

Iatrogenic Post Nephrectomy Recurrent Diaphragmatic Hernia with Colonic Obstruction, Case Report

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Abstract

Diaphragmatic hernias complicating nephrectomies are very rare. We report a case of iatrogenic recurrent right diaphragmatic hernia complicating right radical nephrectomy presenting 9 years after the initial surgery and recurring one year after being repaired by thoracotomy and suturing of the diaphragmatic defect.

INTRODUCTION

Hernias of the diaphragm are rarely reported as a complication of abdominal surgery. We report a case of a 63 years old male who presented with clinical picture of right side colonic obstruction 10 years after right radical nephrectomy for renal cell carcinoma. We also review the literature for this rare complication.

CASE REPORT

A 63 years old man presented to our emergency department with 3 days history of on and off colicky abdominal pain associated with frequent vomiting and absolute constipation. He gave history of right radical nephrectomy for renal cell carcinoma 10 years prior to his presentation. He presented a year earlier to another surgical unit with right side chest pain and increasing dyspnea. He was diagnosed to have post right nephrectomy iatrogenic diaphragmatic hernia, and had repair of the hernia defect with non-absorbable sutures through thoracotomy approach. He was otherwise healthy and not on medications.

On examination he was slightly dehydrated, not febrile. His pulse was 92/minute, BP was 110 /70 mm of Hg. Abdominal examination revealed slightly distended abdomen without tenderness or muscle rigidity. There were right thoracotomy and right thoracoabdominal scars related to his previous surgeries (photograph 1).

Photograph 1

Showing the right thoracoabdominal scar of the nephrectomy and the right thoracotomy scar of the previous diaphragmatic hernia repair.



All his blood tests including CBC, urea and electrolytes, liver function test and coagulation screen were within normal values.

His erect abdominal x rays showed multiple air fluid levels (figure 1).

Figure 1

Erect abdominal x ray showing multiple air fluid levels



He had abdominal CT scan which showed right lower lobe atelectasis particularly at the posterior segments associated with a rounded soft tissue mass in the right lower chest. The hepatic flexure of the colon was herniating through a posterolateral diaphragmatic defect into the thoracic cavity associated with distended right colon and small bowel loops with collapse transverse and left colon. The CT scan images were compatible with partial colonic obstruction with junctional zone at the site of diaphragmatic hernia. There was no obvious free air or fluid in the abdomen. The right kidney was not visualized. The CT scan findings were suggestive of right posterolateral diaphragmatic defect with right colonic flexure herniation into the chest resulting in partial obstruction of the right colon and dilation of small bowel (Figures 2-5).

Figure 2

The abdominal CT scan showing distended right colon, deformed diaphragm and herniation of the colon in the chest.

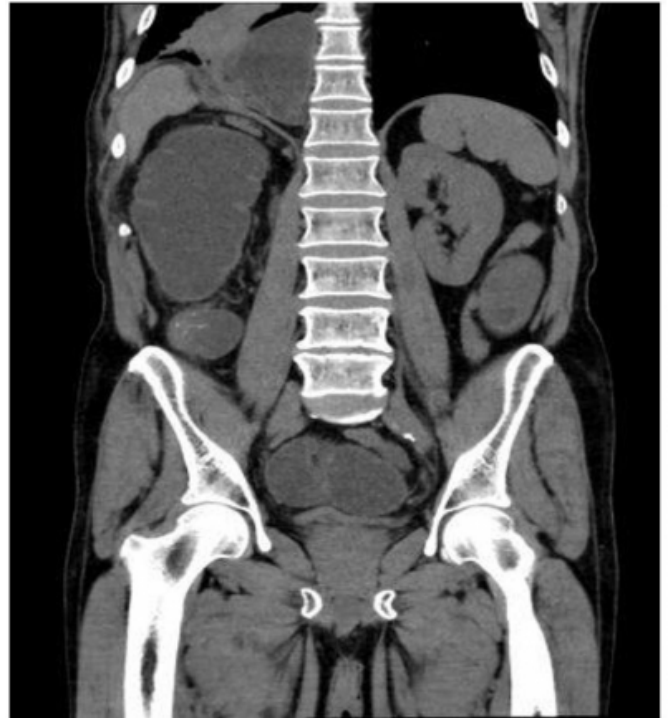


Figure 3

Showing the same finding of figure 2.



