

A 26-Year-Old Man with Acute Abdomen Due to Omental Torsion: A Rare Case Report

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ABSTRACT

Background: Omental torsion (OT) presents as a rare, infrequent pathology with often non-specific symptoms. This condition occurs when the greater omentum is twisted around its axis, producing perfusion defects and vascular impairment of the organ. This case report describes an overweight 26-year-old Caucasian man presenting with acute abdomen in previous appendectomy, whose definitive surgical diagnosis was omental torsion. Omental torsion is a rare pathology regarding the causes of acute abdomen associated with a challenging diagnosis.

Introduction: Omental torsion presents as a rare, infrequent pathology with often nonspecific symptoms. This condition occurs when the greater omentum is twisted around its axis producing perfusion defects and vascular impairment of the organ. Often, the only sign is pain in the right iliac fossa in the absence of fever, vomiting or other symptoms. The causes are not known exactly and may range from congenital malformations to tumors or previous surgeries.

Case report: This case report describes an overweight 26-year-old Caucasian man presenting with acute abdomen in previous appendectomy and the definitive surgical diagnosis was omental torsion.

Conclusions: Omental torsion is a rare pathology regarding the causes of acute abdomen associated with a challenging diagnosis. However, the patient's history and correct use of diagnostic images, mainly the CT of the abdomen, can help in the diagnosis. Surgical exploration remains the definitive gold standard.

Keywords: omental torsion (OT), CT scan, diagnostic laparoscopy (DL).

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INTRODUCTION

Omental torsion (OT) presents as a rare, infrequent pathology with often non-specific symptoms. This condition occurs when the greater omentum is twisted around its axis, producing perfusion defects and vascular impairment of the organ (1). Often, the only sign is pain in the right iliac fossa in the absence of fever, vomiting or other symptoms. The causes are not known exactly and may range from congenital malformations to tumors or previous surgeries (2-4). The first omental torsion was described by Bush, in 1896, and Eitel, in 1899 (5). In the literature, OT has an incidence of 0.0016% up to 0.37% with a ratio of 4:1000 and a male/female incidence ratio of 5:1. It can happen from the pediatric age up to the young age. The prevalence is between 30 and 50 years (6-12). It is difficult to diagnose clinically in the preoperative setting. Preoperative diagnosis was poorly reported in the range of 0.6–4.8% (13). The differential diagnosis should be made with acute appendicitis, acute cholecystitis, duodenal perforation and pseudotumor or sarcoma, Meckel's diverticulum, mesenteric adenitis and ovarian pathology. Goti *et al.* (14) stated that 66% of these cases mimic appendicitis, and 22% cholecystitis. The pathogenesis of primary omental torsion (POT) with infarction has not been completely established, while secondary omental torsion (SOT) can be attributed to hernias, tumors or previous surgery (15-17).

This case report describes an overweight 26-year-old Caucasian man presenting with acute abdomen in previous appendectomy, whose definitive surgical diagnosis was omental torsion.

CASE REPORT

A 26-year-old man was admitted to the Emergency Department with one week history of paroxysmal abdominal pain. He referred the sudden abdominal pain two days ago before he was hospitalised. He went two times in First Aid and two times he was discharged with negative results in blood exam, X-ray, abdominal ultrasound (AUS) and physical examination. He described right-sided paroxysmal abdominal pain without radiation and being aggravated by

