



Global Advanced Research Journal of Medicine and Medical Science (ISSN: 2315-5159) Vol. 3(3) pp. 054-058, March 2014  
Available online <http://garj.org/garjmms/index.htm>  
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## Case Report

# Laparoscopic diagnosis and treatment of primary segmental omental torsion with infarction mimicking acute appendicitis: a rare cause of acute abdominal pain

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Accepted 14 March, 2014

**Torsion of the greater omentum is a rare condition with symptoms resembling those of acute appendicitis and is infrequently diagnosed preoperatively. Knowledge of this entity is important to the surgeon because it mimics other causes of acute surgical presentations. Treatment is surgical excision and laparoscopic approach is an excellent diagnostic and therapeutic tool. This case stresses the fact that when unremarkable appendiceal pathology is found with the presence of serosanguineous fluid in the right paracolic gutter especially at laparoscopy mandates inspection of the omentum to exclude torsion possibly with infarction as a possible diagnosis if the bowel, gall bladder and pelvic organs are normal. This case report is the first one documented in this hospital diagnosed and treated laparoscopically.**

**Keywords:** Omentum, Infarction, Appendix, Laparoscopy.

## INTRODUCTION

The classical presentation of pain, tenderness, guarding with rebound tenderness in the right lower abdomen usually denotes acute appendicitis in most instances; but once in a while this may not be so (Quinn and Jothi, 1986; Paroz et al., 2003; Yoon et al., 2007; Albuz et al., 2010).

Omental infarction is a rare entity that usually causes symptoms similar to those of acute appendicitis.

Torsion of the greater omentum is defined as a twist of the organ in its longitudinal axis around a narrow pedicle to such an extent that its vascularity is compromised with resultant infarction of the affected omentum.

Primary torsion of the greater omentum is rare with less than 400 cases reported in the English literature. Its pre-

operative diagnosis is difficult, with an accuracy reported in the range of 0.6-4.8% (Mohamed et al., 2010). Primary torsion of the greater omentum is usually diagnosed clinically as acute appendicitis and found intra-operatively to be primary torsion of the omentum.

Although Bush 1896 (Bush, 1896) and Eberts in 1920 (Eberts, 1920) described haemorrhage into the greater omentum but it was not until 1899 that Eittel (Eitel, 1899) described the first case of this condition with no underlying pathology and since then almost 250 cases have been reported.

Wrenzenski and his associates (Wresinki et al., 1956) in 1956 outlined the diagnostic criteria that distinguish primary idiopathic segmental infarction from omental

torsion due to other causes such as torsion and strangulation in hernias (Kayan et al., 2013).

If left untreated it may form a fibrous ball surrounded by adhesions, which may become infected (Balthazar and Lefkowitz, 1993) or separate to form a loose body within the abdominal cavity.

## CASE REPORT

A 32-year-old fairly obese male was admitted through the Emergency Room (ER), with a four-day history of right-sided lower abdominal pain with anorexia but no fever, vomiting, or urinary symptoms.

There was no history of abdominal trauma, exertion or previous surgery.

Abdominal examination showed marked tenderness and positive rebound tenderness in the right lower abdomen more at the lateral edge of the rectus muscle.

Apart from a leucocytosis of 11.5; results of all other investigations were within normal limits.

A provisional diagnosis of Acute Appendicitis was made.

He was then subjected to diagnostic laparoscopy with the possibility of laparoscopic appendectomy with the usual three port technique carried out on the same day of admission.

At laparoscopy haemorrhagic fluid was found in the right paracolic gutter with normal looking appendix (figure 1 below)



Figure 1

These findings called for further laparoscopic exploration, which eventually showed partial infarction

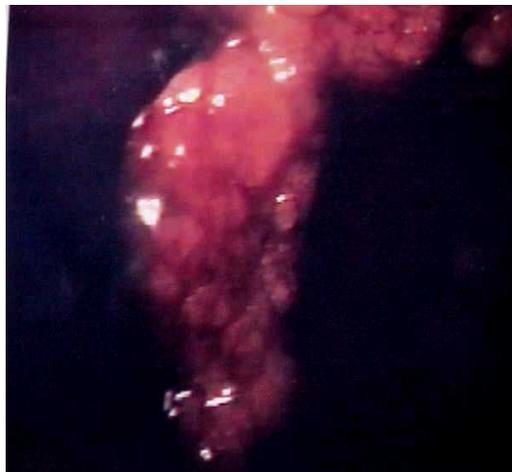


Figure 2

around the distal one third of the greater omentum with some oedema (figure 2 above).

