

Idiopathic Diaphragm Disease of The Small Bowel Presenting with Iron Deficiency Anemia and Abdominal Pain

Authors: Dhir Gala¹ (presenting author), Vikash Kumar², Han Chen Tom Tsou³, Josef Khoury³, Mili Shah¹, Stephen Wonnacott¹, and Paul Toomey⁴

Affiliations: ¹American University of the Caribbean School of Medicine, ²The Brooklyn Hospital Center, ³Ross University School of Medicine, ⁴Epsom and St Helier University Hospitals

INTRODUCTION

Diaphragm disease of the small bowel is a rare condition that is commonly associated with long-term NSAID use.

It causes intraluminal narrowing secondary to a series of repairs and injuries leading to the deposition of collagenous scars.

Definitive treatment often requires surgical resection.

Grossly, diaphragm disease of the small bowel shows ulceration on the diaphragm with serosa retractions of the small bowel causing a ring-like appearance resulting in stenosis of the lumen.

CASE PRESENTATION

A 50-year-old male presented with shortness of breath, chronic fatigue, and abdominal pain.

At presentation, he was vitally stable. His labs showed iron deficiency anemia (Table 1).

Endoscopy and colonoscopy showed no signs of ulceration or obvious blood loss.

A computed tomography (CT) scan showed moderately dilated small bowel loops involving the distal jejunum and proximal ileum suggesting an incomplete closed-loop partial obstruction without an obvious cause (Figure 1).

Magnetic resonance imaging (MRI) showed no small bowel lesions.

An iron tablet was not tolerated. He was given two units of blood transfusion.

A video capsule endoscopy was not performed because the patency capsule did not pass through as seen on XR (Figure 2).

CASE PRESENTATION

A positron emission tomography-computed tomography (PET/CT) scan showed no abnormal findings.

He continued to be anemic and lost 21 pounds

He also started noticing frank blood in his stool.

A laparoscopy was performed.

3 distinct areas of congested appearing, thickened, narrowed small bowel within the ileum were observed (Figure 3) with associated mesenteric lymphadenopathy.

The diseased segment of the small bowel with the associated mesenteric vessels was removed.

Histology of the resected small bowel showed ulceration with elongated mucosal folds and submucosal fibrosis confirming the diagnosis of diaphragm disease of the small bowel.

At outpatient follow-up post operation, he reports doing well with the resolution of all symptoms.



Figure 1. Coronal CT abdominal scan - Signs of dilated small bowel and fecalization (red arrow) suggesting small bowel obstruction.



Figure 2. Abdominal X-ray - showing the patency capsule that did not pass through the small bowel (red arrow).

CASE PRESENTATION

Lab Results	At presentation (May 2020)	2-month Post-Operative (June 2021)	8-month Post-Operative (December 2021)
RBC count (million cells/mcL)	3.97 (L)	4.78	4.95
Hb (g/dL)	9.1 (L)	12.1 (L)	13.5
Hematocrit (%)	30.8 (L)	39.2 (L)	42.4
MCV (fL)	78 (L)	82 (L)	86
MCH (pg)	22.9 (L)	25.3 (L)	27.3 (L)
MCHC (g/dL)	29.5 (L)	30.9	31.8
RDW (%)	15.4 (H)	17.3 (H)	15.8 (H)
Ferritin (µg/L)	6 (L)	13 (L)	21 (L)

Table 1. Summary of lab values at presentation and 2- and 8-months post-resection of the strictured small bowel.

