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Case Report

Laparoscopic resection for rectal arteriovenous malformation: a case report

Shoko Tei[1], Keisuke Noda[1], Tetsuro Tominaga[1], Yuma Takamura[1], Hiroki Katayama[1], Shintaro Hashimoto[1], Mariko Yamashita[1], Yuki Hara[2], Rin Yamaguchi[2], Takashi Nonaka[1,3,4]*, Keitaro Matsumoto[1]

[1]Department of Surgery, Divisions of Surgical Oncology, Nagasaki University Graduate School of Biomedical Sciences, Sakamoto, Nagasaki, Japan
[2]Department of Pathology, Nagasaki University Hospital, Nagasaki, Japan
[3]Department of Surgery, Divisions of Colorectal Surgery, Nagasaki University Graduate School of Biomedical Sciences, Sakamoto, Nagasaki, Japan
[4]Minimally Invasive Surgery Center, Nagasaki University Hospital, Nagasaki, Japan

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***Correspondence:**
Takashi Nonaka,
E-mail: tnonaka@nagasaki-u.ac.jp

ABSTRACT

Arteriovenous malformation (AVM) is a vascular anomaly characterized by direct communication between arteries and veins without intervening capillaries. A 67-year-old man with no history of surgery, trauma, or gastrointestinal bleeding was incidentally found to have a rectal AVM during follow-up imaging after endoscopic resection of a rectal neuroendocrine tumour. Contrast-enhanced computed tomography revealed multiple dilated veins surrounding the rectum and sigmoid colon, with shunting from the inferior mesenteric artery into a dilated venous sac and subsequent drainage into the inferior mesenteric vein. Colonoscopy identified a bulbous, dilated vascular proliferation 15–25 cm from the anal verge. Treatment was considered necessary due to the potential for future rupture. Interventional radiology was deemed unsuitable because of the extensive nature of the lesion, and the patient underwent laparoscopic low anterior resection with early ligation of the inferior mesenteric artery and vein. The postoperative course was uneventful, discharged on postoperative day eight.

Keywords: Arteriovenous malformation, Rectum, Surgery

INTRODUCTION

Arteriovenous malformation (AVM) is a congenital vascular anomaly resulting from abnormal vascular development during the fetal period, characterized by a direct shunt between arteries and veins without intervening capillaries, accompanied by proliferation of dilated, tortuous abnormal vessels. AVMs of the gastrointestinal tract occur predominantly in the right colon, whereas rectal AVMs are extremely rare.[1] Without appropriate treatment, they carry a risk of life-threatening complications such as variceal formation and hemorrhage.[2] We report a case of rectal AVM successfully treated with laparoscopic low anterior resection.

CASE REPORT

A 67-year-old man underwent follow-up imaging following endoscopic resection of a rectal neuroendocrine tumour. He had no history of surgery or trauma, and no previous complaints of abdominal pain or hematochezia. Abdominal CT revealed multiple dilated veins around the rectum and sigmoid colon (Figure 1).

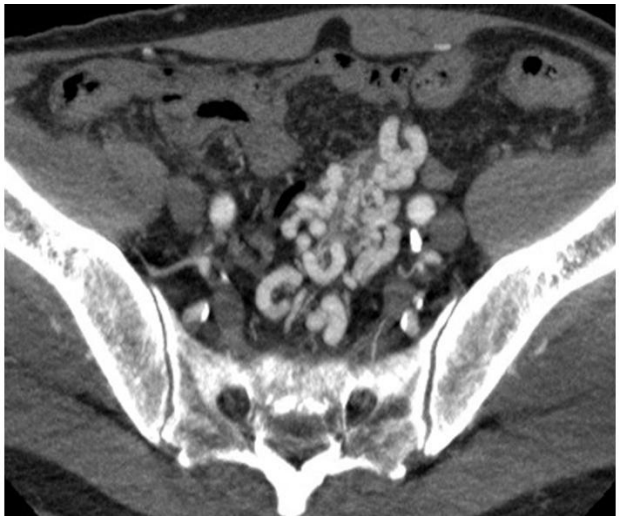

Figure 1: Abdominal CT revealed multiple dilated veins around the rectum and sigmoid colon.

