International Surgery Journal
Fraga EC et al. Int Surg J. 2020 Feb;7(2):557-559
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20200055

Case Report

Iatrogenic diaphragmatic hernia after laparoscopic gastric band removal: a rare case report

Emília C. Fraga*, Cristina P. Camacho, Ana C. Almeida, Maria J. Amaral, João R. Almeida

Department of Surgery, Centro Hospitalar e Universitário de Coimbra, Coimbra, Portugal

Received: 22 December 2019
Revised: 08 January 2020
Accepted: 09 January 2020

***Correspondence:**
Dr. Emília C. Fraga,
E-mail: aemiliacfraga@gmail.com

ABSTRACT

Iatrogenic diaphragmatic hernia is a rare complication of esophageal and upper abdominal surgery. The use of the gastric band has been an established and popular surgical treatment for morbid obesity. We describe a rare case of a patient who had undergone laparoscopic surgery to remove an adjustable gastric band, who presented 5 months later with an acute intense thoracic pain. The computed tomography scan revealed a diaphragmatic hernia containing the stomach. The patient required emergent laparoscopic surgery to reduce the hernia, repair the defect and resection of the ischemic stomach. In this case report, we discuss the etiology, diagnosis and treatment of this very rare complication of laparoscopic gastric banding removal.

Keywords: Strangulated diaphragmatic hernia, Complication of bariatric surgery, Laparoscopic repair of iatrogenic diaphragmatic hernia, Laparoscopic adjustable gastric band

INTRODUCTION

Diaphragmatic hernias can be divided by their etiology into congenital and acquired hernias. The main cause of acquired diaphragmatic hernias is trauma. The usual trauma related to this type of hernias are falls from height, motor vehicle accidents and penetrating wounds to the chest and abdomen.[1]

Nonetheless, in rare cases, they can be a complication of upper gastrointestinal surgery such as bariatric surgery, although these cannot be considered true hernias since there is no peritoneal sac present. These iatrogenic diaphragmatic hernias can be a potentially life-threatening condition and may present instantly after the injury, or be left unrecognized, sometimes for many years.[2]

The use of gastric band in the surgical treatment of morbid obesity has gained worldwide popularity, especially with the evolution of laparoscopic surgery.[3]

Thus far, there are only a few known cases of diaphragmatic hernias as a complication following laparoscopic placement of a gastric band.

In this case report, we describe the presentation of a strangulated diaphragmatic hernia, with acute intense thoracic pain, in a patient who had undergone laparoscopic surgery to remove an adjustable gastric band 5 months earlier.

CASE REPORT

We present the case of a 42-year-old Caucasian female who underwent laparoscopic gastric banding ten years previously and after a weight loss of about 20 kg, the gastric band was removed laparoscopically due to slippage.

About 5 months after the band was removed, the patient was admitted in the emergency department with acute

intense left thoracic pain. There was no history of trauma (penetrating or blunt).

