A clinical conundrum with a radiological answer

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ABSTRACT

An 82-year-old woman with longstanding medial thigh pain presented with a 5-day history of constipation, vomiting, abdominal pain and distension. She was unable to pass flatus for the preceding 24 hours and had a past history of laparoscopic abdominal surgery. Computed tomography of the abdomen and pelvis revealed a right-sided obturator hernia containing a dilated loop of small bowel. She underwent emergency surgery for a right obturator hernia repair by limited laparotomy and was discharged after an extended stay complicated by postoperative atrial fibrillation.

KEYWORDS

Obturator hernia – Abdominal hernia – Bowel obstruction – Computed tomography

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Case History

An 82-year-old woman was admitted to the acute surgical ward with a 5-day history of constipation, feculent vomiting, abdominal pain and distension. She had presented to the accident and emergency department the day before with similar complaints. However, it was thought that her constipation was secondary to codeine use for neuropathic right lower limb pain and she was discharged with laxatives. She had a background history of osteoarthritis, cholangitis, a laparoscopic cholecystectomy with postoperative atrial fibrillation and a three-month history of right medial thigh pain, thought to be sciatica.

The patient had not passed a bowel motion in 5 days prior to her presentation and had not passed flatus in 24 hours. On admission, her abdominal pain was generalised and constant, having in the preceding days been intermittent and colicky in nature. This pain was associated with dark brown, feculent vomiting. Clinical examination revealed a stable, thin patient of 40kg with a temperature of 36.5°C, a heart rate of 85 beats per minute, blood pressure of 130/62mmHg, a respiratory rate of 18 breaths per minute and oxygen saturation of 94% on room air. Her abdomen was visibly distended with generalised tenderness but no guarding or rigidity was elicited. She had no palpable hernias and digital rectal examination revealed an empty rectum.

A full blood count showed a normal white cell count with a neutrophilia of $9.1 \times 10^9/l$. The patient's C-reactive protein level was also raised at 16mg/l. Her renal profile was normal. However, her arterial blood gas showed a metabolic alkalosis with respiratory compensation and a normal lactate, in keeping with her history of protracted vomiting. Plain film of the abdomen demonstrated dilated

loops of small bowel consistent with her working diagnosis of a small bowel obstruction.

The patient was made nil by mouth. A catheter was passed and a nasogastric tube left on free drainage with four-hourly aspirates. She was maintained on intravenous fluids overnight awaiting computed tomography (CT) of the abdomen and pelvis the following morning. The CT revealed multiple fluid and gas filled dilated loops of small bowel throughout the abdomen and pelvis, and a right obturator hernia containing a loop of dilated small bowel measuring a maximum of 2.2cm in diameter with a tapered neck (Figs 1–3). There was no evidence of perforation. There was also dilation of the common bile duct and pneumobilia, in keeping with her history of endoscopic retrograde cholangiopancreatography and sphincterotomy with eventual cholecystectomy (Fig 3).

Our patient underwent emergency surgery for a right obturator hernia repair by limited laparotomy. Exploration of the abdomen revealed a right obturator hernia of the Richter type. There were also early femoral defects bilaterally. No left obturator defect of any size was seen. The small bowel was reduced, inspected and found to be viable. The construction rings were oversewn and following this, the obturator defect was oversewn. The patient returned to the ward and developed atrial fibrillation on day 3 postoperatively. Choice of anticoagulant was discussed and she was commenced on a direct factor Xa inhibitor. The pain on the medial aspect of her right thigh, previously attributed to sciatica, resolved completely.

Discussion

Obturator hernias were first described by Pierre Roland Arnaud de Ronsil in 1724 at the Royal Academy of Sciences

in Paris and they were first treated successfully in 1851 by Henry Obre.^{1,2} Obturator hernias constitute 0.04–0.5% of all abdominal hernias.³ However, they account for 0.2–1.6% of all cases of mechanical intestinal obstruction.⁴ The rarity of the hernia can be explained anatomically by the relatively well protected obturator foramen as compared with that of the inguinal or femoral rings.⁵

The obturator foramen is located in the anterolateral aspect of the pelvis, formed by the ischial and pubic rami. The obturator membrane covers the majority of the foramen with a small defect, allowing the passage of the obturator vessels and nerves into the medial thigh. The canal, which passes obliquely and caudally, conveys the obturator vessels and nerves, and is bounded laterally and superiorly by the pubic bones. Inferiorly, it is bounded by the obturator membrane and muscles.⁶

Often referred to as the 'little old ladies' hernia',² obturator hernias occur more commonly in an elderly female population and in patients with chronically raised intra-abdominal pressure.⁷ Pregnancy results in a relaxation of the pelvic peritoneum as well as a wider and more horizontal obturator canal, accounting for the female preponderance of this hernia.⁸

There are four cardinal signs of an obturator hernia: acute intestinal obstruction, a palpable mass in the medial aspect of the proximal thigh, repeated episodes of bowel obstruction resolving without intervention and pain in the hip radiating down the anteromedial aspect of the thigh.⁹ There are two eponymous signs ascribed to obturator hernias. The Howship–Romberg sign is pain down the medial aspect of the thigh to the knee, resulting from compression of the anterior branch of the obturator nerve. It is exacerbated by extension,

adduction and internal rotation of the thigh, and relieved by flexion and external rotation. The Hannington-Kiff sign is absence of the adductor reflex with a positive patellar reflex, again caused by compression of the obturator nerve.¹⁰

There are three stages of hernia formation. The pre-hernial stage involves preperitoneal fat otherwise known as pilot tags. The second stage is the formation of the hernia sac. The third stage occurs on entrance of a viscus into the preformed sac. Hernia in the third stage may be diagnosed prior to developing bowel obstruction in patients with the aforementioned signs using the appropriate imaging.¹¹

Clinical diagnosis alone remains difficult and a variety of imaging techniques have been employed to aid diagnosis. Rarely, abdominal x-ray can demonstrate air in the obturator region. Ultrasonography has been used for pre-operative diagnosis.¹² The most sensitive modality is CT, which can delineate between protruding bowel through the obturator foramen and other abdominal masses.¹³

While a laparoscopic approach to repair is gaining popularity, a low midline incision facilitating an intra-abdominal approach is most commonly used as it aids in gaining adequate exposure of the obturator ring, avoiding the obturator vessels and nerve, and this can facilitate a bowel resection if required.¹⁴

Conclusions

Although rare, obturator hernias should be part of the differential diagnosis of small bowel obstruction, particularly in elderly, thin, multiparous women with a 'virgin abdomen'. Clinical diagnosis can be difficult but there are cardinal signs that should raise suspicion and prompt urgent CT. As this hernia is rare, the repair is a developing area and further research is required to confirm the best approach.

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