During contrast enhancement, blood flow from the inferior mesenteric artery entered a dilated venous sac anterior to the sacrum, then flowed into dilated veins surrounding the rectum and sigmoid colon, ultimately draining into the inferior mesenteric vein. The patient was diagnosed with rectal AVM. Colonoscopy revealed a bulbous dilated vascular proliferation 15–25 cm from the anal margin (Figure 2).

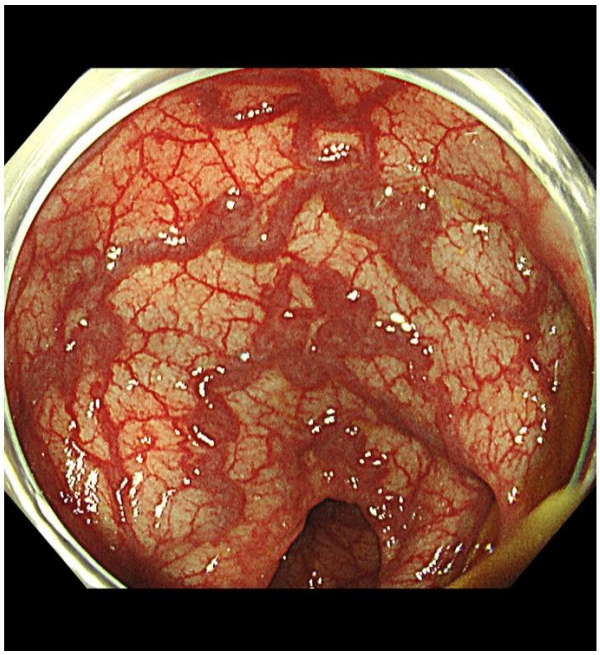

Figure 2: Colonoscopy revealed a bulbous dilated vascular proliferation 15–25 cm from the anal margin.

Considering the risk of future rupture, the lesion was deemed suitable for treatment. Initial consultation with the radiology department explored interventional treatment via vascular embolization. However, given the extent of the AVM and associated risks such as intestinal ischemia, the decision was made to proceed with surgical resection. A laparoscopic low anterior resection was performed. Laparoscopic examination revealed the AVM at the rectosigmoid junction (Figure 3). Careful attention was paid to bleeding, and a meticulous surgical approach was employed. To control blood flow, the inferior mesenteric artery and vein were clipped and ligated early. Intraoperative endoscopy confirmed the absence of abnormal vessels on the anal side of the peritoneal inversion. The mesentery was processed and dissected. The operative time was 280 minutes, and blood loss was 20 ml.

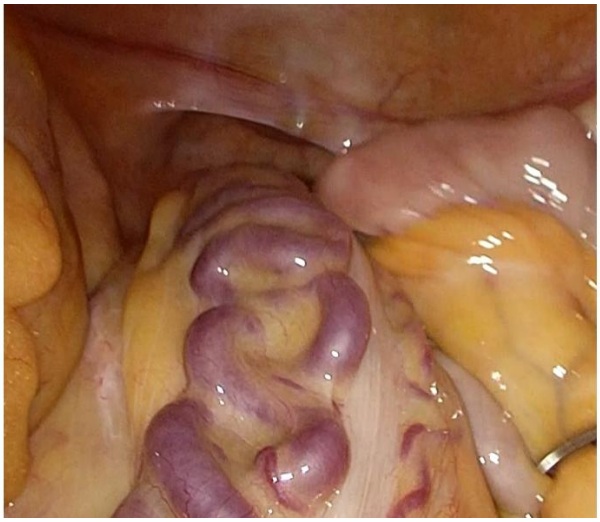

Figure 3: Intraoperative findings revealed the arteriovenous malformation at the rectosigmoid junction.

