CASE REPORT

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Concomitant obturator hernia and midgut volvulus in an elderly woman

Yeung Kwok-Wan, Chang Ming-Sung

ABSTRACT

Introduction: Obturator hernia is a rare hernia of the pelvic floor and accounts for less than 1% of all intra-abdominal hernias. Midgut volvulus may be primary without an associated underlying cause, or secondary to a congenital or acquired condition. **Case Report:** A 94-year-old female patient suffered from severe and diffuse abdominal cramping pain and no stool passage for 2 days and vomiting for a day. Blood analysis revealed leukocytosis. A history of constipation and chronic obstructive pulmonary disease was noted and no intra-abdominal operation was performed in the past. Contrast-enhanced computed tomography scan showed distention of the small bowel loop, a whirl sign of the superior mesenteric artery and vein, and a short segment of distal ileum incarcerated between the right external obturator and pectineus muscles. Computed tomography scan of concomitant right obturator hernia and midgut volvulus was made, which was confirmed by surgical exploration. **Conclusion:** Concomitant obturator hernia and midgut volvulus in an elderly woman is rare. Careful and thorough survey of the whole abdomen by using computed tomography prompts

emergent operation to reduce the mortality and morbidity of the patient.

Keywords: Obturator hernia, Midgut volvulus

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INTRODUCTION

Obturator hernia is a rare hernia of the pelvic floor and accounts for 0.05% to less than 1.4% of all intra-abdominal hernias. It is also a rare cause of small bowel obstruction, accounting for 0.2–1.6% of bowel obstruction [1–6]. Obturator hernia may be associated with midgut volvulus [6]. A volvulus represents the most common cause of strangulation with associated bowel ischemia. Midgut volvulus may be primary without an associated underlying cause, or secondary to a congenital or acquired condition [7–10]. We present a case of concomitant obturator hernia and midgut volvulus in a 94-year-old woman with a series of imaging studies.

CASE REPORT

A 94-year-old woman suffered from severe and diffuse abdominal cramping pain and no stool passage for two days, and vomiting for a day. Blood analysis revealed leukocytosis (WBC 16,410/ μ L with elevated band form (7%)) and elevated C-reactive protein level (2 mg/dL). A history of constipation and chronic

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obstructive pulmonary disease (COPD) was noted. No intra-abdominal operation was performed in the past years. Physical examination showed diffuse abdominal tenderness and distention, and increased bowel sound.

Kidney-ureter-bladder (KUB) radiograph revealed diffuse distention of small bowel loop (Figure 1). Multidetector row computed tomography (MDCT) with intravenous contrast administration showed dilatation of the small bowel loop with intraluminal air-fluid level, and whirl sign of the superior mesenteric artery and vein (Figure 2). A short segment of distal ileum was incarcerated between the right external obturator and pectineus muscles. Therefore, computed tomography (CT) scan of the concomitant midgut volvulus and right incarcerated obturator hernia was made. Emergent exploratory laparotomy by using midline incision showed a 360° counterclockwise volvulus of the small bowel loop, and uncovered a 5-cm distal ileal loop incarcerated in the right obturator hernia (Figure 3). The small bowel loop showed ischemic change but became revascularized again after reduction of the volvulus. The defect of the hernia was simply repaired with the interrupted Dexon suture. No resection of bowel loop was done. However, postoperative pneumonia occurred and extubation was failed. Despite vigorous antibiotics and supportive treatment, the patient died of respiratory failure on the 108th day postoperation.

Figure 1: Kidney-ureter-bladder revealed diffuse distention of small bowel loop.

DISCUSSION

Obturator hernia occurs through the obturator canal, which is 2–3 cm long and 1 cm wide and contains the obturator nerve and vessels surrounded by fatty tissue [1, 4]. The most common form of obturator hernia is through the pathway between the external obturator and pectineus muscles [3]. It is a rare hernia of the pelvic floor and accounts for 0.05% to less than 1.4% of all intra-abdominal hernias. It is also a rare cause of small bowel obstruction, accounting for 0.2–1.6% of bowel

Figure 2: (A) Contrast-enhanced multidetector computed tomography with axial image showed dilatation of the small bowel loop with intraluminal air-fluid level, and whirl sign of the superior mesenteric artery and vein (curved arrow), (B) A short segment of distal ileum (open arrow) was incarcerated between the right pectineus muscle (P) anteriorly and external obturator muscle (O) posteriorly.

obstruction [1–6]. Asians have been shown to have the highest rates while a much lower incidence occurs in the Western countries [1]. The right side is more frequently affected than the left due to protection from the sigmoid colon on the left [2–4]. Bilateral obturator hernias occur in 6% of cases and may be in combination with other types of hernias such as inguinal hernia or femoral hernia [3–4]. Women are affected nine times more frequently than men because the former group has a wider pelvis, a more triangular obturator canal opening and a greater transverse diameter [4, 5]. With the nickname ‘little old lady’s hernia’, obturator hernia most frequently affects the elderly and emaciated women, especially between 70 and 90 years of age, due to loss of preperitoneal fat over the obturator canal, which facilitates the formation of the hernia. Other risk factors may increase the intra-abdominal pressure, relax the peritoneum and predispose the patients to herniation, such as chronic constipation, ascites, chronic obstructive pulmonary disease (COPD), multiparity and kyphoscoliosis. The clinical