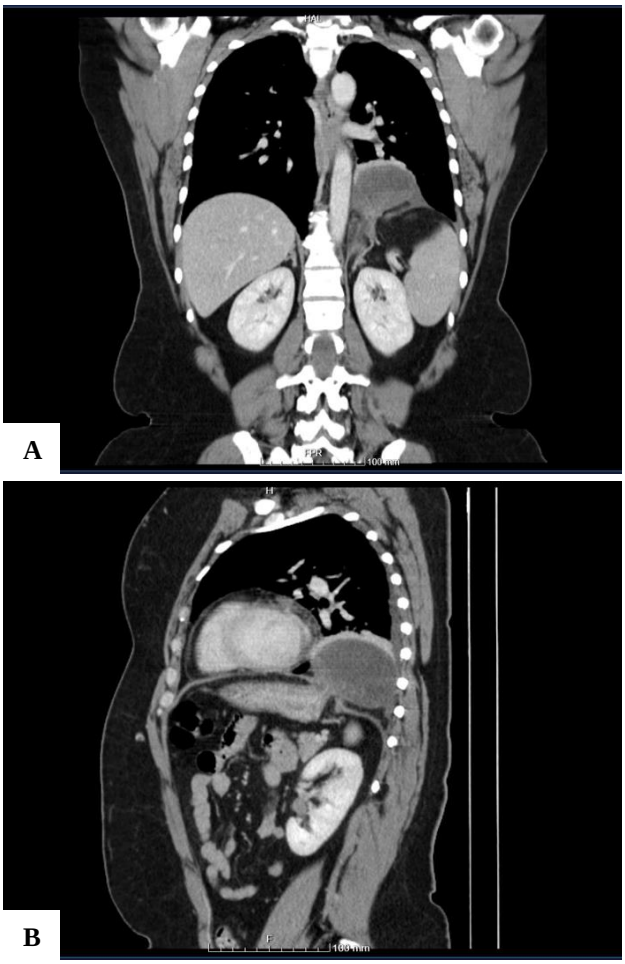

Figure 1 (A and B): CT reconstructions showing a left diaphragmatic hernia containing the stomach with associated lower lobe collapse and pleural effusion.

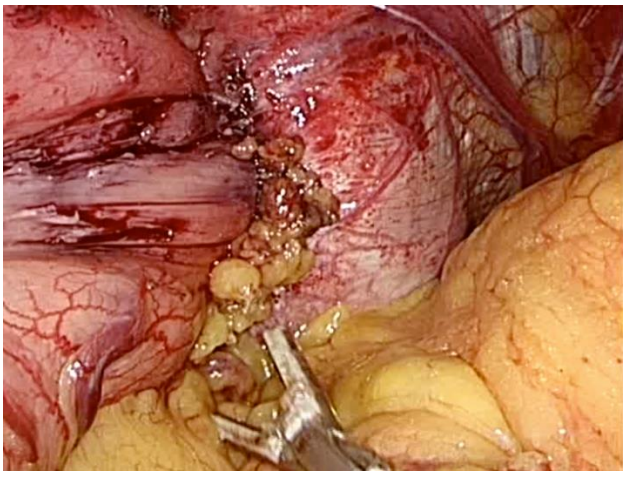

Figure 2: Intraoperative image showing the left diaphragmatic hernia containing the gastric fundus.

On physical examination, the patient was tachypneic and the abdomen was painless with no signs of peritoneal irritation. The chest X-ray showed opacification of the base of the left hemithorax. The computed tomography (CT) scan revealed a diaphragmatic hernia containing the stomach with signs of ischemia and a left pleural effusion but no peritoneal effusion (Figure 1 A and B).

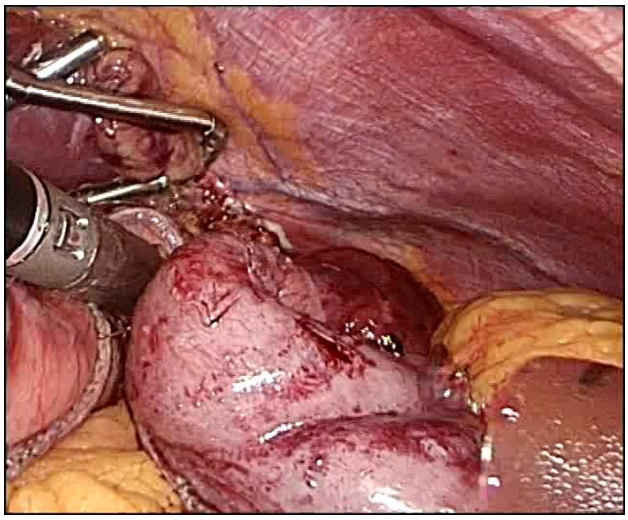

Figure 3: Intraoperative image: calibrated sleeve gastrectomy resecting the strangulated stomach (gastric fundus).

The patient underwent laparoscopic surgery that showed a strangulated diaphragmatic hernia containing the stomach (Figure 2). Reduction of the hernia content was performed. The hernial defect in the diaphragm was approximately 2 to 3 cm in size, located in the left side. After the reduction of the hernia, the greater curvature of the gastric fundus showed some segments with signs of irreversible ischemia, requiring resection. Since the patient still maintained a BMI of 40 kg/m^2, a calibrated sleeve gastrectomy (with a Bougie 36 Fr) was performed, resecting the ischemic segments (Figure 3). The defect in the diaphragm was closed with nonabsorbable sutures. The postoperative course was uneventful, and the patient was discharged 4 days after the surgery.

