



A case of early colorectal cancer with rectal varices treated with endoscopic variceal ligation

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Abstract

Rectal varices are ectopic varices that occur in patients with portal hypertension and cause abrupt gastrointestinal bleeding. Endoscopic variceal ligation is a minimally invasive treatment used for patients with bleeding from rectal varices. Endoscopic treatment of colorectal tumors accompanied by rectal varices has been rarely reported. It is very important to control bleeding during treatment. The patient was a 76-year-old man who had a chief complaint of bloody stools. A flat-elevated-type neoplastic lesion measuring about 20 mm was found above the rectal varices. After performing endoscopic variceal ligation for rectal varices around the lesion, the lesion was resected en bloc by endoscopic submucosal dissection. Bleeding was controlled during the procedure; the patient was discharged 7 days after the endoscopic treatment, and there was no postoperative bleeding. Colonoscopy performed 90 days after the procedure showed scar formation in the wound area and no remnant lesion. The implementation of preoperative endoscopic variceal ligation enabled us to control bleeding during endoscopic treatment in a case of early colorectal cancer accompanied by rectal varices.

Keywords Case report · Endoscopic variceal ligation · Early colorectal cancer

Introduction

Rectal varices represent a type of ectopic varices that occur due to portal hypertension, and the diagnosis of this condition is often made after abrupt onset of gastrointestinal bleeding [1, 2]. Endoscopic variceal ligation (EVL) is a minimally invasive treatment for bleeding from rectal varices [3]. It has been reported that EVL is associated with frequent recurrence, although it is superior to endoscopic injection sclerotherapy (EIS) in safety and simplicity [4].

In cases of large flat-elevated-type colorectal tumors, endoscopic submucosal dissection (ESD) is a useful endoscopic treatment and well-standardized procedure, and it facilitates a high rate of en bloc resection [5]. The incidence

rate of postoperative bleeding as a procedural accident is about 3%. Useful hemostatic measures include hemostatic treatment of exposed vessels in the ulcer floor after resection and clipping of the wound area [6].

Early colorectal cancer accompanied by rectal varices has been rarely reported. Hemostatic measures are important and have an effect on the treatment outcome. However, whether EIS or EVL is a more useful preventive treatment of rectal varices remains controversial [4, 7]. Indications for ESD and endoscopic mucosal resection (EMR) as endoscopic treatment of gastrointestinal tumors accompanied by varices also remain unclear because of the scarcity of reported cases [8].

Here, we describe a patient with early colorectal cancer accompanied by rectal varices in whom implementation of EVL before ESD achieved control of bleeding, resulting in successful treatment.

Case report

The patient was a 76-year-old man who had a chief complaint of bloody stools. His medical history included hypertension, type C liver cirrhosis, splenectomy (3 years prior),

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esophageal variceal sclerotherapy (7 years prior), and portal vein thrombosis (treated with ongoing oral warfarin). At another clinic, a flat-elevated-type lesion measuring 20 mm in diameter and located in the upper rectum was found on colonoscopy for further examination of bloody stools. Varices were also found near the lesion, and the patient was referred to our hospital for further examination and treatment. Blood tests showed a platelet count of 183,000/ μ L and a prothrombin time-international normalized ratio (PT-INR) of 1.41; the patient had Child–Pugh class A. Abdominal contrast-enhanced computed tomography revealed calcification and thrombus in the main portal vein and the formation of varices of the blood vessel connected to the inferior mesenteric vein around the rectum (Fig. 1a–c). Colonoscopy showed a reddish, flat-elevated-type lesion measuring 20 mm in diameter and located in the upper rectum (Fig. 2a). The lesion was clearly demarcated from the surroundings, and oozing of blood from the mucosa of the lesion occurred

when the amount of air insufflation was increased (Fig. 2b). Endoscopic ultrasonography revealed dilated veins just beneath the mucosa of the lesion (Fig. 3). Because air insufflation caused bleeding from the mucosa of the lesion, it was difficult to observe the lesion closely by magnification endoscopy with narrow-band imaging (NBI). However, on the basis of the findings from the observation, we diagnosed the lesion as a type 2A according to the Japan NBI Expert Team classification (Fig. 4a) [9]. When the pit pattern was examined by magnifying observation using crystal violet staining, a diagnosis of type IIIs–III ℓ mainly comprising small oval pits was made (Fig. 4b). Regarding the lesion depth, the lesion was determined to be intramucosal. Biopsy was avoided because of a risk of bleeding. However, since the patient was receiving oral warfarin therapy, and it was predicted that bleeding from the lesion would continue and anemia would progress, treatment was judged necessary. It was speculated that EMR might not enable us to control

