

Case Report

A case report of a rare strangulated incisional umbilical Richter's hernia of the transverse colon

Blake A. Sykes*, Chitrakanti R. Kapadia

Department of General Surgery, Rockhampton Base Hospital, Rockhampton, Queensland Australia

Received: 04 February 2023

Revised: 20 February 2023

Accepted: 21 February 2023

*Correspondence:

Dr. Blake A. Sykes,

E-mail: blakesykes1992@gmail.com

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ABSTRACT

Richter's hernias are not uncommon, however there have been very few articles which describe this type of hernia of the transverse colon. This case report is regarding a 76-year-old gentleman who presented with periumbilical pain and obstipation and was found to have a Richter's hernia of the anti-mesenteric transverse colon. He underwent an open extended right hemicolectomy to resect the strangulated contents of the hernia and made good recovery subsequently. Upon review of the literature, it is clear that this is a very rare content for a Richter's hernia and we believe this is the second report of an incisional Richter's hernia of this kind. This case report and the discussion of the literature reminds us of the pathology of a Richter's hernia and the principles of its investigation and management.

Keywords: Abdominal hernia, Richter's hernia, Ventral abdominal hernia, Hernia

INTRODUCTION

A Richter's hernia is a herniation of part of the circumference of the large or small bowel. In this case, the content of the hernia was the anti-mesenteric transverse colon which had become strangulated and needed to be surgically treated and the bowel resected. Richter's hernias containing the transverse colon have been extremely rarely described in the literature.^{1,2} Knowledge of Richter's hernias will lead to improved diagnosis and subsequent surgical management.

CASE REPORT

A 76-year-old socially-independent gentleman presented to our hospital emergency department with periumbilical pain which had commenced three days prior after lifting heavy boxes. It was of a gradual onset and increased with severity over the course of the few days. Although he had not experienced nausea or vomiting, he had not passed a bowel motion or flatus throughout the course of the symptoms. He was due to have an incisional hernia repaired two weeks later, which had arisen after a midline

laparotomy for a sigmoid resection for malignancy a decade prior.

His surgical history also included a previous ruptured appendix in his childhood years resulting in right paramedian incision, he had also had three spinal surgeries with a combination of anterior and posterior approaches. His other co-morbidities were ischaemic heart disease with subsequent stenting and bypass grafting as well as chronic kidney disease. He took several anti-hypertensive medications and his only blood-thinning medication was a daily 100 mg aspirin.

On examination he had mild abdominal distension and a tender, hard, irreducible lump in the midline at the level of the umbilicus. He explained that the lump had been present for many years but the tenderness and the overlying erythema was new.

Presuming this was a strangulated ventral hernia, bloods were taken in the pre-operative work up as well as a CT to define the nature of this hernia-noting that this imaging did not delay surgical management. He was found to

have a mild leucocytosis of $12.4 \times 10^9/L$ which comprised of mostly neutrophils. His eGFR was at a baseline of $36 \text{ ml/min/1.73 m}^2$ and his venous blood gas revealed a normal pH of 7.35 and a lactate of 1.17 mmol/L .

His CT abdomen pelvis confirmed that there was a ventral hernia, however interestingly this suggested it was a Richter's hernia of the transverse colon in the midline at the site of his previous laparotomy (Figure 1) (Figure 2). There was no radiological evidence of bowel obstruction, but there was a smaller fat-containing hernia noted to the left of the midline at the same level as the Richter's hernia.



Figure 1: An axial CT image of transverse colon within the ventral Richter's hernia.



Figure 2: A sagittal CT image of transverse colon within the ventral Richter's hernia.

Initially, an upper-midline laparotomy was performed to examine the contents of this hernia. Extensive adhesions were noted between the large and small bowel, which were surgically cleared to allow assessment of the hernial content. His hernia contained a $4 \times 4 \text{ cm}$ segment of strangulated antimesenteric transverse colon as well as omentum. Despite liberation of the hernial content, it was

non-viable and as such was resected as an extended right hemicolectomy with an ileocolic side-to-side stapled anastomosis. The second small fat containing hernia had viable content and was treated in the same incision. Mass closure of the midline laparotomy with PDS suture was performed, with surgical staples applied to the overlying skin.

The resected bowel was histologically assessed and confirmed to have a full-thickness necrotic segment of the anti-mesenteric transverse colon, which was circular in nature and well-delineated (as expected for a Richter's hernia) (Figure 3) (Figure 4). There were also three small, low-grade dysplastic, tubular adenomas in the resected segment of bowel.

