

Delayed Bleeding at Different Anastomotic Sites After Operation for Synchronous Colon and Rectal Carcinoma: A Rare Case Report

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Case report

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Abstract

Background: Delayed postoperative anastomotic bleeding is a life-threatening complication of gastrointestinal reconstruction surgery, but rarely been reported in the literature.

Case presentation: A 64-year-old man was admitted to our hospital with bleeding stool for 10 days, he had a long history of uncontrolled type 2 diabetes mellitus. He was then diagnosed with synchronous adenocarcinoma of the ascending colon and the rectum. Laparoscopic right hemicolectomy combined with low anterior resection of rectal cancer was conducted later. Delayed bleeding occurred at ileocolonic anastomotic orifice and colorectal anastomotic orifice at different periods, by multi-means of hemostasis therapy, he finally gained a good recovery.

Conclusion: Enhanced postoperative monitoring, early detection of bleeding and combined with multiple hemostasis methods are the keys to successful management of delayed postoperative anastomotic bleeding in colorectal cancer. Type 2 diabetes mellitus may be one of the risk factors of delayed postoperative anastomotic bleeding, and preventive ostomy may be beneficial to avoid the occurrence of delayed postoperative anastomotic bleeding, both of which needs to be confirmed by further studies.

Background

Anastomotic bleeding is one of the most common anastomosis related complications after gastrointestinal reconstruction surgery. Although the incidence of postoperative anastomotic bleeding is relatively low as reported in the literature, it increases the difficulty of treatment, prolongs the length of hospital stay, raises the hospitalization cost of patients, and is life-threatening in serious cases [1, 2]. Postoperative anastomotic bleeding is unpredictable and its risk factors have not been clarified, so there is a lack of accurate preventive measures [3]. Delayed postoperative anastomotic bleeding is even more rare, herein, we report a case of delayed postoperative anastomotic bleeding in a synchronous colon and rectal cancer patient complicated with type 2 diabetes mellitus, in order to provide some ideas for further researches of this complication.

Case Presentation

A 64-year-old man was admitted to our hospital with bleeding stool for 10 days. He had been diagnosed with type 2 diabetes mellitus for years, but his blood glucose had never been regularly monitored and controlled, and there was no other medical history. Adenocarcinoma of the ascending colon and the rectum were confirmed by electronic colonoscopy and pathological biopsy. Contrast-enhanced Computed Tomography (CT) scan of chest and abdomen showed local thickening of the ascending colon and the rectum, without signs of tumor invasion to surrounding organs or distant metastasis. His fasting blood glucose was 14.7 mmol/L, considering the poor blood glucose controlled, the patient was consulted by the endocrinology department preoperatively. Laparoscopic right hemicolectomy combined with low anterior resection of rectal cancer was conducted one week later after fasting and postprandial blood