Figure 3: Operative findings. (A) Twisting of the small bowel loop around the mesentery was found, (B) View into the right lower lateral pelvic cavity demonstrated distended and ischemic afferent ileal loop (Af) and collapsed efferent loop converging to the right obturator hernia. UB, foley catheter-indwelled urinary bladder.

presentation is not specific with symptoms of bowel obstruction such as dull, cramping abdominal pain, nausea and vomiting. It may be acute or intermittent if the hernial viscera reduce into the abdominal cavity spontaneously [1, 5]. Partial obstruction is usually encountered and due to a high frequency (41–100%) of Richter's hernia of small bowel into the obturator canal. A palpable mass at the obturator region is uncommon because the herniated mass is concealed beneath the pectineus muscle [5]. Obturator hernia may cause Howship–Romberg sign, which refers to pain along the course of the obturator nerve as a result of compression of the nerve by the hernial sac [1–4]. The pain is prominent in the anteromedial aspect of the thigh and less often in the hip, and is relieved by flexion of the thigh and aggravated by extension, adduction and medial rotation. This sign is only present in 15–50% of cases and often overlooked due to the osteoarthritis of the hip, or may be masked by the more severe symptom of abdominal pain. Hannington–Kiff sign is more

specific but less known than Howship–Romberg sign and refers to an absent adductor reflex in the thigh.

Several imaging modalities have been described to be useful in the diagnosis of obturator hernia, including ultrasonography, herniography, barium enema, and CT scan [1–5]. Among them, CT scan of the abdomen and pelvis has proven its value in definite diagnosis of obturator hernia, which demonstrates entrapment of bowel loop between the external obturator and pectineus muscles, and significantly increases preoperative diagnostic accuracy. Early and definite diagnosis can be made in 100% of cases by using CT scan [1]. Early preoperative CT scan helps to decrease intestinal resection and surgical mortality because the shorter period from the occurrence of symptom to surgical correction can increase viability of the bowel and lower the morbidity and mortality rates. Thus, the rapid evaluation of the patients should be accomplished within hours but not in days [5].

Obturator hernia may be associated with midgut volvulus [6]. Midgut volvulus may be primary without an associated underlying cause, or secondary to a congenital or acquired condition [7–9]. The primary small bowel volvulus is much more common in africa and Asia, and usually occurs in children and young males, in whom no predisposing anatomic abnormality is found during surgery [7–9]. The presence of long mobile mesentery and dietary factors may contribute to the primary volvulus [9].

Secondary midgut volvulus usually occurs in older patients, with a peak incidence of sixth to eighth decades, affecting both the sexes equally, and is more common in western countries [7–9]. The bowel loop is twisted around an underlying point of fixation, causing closed-loop obstruction at two fixed points due to acquired or congenital lesions [10]. The most frequently encountered cause is postoperative adhesions. Other etiologies include internal hernia, external hernia (as noted in our case of obturator hernia), pregnancy, tumors, mesenteric lymph nodes, Meckel's diverticulum, mesenteric lipoma, endometriosis, abscess, aneurysm, hematoma and following gastric surgery. An incarcerated hernia may be complicated by a volvulus of bowel loop through a twist around the fixed small bowel loop at or near the hernial sac [6].

A volvulus represents the most common cause of strangulation with associated bowel ischemia. Characteristics CT findings in closed-loop obstruction include a C-shaped, U-shaped, or 'coffee bean' appearance of the bowel loop, mesenteric vessels converging towards the point of obstruction, fluid-filled bowel loop, a triangular loop, the beak sign and whirl sign at the site of obstruction [10]. Whirl sign represents twisting of the bowel loop with the superior mesenteric artery at the center of the whirl and is a CT sign of midgut volvulus.

The treatment of obturator hernia is surgery, with a variety of operative approaches including abdominal approach, retropubic approach, obturator approach, inguinal approach, and more recently, laparoscopic

approach [1–3, 5]. The abdominal approach is most commonly performed with the advantages of making a diagnosis, avoiding obturator vessels, exposing the obturator ring more easily and facilitating bowel resection, if necessary. Prosthetic plugs or mesh can be used to reinforce the obturator foramen. The laparoscopic surgery is less invasive and reserved for the high-risk patients and the nonstrangulated ischemia with benefits of less postoperative pain, less bowel ileus, shorter hospital stay and fewer complications.

CONCLUSION

Concomitant obturator hernia and midgut volvulus in an elderly and emaciated woman is a rare cause of bowel obstruction. Careful and thorough survey of the whole abdomen by using multidetector computed tomography, and recognition of the computed tomography characteristics can establish definite preoperative diagnosis. Early diagnosis and prompt emergent operation are essential to reduce the mortality and morbidity.

Author Contributions

Yeung Kwok-Wan – Drafting the article, Critical revision of the article, Final approval of the version to be published

Chang Ming-Sung – Conception and design, Acquisition of data, Analysis and interpretation of data, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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