movement in right iliac fossa, without fever, vomiting or alteration of flatus. At the time of admission, he complained of nausea, without vomiting, fever, abdominal distension or diarrhea. He had a history of laparoscopic appendectomy ten years ago and obesity shape, BMI 30 kg/m². On examination, vital signs revealed a normal blood pressure of 130/60 mm Hg, respiratory rate of 13/min, peripheral oxygen saturation of 99%, no fever (36.0°C) and no tachycardia (70 bpm). Physical examination showed a flat abdomen with tenderness in the right side flank of the abdominal including McBurney's area with localised rebound tenderness and guarding. The percussion was tympanic note and the bowel sound was normal. Routine bloods on admission showed normal leucocytosis; a white cell count of $9.1 \times 10^9/L$, neutrophils of $13.4 \times 10^9/L$ and a C reactive protein of 11 mg/L. Arterial blood gas test was normal. To avoid another diagnostic error, this time we performed an abdominal CT scan, which revealed a 10 cm x 7 cm x 6 cm fatty mass in the right iliac fossa extended to the liver between the rectal muscle and the ascending colon with a "whirlpool sign" suspecting a mesenteric torsion (Figures 1 and 2). The patient was taken to the operating room for a diagnostic laparoscopy (DL). We found an omental torsion 360° clockwise with hemorrhagic infarction and hemoperitoneum (Figure 3). We performed a laparoscopic omentectomy and peritoneal lavage. The postoperative days were uneventful and the patient was discharged from the hospital on the third day after surgery. The pathological report showed hemorrhagic omental adipose tissue blood vessels and marked neutrophil infiltration.

DISCUSSIONS

The greater omentum, embryologically, is derived from the dorsal mesentery. It is made up of four layers of peritoneum. It is attached from the greater curvature of the stomach (18). Omental torsion occurs when the greater omentum is twisted around its axis producing perfusion defects and vascular impairment of the organ (1). The most common point of torsion is around the distal right epiploic artery (10). Omental infarction can be classified as primary or secondary. For primary omental torsion (POT), we mean a torsion without an underlying pathology. Some