Fig. 1 **a** Contrast-enhanced computed tomography image showing thrombus formation in the main portal vein (arrow). **b** There are varices around the rectum (arrowheads). **c** The inferior mesenteric vein (IMV) is identified as the inflow vessel into the rectal varices (arrow)

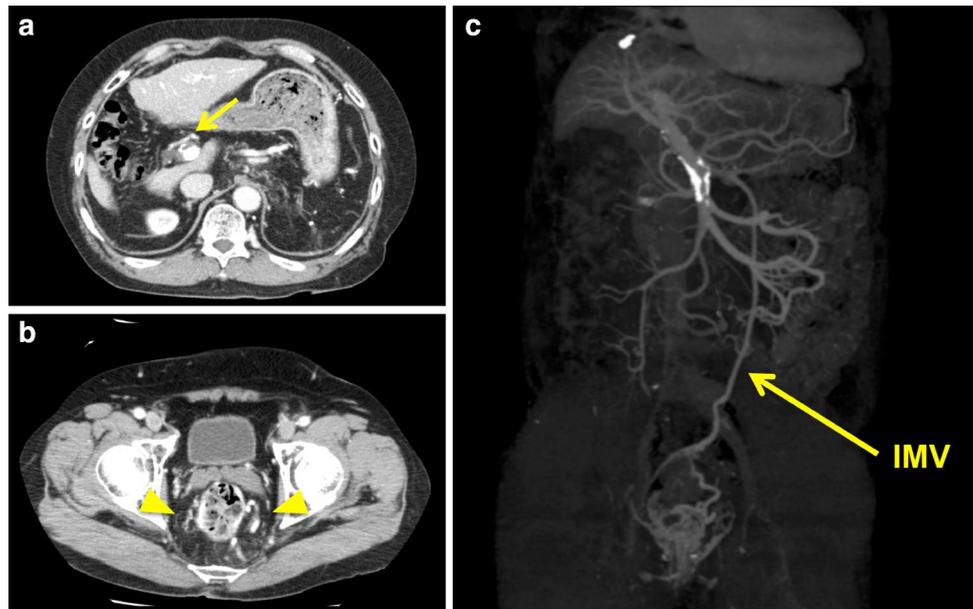
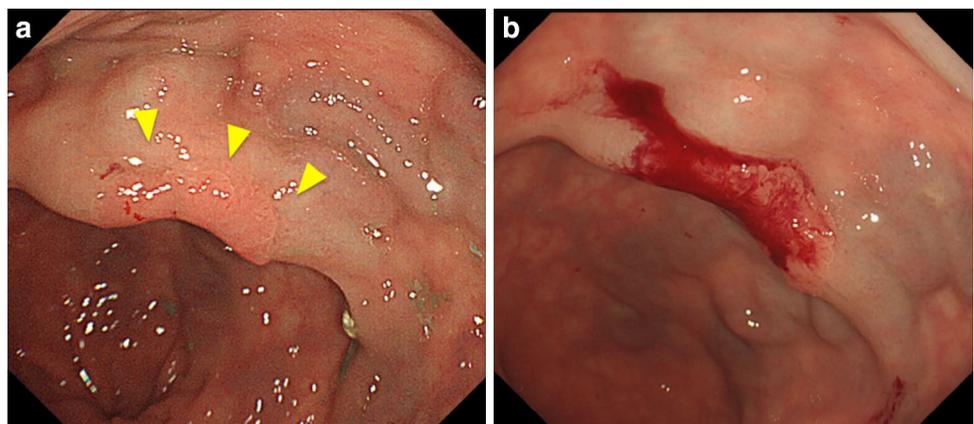


Fig. 2 **a** There is a reddish, flat-elevated-type lesion measuring 15 mm and located in the upper rectum. Rectal varices are present near and just beneath the lesion. **b** Exudative bleeding has occurred from the lesion after air insufflation



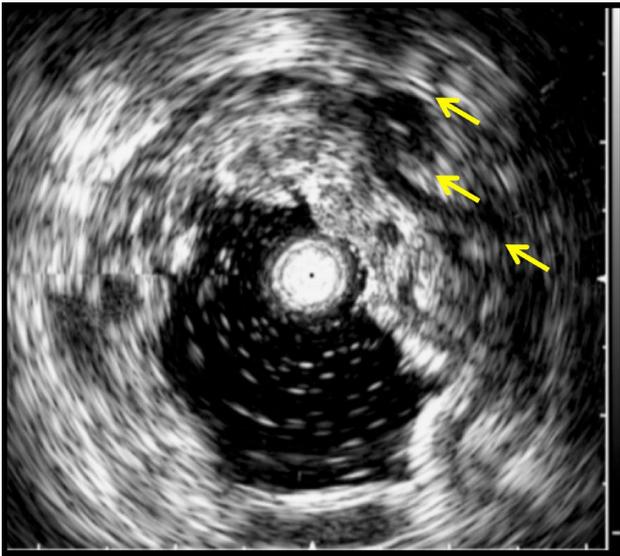


Fig. 3 Ultrasonogram showing dilated vessels in the submucosal layer (arrows)

bleeding during resection. ESD allowed us to perform en bloc resection and thus minimize bleeding. Therefore, ESD was used.