The infarcted omentum was resected laparoscopically with combination of stapler and endo-cautery (figure 3 below) and the resected specimen sent for histopathological examination.

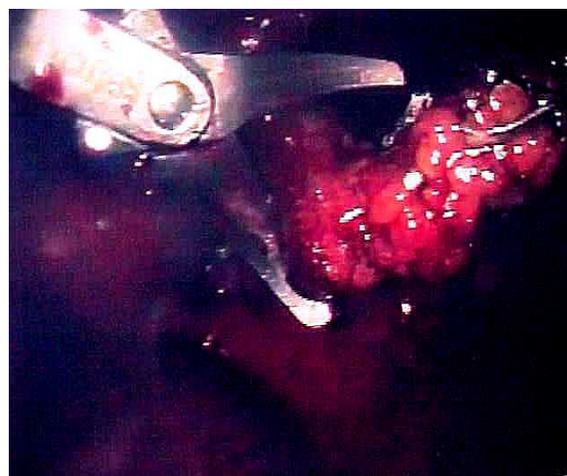
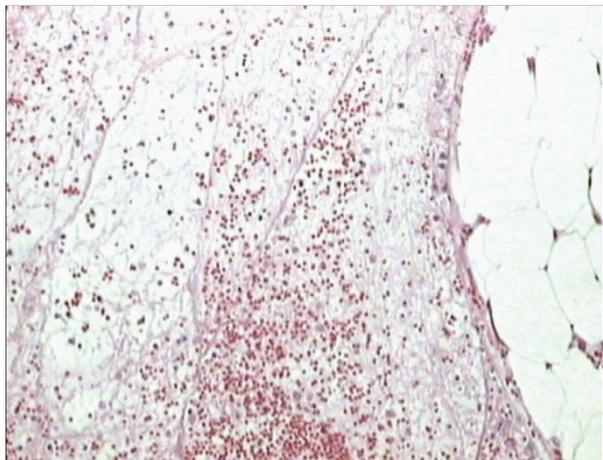


Figure 3. of Infarcted omentum about to be resected

The histologic examination of the omentum revealed foci of hemorrhage, vascular congestion, inflammatory changes, and fibrin deposition consistent with segmental omental infarction (figure 4 below).

Laparoscopic appendectomy was also carried out at the same time and its histopathological examination reported as normal. The pelvis was sucked out and further irrigations done before the patient was closed up without any drain.



**Figure 4.** Slide of infarcted omentum

Post-operatively the patient had fever of 38.8°C on the day of the operation, which settled down over the following 24 hours and the patient was discharged home four days later. Patient remained well before discharge from the hospital.

Surgical out-patient follow-up was uneventful and he has since been discharged from follow-up.

## DISCUSSION AND CONCLUSION

Cases of omental infarction were first reported in the literature over one hundred (100) years ago first by Bush (Bush, 1896) in 1896 and three (3) years later in 1899 by Eittel (Eitel, 1899).

Omental infarction occurs more often in the fourth and fifth decade of life although it may present at any age (Kimber et al., 1996). with a male to female ratio of 2:1.

Omental torsion can be primary or secondary.

Primary torsion of the greater omentum without any underlying cause is less common and it is a rare entity. Because of its rarity and non-specific clinical features, the diagnosis is seldom made preoperatively.

The precise cause of primary torsion is not known but exceptionally long omentum, with narrow attachment, omentum with relative increase in the bulk of fatty deposition at its distal segment and omentum with more prominent tortuous veins could be possible predisposing factors to torsion (Johnson, 1932). The higher incidence of torsion on the right side of the omentum is related to the greater size and mobility of that side.

Also blunt abdominal trauma, excessive coughing and straining, heavy exertion (Shields and Chase, 1988) sudden changes in body position and hyperperistalsis from over eating could also act as other precipitating factors to torsion. The higher incidence of torsion on the right side is related to the greater size and mobility of the

right side of the omentum (Kargar and Fallahnejad, 2009).

Further factors that predispose a patient to torsion include anatomic variations of the omentum, presence of accessory omentum, bifid omentum, irregular accumulations of fat in the omentum especially in obese patients, or omentum with narrow pedicle. The patient's slight obesity in this case could have contributed to this pathology.

Because of its rarity and nonspecific clinical features, the diagnosis is seldom made preoperatively (Al-Husaini et al., 2000; Tandon and Lim, 2010) and is usually made at laparotomy for suspected appendicitis.

