

# Perforated jejunal diverticulitis: personal experience and diagnostic with therapeutical considerations



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## Introduction

Jejunal diverticulitis is an uncommon complication of jejunal diverticulosis (JD), itself a rare condition. Jejunal diverticulosis is estimated to occur in 0.02% to 1.3% of the adult population (19) and is found most often in the elderly although it has also been reported in children (15). The association of jejunal diverticula with diverticula elsewhere in the gastrointestinal tract is well known; the coexistence of jejunal diverticulosis with colonic diverticulosis has been documented in approximately 50% of cases (7). The lesions are commonly multiple, though a solitary jejunal diverticulum can also occur. Most patients with JD are asymptomatic; others may complain of chronic, vague abdominal discomfort, nausea, vomiting, anorexia and weight loss. The acute complications of jejunal diverticulosis include haemorrhage, obstruction, inflammation and perforation which may lead to localized or generalized peritonitis. The aim of this publication is to describe a case of jejunal diverticulitis with a perforated diverticulum in an 87-year-old man, and to review the literature concerning the diagnosis and the therapy of perforated jejunal diverticulosis.

## Case report

A 87-year-old white man was admitted to hospital with

## Abstract

*A case of perforated jejunal diverticulitis in a 87 year old man is described and the literature is reviewed. Jejunal diverticulosis (JD) is estimated to occur in 0.02% to 1.3% of the adult population and is found most often in the elderly. The acute diverticulitis with perforation has been reported as high as 2.3% among patients with JD and is associated with high mortality.*

*Clinical presentation mimic other more common acute intraperitoneal inflammatory conditions. Enteroclysis and abdominal CT are the most specific diagnostic tests. The common treatment is surgical resection of the involved segment. Laparoscopic resection and medical and medical/radiological approaches have also been proposed. Diagnostic and therapeutical aspects of this pathology are discussed.*

**Key words:** Jejunal diverticulosis, jejunal diverticulitis, perforated small bowel diverticulosis.

abdominal pain. Two days before admission he had experienced periumbelical pain and nausea without vomiting. The admission day, the pain was located in the right lower quadrant with a temperature of 37 °C. Stools were normal.

Abdominal examination revealed pain in the periumbelical region and the right lower quadrant, with rebound tenderness and guarding. Bowel sounds were diminished. Rectal examination was normal without evidence for blood. Laboratory tests showed hematocrit 42.2%, hemoglobin 14.6%, white blood cells 16,030/mm<sup>3</sup> with 87% neutrophils. There were no pathological findings on chest x-ray; EKG showed a 1° grade atrioventricular block (PQ = 22"). The abdominal x-ray film with the patient upright revealed multiple small air-fluid levels without dilatation of the bowel loops; there was no free peritoneal air.

Diagnosis of probable acute appendicitis was made and the patient was taken to the operating room. At laparotomy, a perforation of a jejunal diverticulum – with



Fig. 1: Intraoperative photograph showing a jejunal loop suffering from diverticulosis and perforated diverticulitis.

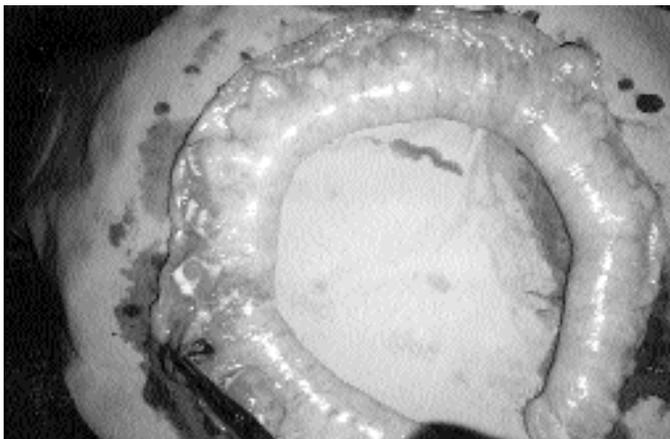


Fig. 2: Resected specimen of the jejunum with the perforated diverticulum and other large mesenteric diverticula.

extended peritonitis – was found in a segment of jejunum (30 cm) showing multiple large diverticula on the mesenteric border. There were other diverticula in the sigma. A resection of the involved segment of jejunum with a two-layer handsewn jejunojejunal anastomosis was performed. Postoperatively, the patient did well and had a good outcome. At histopathological examination, the diverticula of the resected specimen were lined only by mucosa and submucosa.

## Discussion

Acquired jejunal diverticula consist only of mucosa, submucosa and serosa without a tunica muscularis. They are also called “false” or “pseudo” diverticula as compared with other less common congenital diverticula (8). Jejunal diverticula occur on the mesenteric side of the intestine, are multiple in approximately two third of the cases and are associated with colonic diverticulosis in half of

patients. They are more commonly found in the proximal jejunum (2, 18, 11).