glucose were sustained in normal range. The tumors were resected according to the standard surgical procedure, and the excised specimens were removed through a small incision in the upper abdomen. For the digestive tract reconstruction method, side-to-side anastomosis was performed for ileocolonic anastomotic orifice and end-to-end anastomosis was performed for colorectal anastomotic orifice. The anastomotic site of the ileocolon was intact under direct observation without active bleeding, and the anastomotic site was sutured with plasmomuscular layer reinforcement. Digital rectal examination and air leak test confirmed that the colorectal anastomosis was intact and there was no active bleeding. On the second day after operation, the patient had anal exhaust, he was allowed to start a liquid diet, and then gradually transition to a semi-liquid diet. On the 7th day after the operation, the patient developed a large amount of bloody stool, then intermittently discharge of blood clots, accompanied by dizziness and fatigue. Considering the possibility of postoperative anastomotic bleeding, endoscopic hemostasis was arranged in the Digestive Endoscopy Center. Active bleeding of rectal anastomosis was observed during the operation, and 6 titanium clamps were given to stop the bleeding (Fig. 1a and 1b). The postoperative vital signs and the dynamic reexamination of hemoglobin were stable. On the 7th day after endoscopic hemostasis, the patient had no abdominal pain, abdominal distension, hematochezia and other discomfort after having semi-fluid diet, and the anal exhaust and defecation were normal, he was then discharged. One week later, the patient came back to the hospital for tumor chemotherapy, before the treatment, bloody stool appeared again, his blood pressure was 90/55 mmHg, the following electrocardio and blood pressure monitoring indicated a progressive decrease of blood pressure, hemorrhagic shock (84/53 mmHg). Emergency colonoscopy was arranged, no active bleeding at the colorectal anastomotic site was shown, and three of the titanium clips were in position intraoperatively (Fig. 1c). Since the proximal intestinal cavity was filled with blood clots (Fig. 1d), and the entry was difficult, so the examination was stopped. As a replacement, the patient was scheduled for percutaneous selective arteriography. During the operation, the superselective catheter was applied to the superior mesenteric hypertension subtractive imaging, showing disturbance of one of the branches and significant contrast extravasation at the proximal ileocolonic anastomosis, indicating an active bleeding of this branch (Fig. 2a). Selective arterial drug infusion hemostasis and selective arterial embolization were performed, and no contrast medium spillover was found in reexamination angiography, indicating the hemostasis was successful (Fig. 2b). After operation, the vital signs of the patients were stable, and the dynamic reexamination showed that his hemoglobin level did not continue to decline. One day after operation, the patient developed distension and pain in the right upper abdomen, accompanied by chills and fever, and the anus stopped exhaust and defecation. Physical examination: right upper abdominal tenderness, rebound pain and muscle tension, indicating localized peritonitis. Whole blood cell analysis indicated that white blood cells and C-reactive protein were increased. Local intestinal ischemia and secondary peritonitis were considered after interventional embolization, which were treated with anti-infection, fasting and rehydration, nutritional support and so on. After treatment, the symptoms of the patients were relieved, and the liquid diet and semi-fluid diet were gradually restored after the recovery of intestinal function. The reexamination of whole blood cell analysis indicated that the inflammatory index was normal and the patient was discharged from the hospital. Ten days after discharge, the patient had hematochezia again, and the relevant examination was performed in the local hospital. Considering the

recurrent bleeding of the ileocolonic anastomotic orifice, emergency operation was arranged. During the operation, the posterior wall of the ileocolonic anastomotic orifice was perforated and bleeding was seen, indicating anastomotic fistula with bleeding, and the anastomosis was resected. An ileocolonic anastomosis combined with preventive ostomy of the proximal small intestine was performed, and the postoperative condition of the patient was stable. At the 8-month follow-up, the patient had no symptoms of hematochezia and had completed the closure surgery of the ileal stoma for one week and recovered well.

Discussion

Anastomotic bleeding is one of the most dangerous postoperative complications of colorectal cancer, and its incidence is reported in the literature as 0.5%-9.6% [4–6]. Postoperative anastomotic bleeding usually occurs within 24 hours after the operation [1, 7]. The early postoperative anastomotic bleeding is mainly related to insufficient hemostasis during the operation and postoperative circulation fluctuation [2]. The hemorrhage that developed more than 24 hours after surgery was considered as delayed bleeding [8]. In the studies of delayed anastomotic bleeding after pancreatoduodenectomy, the vascular erosion and ulcer caused by pancreatic fistula, biliary leakage, anastomotic fistula, and abdominal abscess erosion were considered as the causes of delayed anastomotic bleeding [9, 10]. So far, the risk factors associated with anastomotic bleeding have not been fully elucidated, making it much more difficult to predict and prevent postoperative anastomotic hemorrhage. Although there was still a lot of debate, some studies believed that intraoperative colonoscopy can help to detect active bleeding and make timely treatment, reducing the probability of postoperative anastomotic bleeding [1, 7]. However, intraoperative colonoscopy requires high technical requirements and endoscopy dedicated surgeons or gastroenterologists, making a routine intraoperative colonoscopy difficult to be popularized [1, 3]. As a compensation, some surgeons recommended that digital rectal examination and air leakage test should be always performed to preliminarily determine the integrity of the anastomosis, and routinely whole layer interrupted reinforcement sutures after stapled anastomosis might help to reduce the probability of postoperative anastomotic bleeding [1, 7]. Nevertheless, anastomotic bleeding often occurs unpredictably, once it happens, the combination of multiple means to stop bleeding is the key to save lives. Since it could stop spontaneously and severe bleeding is rare, anastomotic bleeding can usually be managed by conservative treatments such as observation, blood transfusion, packing hemostasis [1, 11]. For those who undergo a failure of conservative treatments, endoscopy can offer a direct approach to the site of anastomotic bleeding and stop the bleeding by different means such as hemostatic sprays of noradrenaline or thrombin, local injection of epinephrine and hardener, metal clipping [1, 2, 5]. When endoscopic treatment is unsuccessful, Digital Subtraction Angiography (DSA) and interventional embolization is an appropriate alternative [2]. If these treatments are all inappropriate, a resecting and refashioning surgery of the anastomosis may be a final choice [1, 11]. To our best knowledge, this is the first case of delayed bleeding at multiple anastomoses after colorectal cancer surgery. Anastomotic integrity and no active anastomotic bleeding were confirmed by intraoperative air leak test and digital rectal examination. The absence of hematochezia within 7 days after the operation confirmed the

