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Case Report

The Tip of The Iceberg: An Unusual Case of Diaphragmatic Hernia Presenting as A Breast Abscess

Victoria Needham*, Alexandra Argioff and Diego Camacho

Montefiore Medical Center

ARTICLE INFO

Article history:

Received: 5 February, 2019

Accepted: 21 February, 2019

Published: 28 February, 2019

Keywords:

diaphragmatic hernia

ventral hernia

colocutaneous fistula

diverticulitis

reoperation

ABSTRACT

In this case report we illustrate an atypical presentation of diaphragmatic hernia as a colocutaneous fistula. An 83-year-old female with history inclusive of hiatal hernia repair and multiple ventral hernia repairs presented with purulence from her left breast. CT scan was performed showing a colon-containing diaphragmatic hernia protruding between left-sided ribs, with an overlying left breast collection. She was taken to the OR, and after extensive lysis of adhesions, a large left diaphragmatic hernia was encountered with perforated colonic diverticulitis in the hernia sac extending to the colocutaneous fistula via the breast. The hernia sac was dissected down, the colon was mobilized, and a left segmental colectomy was performed to include the area of involved pathology, with primary anastomosis, and the diaphragmatic defect was repaired primarily. It is important to consider unusual presentations of diaphragmatic hernia, including any pathology involving any intraabdominal organs incarcerated within the defect.

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Introduction

A diaphragmatic hernia is caused by any disruption in the musculotendinous boundary between the negative-pressure thoracic cavity and positive-pressure abdominal cavity [1]. Diaphragmatic hernias are categorized as congenital or acquired, congenital due to embryologic defects in the diaphragm and acquired via penetrating or blunt trauma, iatrogenic injury, or rare barotrauma accidents such as labor and scuba diving [2, 3]. While many diaphragmatic hernias (congenital or acquired) are asymptomatic, they may also present with subacute symptoms such as pain or dyspnea, or as a surgical emergency via organ strangulation. This case scenario illustrates an atypical presentation of a perforated viscus within the hernia sac leading to colocutaneous fistula.

Case Report

An 83-year-old female with a surgical history inclusive of hiatal hernia repair and multiple ventral hernia repairs (without available prior operative records) presented to the emergency room with purulence from her left breast, after drainage of a breast abscess earlier that day in clinic. Upon review of her recent mammogram noting bowel loops in the left chest, the patient was directed to the emergency room for further workup. CT scan was performed showing a colon-containing diaphragmatic and ventral hernia protruding between left-sided ribs,

with an overlying left breast collection, concerning for enterocutaneous fistula (Figure 1). She had normal vitals, laboratory results, and a benign abdominal exam. Decision was made for operative exploration after preoperative medical clearance.

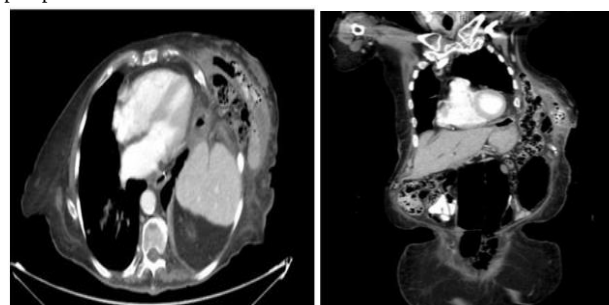


Figure 1

An open incision was made via an existing upper abdominal chevron scar, revealing a mesh directly under the subcutaneous tissue. The mesh was opened, and extensive lysis of adhesions was performed in the left upper quadrant, revealing a colon-containing hernia sac through the diaphragm and through the left lateral ribs into the breast (Figure 2). The hernia sac was dissected down into the abdominal cavity, revealing extensive colonic diverticulosis and inflammation as well as a perforated diverticulum with surrounding abscess. The distal transverse colon and

*Correspondence to: Victoria Needham, Montefiore Medical Center; E-mail: vneedham@montefiore.org

splenic flexure were completely mobilized, and a left segmental colectomy was performed to include the area of involved pathology, with primary anastomosis. Remaining hernia sac was dissected to identify clean fascial edges, and the diaphragmatic defect was repaired primarily (Figure 3). The patient's postoperative course was uncomplicated.

