

## Perforation of Jejunum Diverticula: Report of Two Cases

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### Abstract

Perforation of jejunal diverticulum is quite uncommon. Clinically this diagnosis may be easily confused with other causes of an acute abdomen. We present two cases with acute abdomen caused by perforation of jejunal diverticulum. These two patients are diagnosed and treated at different phases of the entity. Choice of surgical procedure was different in these patients. Physicians should increase the awareness of perforated jejunal diverticulum in patients with acute abdomen.

**Keywords:** Small bowel diverticula; Complication; Primary repair

### Background

Small bowel diverticulosis is quite rare. Generally, small bowel diverticulosis is asymptomatic or pauci-symptomatic and clinical expression is usually limited to diffuse abdominal pain or discomfort [1]. Jejunal diverticula are the least common type of small bowel diverticula [2]. We present two cases with acute abdomen where we found jejunal diverticula perforation.

### Case 1

A 95-year-old female patient administered to the gastroenterology department for pain in her abdomen. Due to her history of chronic cholecystitis and choledocolithiasis, upper abdomen ultrasonography and blood tests were performed. No abnormality was found and she was sent home with pain killers. After 4 days of this admission, she was admitted to the emergency department with 2-day history of fatigue, nausea and vomiting. Her past medical history also included hypertension, chronic obstructive pulmonary disease, diabetes mellitus and umbilical herniorrhaphy. At the time of admission, she was lethargic and she had confusion. She had tachypnea, tachycardia with normal blood pressure. Her abdomen was tender in both upper quadrants with rebound tenderness. Bowel sounds were decreased. Laboratory investigations revealed leukocytosis, increase in blood urea nitrogen and mild hypokalemia. Her abdominal X-ray showed only prominent but non-dilated small-bowel loops. Abdominal computed tomography (CT) revealed ruptured jejunum with associated free intraperitoneal air and surrounding mesenteric edema. Numerous jejunum and colon diverticuli were noted with marked jejunal and colonic diverticulosis (Figure 1). Patient underwent emergency laparotomy after a rapid resuscitation and stabilization.

At laparotomy, there was about 200 ml contaminated fluid in abdominal cavity. All gut was examined; diverticulosis was found at jejunum from 10 to 70 cm – distal to the ligament of Treitz and at sigmoid and descending colon. The perforated diverticulum was located about 30 cm distal to ligament of Treitz. A primary repair was done for the perforation in two layers.

Post-operative period was uneventful. On post-operative day 3, oral feeds commenced with fluid nutrients. On day 5, she was discharged from hospital after abdominal drain removed. Three years after operation, she is still alive and she had no complication about this surgical procedure.

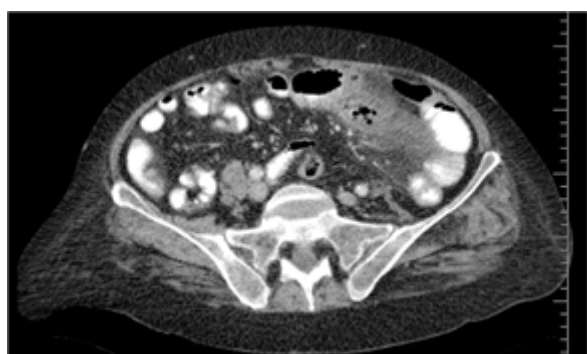


**Figure 1:** Abdominal computed tomography of case 1, ruptured jejunum with associated free intraperitoneal air and surrounding mesenteric edema.

### Case 2

A 64-year-old female patient was hospitalized by Nephrology department consulted for acute worsening of abdominal pain. She reported that her pain started 10 days ago and had become worse. Her medical history was significant for end-stage renal disease and she had been on routine hemodialysis for 6 years. On admission, physical examination showed localized tenderness and rebound tenderness in the left upper abdomen. Her abdomen was distended, and bowel sound was decreased. Leukocytosis and elevation of serum creatine levels were found in laboratory findings. An emergent abdominal CT scan revealed elevation of density of the jejunal mesentery that contained extraluminal air. There was localized fluid around this jejunal segment (Figure 2).

Once a diagnosis of perforation of jejunum was made, she was taken for surgery. When the peritoneum was opened, there was no free air or fluid intra abdominally. The gut loop was adhered to each other. After adhesions were gently dissected, a walled-off perforation by the adjacent mesentery with localized abscess was revealed. A segment of jejunal wall distal from 40 cm to ligament of Treitz appeared thick and reddish, where a pin-size perforation hole was observed (Figure 3).



**Figure 2:** Abdominal computed tomography of case 2, elevation of density of the jejunal mesentery that contained extraluminal air and localized fluid around this jejunal segment.

She underwent resection of involved jejunum and end-to-end anastomosis. The specimen showed perforated jejunal diverticulitis. She was discharged a week later after an uneventful postoperative period. She is still on hemodialysis program with routine control visits to the nephrology department and she had no complications related to the operation during the year after the operation.



**Figure 3:** Operative findings of case 2, segment of jejunal wall distal from 40 cm to ligament of Treitz appeared thick and reddish, a pin-size perforation hole was shown with a right angle clamp.

## Discussion

Jejunal diverticula are the least common type of small bowel diverticula, with an incidence of less than 1%, slightly more common in men [3]. The typical presentation of jejunal diverticula is intermittent abdominal pain, accompanied by flatulence, diarrhea or constipation in 10% to 30% of the cases. In a series of 112 cases of jejuno-ileal diverticulosis analyzed by Tsiotos et al., 42% were asymptomatic [3]. Among the symptomatic patients, diarrhea (58%)

was the most common clinical manifestation followed by chronic abdominal pain (51%) or bloating (44%).

Common acute complications include diverticulitis, bleeding, intestinal obstruction and perforation [4]. Only a very small number of the patients present perforation of diverticula. Perforation is usually walled off by the adjacent mesentery leading to localized abscess, absence of generalized peritonitis delays the diagnosis. Although the widely accepted recommendation is segmental resection of the segment of gut involved by diverticula [5], there is no clear-cut evidence for this in the literature. There are some reports of successful primary repair of perforated jejunal diverticula [6]. The choice of any procedure appears dependent not only on the tissue to be operated but also systemic condition of the patient. Our first patient was a very old woman with a number of co morbidities. Relatively early diagnosis and absence of generalized and necrotizing inflammation were the basis of applied surgical procedure. The surgery lasted only a short time and the patient was discharged uneventfully. On the contrary, our second patient was diagnosed relatively late and there was a walled-off abscess involved with the segment which contained perforated diverticula. This patient underwent segmental resection and primary anastomosis. She also had an uneventful postoperative period. Agarwal et al. [6] estimated factors which might explain success of primary repair as: 1. Absence of chronic symptoms, 2. Small size of the perforation, 3. Relatively early exploration, 4. Absence of the necrotizing inflammatory reaction.

There are many reasons causing small bowel perforation that should be considered in differential diagnosis. Meckel's diverticulitis is one of such examples among other diverticular disease of the small bowel [5]. Non-steroidal anti-inflammatory drugs are another cause of ulcerations and perforation. Although they primarily affect the stomach or ileum, their effect is not limited to these regions and can affect any point throughout the small bowel [7]. Perforation due to neoplasms is difficult to distinguish but it is one of the important causes of small bowel perforation.

Delay of surgical consultation or intervention has serious consequences; Koger et al. [8] reported that 2 out of 13 patients, having perforated jejunal diverticula in whom surgical consultation was delayed (8 days, 12 days) died. Importance should be placed on the suspicion for jejunal diverticulitis as the etiology of acute abdomen.

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