



Unexpected diagnosis of jejunal perforation after robot-assisted radical prostatectomy

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ARTICLE INFO

Keywords:

Jejunal diverticulitis
Jejunal perforation
Robot-assisted radical prostatectomy

ABSTRACT

We report a rare case of perforated jejunal diverticulitis after an unrelated surgery. A 60-year-old male presented with severe abdominal pain one day after robot-assisted radical prostatectomy. This was diagnosed as perforated jejunal diverticulitis and managed via immediate partial jejunal resection.

Key points are as follows. First, surgery may have indirect impacts on diverticulitis perforation because of postoperative intestinal hypomobility and immunosuppression. Second, the diagnosis becomes harder when the perforation occurs after surgery because postoperative laboratory and imaging findings are similar to those after jejunum perforation. Hence, aggressive diagnostic evaluation and immediate treatment are crucial for improving prognosis.

1. Introduction

Few reports discuss the occurrence of small intestine perforation after robot-assisted radical prostatectomy (RARP). Cases of jejunal diverticulosis are also rare and difficult to diagnose because most of them are asymptomatic or have only nonspecific symptoms.

When these are perforated, the mortality rate is high and immediate resection surgery is required. This case report details a very rare case of jejunal diverticulitis perforation occurring just one day after RARP.

2. Case presentation

The patient is a 60-year-old male with a body mass index of 29.3 who was diagnosed with prostate cancer. The tumor had a Gleason score of 4 + 3 in the bilateral lobes (7 out of 16 sites) and a clinical stage of T2cN0M0. The patient had a past medical history of diabetes (HbA1c: 6.9%) and colon polyp. He had no previous surgeries. The initial serum prostate-specific antigen level was 23 ng/mL. The patient received chemotherapy for 4 months and underwent RARP with bilateral obturator lymph node dissection using a transperitoneal approach without nerve preservation. The operative time was 232 minutes (console time, 202 minutes) with a blood loss of 200 mL. There were no adhesions except for the physiological adhesion of sigmoid colon. As the drainage volume and its quantity were normal, the drainage tube was removed on

postoperative day 1. On that same evening, the patient complained of acute severe abdominal pain. Laboratory tests revealed that C-reactive protein levels were elevated from 4 to 16, but there were no other abnormal findings. Computed tomography revealed a small amount of free air around the mesenteric membrane (Fig. 1). Colon perforation was suspected due to the peritoneal signs; thus, we decided to perform emergency operation on the same day the patient complained of abdominal pain. During the operation, a small perforation was found in the jejunum, and a 15-cm segment of jejunum was resected (Fig. 2). The rectum had no perforations when assessed via colonoscopy. Four drainage tubes were placed, and the resection surgery was finished. The patient had an uneventful postoperative course. After partial jejunal resection, he was started on liquid food from the 5th postoperative day and was discharged on 17th day.

Since there were no complications (as seen on the intraoperative video), the initial diagnosis was traumatic perforation due to the Verres needle used for port insertion. Based on the histological findings, however, the final diagnosis was perforated jejunal diverticulitis (Fig. 3).

3. Discussion

3.1. • Jejunal diverticulosis

Jejunal diverticulosis is an uncommon disease, yet it remains

Abbreviations: RARP, robot-assisted radical prostatectomy.

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<https://doi.org/10.1016/j.eucr.2022.102127>

Received 5 May 2022; Accepted 8 June 2022

Available online 10 June 2022

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Fig. 1. Free air around mesenteric membrane.



Fig. 2. Small perforation with approximately 5-mm diameter was found on jejunum.

clinically important because of the difficulty of diagnosis and the mortality rate caused by its acute serious complications. Epidemiologically, old age (>60 years), male sex, and colon diverticulosis are risk factors of jejunal diverticulosis.¹

The incidence of small bowel diverticulosis ranges from 0.3% to 1.3% in the general population and is 2.3% in autopsies. In a retrospective study of 208 patients performed at three institutions over 23 years, 79% had duodenal diverticulosis, 18% had diverticulosis of the jejunum and ileum, and 3% had diverticulosis of the entire small bowel.

The diagnosis of jejunum diverticulosis requires invasive study, such as capsule endoscopy and barium meal follow-through. Jejunal diverticulosis is sometimes found accidentally during an unrelated surgery.

