

CASE REPORT

Paraestomal hernia with gastric outlet obstruction: a case report and literature review

Vitor Augusto de Andrade¹, Cláudio Saddy Rodrigues Coy¹,
João José Fagundes¹, Pedro França da Costa Soares^{1,*},
Maria de Lourdes Setsuko Ayrizono¹, and Carlos Augusto Real Martinez^{1,2}

¹Colorectal Division of Department of Surgery, Faculty of Medical Sciences of Campinas State University, Campinas, São Paulo, Brazil and ²Post-Graduate Program in Health Sciences of São Francisco University, Bragança Paulista, São Paulo, Brazil

*Correspondence address. Rua Hermantino Coelho, 595 bloco A apto. 123, Campinas, São Paulo CEP-13087500, Brazil. Tel: + 55-86-98-833-6955; E-mail: peds8@hotmail.com

Abstract

An 69-year-old obese woman was submitted to an abdominoperineal resection (APR) with left side end colostomy to treat a synchronic sigmoid and middle rectum cancer. Six months after APR, she develop a PH with a progressive increase of the size. The patient refused the surgical indication. Thirteen years after APR she presenting with abdominal pain, hematemesis, bilious vomiting and non-functioning of the stoma in the last 2 days. She had a distended and painful abdomen without signs of peritoneal irritation and a large incarcerated PH. CT showed a PH with incarcerated gastric herniation. Endoscopy showed a 4 cm ulcerated lesion in the lesser curvature of the stomach whose posteriorly histopathological study revealed that it was an ischemic ulcer. She was submitted a correction of PH using an onlay polypropylene mesh put around of the previous stoma. The patient has an uneventful recovery and was discharged 3 days later.

INTRODUCTION

Parastomal hernia (PH) is one of the most common and significant complications following stoma formation. It has been showed that PH develops in up to 78% of patients with a stoma and typically occurs within 2 years of ostomy creation but may develop as long as 20 or 30 years after surgery. The presence of the stomach inside of PH causing a gastric outlet obstruction is an exceptional finding. To the best of our knowledge there are only nine cases described to date in worldwide literature [1–9]. The aim of this report is to describe a case of gastric outlet obstruction due to stomach incarceration inside of the PH successfully treated by an onlay repair with a polypropylene mesh placed by the site of the ostomy.

CASE REPORT

A 77-year-old woman was submitted 13 years before to end colostomy in left flank due to abdominoperineal resection (APR) resection to treat a synchronic sigmoid and middle rectal adenocarcinoma. She was admitted at the ER presenting a 2 days history of diffuse abdominal pain associated with hematemesis and non-functioning stoma. An irreducible and painfully PH was identified on left side of the abdomen (Fig. 1).

An abdominal computed tomography (CT) demonstrated a voluminous PH with part of the stomach protruded through the PH (Fig. 2A and B).

With the diagnosis of gastric output obstruction, it was decided to perform a digestive upper endoscopy to clarify the

Received: May 23, 2018. Accepted: July 3, 2018

Published by Oxford University Press and JSCR Publishing Ltd. All rights reserved. © The Author(s) 2018.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact journals.permissions@oup.com



Figure 1: Incarcerated PH located in left side abdominal at the site of a terminal colostomy.

cause of the digestive bleeding. The endoscopy identify a diffuse erosive gastritis and an ulcerated lesion with 4 cm of diameter. The patient was submitted to paraesophageal herniorrhaphy performed through an arciform incision done in the lower and lateral side of the stoma similarly to that previously performed by other author [10]. After release of the adhesions the stomach was easily returned to the abdominal cavity. The fascial defect was closed with a single layer of interrupted polypropylene sutures (Ethicon™, Johnson & Johnson, USA). The PH was corrected using an *onlay* polypropylene mesh (Propy-Mesh, Atramat™, Mexico), cut like an 'M' letter (Fig. 3A). The lateral large flaps of the 'M' mesh were passed alongside the lateral walls of the colon and fixed at colonic wall with interrupted stiches of 3-0 polypropylene (Ethicon™, Johnson & Johnson, USA) and the central part of the 'M' letter mesh crossed the mesocolon between the mesenteric border of the colonic wall and the marginal arterial arcade. The three flaps of the 'M' mesh were fixed on the aponeurosis of the external oblique and rectus abdominis muscles with suture with uninterrupted suture of prolene 2-0 (Ethicon™, Johnson & Johnson, USA)

