

Case Report

Robotic assisted transabdominal preperitoneal approach for repair of Morgagni hernia in elderly female

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Abstract

Morgagni hernia's are relatively rare congenital diaphragmatic hernias that are typically described in pediatric populations. It is rare for patients to present with symptoms related to this defect in adulthood. Several techniques have been successfully utilized. This case report offers the successful utilization of the robotic assisted transabdominal preperitoneal approach (r-TAPP) for primary repair of a symptomatic Morgagni hernia in a high risk patient. To date, there are few publications describing the r-TAPP technique for Morgagni hernia repair, and no publications were found in the context described in our case. From this, we are able to provide increasing evidence of the efficacy and deployment of r-TAPP in age variable presentation of this pathology.

INTRODUCTION

The Morgagni hernia is an anterior and retrosternal congenital diaphragmatic hernia that results from the failed fusion of the pars sternalis with the pars tendinalis of the costochondral arches [1]. This failed fusion in the case of Morgagni hernia is more common to the right side of the diaphragm, although left sided and bilateral defects have been described. Morgagni hernia's are relatively rare and comprise only 2–5% of all congenital diaphragmatic hernias [2, 3]. Published literature typically describes this defect in the pediatric population with an increased likelihood of symptomatic presentation in this age group [4–6]. Few symptomatic cases are encountered in the adult population. In adults, the diagnosis is more likely to be made from chest imaging taken for symptoms unrelated to this pathology [1].

Currently, several techniques have been described for repair of this hernia. Our case report involves the utilization of the r-TAPP approach with mesh placement in a 91-year-old, high risk patient, with symptomatic gastric outlet obstruction secondary to incarcerated Morgagni hernia containing a portion of stomach.

CASE

We present the case of a 91-year-old female with history of chronic constipation, hypertension and advanced dementia who presented to the emergency department with 1 day of abdominal pain, nausea and coffee-ground emesis along with 4 days of constipation. Vital signs were within normal limits and examination of the abdomen was noted as being soft, non-distended with mild tenderness to deep palpation in the epigastric region. Complete blood count, complete metabolic panel, liver function test and urinalysis were unremarkable. Single view X-rays of the chest

showed evidence of a nonspecific herniation. Follow up computed tomography (CT) scan of chest and abdomen were significant for an anterior diaphragmatic hernia containing the antrum of the stomach with gastric outlet obstruction consistent with an incarcerated Morgagni hernia. The patient was placed on an IV proton pump inhibitor and nasogastric tube (NG) was inserted for decompression. The patient was scheduled for emergent robotic repair with mesh placement and intraoperative upper endoscopy as agreed upon with the patient's proxy.

Intraoperatively, under laparoscopic visualization, pneumoperitoneum was established. Eight millimeter trocars were then placed in the supraumbilical region and on both sides of the abdomen at this level. An additional assistant 12-mm trocar was placed over the lower left abdomen. The patient was then placed in the reverse Trendelenburg position and the Da Vinci Xi Robotic Assisted Surgical System was docked. Initial inspection of the intra-abdominal cavity revealed a large anterior diaphragmatic defect ~8–10 cm in diameter containing a portion of the stomach. The stomach appeared viable and was easily reduced with gentle traction. The peritoneum was opened over the anterior abdominal wall with hot shears to gain access to the pre-peritoneal space. Dissection was then performed in the cephalad direction until visualization of the hernia sac was achieved. The hernia sac was then retracted, carefully dissected from the mediastinum and fully reduced to expose the anterior chest wall and diaphragm. The pneumoperitoneum was decreased to reduce tension on the repair. The diaphragmatic defect was closed with running Stratafix 1 (PDS). A 10 by 15-cm progrip mesh was then placed preperitoneal to provide adequate coverage circumferentially over the defect. Hemostatic agent (Vistaseal) was then sprayed over the surgical area and mesh to ensure hemostasis. The redundant

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hernia sac and peritoneum were then reapproximated taking care to imbricate and incorporate the redundant hernia sac into the suture line using Stratafix 2-0 (PDS). Following repair, the robot was undocked, and upper endoscopy was performed, which showed numerous shallow ulcerations without active bleeding in the stomach, but no evidence of obstruction in the pylorus or duodenum. Following this, the trocars were removed, pneumoperitoneum was evacuated, and fascia and incisions were repaired.

DISCUSSION

To date, there have been several techniques described for repair of the Morgagni hernia. Recent studies have shown that minimally invasive robotic assisted approaches offers the added benefit of an abbreviated postoperative recovery period and shortened hospital stays along with a reduction in postoperative pain [7, 8]. The technical benefits in comparison to laparoscopic intervention of this method include greater visualization of the operating field, improved ergonomics as well as enhanced wrist movements that allow for easier dissection [8].

Recently, Sioda *et al.* and Gergen *et al.* separately described the novel r-TAPP for successful repair of the defect [9, 10]. To date, robotic assisted repair for Morgagni hernias is a relatively new approach that is gaining greater traction with more novel techniques like r-TAPP proving to be safe and effective means to repair this pathology.

In our case, we utilized this approach for successful repair of a symptomatic gastric outlet obstruction secondary to incarcerated Morgagni hernia in an elderly female. Our literature review yielded no other literature describing use of this technique for repair in the context of our patient, making this report unique and offering greater insight into the utility of this surgical approach. As such, our case report solidifies the safe and effective nature of the r-TAPP approach, while conferring its adaptability for cases involving high risk scenarios.

CONCLUSION

Our case report offers evidence of the effective and safe use of the robotic minimally invasive approach to alleviation and resolution of an incarcerated Morgagni hernia. The r-TAPP used during this procedure provided a means for primary repair of this congenital defect in the setting of a high risk elderly patient.

CONFLICT OF INTEREST STATEMENT

None declared.

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