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## Colonoscopy-induced right superior rectal artery tear: A case report



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## ABSTRACT

**INTRODUCTION:** Colonoscopy is a well-accepted procedure applied worldwide in diagnosis and management of colon lesions. The incidence of reported complications is not rare.

**PRESENTATION:** A 79-year-old man with postcolonoscopy intraperitoneal bleeding secondary to superior rectal artery injury. He received computer tomogram and angiogram study to confirmed bleeder from right superior rectal artery and subsequently managed with embolization and operation.

**DISCUSSION:** This is the second case report in the literatures of mesentery tear and the first case with massive hemoperitoneum.

**CONCLUSION:** Identification and careful evaluation are crucial for successful diagnosis and treatment in cases such as this after colonoscopy.

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## 1. Introduction

Colonoscopy has been used in screening and treatment of colon lesions since 1969 [1]. Over the decades, advancements in this tool led to widespread acceptance and use. Millions of colonoscopy procedures have been performed, and complications are not uncommon. A U.S. report in 2008 identified 2.8 major complications per 1000 procedures [2]. Other rare complications are splenic tear or rupture, pneumothorax, incarcerated hernia, and appendicitis. We report an extremely rare complication; a mesentery tear that induced massive hemoperitoneum secondary to right superior rectal artery injury.

## 2. Case presentation

A 79-year-old man had a medical history of pneumoconiosis, chronic duodenal ulcer, and benign prostatic hyperplasia. Because of severe chronic obstructive pulmonary disease (COPD) with repeated acute exacerbation, he had repeated admission to our chest ward. He had needed occasional home mechanical ventilation support for years. On the most recent visit to our outpatient chest clinic, he reported abdominal distention and severe constipation and was hospitalized in our medical ward for further survey.

After admission, the scheduled colonoscopy was done without specific findings. Unfortunately, 9 h after the examination, the patient displayed severe abdominal distention with shock status (systolic blood pressure 70–80 mmHg, heart rate 145 beats/min).

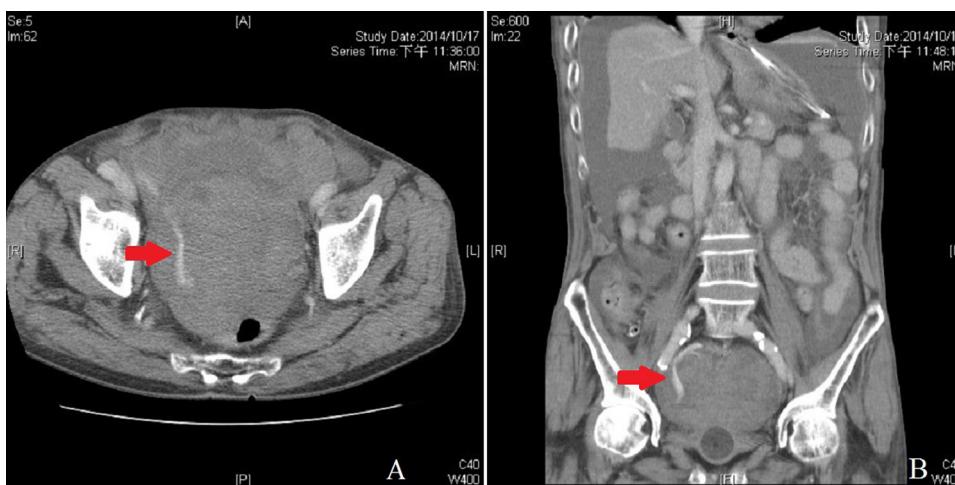
The emergent complete blood count data revealed a drop of hemoglobin from 10.3 g/dl to 5.7 g/dl. On suspicion of colon perforation, the colorectal surgeon was consulted. However, with the near collapse status, the protective intubation, fluid resuscitation, and immediate abdominal computed tomography (CT) were done. The CT scan revealed contrast extravasation from the right branch of the inferior mesenteric artery and induced massive hemoperitoneum (Fig. 1A and B), but without pneumoperitoneum.