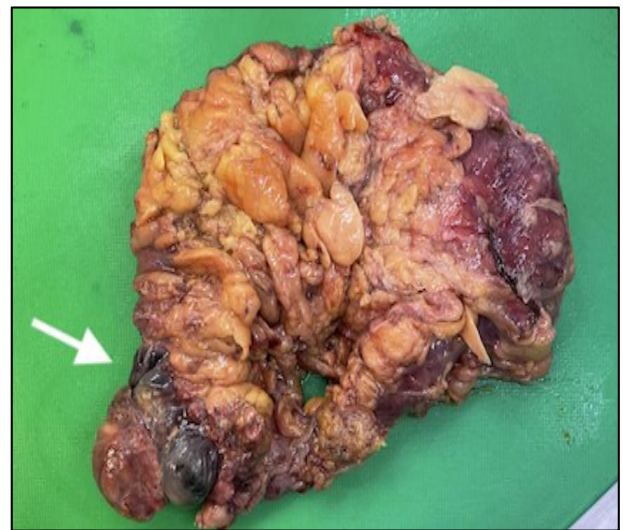


Figure 3: The resected specimen with a clearly circumscribed hernial sac (arrow).



Figure 4: The resected specimen with the hernial sac is inverted (arrows) to show how well demarcated a gangrenous Richter's hernial sac.

In the post-operative period, he was given 24 hours of intravenous Augmentin and then this was ceased. He had had an intra-operative nasogastric tube inserted, which

was initially managed on free-drainage with four-hourly aspirations, while he tolerated a fluid diet. He subsequently had increasing naso-gastric outputs and minimal flatus and bowel motions. He was treated for a post-operative ileus with parenteral nutrition and intravenous fluids and improved some days later with return of gastrointestinal function and eventual removal of the naso-gastric tube when able to tolerate a full diet. Subsequently, he was discharged and reviewed in the surgical outpatient clinic several weeks later with no further symptoms and a wound that had healed.

DISCUSSION

The first Richter's hernia was actually described by Fabricius Hildanus in 1598, however the first scientific description was given much later in 1778 by August Gottlob Richter. An overview was given over a century later by Sir Frederick Treves, where he titled the phenomenon as a "Richter's hernia".³

A Richter's hernia is considered to be a hernia containing only part of the circumference of the bowel (or even stomach) wall strangulated within the hernial orifice. As such, the orifice has to be an appropriate size to contain the bowel wall, but not allow protrusion of the entire bowel wall. This also means that it must have a certain tension to the hernial ring.⁴ Due to the nature of this hernial ring, Horbach et al found that Richter's hernias are almost three-times more likely to contain gangrenous content than other strangulated hernias.⁵

This type of hernia does not fully obstruct the lumen of the bowel (or stomach) and as such has a more insidious onset of symptoms. If only a small portion of bowel wall is contained within the hernia, then necrosis can occur without significant gastrointestinal upset, leaving pain as the only symptom. In our increasingly obese population, this can make Richter's hernias difficult to diagnose on clinical examination alone, and often requires cross-sectional imaging to make a pre-operative diagnosis.

Richter's hernias are more commonly seen in patients who are between 60 and 80-years old; and make up 10% of all strangulated hernias.⁶ These hernias most commonly present as femoral hernias (72-88%), followed by inguinal hernias (12-24%) and lastly abdominal wall incisional hernias (4-25%).⁷

A Richter's hernia can contain any part of the hollow visceral digestive tract from the stomach to the large bowel, including the appendix, though it most commonly occurs in the distal ileum.^{8,9} Our case is interesting in that the content of the Richter's hernia was part of the circumference of the transverse colon.

When reviewing the literature, imaging of this type of hernia was initially reported by Forrest et al where oral contrast radiographs suggested the content of an

umbilical hernia was part of the transverse colon-which was subsequently confirmed intra-operatively.¹⁰

Richter's hernia containing the transverse colon have been described again in 2012 and 2019 in case reports by Kim et al and Katragadda et al respectively.^{1,2} Both authors describe midline hernias, which required laparotomy and colonic resection; one performed a primary anastomosis, while the other made a transverse loop colostomy. From what we are able to tell, an incisional Richter's hernia of the transverse colon has only been described once before, making this case the second of its kind in the literature.

CONCLUSION

Richter's hernias were described as early as 1598 and can contain various hollow intra-abdominal viscera. However, it was many years later, in 1978, where this entity was described to be containing the transverse colon. As far as we can tell, it was further described in only two other case reports prior to this one. This case highlights a rare example of a more commonly seen entity and reminds us of the principles of pathophysiology, diagnosis and management of all Richter's hernias. The case reminds us that early detection and surgical management of Richter's hernias is of utmost importance in improving patient outcomes.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: Not required

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Cite this article as: Sykes BA, Kapadia CR. A case report of a rare strangulated incisional umbilical Richter's hernia of the transverse colon. *Int Surg J* 2023;10:481-4.