.8 months (1—132 months).

Conclusion: We recommend the transabdominal subcostal approach in patients with Morgagni hernia for surgical exposure, easy repair of the hernia sac, and low morbidity.

Keywords: Morgagni hernia; Surgery; Laparotomy

Diaphragmatic hernias of Morgagni were first described in 1769 as anatomical defects in the anterior diaphragm that allow abdominal contents through the retrosternal defect into the thoracic cavity [1]. Morgagni hernia (MH) is an uncommon type of diaphragmatic hernia whose pathophysiology is not clear, and accounts for 3% of all diaphragmatic hernias [2]. Although MHs are generally asymptomatic and usually discovered incidentally during routine diagnostic tests for other pathologies [3], a missed or late diagnosis can lead to serious complications. Early surgical intervention and correct diagnosis prevent these undesirable events. Hereafter, we aimed to retrospectively evaluate morbidity, mortality, and treatment outcomes in 13 cases of MH treated with the subcostal approach.

1. Material and methods

Our study included 13 cases of MH operated using the transabdominal subcostal approach between 1993 and 2009 in our department. Of the 13 patients with a median age of 65 years (range: 13—78), 12 were female. The medical records of the patients were retrospectively reviewed for age, sex, side of defect, presenting symptoms, diagnostic studies, and content of the hernia sac (Table 1). The presenting symptoms included dyspnea (54%), abdominal pain (54%), nausea, and vomiting (8%). One patient was operated with severe dyspnea on ventilation treatment. Predisposing factors were obesity in six patients (46%), history of trauma in three patients (23%), and chronic coughing in one patient (8%). There was no complaint in three patients. Biochemistry and hemogram data were within the normal limits in all patients. X-ray (100%), thorax computed tomography (CT) (100%), contrast enema (31%), and magnetic resonance imaging (MRI) (15%) studies have been used to evaluate patients with MH (Figs. 1 and 2). The preoperative diagnosis was an MH in all patients.

The contents of the hernia, as diagnosed with CT and confirmed at surgery, were omentum and colon in 12 patients (92%). In addition, omentum and stomach were found in one patient (8%). All the patients were operated using transabdominal right subcostal approach. Exploration through the incision provided a good exposure in all cases. Following the excision of the hernia sac, adhesions were lysed with blunt and sharp dissection. Hernia contents of those of omentum, transverse colon, and stomach were pushed down into the
abdomen. Diaphragmatic defects were repaired primarily with interrupted 0 nonabsorbable sutures; mesh was not need for defect in the diaphragm.

2. Results

All the patients underwent successful transabdominal repair of MHs. Although prognosis after surgery is good, recurrence is not. Right subcostal incision provided a good exposure and easy repair of hernia in our patients. There was no need for additional incision and subcostal approach except in one patient with strangulation. Emergency surgery was performed and right hemicolectomy was done on this patient. At the operation, the anatomic distribution of MH was found to be 85% for the right, and 15% for the left. Exploration revealed that the most common contents of the hernias were the omentum and colon in 12 patients (92%), followed by the colon and stomach in one patient (8%). The lengths of the hernias were between 4 and 10 cm. The postoperative course was uneventful except in one patient with 3-day postoperative ventilation who had been operated on ventilation treatment. This patient was discharged in good condition after weaning ventilatory. The median hospital stay was 8 days (range: 6—14 days). There was no recurrence during the follow-up of 48.8 months (1—132 months). There was also no 30-day mortality.