reliability of intraoperative hemostasis. The patient had a long history of uncontrolled type 2 diabetes before surgery, which we speculated may be related to repeated delayed anastomotic bleeding in this case. In a review focused on diabetic wound healing, delayed wound closure in diabetes was considered to be associated with insufficient angiogenesis, which showed decreased vascularity and capillary density [12]. Spivak et al reported that diagnosis of type 2 diabetes but not surgical techniques is strongly associated and an independent predicting risk factor for acute and subclinical postoperative hemorrhage in sleeve gastrectomies [13]. In our case, the patient's long-term diabetes might cause microcirculation disorder, and he was potentially at risk of anastomotic ischemia and anastomotic fistula after surgery. In turn, as is mentioned above, anastomotic fistula is the possible cause of delayed anastomotic bleeding. Although our hypothesis needs to be confirmed by a large number of studies, we have accumulated the following experiences through the treatment of this case: 1. Endoscopic treatment has a reliable effect on colorectal anastomotic bleeding. The anastomotic site of the ileocolon is far from the anus, and in the case of unprepared intestinal tract and massive blood accumulation, endoscopic observation is difficult, and it is not easy to find the bleeding site and stop bleeding. 2. In the case of endoscopic hemostatic failure, DSA combined with super choice vascular embolization can effectively stop the bleeding, but can cause embolic ischemia, which is the risk factor of intestinal ischemia and fistula. After embolization, the patient had signs of right upper abdominal pain and localized peritonitis, and the inflammatory index was increased, which indicated this possibility. After discharge, the ileocolic anastomotic fistula and bleeding happened again, which confirms the previous report [14]. 3. Preventive ostomy was done during the reoperation, which successfully avoided the recurrence of anastomotic bleeding. Therefore, for patients with colorectal tumor complicated with type 2 diabetes mellitus, the risk of intestinal fistula and anastomotic bleeding at multiple anastomotic sites was significantly increased, and preventive ostomy may be beneficial to reduce the risk of anastomotic complications. 4. The risk factors of delayed anastomotic bleeding have not been clarified yet, so it is difficult to predict and avoid. Surgeons should be more careful during gastrointestinal anastomosis, especially for patients with type 2 diabetes mellitus, patient's condition changes should be closely monitored postoperatively, and anastomotic complications should be detected and treated as soon as possible.

Conclusion

1. Postoperative delayed anastomotic bleeding of colorectal cancer is rare and unpredictable, and repeated delayed anastomotic bleeding may occur at the same anastomotic site. Enhanced postoperative monitoring, early detection of bleeding and combined with multiple hemostasis methods are the keys to successful management of delayed postoperative anastomotic bleeding in colorectal cancer.
2. Type 2 diabetes mellitus may be one of the risk factors of delayed postoperative anastomotic bleeding, and preventive ostomy may be beneficial to avoid the occurrence of delayed anastomotic bleeding, both of which need to be confirmed by further studies.