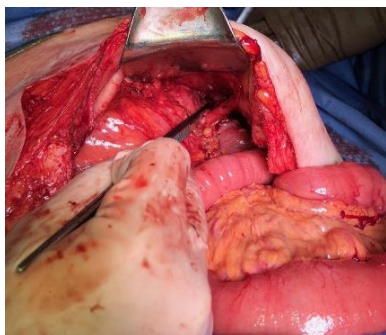


Figure 2

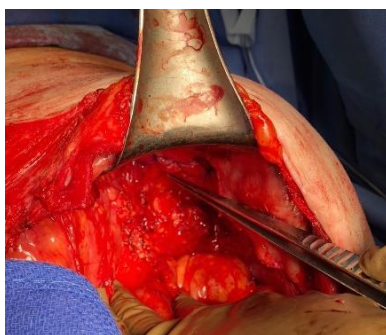


Figure 3

Discussion

Fistula formation is a known complication of diverticular disease and occurs in up to 20% of surgically-treated diverticulitis. Fistulas are most common to organs in proximity to the sigmoid colon (colovesical, colovaginal and colouterine) but can occur between any portion of inflamed colon and any other structure, and colocutaneous fistulas do occur as in our case. Generally diverticular fistulas require surgical management as they often do not close spontaneously, and segmental resection of the inflamed or grossly diseased segment is indicated but does not have to be done on an urgent basis in the absence of peritonitis or sepsis [4].

Acquired diaphragmatic hernias may present at the time of injury such as during a trauma laparotomy or may have a delayed presentation such as illustrated in this case report. While our patient's past surgical history was not completely elucidated by her history and available records, prior chest radiographs did not show elevation of the left hemidiaphragm. This could point to her hernia as a consequence of iatrogenic injury from her prior hiatal hernia or ventral hernia surgery. However, one must keep in mind that radiological examination is not entirely specific, and in fact the most common cause of delay in diagnosis of posttraumatic hernia is no sign of displaced abdominal organs into the chest on xray and can be delayed for years [5].

Diaphragmatic hernia while often asymptomatic can progress to a surgical emergency for a variety of reasons. The diaphragm is the main muscle for respiration, and therefore respiratory compromise may be the first or a severe sign of diaphragmatic herniation for some [6]. Therefore, clinicians must maintain a high index of suspicion. Clinical findings include respiratory distress, decreased breath sounds on the affected side or auscultation of bowel sounds in the chest, as well as

abdominal pain and paradoxical movement of the abdomen with respirations. As stated above, while chest radiographs can miss up to a third of diaphragmatic hernias, it remains the best initial screening test, and is most sensitive for demonstrating left sided hernias. Placement of a nasogastric tube prior to the chest x-ray will aide in the diagnosis if seen in the thorax on the film. CT chest will increase the sensitivity and specificity. The "collar sign" is traditionally described for diaphragmatic hernias as abdominal contents in the thorax [7, 8].

Once the diagnosis is made, repair is indicated due to the morbidity and mortality associated with diaphragmatic hernia, including the aforementioned risk of respiratory compromise, as well as the risk for incarceration and strangulation of the intrathoracic contents. However, all cases must be individualized. Upon operative exploration, the hernia sac and its contents should be dissected from the chest, the diaphragmatic defect cleared, and in the absence of contraindications (such as contamination in our case), a mesh may be needed to reinforce the repair if a large defect is present [9]. In our case, once the hernia sac was reduced, the underlying pathology of our enterocutaneous fistula could be properly dealt with as a segmental colon resection. If technically feasible, a laparoscopic abdominal approach is preferred to an open approach. In certain cases, transthoracic approach may be necessary to release long-standing adhesions. Trauma literature describes an abdominal approach (laparoscopy or laparotomy) for early presentations, and thoracic approaches for long-standing diaphragmatic hernias due to the likely presence of dense adhesions in the chest [10].

Conclusions

It is important to consider unusual presentations of diaphragmatic hernia. Chest radiograph and chest CT are standard modalities for both diagnosis and preoperative planning. All diaphragmatic hernias should be repaired to avoid the morbidity and mortality associated with the respiratory effects of a compromised thorax, incarceration and strangulation of the hernia contents, as well as the potential pathology involving any of the organs involved in the hernia.

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