Incidental Discovery of Atypical Diaphragmatic Hernia Repair During Elective Robotic Hiatal Hernia Repair

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Background

Congenital diaphragmatic hernias (CDH) occur due to abnormal pleuro-parietal separation during weeks 4-8 of development and are identified in an estimated 1:2,500 live births. They are generally left-sided (80-90%) and posterolateral (90%), graded by size of defect[1,2].

Traumatic diaphragmatic hernias are uncommon, and while incidence in penetrating and blunt trauma is highly variable, the majority are reported in penetrating trauma. They are often identified surgically due to poor imaging sensitivity and 14-66% are identified in a delayed fashion either incidentally or secondary to obstruction, gastrointestinal, or cardiopulmonary symptoms[3].

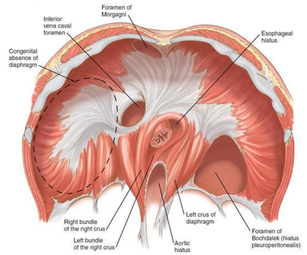

Figure 1:
Types of described congenital diaphragmatic defects[4].

Case

We present the case of a 30-year-old female with history of longstanding gastroesophageal reflux disease in whom an atypical diaphragmatic hernia was identified during hernia repair.

She presented with longstanding symptoms of typical reflux. She had undergone esophagogastroduodenoscopy at the age of 13 for post-prandial left upper quadrant pain which demonstrated a small hiatal hernia and was placed on a proton-pump inhibitor with symptom improvement. However, she had recent progression in her symptoms prompting re-evaluation with EGD demonstrating a large hiatal hernia and robotic hernia repair was offered.

Operative Findings

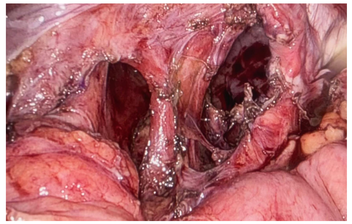

Figure 2:
Hiatal hernia patient right with incidental diaphragmatic defect left following reduction of the hernia contents. The diaphragmatic defect identified is most similar to a Bochdalek hernia, though is more anterior in its positioning that may generally be expected.

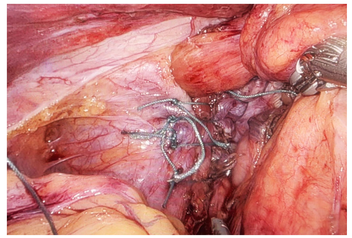

Figure 3:
The posterior portion of both defects was closed en masse in an interrupted fashion with permanent suture taking care not to capture the left phrenic nerve within the repair

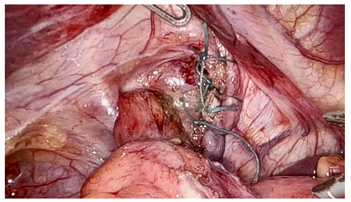

Figure 4:
The anterior portion of the diaphragmatic defect was closed with simple interrupted permanent suture for anatomic repair. The size of the defect lent itesIf to repair without relaxing incisions. Following closure of the defects a Gore BioA mesh was placed in typical reverse "C" fashion

Approach to Repair

A typical robotic hiatal hernia repair approach was taken. Intraoperatively the stomach was difficult to reduce. Once reduced, a complex diaphragmatic defect was revealed with a type II paraesophageal hernia and a separate defect just to the left of the hiatus divided by a pillar of diaphragm muscle (Fig 2). The hiatal defect and the separate diaphragm defect were closed en masse posteriorly with interrupted posterior sutures (Fig 3). The anterior portion of the diaphragmatic portion was closed primarily with permanent suture (Fig 4). A Gore Bio-A mesh was positioned in a reverse "C" fashion overlying both defects.

Discussion

In patients with subclinical congenital diaphragmatic hernias incidental imaging or intraoperative identification is not uncommon. As this patient has no known history of trauma, we assume this to be a congenital defect. This patient's diaphragmatic hernia is somewhat atypical in its location as it does not appear to originate as posteriorly as would be expected in a Bochdalek hernia, though is clearly within the muscular body of the diaphragm as opposed to located within the central tendon.

The approach to repair of both congenital and traumatic hernias is size dependent. In this patient, the relative location of the hernias to each other, the comparable size of the defects, and the robust, though narrow nature of the dividing pilar of tissue lent themselves well to en masse repair posteriorly. In taking this approach particular care was taken to avoid entrapping the left phrenic nerve within the repair.

The patient has recovered well from her surgery and has had relief in her symptoms after undergoing repair.

Selected References

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The authors of this report have no conflicts of interest to declare