Abbreviations

CT: Computed Tomography; DSA: Digital Substraction Angiography

Declarations

Ethics approval and consent to participate

Ethical approval was given by the medical ethics committee of The People's Hospital of Guangxi Zhuang Autonomous Region.

Consent for publication

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

CRL reviewed the literature and contributed to manuscript drafting; ZYL and WHZ analyzed and interpreted the imaging findings of the DSA and colonoscopy; CCD supervised the entire project and helped to write the manuscript; All authors approved the final version of the manuscript.

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Figures

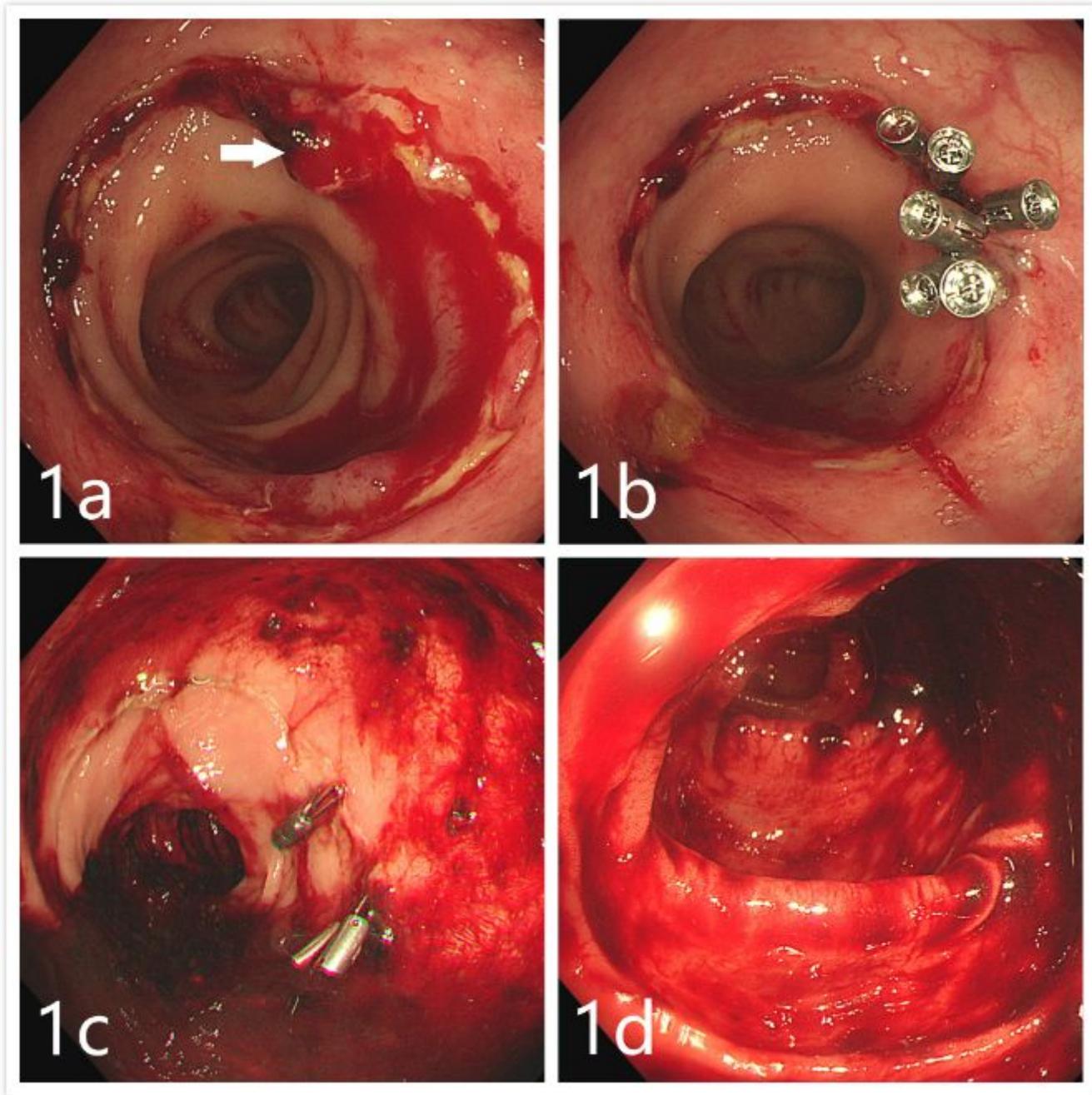


Figure 1

a. Active bleeding of rectal anastomosis was observed during the operation (arrow). b. Six titanium clamps were given to stop the bleeding. c. No active bleeding at the colorectal anastomotic site was shown, and the titanium clips were in position intraoperatively. d. The proximal intestinal cavity was filled with blood clots.

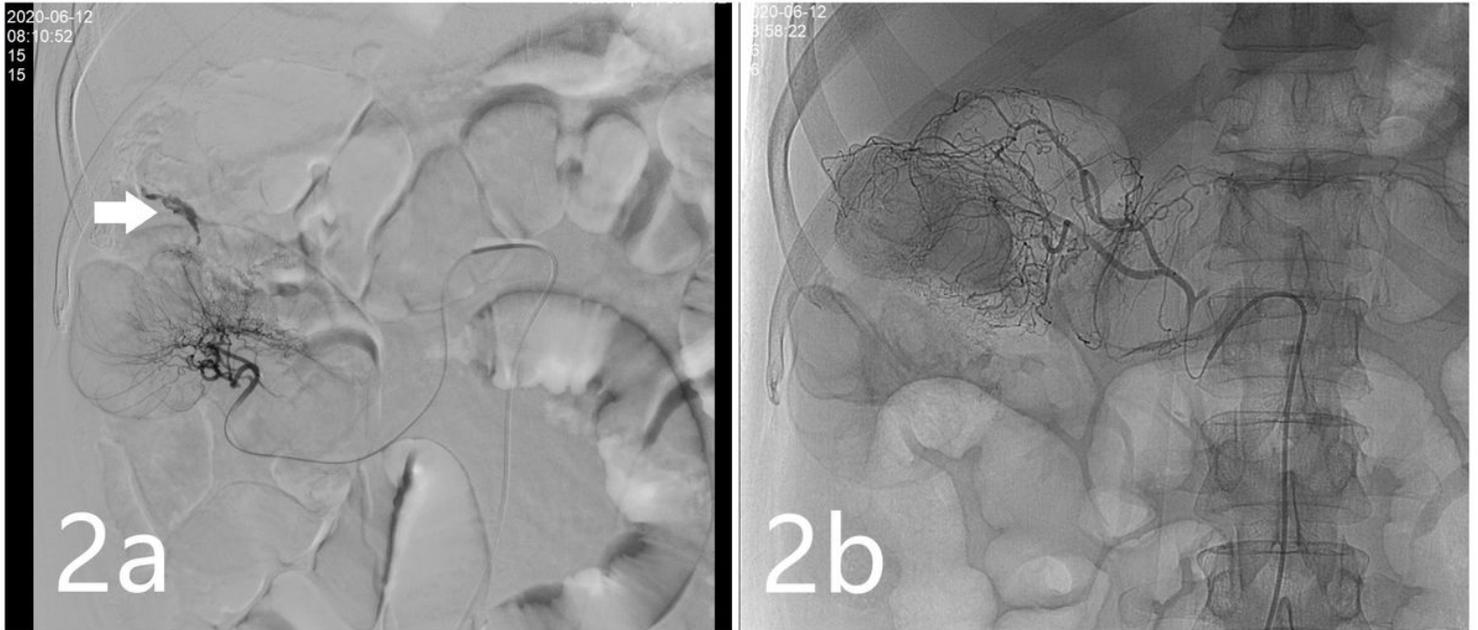


Figure 2

a. Disturbance of one of the branches and significant contrast extravasation at the proximal ileocolonic anastomosis (arrow). b. After the selective arterial drug infusion hemostasis and selective arterial embolization, no contrast medium spillover was found in reexamination angiography.