After reviewing the abdominal CT results, emergent angiography for arterial embolism was suggested by the colorectal surgeon. During this procedure, compatible results of contrast extravasation from the right superior rectal artery were identified (Fig. 2A) and then micro-coils were infused by superselective transarterial cannulation to achieve successful embolism and stop bleeding (Fig. 2B). The patient's hemodynamic status stabilized, and he was then transferred to the ICU for post-procedure care.

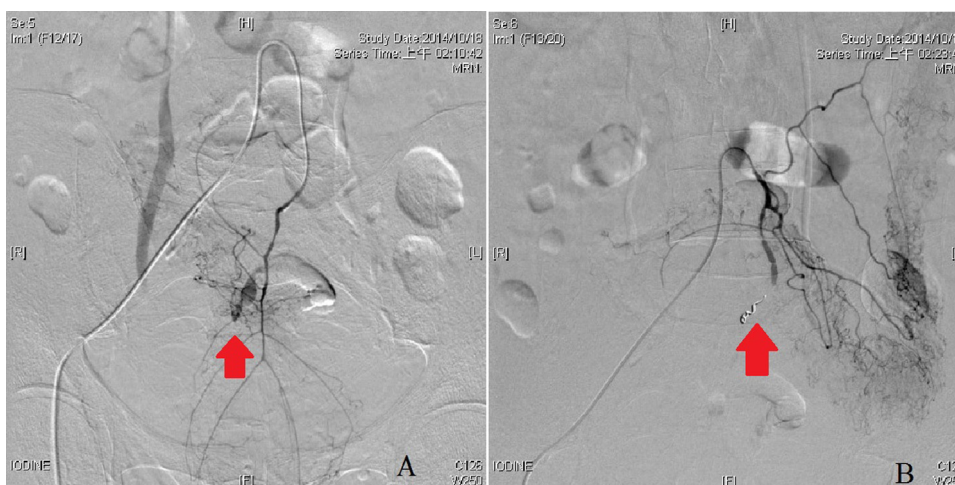
Unfortunately, progressive elevation of intra-abdominal pressure (IAP) was noted at 24 h after transarterial embolization with compromised urine output and metabolic acidosis. Although the rechecked hemoglobin level was unchanged, emergent laparotomy was performed for suspected abdominal compartment syndrome (ACS). On operation, 3000 ml of blood and blood clot were found in the intra-abdominal cavity. The whole colon included embolization territory that was viable without ischemic change. The whole colon examination found a rectosigmoid colon mesentery tear without bleeding or oozing, and primary repair was done to avoid repeated bleeding. The operation was completed after repairing the tear wound and draining out the blood clots; he was sent to the surgical ICU for postoperative care. His condition stabilized and he was transferred to a respiratory care center after 10 days in ICU with difficulty weaning from ventilation.

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**Fig. 1.** A: Contrast enhanced CT Pelvis axial view shows contrast extravasation at right pelvic area (red arrow). B: Coronal view of the abdomen shows contrast accumulation (red arrow head) at right side pelvic inlet.



**Fig. 2.** A: Superselective angiography showed right side superior rectal artery contrast extravasation (red arrow head). B: No bleeding after selective coil embolization (red arrow head).

### 3. Discussion

Although colonoscopy has been used for more than 40 years in the management of colonic problems, the complication in this procedure is uncommon. The most common major complications included intraluminal bleeding, colonic perforation, and cardiopulmonary complications [3], which have been discussed in the literature, with an incidence of approximately 0.5%–2.5% in systematic reviews. Other rare complications such as splenic tear or rupture, incarceration hernia, retroperitoneal abscess, and pneumothorax have been presented as case reports or series that showed the incidence to be 0.0001% or less [4].