Endoscopic treatment was performed after the patient underwent heparin substitution for warfarin for 3 days. Because inflow and outflow vessels of varices around the lesion were unclear, EVL (pneumo-activate EVL device, MD-487090, Sumitomo Bakelite, Tokyo, Japan) was performed for varices connected to the lesion. EVL was performed six times in the varices about 20 mm away from the lesion to prevent possible problems later during mucosal incision (Fig. 5). For the procedure, the GIF-240Z endoscope (Olympus Corporation, Tokyo, Japan) was used. The mucosa was incised with a Dual Knife J (MD-48709U, Olympus Corporation) after locally injecting hyaluronic acid into the submucosal layer (Electronic Supplementary Video Clip 1). Because procedure-related bleeding was anticipated,

we made a shallow incision initially and then carefully proceeded to the submucosal layer, using coagulation waves. There were many dilated vessels in the submucosal layer, and vascular treatment was performed with a high-frequency VIO300D electro-surgical unit (ERBE, Tuebingen, Germany) in the soft coagulation mode using hemostatic forceps (HemoStat-Y, DP-D2622, HOYA Corporation, Tokyo, Japan) as needed. Hemostatic treatment was performed with HemoStat-Y to expose the vessels in the ulcer floor, and the lesion was resected en bloc without causing major bleeding. The endoscopic procedure was completed by covering the ulcer floor with a polyglycolic acid sheet (Fig. 6).

The histopathological examination revealed that it was well-differentiated tubular adenocarcinoma (tub1), pTis(M), ly(-), v(-), pHM0, and pVM0 that was curatively resected (Fig. 7a, b). Markedly dilated venous vessels were found in the submucosal layer of the resected specimen (Fig. 7c).

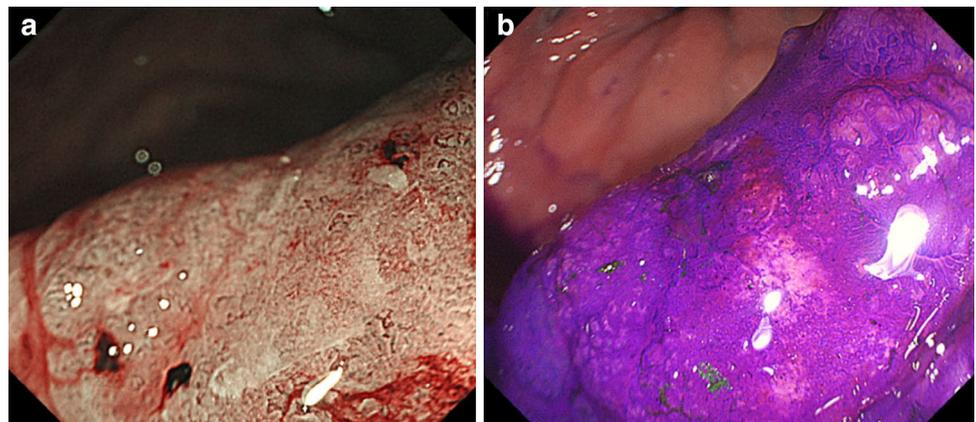
The patient was discharged 7 days after the endoscopic treatment without postoperative bleeding. Colonoscopy performed 90 days after the procedure showed scar formation in the wound area and no remnant lesion (Fig. 8).

Discussion

The early colorectal cancer lesions above the rectal varices were successfully treated with ESD. Implementation of EVL in rectal varices around the lesion before endoscopic treatment prevented bleeding during and after the treatment.