Histopathological findings showed that large and small blood vessels grew in a nodular manner, along with dilatation of vessels and distributed blood clots (Figure 4). Final diagnosis was AVM in the IMA region. The postoperative course was uneventful and the patient was discharged on postoperative day.[8]

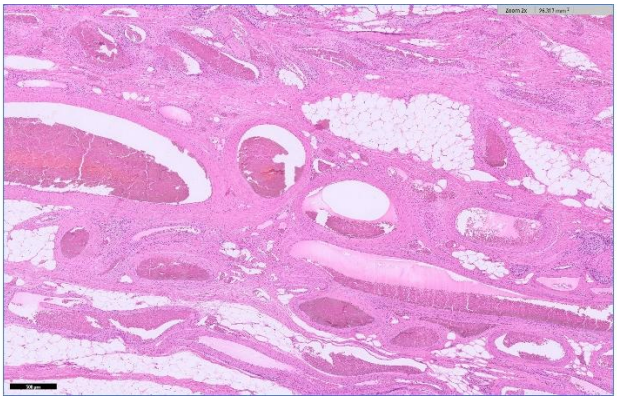

Figure 4: Histopathological findings showed that large and small blood vessels grew in a nodular manner, along with dilatation of vessels and distributed blood clots.

DISCUSSION

AVMs of the gastrointestinal tract occur most commonly in the right colon (37%), followed by the jejunum (24%) and ileum (19%). Rectal involvement, as in the present case, accounts for only 8%.[3] AVMs are reported to arise from congenital vascular anomalies or from acquired causes such as trauma, surgery, or pregnancy/childbirth.[4] In this case, there was no history of surgery or trauma, suggesting a congenital origin. The most common symptom of rectal AVM is hematochezia, occurring in 60%–90% of patients.[5] Other reported symptoms include anemia, constipation, and abdominal pain; however, approximately 10% of patients are asymptomatic, and are diagnosed incidentally. Delayed or missed diagnosis can potentially result in life-threatening bleeding, making accurate and timely diagnosis essential. Colonoscopy and CT are useful for diagnosing gastrointestinal AVMs.

The typical colonoscopy findings include mucosal redness, hyperemia, edema, and multiple ulcers.[6] On CT, numerous dilated veins are characteristic. Enhanced CT can identify the vascular supply of high-flow lesions, delineate draining vessels, and demonstrate the presence of phleboliths, which are characteristic of low-flow venous malformations.[7] It also allows assessment of the extent of AVMs that may not be fully visualized by colonoscopy.

Moore et al reviewed and classified intestinal AVMs based on angiographic characteristics, localization, patient age, and family history.[8] They classified AVMs into three types: Type 1, solitary, small (usually <5 mm), localized mostly in the right colon, and typically seen in elderly patients; Type 2, large lesions found in the small intestine that can cause obscure gastrointestinal bleeding and are considered congenital; and Type 3, punctuate angiomas that commonly cause gastrointestinal hemorrhage.[8] The present case was considered Type 2. Due to their rarity, management options for rectal AVMs are not well established. Some reports suggest asymptomatic patients can be followed every six months with CT/MRI or transrectal ultrasound imaging.[9] However, considering the risk of bleeding, some form of therapeutic intervention is often performed. Conservative treatments include interventional radiology (IVR) and endoscopic sclerotherapy, which have the advantages of lower cost and ability to be repeated.[10] They also offer a minimally invasive approach for elderly patients at high surgical risk or those with multiple comorbidities. Several recent studies have reported successful IVR treatment for rectal AVMs.[3] However, this is limited to relatively localized lesions, and concerns remain regarding long-term efficacy and recurrence. In this case, considering the patient's relatively young age and the potential for future life-threatening gastrointestinal bleeding, therapeutic intervention was deemed necessary. Although IVR treatment was also considered, the AVM was judged to be so extensive that sufficient efficacy was unlikely to be achieved. Therefore, surgical resection was chosen, and a curative outcome was achieved.

CONCLUSION

The study described a rare case of rectal AVM successfully treated by laparoscopic low anterior resection. Early and accurate diagnosis, together with appropriate selection of treatment strategy, is essential to prevent life-threatening hemorrhage and achieve optimal outcomes.

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Ethical approval: Not required

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