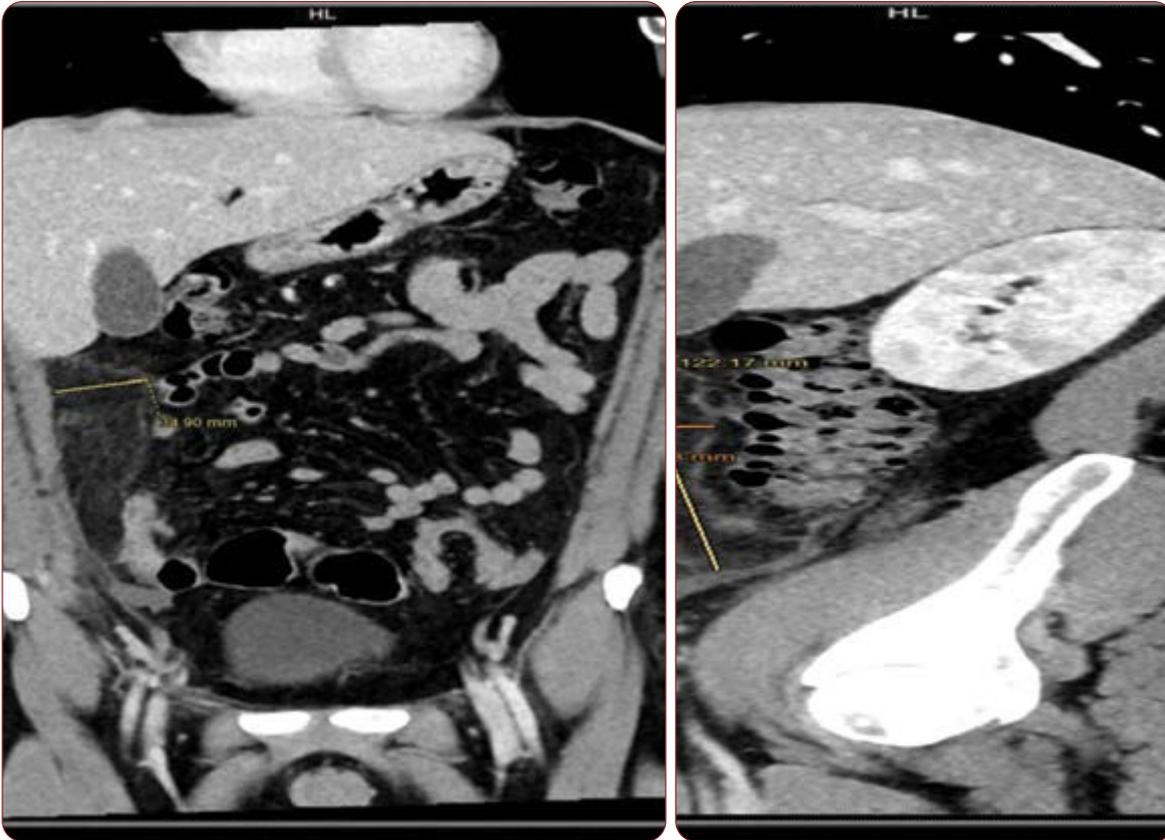


FIGURE 1 AND 2. Abdominal CT scan: “sign of the vascular pedicle”: a central amplifying point in the mesenteric vessel surrounded by multiple whirls of the smaller mesenteric branches. The “whirlpool sign” is described as a cloudy mass of fat with concentric lines of fat, with torsion of the blood vessels inside the greater omentum.



FIGURE 3. The greater omentum of right upper quadrant rotated 360° by clockwise direction

anatomical malformations and anomalies of the great omentum such as bifid omentum, accessory omentum, anomalous vascular blood supply, other vascular anomalies that modify the weight of the omentum, are recognized as common predisposing factors for POT. As far as secondary omental torsion (SOT) is concerned, we mean an omental torsion due to hernias, tumors or previous surgery (15-17). This pathology occurs in 90% of cases with abdominal pain more often in the right flank and right iliac fossa but can also present as acute pain in the left flank (11). The differential diagnosis should be made with acute appendicitis, acute cholecystitis, duodenal perforation and pseudotumor or sarcoma, Meckel's diverticulum, mesenteric adenitis and ovarian pathology if it presents with pain on the right side. A differential diagnosis is made with complicated acute diverticulitis if it presents with pain in the left flank. Often, the torsion of the omentum causes vascular torsion of the gastroepiploic artery and a venous stagnation. This creates an ischemia of the omentum, with consequent hemorrhagic infarction, followed by ischemia of the omentum resulting in acute abdomen (12). The causes of omental torsion seem unknown. In the literature, weight change or obesity is described as the main cause (19). Diagnosis is often difficult. Basson and Jones (20) analysed 223 cases of primary torsion and revealed that only one patient had been correctly diagnosed preoperatively. Kimber (21) *et al.* reviewed over 8000 cases of appendectomies, quoting omental torsion as the finding in one out of every 600 operations for presumed appendicitis. As reported in the literature and in several presentations of case reports (22-24), our patient went to the emergency room having all the criteria described: young age, BMI greater than 29 kg/m², pain in the right iliac fossa, normal leukocytosis, nausea in the absence of abdominal distension or vomiting or fever. Abdominal ultrasound (AUS) often shows hyperechoic or hypoechoic images such as abdominal mass and

may show fluid effusion in the abdomen. In our case, AUS was negative but Abdominal Computed Tomography scan (CT scan) showed the pathology that is frequently confused with appendicitis, liposarcoma, panniculitis or torsion of the ileal or cecum loops (22-25). Abdominal CT scan presented an agglomeration of fat with diffuse vascularization and a twisted vascular peduncle on the same side, the so-called "whirlpool sign" (17, 26). Given the difficulties in diagnosis, radiological images and particularly CT can guide the diagnosis; however, surgical exploration and especially laparoscopic surgical exploration, remains the definitive gold standard for intraoperative diagnosis and therapeutic management (27). The use of laparoscopy provides various benefits such as less postoperative pain, shorter hospital stays and a reduced incidence of wound complications. The disadvantages include difficulty in controlling bleeding, difficulty in lysis of adhesions and loss of touch sensation (28).

CONCLUSION

Omental torsion is a rare pathology regarding the causes of acute abdomen. However, patient history and a correct use of diagnostic images, mainly abdominal CT scan, can help in the diagnosis (17, 26). The CT scan shows the "whirlpool sign". The resolution of the pathology consists in laparoscopic omental resection (26). Given the difficulties in diagnosis, surgical exploration remains the definitive gold standard for intraoperative diagnosis and therapeutic management (27). □

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