Rectal varices are frequent collateral veins [1, 2], often undiagnosed until the abrupt onset of fresh or massive melena. Common underlying diseases include liver cirrhosis, extrahepatic portal obstruction, and a history of treated esophageal varices [2]. Direct observation by endoscopy is useful for diagnosing rectal varices. Although bleeding from varices is rare (5%), it is fatal once it occurs [10]. Varices with bleeding, growth tendency, F2 or F3 features, or positive red color sign should be treated. Treatments include

Fig. 4 **a** Based on the limited findings obtained from magnification endoscopy with narrow-band imaging, a diagnosis of Japan NBI Expert Team classification type 2A was made. **b** Magnifying observation using crystal violet staining led to a diagnosis of an intramucosal lesion with a IIIs–IIIL pit pattern



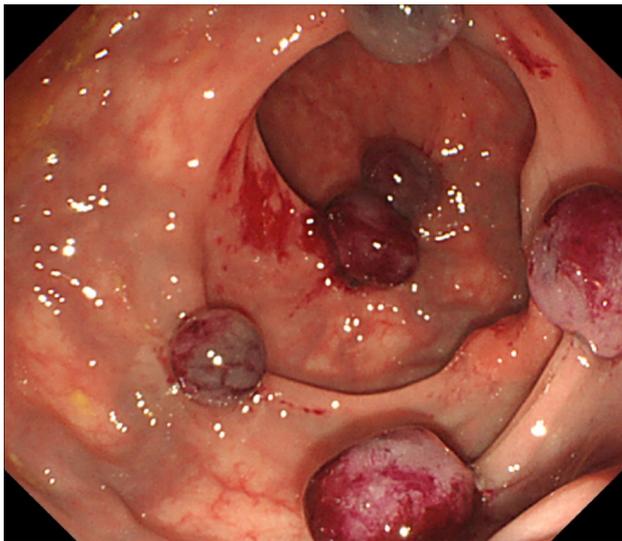


Fig. 5 Endoscopic variceal ligation is performed for rectal varices at six sites connected to the lesion

endoscopy (EIS and EVL), interventional radiology [4, 7] (embolization, transjugular intrahepatic portosystemic shunts, and coiling) [7], and surgical treatment (shunt

occlusion, intestinal resection, and ligation). Although EVL is safe and simple compared with EIS, the recurrence rate after EVL is high [4]. In the present case, we used EVL to control bleeding during and after ESD, not to radically treat rectal varices. Endoscopic treatment of early colorectal cancer accompanied by rectal varices has previously been reported only by Rodrigues et al. who controlled bleeding during ESD by performing EVL in rectal varices in the same manner as in our case [11].

ESD as treatment for early colorectal cancer, particularly of the flat type, has been standardized to a certain degree, and various measures against procedural accidents, such as perforation and postoperative bleeding, have been reported [5, 6]. Hemostatic measures include prophylactic vascular coagulation using hemostatic forceps, reefing of the wound area by clipping, and coverage with a polyglycolic acid sheet [12]. The present patient was taking oral warfarin and prone to bleeding because of the presence of varices. Therefore, the ulcer floor was covered with a polyglycolic acid sheet after performing hemostatic treatment of vessels in the ulcer floor with bipolar forceps. Postoperative bleeding was prevented by this treatment.

The implementation of EVL or EIS before endoscopic treatment of early esophageal cancer accompanied by

Fig. 6 **a** Dilated vessels are shown in the ulcer floor (arrows). There is no bleeding at the end of resection. **b** A polyglycolic acid sheet is placed over the ulcer area and adhered with fibrin glue

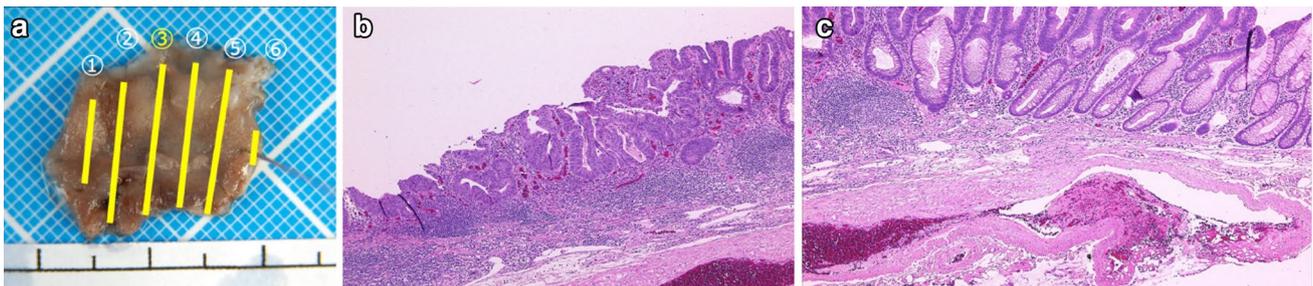
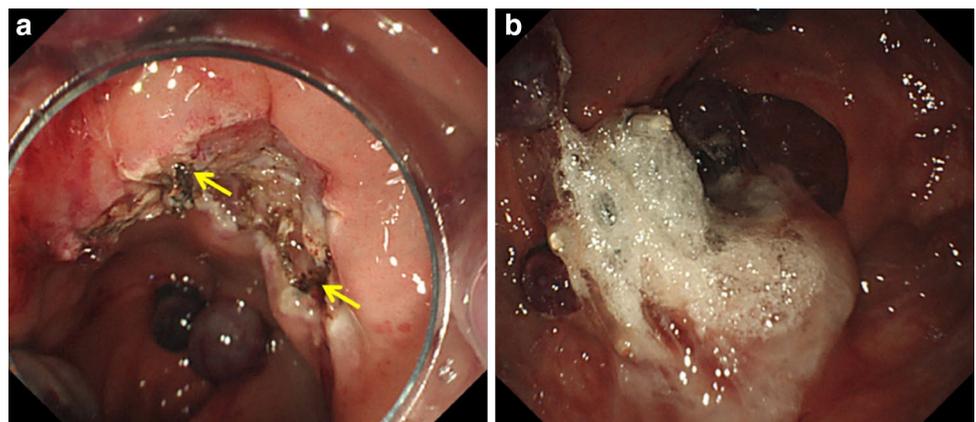


