

Laparoscopic Management of Acute Torsion of the Omentum in Adults

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ABSTRACT

Background: Acute torsion of the greater omentum is a rare cause of acute abdomen in adults. We report our experience on the clinical presentation, diagnosis, treatment, and outcome of this condition.

Method: This is a retrospective review of 9 patients who had a clinicopathologic diagnosis of acute torsion of the greater omentum and were treated at the Department of Surgery, Pamela Youde Nethersole Eastern Hospital from January 1994 to March 2004. Eight patients were male and 1 was female with a median age of 43 years (range, 24 to 65). Median body mass index was 24 kg/m² (range, 22 to 24). All presented with acute abdominal pain with a median temperature of 36.8 °C (range, 36.5 to 37.2) and a median white cell count of 9.5 x 10⁹/L (range, 7.4 to 15.1 x 10⁹). Preoperative ultrasound was done in 5 patients.

Results: All diagnoses were made during surgery. Resection of the infarcted omentum was performed for all patients (5 laparoscopic resections and 4 open resections). No postoperative complications occurred. The overall median time from admission to operation was 23 hours (range, 2 to 98). The overall median operating time and postoperative stay were 70 minutes (range, 38 to 105) and 3 days (range, 1 to 6), respectively. The median oral and parenteral analgesic requirement for postoperative pain control was less and the median hospital stay was shorter in patients who underwent laparoscopic resection.

Conclusion: Acute torsion of the greater omentum is an uncommon cause of acute abdomen in adults, and preoperative diagnosis is usually difficult. Laparoscopy seems a safe and minimally invasive technique for both diagnosis and treatment of this rare disease entity.

Key Words: Acute torsion of omentum, Acute abdomen, Adults, Laparoscopy.

INTRODUCTION

Acute torsion of the greater omentum is an uncommon cause of acute abdominal pain in adults. Preoperative diagnosis is difficult because of the rarity of the disease and the absence of specific clinical manifestations. Major laparotomy is unavoidable in many cases before reaching a definite diagnosis.^{1,2} Surgical resection of the infarcted omentum remains the standard treatment. We report a retrospective review of the management of acute torsion of the greater omentum in adults and compare the outcomes between patients who underwent laparoscopic or open resection.

METHODS

Data for 9 patients with a clinicopathologic diagnosis of torsion of the greater omentum and treated at Pamela Youde Nethersole Eastern Hospital, Hong Kong, between January 1994 and March 2004 were retrieved from a computer database, and the medical records of these patients was reviewed systematically. Eight were males and 1 was female. Median age was 43 years (range, 24 to 65). Patient demographics and clinical data are summarized in **Table 1**.

All patients presented with acute abdominal pain. Their median body mass index (BMI) was 24 kg/m² (range, 22 to 24). They were afebrile on admission with a median oral temperature of 36.8 °C (range, 36.5 to 37.2). Median white cell count was 9.5 x 10⁹ (range, 7.4 to 15.1 x 10⁹/L). Their serum amylase level and renal and liver functions were all normal. Localized abdominal tenderness was elicited at the right lower quadrant (4 patients), right upper quadrant (3), both right upper and lower quadrant (1), and left lower quadrant (1).

Ultrasonography of the abdomen was performed in 5 patients (56%). None of the examinations gave the correct diagnosis of acute torsion of the omentum. Three exami-

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Table 1.

Demographics and Clinical Data of all Patients (n = 9)

Median age (years)	43 (range, 24–65)
Sex (M:F)	8:1
Median oral temperature (degrees Celsius)	36.8 (range, 36.5–37.2)
Median WBC ($\times 10^9/L$)	9.5 (range, 7.4–15.1)
Median BMI (kg/m^2)	24 (range, 22–24)
Median time from admission to operation (hours)	23 (range, 2–98)
Median operating time (minutes)	70 (range, 38–105)
Median hospital stay (days)	3 (range, 1–6)

nations revealed no abnormality, and 2 suggested right ovarian pathology and acute appendicitis, respectively.