DISCUSSION

Acquired diaphragmatic hernias occur more frequently after a blunt or penetrating trauma to the abdomen or chest.[2]

Iatrogenic diaphragmatic hernia is a rare complication of upper gastrointestinal surgery such as bariatric surgery, but, as mentioned previously, these cannot be considered true hernias since there is no peritoneal sac present.

Over the years, there have been reports in the literature concerning the development of these hernias after bariatric surgery, such as gastric banding and gastric bypass.[2,5-7] They can be a potentially life-threatening condition and may present instantly after the injury, but some may be left unrecognized.[1] These are commonly

located on the left side of the diaphragm, due to the protecting effect of the liver on the right side. These iatrogenic hernias generally contain the large bowel, stomach, omentum, or rarely, the small bowel, and may cause strangulation of these organs.[4-8]

Probably in this case, the energy of the device used may have caused a thermal injury, and that was enough to generate a fragility point in the diaphragm. It went unnoticed at the time of the surgery and any such defect is likely to increase in size over time, due to the gradient of pressure between the abdominal and pleural cavities.[1,9]

With the increase in number of gastric bandings removals performed each year, it is reasonable to assume that the number of cases presenting with such a complication will increase.

CT scan is the preferred to diagnose diaphragmatic hernias.[1] Surgery is the gold-standard treatment for diaphragmatic hernias even in asymptomatic patients. The diaphragmatic defect should be repaired using interrupted nonabsorbable sutures, if this can be done without tension.

In this case report, we present a case of a diaphragmatic hernia complicated with strangulation of the greater curvature of the stomach, 5 months after laparoscopic gastric band removal, that was treated laparoscopically with the repair of the hernia defect and a sleeve gastrectomy.

CONCLUSION

Iatrogenic diaphragmatic hernia is a rare and potentially life-threatening complication of upper gastrointestinal surgery, including laparoscopic gastric band removal. Consequently, it is important that surgeons are aware of this serious complication to allow for an early diagnosis and an appropriate treatment.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Dukhno O, Peiser J, Levy I, Ovnat A. Iatrogenic diaphragmatic hernia due to laparoscopic gastric banding. Surg Obes Relat Dis. 2006;2:61-3.
2. Batmunsky M, Yoffe B, Dukhno O. Laparoscopic repair of postbariatric incarcerated diaphragmatic hernia presenting as large bowel obstruction. Surg Obes Relat Dis. 2015;11(2):15-7.
3. Boyce S, Burgul R, Pepin F, Shearer C. Late presentation of a diaphragmatic hernia following laparoscopic gastric banding. Obes Surg. 2008;18:1502-4.
4. Axon PR, Whatling PJ, Dwerryhouse S, Forrester-Wood CP. Strangulated iatrogenic diaphragmatic hernia: a late diagnosed complication. Eur J Cardiothorac Surg. 1995;9:664-6.
5. Alimoglu O, Eryilmaz R, Sahin M, Ozsoy MS. Delayed traumatic diaphragmatic hernias presenting with strangulation. Hernia. 2004;8:393-6.
6. Arsalane A, Herman D, Bazelly B. Left strangulated diaphragmatic hernia: an unusual complication of gastric bypass. Rev Pneumol Clin. 2005;61:374-7.
7. Alfa- Wali M, Leuratti L, Efthimiou E. Diaphragmatic Richter's type of hernia involving the transverse colon after laparoscopic gastric bypass: an unusual complication. Surg Obes Relat Dis. 2013;9:60-2.
8. Borg CM, Katz- Summercorn A, Adamo M. Acute diaphragmatic herniation as cause of small bowel obstruction after gastric bypass. Surg Obes Relat Dis. 2011;7:6-8.
9. Suh Y, Hyun Lee J, Jeon H, Kim D, Kim W. Late onset iatrogenic diaphragmatic hernia after laparoscopy-assisted total gastrectomy for gastric cancer. J Gastric Cancer. 2012;12:49-52.
10. Chevallier JM, Zinzindohoue F, Douard R, Blanche JP, Berta JL, Altman JJ, et al. Complications after laparoscopic adjust- able gastric banding for morbid obesity: experience with 1,000 patients over 7 years. Obes Surg. 2004;14:407-14.

Cite this article as: Fraga EC, Camacho CP, Almeida AC, Amaral MJ, Almeida JR. Iatrogenic diaphragmatic hernia after laparoscopic gastric band removal: a rare case report. Int Surg J 2020;7:557-9.