Jejunal diverticulosis is usually asymptomatic, with only about 29% of patients presenting with nonspecific chronic abdominal symptoms such as stomachache, nausea, and malnutrition. Perforation occurs in only 2%–6% of patients; it is associated with increased mortality rate (up to 40%) and requires surgical intervention.¹ The etiology of this disease is not yet fully understood, similar to that of large intestine diverticulosis. It is hypothesized that, both small and large intestine diverticulosis involve mucosal and submucosal herniation due to persistent irregular bowel contractions and increased intraluminal pressure.²

3.2. • Nontraumatic intestine perforation due to diverticulosis after surgery

Most cases of intestine diverticulosis are those of false diverticulosis, which lacks a muscle layer and is more likely to perforate. To the best of our knowledge, there are no reports about postoperative jejunal diverticulitis perforation; however, there are several reports of colon diverticulitis perforation after surgery. Furthermore, cases of colon diverticulitis perforation after extra-abdominal surgery (such as cardiovascular surgeries) have been reported.³ In these studies, the etiology of diverticulitis perforation after surgery was attributed to postoperative constipation and the use of opioid analgesia. Temporal immunosuppression after surgery also has a potential impact on the rupture of diverticulitis. There are many case reports about colon perforation, especially after renal transplantation, occurring in 0.5%–2% of such patients, with over half being caused by diverticulosis. Prednisolone use is said to affect diverticulitis in many studies. The prevalence of colon perforation may be decreasing as immunosuppressive regimens are changing.

A peculiar finding is free air in the abdominal cavity, which occurs in 60% of laparotomies and 25% of laparoscopic procedures,⁴ although it is common to observe free air after laparoscopic surgery. Thus, if physical findings and laboratory data are not indicative, the diagnosis can be delayed.

3.3. • Small intestine perforation after RARP

Previous reports of small intestinal perforation after RARP described that most laparoscopy-induced bowel injuries were caused by the insertion of instruments (i.e., trocars or Verres needles).⁵ We reviewed the video of the operation in this case, but we were unable to pinpoint a

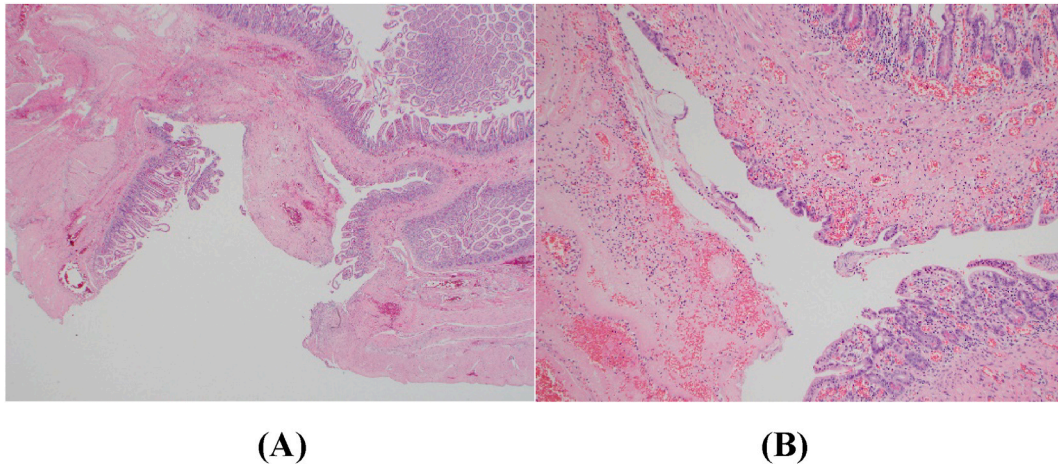


Fig. 3. (A) Section in the site of jejunal diverticulitis perforation
(B) Neutrophil infiltration is observed in the diverticulosis wall.

specific action or instrument that may have caused the perforation.

4. Conclusion

The diagnosis of jejunal perforation is difficult, and this becomes much more complicated when nontraumatic jejunum perforation occurs after surgery. This is the first report in which jejunal perforated diverticulosis was unexpectedly diagnosed after abdominal surgery. However, given the fact that there are many potential risks of intestinal perforation due to surgical stress, it is reasonable that the jejunal perforation occurred just after RARP. Rectal perforation is the usual complication of RARP, but as seen in our case, perforation can occur elsewhere. The diagnostic evaluation should not stop at having an intact rectum. Aggressive diagnostic evaluation and prompt treatment are critical to reduce mortality from this condition.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Declaration of competing interest

The authors declare no conflict of interests.

Acknowledgements

We highly appreciate all members of our department. For providing language help, we appreciate for Enago and Joseph M.

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