We report an extremely rare case of colonoscopy-induced mesentery tear and induced right superior rectal artery rupture. The 79-year-old man underwent elective colonoscopy examination for new-onset abdominal bloating and difficulty in evacuation. After the procedure, symptomatic abdominal distention with tenderness indicates possible complication of colonoscopy. CT of the abdomen is the main diagnostic tool for definite diagnosis [5] with highest predictive value. Other evaluation examinations, such as upright chest radiography or abdominal echography, are approved for diagnosis but show less sensitivity and specificity.

The finding of fluid accumulation in the peritoneal cavity from CT scan after colonoscopy should be alert to possible active intraperitoneal bleeding. There are numerous case reports on solid organ injury during colonoscopy. Fortunately, abnormal intravenous contrast extravasation was noted during the examination (Fig. 1A and B). This finding helps focus on the origin of bleeding and manage it properly.

With increasing evidence of successful nonoperative management of splenic trauma [6], or lower gastrointestinal bleeding [7] with selective embolization, the proper treatment strategy for bleeding from mesentery vessels remains controversial. We attempted to stop the bleeding with transarterial embolization because of the high operative risk due to COPD accompany by good response to resuscitation. The bleeder stopped and his vital signs stabilized. His bowel was viable after exploratory laparotomy for massive hemoperitoneum-induced ACS. We propose that patients with active mesentery vessel bleeding who need laparotomy alternatively may be managed with transarterial embolization, particularly patients at high surgical risk.

Mesentery tear is an extremely rare complication of colonoscopy. The first reported case was in 1975, with 1 case in 6290 procedures [8]. Here we report the second case, with well-documented imaging studies. What is the possible mechanism

to induce mesentery tear and bleeding during colonoscopy? The sharp angle of the colonic alignment of the rectosigmoid colon and splenic flexure colon requires careful forward advance of the colonoscope during procedure. High incidence of mechanical injury to this area was reported by Iqbal et al. [9]. The difficulty of colonoscopy, which has been reported as a risk factor for splenic injury [4], may be another source of colon trauma during the procedure. Massive hemoperitoneum secondary to splenic tear has been reported that may mimic the clinical presentation in this case, and further study is thus necessary for diagnosis. Other risk factors such as pulmonary disease and old age also can contribute to this problem.

The other possible risk factor for this patient is his thin habitus with poor mesentery fat tissue support. This patient is 157 cm tall and weighs 43 kg (BMI 17.4). One report mentioned BMI impact on injury pattern in which patients with a higher BMI had fewer abdominal organ injuries [10]. For the same reason, decreased BMI may indicate decreased mesentery fat tissue, which decreases the supportive cushion of mesentery vessels.

ACS can induce intra-abdominal end-organ perfusion compromise and dysfunction. The general principles for this condition include (a) serial monitoring of IAP, (b) optimizing systemic perfusion and organ function, (c) instituting specific medical procedures to reduce IAP and end-organ consequences, and (d) surgical decompression for refractory ACS. This patient received laparotomy for refractory ACS with end-organ failure.

After exploratory laparotomy, his condition stabilized in the ICU and he returned to enteral feeding at postoperative day 7. However, due to his poor respiratory function because of COPD, he was transferred to a respiratory care center for further management. His recovery was uneventful, and he was discharged after successful extubation.

#### 4. Conclusion

We report an extremely rare case of colonoscopy-induced mesentery vessel injury with active bleeding and massive hemoperitoneum. Identifying this complication and early intervention are recommended to decrease this lethal complication. Conservative procedures such as transarterial embolization for hemostasis may be the first choice for this candidate.

#### Conflicts of interest

No conflicts of interest.

#### Funding

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#### Ethical approval

Chang Gung medical foundation Institutional review board had approved for this care report IRB: 201701099b0.

#### Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

#### Author contribution

Wen-ko Tseng writes this paper and collect data. Yen-lin Yu and Chung-wei Fan share their experience in the management of this patient.

#### Guarantor

Wen-ko Tseng accept full responsibility for this work.

#### Disclosure statement

The authors of this paper have nothing to disclose.

#### Acknowledgements

Our work has been reported in line with the SCARE criteria [11].

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