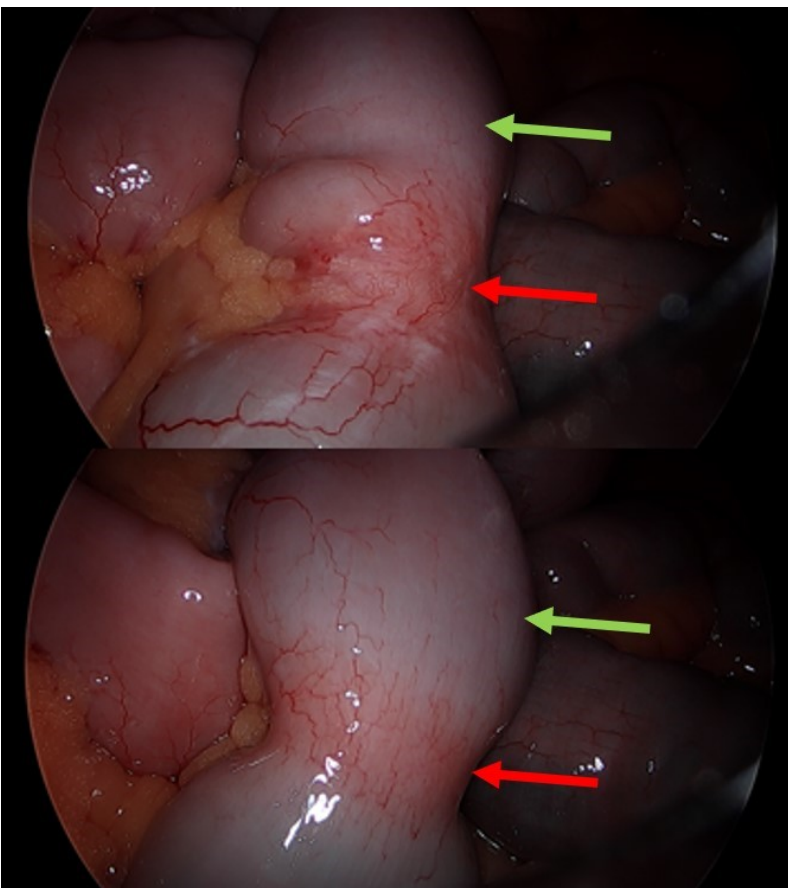


Figure 3. Laparoscopy images showing macroscopic changes in the small bowel. Strictures (red arrows) and dilations (green arrows) are visible in both images.

DISCUSSION

Diaphragm disease of the small bowel is a rare condition but has been previously investigated in individual cases. ‘Diaphragm’ refers to rings of scar tissue that form a band around the bowel lumen.

The usual symptoms are nonspecific such as vomiting and abdominal pain with underlying anemia. The most common presentation includes a history of NSAID use, anemia, and obstructive symptoms.

The best diagnostic and therapeutic intervention for diaphragm disease is laparoscopy which will show dilations and strictures in the affected bowel segment.

LEARNING POINTS

Clinicians should keep diaphragm disease of the small bowel in the differential of idiopathic iron deficiency anemia and recurrent abdominal pain.

Be thorough in your history and diagnostic examinations by following microcytic anemia algorithms.

Following recurring gastrointestinal symptoms with several inconclusive tests and imaging, clinicians should advance to laparoscopy to visualize the bowel.

REFERENCES

Going, J.J., J. Canvin, and R. Sturrock, Possible precursor of diaphragm disease in the small intestine. *Lancet*, 1993. 341 (8845): p. 638-9.

McNally, M. and I. Cretu, A Curious Case of Intestinal Diaphragm Disease Unmasked by Perforation of a Duodenal Ulcer. *Case Rep Med*, 2017. 2017: p. 5048345.

Maiden, L., B. Thjodleifsson, A. Seigal, Bjarnason, II, D. Scott, S. Birgisson, and I. Bjarnason, Long-term effects of nonsteroidal anti-inflammatory drugs and cyclooxygenase-2 selective agents on the small bowel: a cross-sectional capsule enteroscopy study. *Clin Gastroenterol Hepatol*, 2007. 5(9): p. 1040-5.

Slesser, A.A., R. Wharton, G.V. Smith, and G.N. Buchanan, Systematic review of small bowel diaphragm disease requiring surgery. *Colorectal Dis*, 2012. 14(7): p. 804-13.