The preoperative diagnoses after clinical assessment with or without ultrasonography of the abdomen were acute appendicitis (4 patients), acute cholecystitis (3), acute diverticulitis (1), and right ovarian pathology (1).

Routine diagnostic laparoscopy has been used in our unit in all patients who have presented with acute abdomen since 1995. The subsequent treatment approach (laparoscopic or open resection of the infarcted omentum) depended on the laparoscopic experience of the surgeons. Regarding the laparoscopic technique, a 10-mm infraumbilical trocar was inserted by the open technique. Two other 5-mm trocars were then inserted under vision into the right and left side of the abdomen, depending on the location of the pathology. The infarcted omentum was resected by a 5-mm ultrasonic dissector (**Figure 1**) and then delivered through the infraumbilical port by use of a plastic bag. Open resection was defined as resection of the infarcted omentum through any traditional skin incision. Oral Dolpocetmol (Synco Ltd, Hong Kong) (dextropropoxyphene HCL 32.5mg + acetaminophen 320mg)(1 tablet every 4 hours) and Pethidine (Martindale Pharmaceuticals, UK) injection (1mg/kg intramuscularly every 4 hours) were given on demand for postoperative pain control. The patients were discharged once they were ambulatory. Pathology examination was done for all surgical specimens.

RESULTS

All patients belonged to either ASA I or II with good past health. Diagnosis of torsion of the greater omentum was made intraoperatively in all cases. One patient who presented early in 1994 received an immediate midline lap-

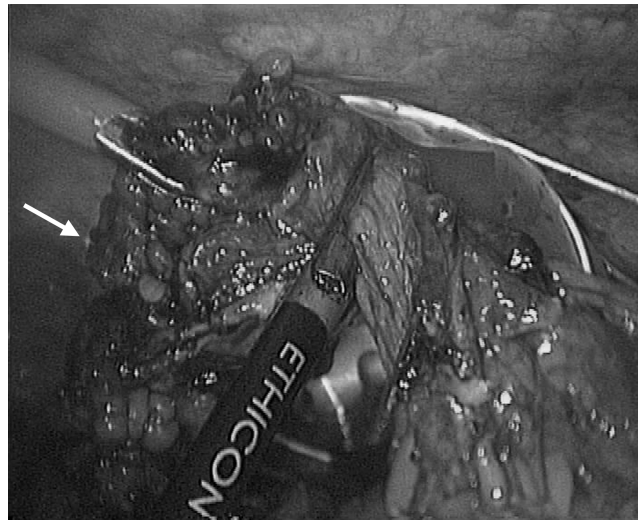


Figure 1. Laparoscopic resection of the infarcted omentum (arrow).

arotomy and resection of the infarcted omentum. Diagnostic laparoscopy was performed on the subsequent 8 patients, and laparoscopic resection of the infarcted omentum was accomplished in 5. Three patients underwent open resection (2 midline incisions and 1 Gridiron incision) after diagnostic laparoscopy because the surgeons involved were less experienced in therapeutic laparoscopic procedures.

No exudative or purulent material was found in the peritoneal cavity of the patients. However, serosanguineous peritoneal fluid was found in 2 patients. Three patients had associated indirect inguinal hernias seen with the tip of the omentum stuck into the hernial orifices. All the associated hernias were treated electively 6 to 8 weeks later by formal mesh repair.

The overall median time from admission to operation was 23 hours (range, 2 to 98). The overall median operating time was 70 minutes (range, 38 to 105). The overall median postoperative hospital stay was 3 days (range, 1 to 6).

No difference existed in age, sex, temperature, and WBC on admission, body mass index and operating time between patients undergoing laparoscopic or open resection. Their postoperative outcomes are shown in **Table 2**. In the laparoscopic group, patients required less Pethidine (Martindale Pharmaceuticals, UK) injection (median, 0mg vs 136mg) and oral Dolpocetmol (Synco Ltd, Hong Kong) [(Dextropropoxyphene HCL 32.5 mg + acetaminophen (320 mg)] consumption (median, 1 vs 6 tablets). The laparo-

Table 2.

