A case report of caecal herniation through the foramen of Winslow

K Shek¹, N Ditzkoffsky², S Ashamalla³, C Patel²

¹University of Manitoba College of Medicine, Winnipeg, Manitoba, Canada

²Department of Medical Imaging, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, Ontario, Canada

³Department of Surgery, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, Ontario, Canada

ABSTRACT

Caecal herniation through the foramen of Winslow is a rare entity of which radiologist should be aware. We present a case of this entity in a patient presenting with diabetic ketoacidosis and ongoing epigastric pain. Abdominal computed tomography demonstrated herniation of the caecum into the lesser sac via the foramen of Winslow. Despite the caecum appearing viable at the time of surgery, the surgeons performed a right hemicolectomy via laparotomy to prevent future recurrence.

KEYWORDS

Internal hernia – Caecal herniation – Foramen of Winslow – Lesser sac

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CORRESPONDENCE TO

Kevin Shek, E: shekk@myumanitoba.ca

Introduction

Internal hernias occur when a viscus protrudes through a normal or abnormal peritoneal or mesenteric orifice within the peritoneal cavity. Acquired orifices occur secondary to surgery, trauma or inflammatory defect, whereas congenital orifices can be normal or can arise from anomalies of internal rotation and peritoneal attachment.¹ The epiploic foramen (foramen of Winslow) is one such normal orifice. A communication between the greater peritoneal cavity and the lesser sac, it is bordered anteriorly by the hepato-duodenal ligament, posteriorly by the inferior vena cava, superiorly by the caudate lobe of the liver and inferiorly by the duodenum.

Certain congenital abnormalities are thought to predispose patients to herniation through the epiploic foramen such as abnormally large internal foramina, elongated right hepatic lobe, excessively mobile intestinal loops due to long mesentery, or persistence of ascending mesocolon and colon that is not fused to parietal peritoneum.²

Patient presentation of caecal herniation through the epiploic foramen (Table 1) is varied and knowledge of this entity is perhaps the best means of ensuring accurate clinical and imaging diagnosis.

Case history

A 62-year-old man with a past history of diabetes mellitus type 2 presented to the emergency department with epigastric pain that awakened him from sleep. Initial laboratory work was diagnostic of diabetic ketoacidosis (DKA; blood glucose 29.9 mmol/L, lactate 5.2 mmol/L, anion gap of 36.6 mEq/L, serum ketones positive). Having no clear exacerbating factor for his DKA, in conjunction with persisting epigastric pain and nausea, abdominal-pelvic computed tomography (CT) was ordered.

The abdominal-pelvic CT (Fig 1) demonstrated a redundant large bowel, with the caecum displaced into the right upper abdomen, herniated through the epiploic foramen into the lesser sac. The caecum was dilated but bowel mural enhancement was preserved. The stomach was compressed as a result of the internal hernia. Based on these imaging findings, the diagnosis of caecal herniation through the epiploic foramen was made.

Treatment of the patient's DKA was initiated, with a successful response. The patient was then taken to the operating room the following evening to undergo a laparotomy for management of his caecal hernia (which was favoured to be the inciting cause of his DKA). A mobile, markedly

Table 1 Common presentation, imaging features and management approach in patients with caecal herniation through the epiploic foramen.

Procedure	Description
History	Abdominal pain Nausea Vomiting Anorexia Obstipation
Physical examination	Diffuse or focal abdominal tenderness Abdominal distension Peritonitis
Laboratory results	Elevated lactate, lipase, amylase Leucocytosis
Imaging:	
Abdominal x-ray ¹	Collection of gas in lesser sac, displacing the stomach anterolaterally Failure to visualise cecum in normal location Displaced stomach and duodenum to the left
CT abdomen ¹	Bowel loops in the lesser sac between the liver hilum and IVC The presence of mesentery between the IVC and main portal vein Absence of ascending colon in the right gutter Two or more loops in the high sub-hepatic spaces
Surgery	Laparotomy or laparoscopy (depending on expertise of surgeon) 1) Attempt manual reduction of hernia; needle decompression if necessary 2) If reduced bowel appears non-viable, proceed with resection (right hemicolectomy) 3) If reduced bowel appears viable, treatment is varied and dictated by surgeon expertise and assessment of the case

CT, computed tomography; IVC, inferior vena cava.

dilated caecum and right colon were identified traversing the epiploic foramen into the lesser sac at the time of surgery, confirming the imaging diagnosis. The bowel was viable at surgery, but a right hemicolectomy was performed to prevent recurrence. The patient had an uncomplicated postoperative course to hospital discharge.

Discussion

Internal hernias are uncommon, with autopsy incidence ranging from 0.2% to 0.9%.⁵ Herniation through the epiploic foramen comprises approximately 8% of internal abdominal hernias. Among this subcategory, approximately 25–30% involve herniation of the terminal ileum, caecum or ascending colon.¹ In keeping with these statistics, the incidence of caecal herniation through the epiploic foramen is therefore less than 0.02%. Despite its rarity, the potential for complications such as bowel obstruction, strangulation, infarction and perforation make this an important entity of which to be aware.

The rarity of epiploic foramen herniation, together with their non-specific presentation, makes preoperative clinical diagnosis difficult. In this case, abdominal-pelvic CT facilitated the diagnosis of caecal herniation through the epiploic foramen and guided surgical management. On CT, the terminal ileum could be followed into the right upper abdomen and the dilated caecum clearly identified passing through the epiploic foramen into the lesser sac with the ascending colon exiting the lesser sac, allowing for an unambiguous preoperative diagnosis.

Maintained viability of the herniated caecum was suggested on CT by normal mural enhancement and the absence of bowel wall thickening, mural gas (pneumatosis) and free peritoneal fluid or gas. However, internal hernias are at risk of progression to strangulation and bowel obstruction. Given the associated morbidity and mortality of these complications, surgery (laparotomy or laparoscopy, depending on the expertise of the surgeon) is often performed even in cases of viable appearing intestine on imaging. In this case, manual reduction of the hernia was

Figure 1 Coronal image demonstrating the dilated caecum displaced into the right upper abdomen with herniation via the epiploic foramen into the lesser sac

successful. Despite viable appearing bowel, a right hemicolectomy was performed to mitigate recurrence.

The approach of resecting an internal hernia, even in the case of viable bowel, is reported elsewhere in the literature.⁴ However, some advocate for avoiding resection if possible by performing manual reduction of the hernia with closure of the epiploic foramen and potentially caecopexy to prevent recurrence.⁵ Ultimately, the decision is determined by the surgical team based on perceived likelihood of recurrence. In this case, the hypermobile caecum posed enough concern for recurrence to indicate resection.

This case report highlights the importance of considering and properly characterising internal herniation to guide appropriate surgical management.

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