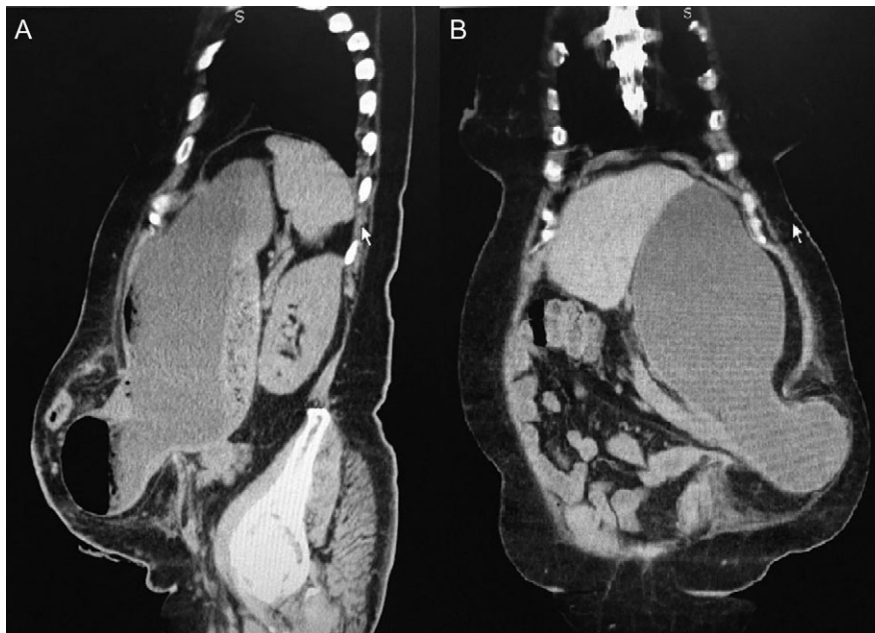


Figure 2: (A) Sagittal view of the PH containing the distal part of the stomach. (B) Coronal view of the PH with gastric content in inferior left side of the abdomen.

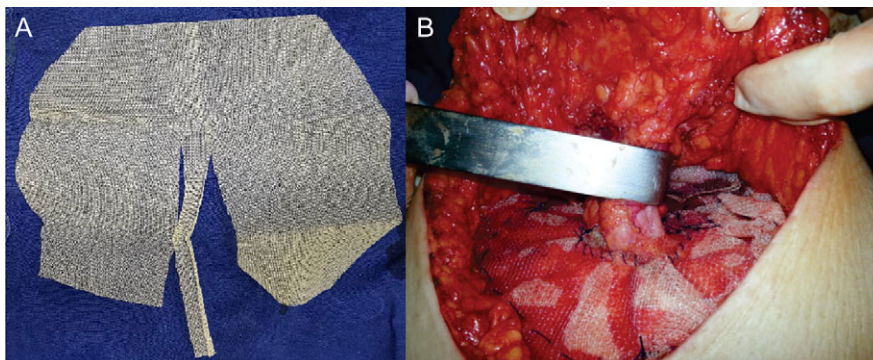


Figure 3: (A) Polypropylene mesh, cut like a letter 'M'. (B) Final aspect of *onlay* mesh paraesophageal hernioplasty.

Table 1 Summary of reported cases of gastric outlet obstruction secondary to PH

Author/year	Age (y)	Sex	Initial procedure	Access way	Technique of PH correction	Mesh	Outcomes
Figiel and Figiel, 1967	76	F	Loop colostomy	Laparotomy	Primary repair	No	Deceased
McAllister and D'Altorio, 1991	91	F	End colostomy	Laparotomy	Stoma transposition	No	Discharge
Ellingson et al., 1993	77	F	End colostomy	-	Primary repair	No	Discharge
Bota et al., 2012	41	F	End ileostomy	Laparotomy	Primary repair	Yes	Mesh infection
Ilyas et al., 2012	93	F	End colostomy	Laparotomy	Primary repair	No	Discharge
Ramia-Angel et al., 2012	64	F	End colostomy	Refuse operative repair	None	No	Discharge
Marsh and Hoejgaard, 2013	81	M	End colostomy	Laparotomy	Stoma transposition	No	Wound infection
Barber-Millet et al., 2014	69	F	End colostomy	Laparotomy	Stoma transposition Preventive mesh of the new stoma	Yes	Discharge
Bull et al., 2017	85	F	Loop colostomy	Laparoscopy convert to laparotomy	Stoma transposition	No	Discharge
Andrade et al., 2017 (current report)	77	F	End colostomy	Stoma site	Primary repair	Yes	Discharge

(Fig. 3B). After PH repair, the patient presented a satisfactory evolution, being discharged on the third postoperative day, with follow-up without relapse of PH 12 months after the procedure.

DISCUSSION

It was estimate that 450 000 people currently lives with a stoma in USA and 120 000 new stomas were created each year and the number of patients submitted to an ostomy grow at annual rate of 3%. PH is the most frequent late complication following stoma creation and its prevalence is only expected to increase. A literature review found that PH occur in 4.0–48.1% of patients with end colostomies [10].