Comparison Between Patients Having Laparoscopic or Open Resection of the Infarcted Omentum

	Laparoscopic resection (n = 5)	Open resection (n = 4)
Median postoperative stay (days)	2 (range, 1–4)	4 (range, 2–6)
Median Dolpocetmol requirement (tablets)	1 (range, 0–12)	6 (range, 2–8)
Median pethidine injection (mg)	0	136 (range, 0–300)

scopic group had a shorter postoperative hospital stay (median, 2 vs 4 days).

No postoperative complications occurred. Pathology examination of the omentum showed hemorrhagic infarction. All patients quickly resumed a normal diet on the first day after the operation. With a median follow-up of 4 months (range, 1 to 63), no recurrent symptom was detected in either group of patients.

DISCUSSION

Our study group consists of healthy middle-aged adults, predominantly male. The abdominal pain was mainly located on the right side of the abdomen, a finding consistent with other reports.^{1,3} The reason is that the greater length and mobility of the right portion of the greater omentum makes it easier to twist along the vascular pedicle. This compromises the vascular supply and causes infarction of the omentum distal to the site of torsion.

The patients are generally less septic than those with other common causes of acute abdomen, such as acute appendicitis or cholecystitis, because they rarely have fever or leucocytosis on admission. Obesity (BMI ≥ 25 kg/m²) does not seem to be a predisposing factor in our patients as postulated by others.⁴

Acute torsion of the greater omentum can be primary or secondary. Primary omental torsion without any underlying cause was first reported by Eitel in 1899.⁵ Secondary torsion associated with adhesion, cysts, tumors, and hernias is much more common.¹ Three of the torsions in our series were secondary to incarceration of the tip of the omentum into the inguinal hernial orifices, but none of them could be detected during physical examination. Interval hernia repair several weeks later was chosen for

fear of the potential septic complication related to the infarcted omentum.

Preoperative diagnosis of this rare condition is difficult. Ultrasound does not add further diagnostic value, in our experience. The diagnosis can only be made during surgery. Resection of the infarcted omentum is the only acceptable treatment because the recovery is usually rapid.¹ Ultrasonographic and computed tomographic (CT) scan features of the condition have been described, which makes preoperative diagnosis and conservative treatment possible.^{6,7} However, a conservative approach may prolong hospital stay of the patients, and complications like abscess formation may occur if the infarcted omentum is left behind.⁸ In the long-term, the infarcted omentum may also act as a nidus for adhesion formation.¹ We do not think a preoperative CT scan is necessary because it is not a routine investigation in our practice for patients who present with common acute emergencies like acute appendicitis and cholecystitis.

Laparoscopy has been recommended as a diagnostic tool for acute abdomen.⁹ In fact, diagnostic laparoscopy is becoming a routine procedure for patients who present with acute abdominal pain in our department. It helps to make the diagnosis and plan the incision when laparotomy is required. Chung et al¹⁰ reported the first laparoscopic management of acute torsion of the omentum in 1992. Thereafter, laparoscopic resection is increasingly recognized as a preferred treatment modality for this rare condition, because it is minimally invasive and the patients recover quickly from the operation.^{11–14} We successfully treated 5 of our patients laparoscopically. The laparoscopic approach probably caused less pain in these patients as suggested by the decrease in postoperative analgesic requirements and hence shortened their postoperative hospital stay. The first patient in our series presented in 1994 and underwent immediate laparotomy because diagnostic laparoscopy was not routinely used for acute abdomen at that time. The reason for the 3 open resections after diagnostic laparoscopy was that the surgeons responsible were less experienced in therapeutic laparoscopy. In retrospect, we believe that all those patients who underwent open resection could be treated laparoscopically provided that both the expertise and instruments are available.

CONCLUSION

Acute torsion of the greater omentum is an uncommon cause of acute abdomen in adults. Diagnosis is often made during surgery, and surgical resection results in rapid recovery of the patients. Under expert hands, laparoscopy

is not just a good diagnostic tool but a safe and minimally invasive technique for the treatment of this rare clinical entity.

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