Figure 4

The abdominal CT scan (sagittal view) showing the herniation of the hepatic flexure of the colon through the posterolateral diaphragmatic defect into the chest



Figure 5

The abdominal CT scan (axial cut) showing the dilated loops of small bowel.

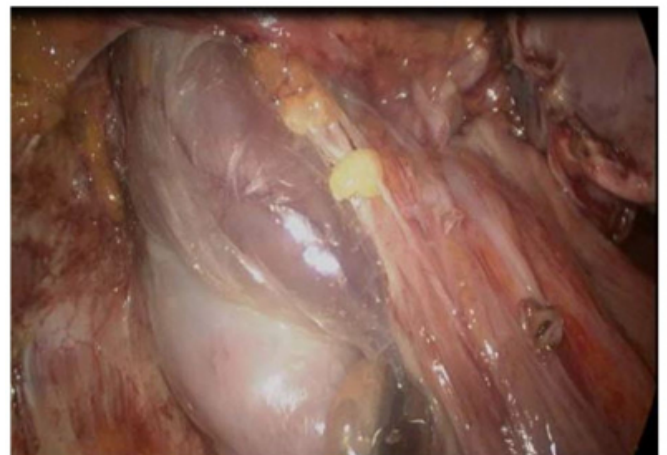


Attempts of conservative management failed to resolved the obstructive symptoms and the patient was consented for laparoscopic explorations with possibility of conversion to open surgery. Intubation was done with double lumen endotracheal tube and the patient was placed in left lateral

position. The abdomen was explored with 10 mm camera trocar positioned about 8-10 cm lateral to the umbilicus on the right side of the abdomen and two 5 mm trocars at the right iliac fossa and right subcostal region. The ascending colon was mobilized and followed up to the hernial defect. The herniated hepatic flexure of the colon was carefully freed and returned to the abdominal cavity. The diaphragmatic hernia defect (about 8 x 4 cm) was repaired with coated mesh sutured to the edges of the diaphragm (photograph 1-5). No chest or abdominal drains were inserted. The patient had uneventful recovery, reassumed oral diet on the second post-operative day and was discharged on the fifth post-operative day.

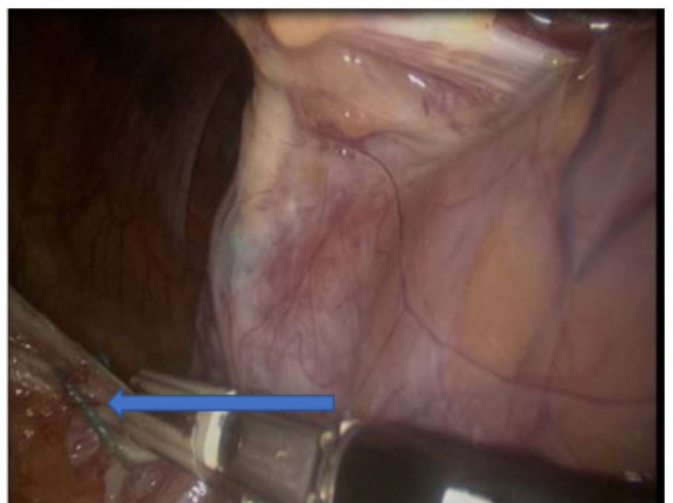
Photograph 2

Showing herniation of the hepatic flexure of the colon through the diaphragmatic defect.



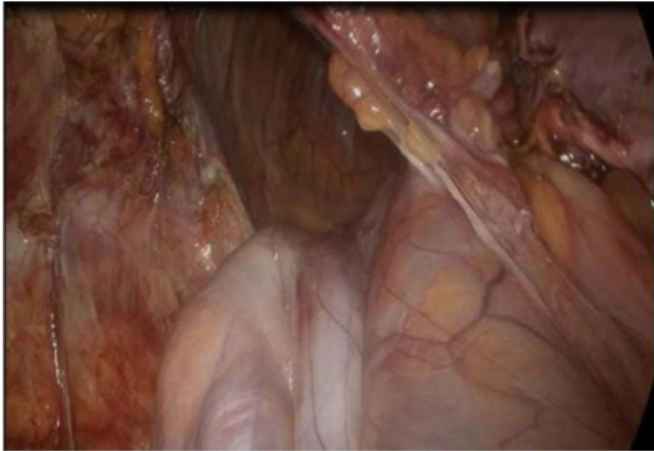
Photograph 3

Showing the diaphragmatic defect with the arrow pointing to the sutures of the pervious repair.