The mainly contents presents inside of the hernia sac include omentum, small bowel and colon. The presence of the stomach inside a PH is exceptionally rare with only a few published cases in international literature (Table 1) [1–9]. To the best of our knowledge, the patient presented in this publication represents only the 10th case described.

The rarity of the gastric herniation into the herniary sac is explained in part by the numerous ligamentous attachments that keeps the stomach relatively fixed in the abdominal cavity. Ellingson et al. [3] believes that increased of gastric ligamentous laxity, like occurs in woman of advanced age with previous history of prior pregnancies, lets the stomach migrate from its native position to interior of the hernia.

Table 1 resume the main aspects of the nine cases previous described and the patient of this report.

In most published cases of gastric outlet obstruction as a consequence of PH, the most commonly used approach for correction of the complication was midline laparotomy (8/9 patients). In the present report, it was decided to access the contents of the herniary sac through an incision located in the place where the stoma had been made. The correction of the aponeurotic defect using a polypropylene mesh after approaching the edges of the herniary ring was also easily performed. The major advantage in correcting a PH by the site of the initial stoma compared to the technique of stoma transposition lies in the lower possibility of the development of incisional hernias at the site of the primitive stoma or in the midline incision used to access the cavity.

Several studies was done to evaluate the effectiveness and safety of open mesh repair comparing open non-mesh fascial repair with mesh techniques PH repair [10]. The study

showed that mesh repair of a PH is safe and significantly reduces the rate of recurrence compared with primary sutured repair. Although these findings in the 10 cases of PH with gastric outlet obstruction presented in this report in only 3/10 cases the mesh was used. Regarding the way in which the mesh is placed to correct an PH by open access without the transposition of the stomach, the techniques that use the mesh cut like a keyhole are the most used. In the past, we used this technique, but the high rates of relapse would motivate us to cut the mesh like an 'M' letter as described in this article. With more than 50 cases of PH operated with this technique, we did not view extrusion of the mesh trough the stoma.

In summary, PH are a common late complication following stoma formation. In patients presenting with upper digestive obstructive symptoms, it is possible that this is due to gastric outlet obstruction secondary to stomach incarceration in the PH.

CONFLICT OF INTEREST STATEMENT

None declared.

REFERENCES

- Figiel LS, Figiel SJ. Gastric herniation as a complication of transverse colostomy. *Radiology* 1967;88:995–6. PMID: 6025058.
- McAllister JD, D'Altorio RA. A rare cause of parastomal hernia: stomach herniation. *South Med J* 1991;84:911–2. PMID: 2068638.
- Ellingson TL, Maki JH, Kozarek RA, Patterson DJ. An incarcerated peristomal gastric hernia causing gastric outlet obstruction. *J Clin Gastroenterol* 1993;17:314–6. PMID: 8308219.
- Bota E, Shaikh I, Fernandes R, Doughan S. Stomach in a parastomal hernia: uncommon presentation. *BMJ Case Rep* 2012;2012. pii: bcr0120125508. doi: 10.1136/bcr.01.2012.5508.
- Ramia-Angel JM, De la Plaza R, Quinones-Sampedro J, Veguillas P, Garcia-Perreno J. Education and imaging. Gastrointestinal: gastric incarceration in parastomal hernia. *J Gastroenterol Hepatol* 2012;27:1405 doi:10.1111/j.1440-1746.2012.07181.x.
- Barber-Millet S, Pous S, Navarro V, Iserte J, García-Granero E. Parastomal hernia containing stomach. *Int Surg* 2014;99: 404–6. doi:10.9738/INTSURG-D-13-00100.

7. Marsh AK, Hoejgaard M. Incarcerated and perforated stomach found in parastomal hernia: a case of a stomach in a parastomal hernia and subsequent strangulation-induced necrosis and perforation. *J Surg Case Rep*. 2013;2013. doi:10.1093/jscr/rjt029. pii: rjt029.
8. Ilyas C, Young AL, Lewis M, Suppia A, Gerotfeke R, Perry EP. Parastomal hernia causing gastric emphysema. *Ann R Coll Surg Engl* 2012;94:e72–3. doi: 10.1308/003588412X13171221588613.
9. Bull N, Chan DL, Ravindran P, Sano SD, White SI. Gastric outlet obstruction secondary to parastomal hernia: case report and literature review. *ANZ J Surg* 2017; doi:10.1111/ans.14066. [Epub ahead of print].
10. Abdu RA. Repair of paracolostomy hernias with Marlex mesh. *Dis Colon Rectum* 1982;25:529–31. PMID: 7117056.