The diagnosis of uncomplicated jejunal diverticulosis, as well complicated one, is extremely difficult. The uncomplicated condition usually goes undetected unless complications arise, or the lesion is discovered incidentally by upper gastrointestinal radiographic studies, CT scan, or sonogram (11). Complications of jejunal diverticulosis are bacterial overgrowth, mechanical or idiopathic obstruction, diverticulitis with possible perforation, and severe haemorrhage. They have occurred in 6-41% of the reported cases (12, 22). Acute diverticulitis with perforation is a rare but well documented complication (9). Incidence is 2.3% among patients with JD (22). Perforation of jejunal diverticulum can be triggered by acute necrotic inflammation (82%), blunt trauma to the abdominal wall, foreign body impaction in a diverticulum, cocaine sniffing (1, 9). The mortality rate has been reported as high as 21% (19), owing to the advanced age of most patients and the delay in diagnosis as perforated diverticulitis is seldom diagnosed preoperatively (15).

Although the advanced age is typically observed in cases of perforated jejunal diverticulitis (which is most commonly diagnosed in patients more than 60 years of age), cases of patients younger than 40 have been reported and a perforated diverticulum has been diagnosed in a two years old child (10). The patients may have a preceding history of nonspecific symptoms such as chronic abdominal pain, often postprandially, and sometimes accompanied by nausea, intolerance to fatty or spicy food, vomiting, bloating, flatulence, weight loss, or alternating diarrhoea and constipation. Some patients may present a history of intermittent abdominal pain for a period of some days to two-three weeks. On the other hand perforated jejunal diverticulitis can be the first clinical presentation of JD; in the case report the patient remembered only one episode of colicky abdominal pain with fever and diarrhoea occurred 6 years before. It is very difficult to diagnose a perforated jejunal diverticulitis from the clinical picture, since it presents an acute abdomen, mimicking other more common acute intraperitoneal inflammatory conditions such as acute appendicitis, perforated ulcer, acute cholecystitis, intussusception or sigmoid diverticulitis.

The plain upright abdominal radiograph may be useful in the preoperative diagnosis. In some cases, the radiographic demonstration of free air provides evidence of gastrointestinal perforation (1, 17), in other cases dilated loops of jejunum on plain abdominal x-ray film may be detected in patients with small bowel diverticula (13, 17, 20), but this finding may be difficult to interpret in the presence of peritonitis. On the other hand in presence of a perforated jejunal diverticulitis the plain upright abdominal radiograph may be absolutely nonspecific; in our case the plain abdominal radiograph showed multiple small air-fluid levels with no dilatation of the bowel loops or free air.

The combination of abdominal CT and enteroclysis can be crucial in establishing the correct preoperative diagnosis. CT findings such as a severe inflammatory reaction of the small bowel loops or an image consistent with abscess cavity may suggest the diagnosis of perforated jejunal diverticulosis (3, 14, 20). The diagnosis can be confirmed by using small bowel enteroclysis with hydrosoluble contrast (20).

On the other hand, most of the times, perforated JD is still diagnosed in the course of an exploratory laparotomy. Many authors have emphasized the difficulty of recognizing small-bowel diverticula at laparotomy and have reported cases in which the diagnosis was missed resulting in the need for a second operation (6, 21). During laparotomy a meticulous inspection of the mesenteric portion of the intestine is very important in finding these lesions. Air insufflation via small gauge needles into isolated segments of bowel has been used successfully to demonstrate more obscure diverticula at operation (4, 16).

The common treatment described in the literature is resection of the involved intestinal segment with a jejunojunal anastomosis (2, 13, 22); limited local excision (diverticulectomy) and single closure are not advisable and are associated with a high incidence of complications (22). Cross et al. have described the use of exploratory laparoscopy with small bowel resection in an 87 years-old woman with perforated jejunal diverticulitis (5). The lesion was visualized and primary resection and anastomosis were performed. The authors stress that this procedure is associated with less post-operative pain, allowing for a prompt recovery with minimal morbidity and mortality, particularly in the elderly.

Recently there has been proposed a non-surgical management of acute jejunal diverticulitis with perforation. Sibille et al. report a case of jejunal diverticulitis with covert perforation diagnosed by CT and enteroclysis and successfully treated with broad spectrum antibiotics and nothing by mouth (20). After the discharge abdominal tenderness was still present and the patient had elective resection of the diverticulosis segment of jejunum 48 days after the first admission. Novak et al. report two cases of acute jejunal diverticulitis treated with a medical/radiological approach (14). An emergent CT scan performed in each patient with localized peritonitis revealed "collections" consistent with abscess cavities. One patient was treated with intravenous antibiotics, total parenteral nutrition, bowel rest and the other with a combination of intravenous antibiotics and percutaneous CT-guided aspiration. CT-guided needle aspiration was performed and the injection of contrast clearly revealed communication with a jejunal diverticulum. Both patients did well and were subsequently discharged without incident or surgical intervention. It is Novak's view that given the proper clinical scenario, medical/radiological treatment should be attempted as first approach in complicated jejunal diverticulitis.

A preoperative diagnosis is certainly important in the choice of the most appropriate treatment; if a phlegmon or a localized abscess due to covert perforation is diagnosed, a non surgical management (medical or medical/radiological) may be first attempted in jejunal diverticulitis. On the other hand an explorative laparotomy with a subsequent jejunal resection is recommended if diverticular perforation with an extended peritonitis is suspected. Delayed surgery after the conservative treatment of jejunal diverticulitis should be performed to prevent recurrence or other complications.

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