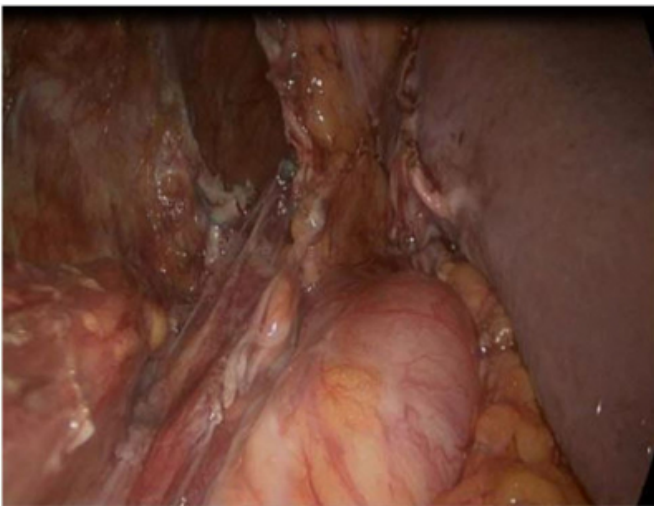
Photograph 4

Showing the releasing the colon from the edges of the hernia defect and pulling it back into the abdomen.



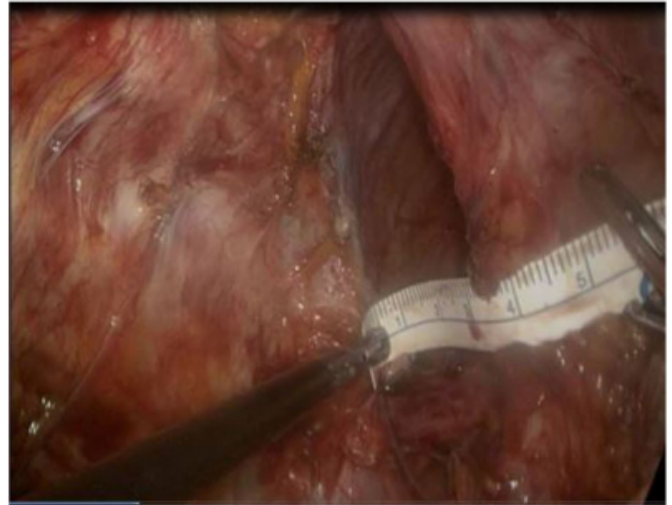
Photograph 5

Showing the hernia defect after reducing the herniated colon into the abdomen.



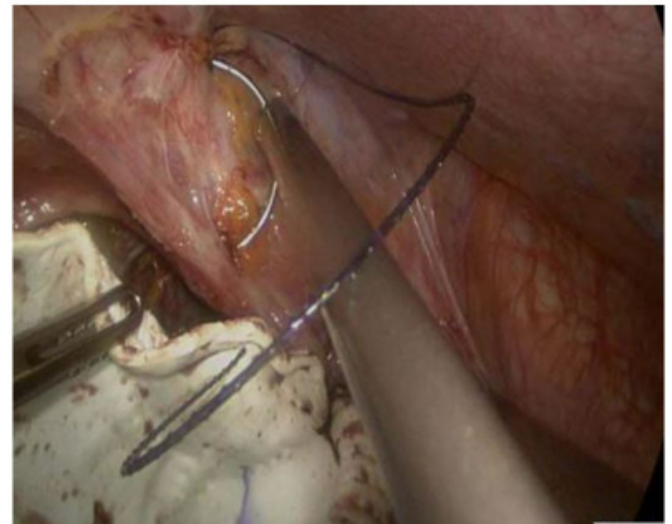
Photograph 6

Measurement of the hernia defect.