Fig. 7 **a** Macroscopic view. **b** Hematoxylin eosin-stained, well-differentiated tubular adenocarcinoma (tub1), p-T1a(M), ly(-), v(-). **c** Dilated vessels are found in the submucosal layer

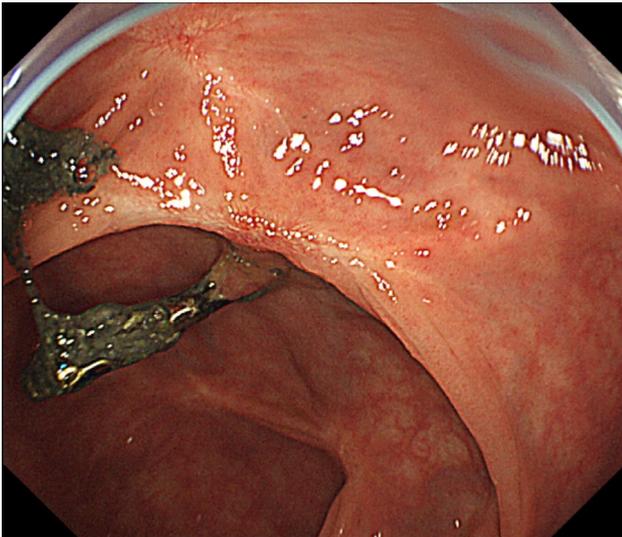


Fig. 8 The wound is scarred, there is no remnant lesion, and rectal varices are flattened

esophageal varices has been reported in the literature [13]. According to one report, EVL or EIS for varices flowing into the lesion was performed before ESD to control bleeding during the treatment. Controlling bleeding during ESD treatment is important in view of preventing perforation. ESD allows vascular treatment of the submucosal layer; therefore, it is useful for patients with a high bleeding risk, such as those with concomitant varices. It has been reported that fibrosis occurring in the submucosal layer after treatment of varices by EIS compromised treatment in some cases [14]. Further consideration is necessary as to which is more useful, EIS or EVL, and at which point EVL should be used. In cases of rectal varices, it is difficult to identify the inflow vessel by direct observation. In the present case, EVL was performed for the varices connected to the lesion. However, it is also possible to observe hemodynamics by color Doppler ultrasonography to identify the inflow vessel. In this regard, further consideration is required to perform EVL more effectively [15].

Early colorectal cancer accompanied by rectal varices was successfully treated by an endoscopic procedure. The implementation of EVL to control bleeding during the treatment was useful from the viewpoint of safety and simplicity. When performing endoscopic treatment of gastrointestinal neoplastic lesions accompanied by varices, it is important to sufficiently assess the hemodynamics and use preventive hemostatic measures. Further accumulation of clinical cases is necessary.

In conclusion, our present patient was an important case in which implementation of EVL before ESD achieved favorable control of bleeding.

Compliance with ethical standards

Conflict of interest Shuhei Ishiyama, Junji Shiode, Masao Yoshioka, Junichirou Nasu, Akiko Fujiwara, Mamoru Itoh, Masakuni Fujii, Shusuke Saitoh, Mitsuhiro Kanetoh and Hisanori Oka declare that they have no conflict of interest.

Human rights All procedures followed have been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Informed consent Informed consent was obtained from all patients for being included in the study.

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