Accurate preoperative diagnosis was reported in the range of 0.6-4.8 % (Mohamed et al., 2010).

Usually the patient is an adult but children are not completely free; in fact it is estimated that fifteen percent (15%) of cases occur in children.

Secondary torsion on the other hand a more common entity; occurs with underlying abnormalities such as hernial sacs, tumours, and foci of inflammation or adhesions. Precipitating factors comprise trauma, increased intra-abdominal pressure following coughing, exertion, heavy meal and change in body position, which probably result in sudden misplacement of the omentum and compromised blood flow.

The patient with omental infarction usually presents with acute onset of abdominal pain. The area of tenderness can be in a characteristic superficial periumbilical location, between the rectus abdominis muscle and the transverse colon corresponding to the greater omentum. Usually the diagnostic impression is of an atypical case of acute appendicitis. The clinical picture of acute appendicitis however is not complete (Albus et al., 2010).

The condition may be associated with nausea, vomiting, or low-grade fever. An abdominal mass may be palpable in half of the patients.

This right-sided acute pain and rebound tenderness is often mistaken for acute appendicitis. Unlike acute appendicitis, however, patients with omental torsion usually do not have any significant gastrointestinal symptoms, and their clinical appearance is not consistent with the classical presentation of acute appendicitis of that duration.

However occasional rebound tenderness and guarding makes one to consider acute appendicitis, acute cholecystitis, pancreatitis, perforated duodenal ulcer or even a twisted ovarian cyst as possible differential diagnosis.

During exploration, the finding of free serosanguinous fluid in association with a normal appendix, gall bladder, pelvic organs and bowel, should alert the surgeon to the possibility of omental torsion.

Until recently, omental torsion was diagnosed only on exploratory surgery for presumed acute appendicitis or similar abdominal emergency.

Complete blood count (CBC) in this patient revealed moderate leukocytosis, which occurs in two thirds of cases which was found in this patient.

The increasing use of high-quality imaging, especially computerized tomography, in the diagnosis of appendicitis and the acute abdomen, has allowed preoperative diagnosis to be made much more often (Naffaa et al., 2003).

Abdominal ultrasound and CT scan reveal, in the majority of cases, solid hyperechoic lesions and a whirling mass with hyper-attenuated fatty tissue, respectively (Naraynsingh et al., 1985; Puyaert, 1992). The presence of concentric linear strands in abdominal CT scan is highly characteristic of omental infarction and allows accurate preoperative diagnosis.

Mazza et al (1997) have reported that laparoscopy can provide an accurate diagnosis and treatment.

The increasing use of laparoscopy nowadays in the management of cases of suspected appendicitis offers substantial advantages for the patients while permitting definitive diagnosis and treatment (Steyaert and Valla, 1997; Mallick and Al-Bassam, 2006).

Laparoscopy is a safe diagnostic and therapeutic modality.

The use of laparoscopy has become widespread among surgeons and is a highly valuable diagnostic and therapeutic tool (Maternini et al., 2009).

Treatment consists of resection of the affected portion of omentum (Abe et al., 2012); and any disease associated with secondary torsion that requires correction at the same time can be carried out.

Although conservative management for omental infarction has been suggested for selected patients, laparotomy and better still laparoscopy remains the gold standard of diagnosis and treatment (Peirce et al., 2011; Sasmal et al., 2010; Costi et al., 2008; Sanchez et al., 2002)

Although omental torsion is not life threatening, segmental omentectomy reduces morbidity and removes inflammatory tissue, which may later serve as a focus of intra-abdominal adhesions and post-operative recovery is usually rapid and morbidity is minimal.

Delayed treatment may lead to the formation of intra-abdominal abscesses, sepsis, and adhesions.

Conservative treatments with bed rest and anti-inflammatory medications have been advised and could be considered; but this approach has been associated with the development of omental abscesses in some patients (Balthazar and Lefkowitz, 1993).

Awareness of the surgeons of this entity (Reurings et al., 2011) and use of CT scan in clinically suspected cases may increase its accurate preoperative diagnosis (Itenberg et al., 2010) and reduce its intra-operative surprise. It also allows the use of a minimally invasive approach of management.

In conclusion, torsion of the omentum is difficult to diagnose preoperatively and is usually detected during

laparotomy for acute abdomen. However with the increase in performance of laparoscopy as a minimally invasive surgery nowadays has been found useful for both diagnosis and treatment of this uncommon condition as was achieved in this case.

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