Photograph 7

Closing the diaphragmatic defect with coated mesh sutured to the edge of the diaphragm.



DISCUSSION

Diaphragmatic hernias are rare conditions usually classified into congenital hernias, traumatic hernias and iatrogenic hernias. Iatrogenic diaphragmatic hernias commonly reported following laparoscopic cholecystectomy, laparoscopic hepatectomy, esophagectomy, gastrectomy, gastric fundoplication, laparoscopic gastric banding, radiofrequency ablation of liver lesions, splenectomy, nephrectomy and spleno-pancreatectomy, as well as after living donor liver transplant and video-assisted thoracoscopic surgery for partial resection of the lung (1–5).

Iatrogenic diaphragmatic hernia complicating nephrectomy

are very rare with only few cases reported in the literature.

Presentation of iatrogenic diaphragmatic hernia depends on the size of the hernia defect and the nature of the herniating organs. In absence of obstruction or incarceration they can passed unnoticed for several years, or may be found incidentally on follow-up imaging (6). Presentation of iatrogenic diaphragmatic hernia can be early or delayed for months or years after the initial surgery (7). De Meijer VE et al (8) reported a case of a 47 years old female who presented with dyspnea and chest pain one day after left radical nephrectomy for renal cell carcinoma. Conall Fitzgerald et al (6) reported two cases of delayed diaphragmatic hernia following nephrectomy which resulted in gastric incarceration requiring emergency repair one case presented 3 years and the other presented thirteen month after the initial surgery. our case presented 9 years after the initial surgery.

It has been suggested that this delay in presentation is as a result of the gradual enlargement of small tears in the diaphragm not noticed at the time of surgery which develop over time with increases in intra-abdominal pressure associated with coughing and straining (9).

Surgery is the treatment of choice for symptomatic iatrogenic diaphragmatic hernias either with direct suture repair, synthetic graft insertion, or a combination of both.

Surgery can be performed by laparotomy, thoracotomy or laparoscopically. Some authors consider thoracotomy the best elective surgical approach for the correction of anatomical chest defects in absence of any abdominal pathology (1-3). Transabdominal surgery is suggested in acute or unstable patients to allow better examination of intra-abdominal organs and dissection of adhesions (7).

Laparoscopic approach was described by many authors (10) and there is increasing use of the laparoscopy in management of diaphragmatic hernias as it has the advantages of avoiding complications associated with thoracotomies and laparotomies.

Some authors have suggested that right-sided defects be an indication for thorascopic diagnosis, as the liver can mask defects that would be apparent on thoracoscopy (11). However, other authors contend that the liver provides a significant enough obstruction to the surgeon's approach that a right-sided defect be an indication for thorascopic repair (12,13).

In our case we preferred the laparoscopic abdominal approach than thoracoscopy to avoid the adhesions that my resulted from the previous thoracotomy. The abdominal laparoscopic approach was difficult because the herniating colon was passing behind the liver together with the limitation of the operative field by the distended small bowel but with retraction of the liver to the left side and careful dissection around the diaphragmatic defect the surgery went smooth and safe. The rapid recovery of the patient, minimum post-operative pain and analgesia, early mobilization and short hospital stay paid well for the operative difficulties.

Whatever surgical approach used the objective of diaphragmatic hernia repair is to achieve tension free repair to avoid future recurrence. Small diaphragmatic defects are usually being treated by primary repair with non-absorbable sutures. If the diaphragmatic defect is large or the muscles weak, synthetic grafts should be used because the primary repair could cause excessive tension (14).

SUMMARY

Iatrogenic diaphragmatic hernias complicating nephrectomy are very rare with only few cases reported in the literature. Presentation of iatrogenic diaphragmatic hernia depends on the size of the hernia defect and the nature of the herniating organs. Presentation can be early or can be delayed until months or years after the initial surgery. Surgery is the treatment of choice for symptomatic diaphragmatic hernias either with direct suture repair, synthetic graft insertion, or a combination of both. Classically, surgery is done through thoracotomy or laparotomy approaches. There is increasing trend towards the use of laparoscopy in management of diaphragmatic hernia as it has the advantages of minimum postoperative pain, early return to normal activities and short hospital stay

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