3. Discussion

MHs account for 3—4% of all non-traumatic diaphragmatic hernias in adults [2,4]. Congenital defects of the diaphragm in the subcostosternal region can result in the direct herniation of abdominal contents into the thoracic cavity [5]. The clinical presentation of this hernia may be confusing, and definitive management strategies have not been well established. Generally, these hernias are founded incidentally when a patient has reached adulthood, when they become symptomatic due to intestinal obstructive symptoms (strangulation or incarceration), or when respiratory deficiency symptoms occur. Majority of MHs are in the right part of the body and MHs in the left part of the body are rare, because of the protection provided by the heart and pericardium [5,6]. However, hernias of traumatic origin more frequently occur in the left part of the body because of the sealing effect of the liver [6,7]. Predisposing situations present in 41% of the cases included pregnancy, trauma, obesity, chronic constipation, and chronic cough [8]. Horton and colleagues [8] reported that only 28% of the patients were truly asymptomatic at the time of presentation. These symptoms were described as bowel obstruction, pulmonary symptoms, pain and pressure, dysphasia, bleeding, gastroesophageal reflux disease (GERD), and others [8]. Pain and pulmonary complaints were the most commonly reported symptoms as in our study. Chest X-rays, barium enema, CT, and MRI can be used in the diagnosis. A chest X-ray is a useful tool in the diagnosis of MHs [9]. In the chest X-ray, mass lesions or air—fluid levels can be detected in the right cardiophrenic area. However, thorax and upper abdomen CT are most sensitive as they provide excellent anatomical details of the contents of the hernia [6,10]. Horton and colleagues [8] also reported that it is chest X-ray (93%), followed by CT scan (47%), contrast enema (24%), upper gastrointestinal (GI) study (23%), upper GI endoscopy (8%), and MRI (5%). In our series, X-ray (100%), thorax CT (100%), contrast enema (31%), and MRI (15%) were used for diagnosis. MH diagnosed on X-ray (85%) and thorax CT (100%).

Once diagnosed, the requirement for surgery largely depends upon the presentation [11]. Early surgical intervention should be considered in all cases because MH could cause life-threatening complications such as obstruction or strangulation [2,3]. The aim of surgery was replacement the herniated organs, excision of the hernia sac, and closure of the hernia defect. Repair of MH has been done primarily through four methods: laparotomy, thoracotomy, thoracoscopic, and laparoscopy. Transabdominal approaches of MH have been recommended by numerous authors with favorable results [2,8]. In a review, repair of MH was performed via thoracotomy (49%), laparotomy (30%), laparoscopy (17%), and thoracoscopic (0.7%) [8]. Recently, video-assisted endoscopic surgery has been proposed as a safe and effective method for repairing MH [2,12,13]. Kılıç and colleagues [14] reported 16 patients with MHs that were repaired through transthoracic approaches. They proposed favorable results with thoracotomy in patients without preoperative diagnosis as Comet and colleagues [2,14] also did. However, other authors proposed laparoscopy, which is useful particularly when the diagnosis is unclear [15]. The reported outcomes for the laparoscopic approach have been excellent [8].

<table>
<thead>
<tr>
<th>No</th>
<th>Age</th>
<th>Sex</th>
<th>Side of defect</th>
<th>Presenting symptoms</th>
<th>Diagnostic studies</th>
<th>Content of hernia sac</th>
</tr>
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<tbody>
<tr>
<td>1</td>
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<td>Barium enema, CT</td>
<td>Omentum, colon</td>
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<tr>
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<td>M</td>
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<td>Dyspnea</td>
<td>X-ray, CT</td>
<td>Omentum, colon</td>
</tr>
<tr>
<td>3</td>
<td>66</td>
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<td>X-ray, CT</td>
<td>Omentum, colon</td>
</tr>
<tr>
<td>4</td>
<td>78</td>
<td>F</td>
<td>Left</td>
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<td>Barium enema, CT</td>
<td>Omentum, stomach</td>
</tr>
<tr>
<td>5</td>
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<td>X-ray, CT</td>
<td>Omentum, colon</td>
</tr>
<tr>
<td>6</td>
<td>64</td>
<td>F</td>
<td>Right</td>
<td>Nausea, vomiting</td>
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<td>Omentum, colon</td>
</tr>
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<td>Omentum, colon</td>
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<tr>
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<td>62</td>
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<td>X-ray, CT, MR</td>
<td>Omentum, colon</td>
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<tr>
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<td>F</td>
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<td>X-ray, CT, Barium enema</td>
<td>Omentum, colon</td>
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<td>Omentum, colon</td>
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<td>Right</td>
<td>Abdominal pain</td>
<td>X-ray, CT</td>
<td>Omentum, colon</td>
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CT: thorax and upper abdominal computed tomography.
Although laparoscopy is suitable for certain cases, signs of respiratory insufficiency and bowel obstruction constitute a surgical emergency and an indication for laparotomy [15]. Laparotomy, however, is still the most common approach for repair [11,16]. From our study, we agree with several others that MH can be managed successfully and easily by the transabdominal approach [2,8,11,16].

MH is a rare surgical disease. The preoperative diagnosis is best aided using a thorax- and upper abdominal CT scan. Early surgical intervention should be required in all cases to prevent life-threatening complications such as obstruction or strangulation. The right subcostal approach provides a view with adequate working space as well as easy and safe repair of the MH.

References