Gastric Outlet Obstruction caused by Intrapericardial Diaphragmatic Hernia: A Description of a Robotic Repair and Review of the Literature

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Background

- Congenital diaphragmatic hernias (CDH) are rare, with an incidence of one in 4,000 newborns
- Typically symptomatic early in life with high morbidity and mortality
- Intrapericardial diaphragmatic hernia (IDH) is the rarest form of CDH[1]

Case Description

An 87-year-old man with history of hypertension and hyperlipidemia presented with exacerbation of his six-month history of epigastric discomfort, nausea, and self-induced vomiting to relieve symptoms with associated 30-lbs weight loss. He developed PO intolerance 3 days prior to presentation. CT scan identified gastric outlet obstruction (GOO) secondary to an anterior diaphragmatic hernia with the distal stomach in the chest (figure 1). He underwent nasogastric tube decompression until his robot assisted laparoscopic hiatal hernia repair.

Upon entry into the abdomen, it was noted that the stomach was mostly reduced from the hernia defect in the center of the diaphragm. The heart and pericardial fluid were visualized (figure 2). Minimal adhesions were present with no identifiable hernia sac. The size of the hernia was 6 cm x 10 cm. The defect was repaired with a GORE Synecor mesh as the diaphragm could not be reapproximated without tension. This was secured in place with sutures circumferentially. A drain was left in the pericardial space.

The patient was advanced to a clear liquid diet and discharged home on post-operative day 2.

He was seen in clinic for a 2 week post-operative follow up. His diet had been advanced to a blenderized diet, which he was tolerating well. The drain had minimal output since surgery and was removed during this clinic visit.

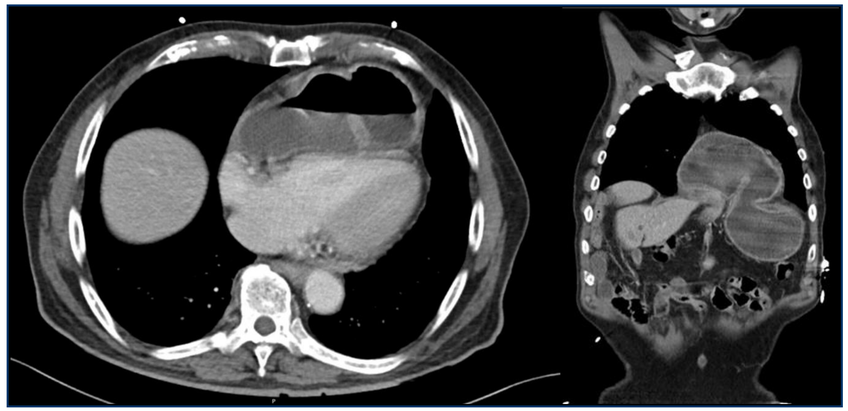


Figure 1 | CT images (axial and coronal views) demonstrating the distal stomach within the diaphragmatic hernia

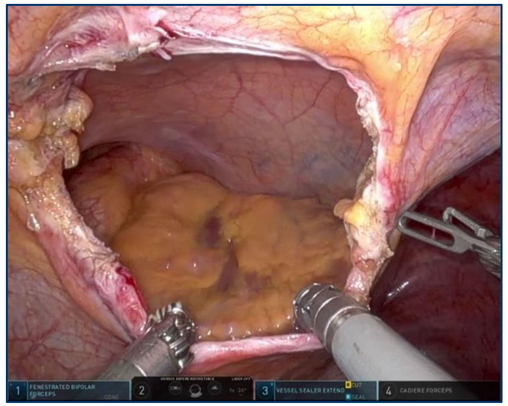
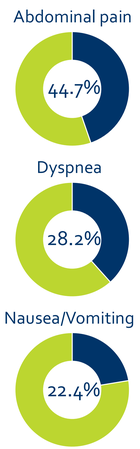


Figure 2 | Intraoperative photo with the heart visualized from the hernia defect after reduction of hernia contents

Discussion

IDH is an incredibly rare clinical entity. There have been less than 90 reported cases. Most frequently, they are secondary to traumatic injury or iatrogenic injury, which our patient had no reported history of. They most commonly present with abdominal pain (44.7%), dyspnea (28.2%), and nausea or vomiting (22.4%). GOO has not been documented as a presenting symptom of congenital IDH.

Most IDH reported in the literature have been repaired with open or thoracic approaches; only 15 cases have been repaired laparoscopically[2]. Of the available data, the laparoscopic approach appears to have a shorter length of stay. With the widespread adoption of the DaVinci robotic platform, the most efficient and ergonomic repair may be robotic-assisted laparoscopic repair. Further research is necessary to identify the potential benefits of this approach.



Conclusion

There are no other reported cases of GOO secondary to congenital IDH that have been repaired robotically. We were successfully able to repair the diaphragmatic defect using a robotic platform with a synthetic mesh. This case provides evidence that a transabdominal robot assisted laparoscopic approach can be safely utilized to repair intrapericardial diaphragmatic hernias.

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