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Case Report

A Case of Laterally Spreading Tumor of the Rectum Treated by Endoscope-Assisted Transanal Tumor Resection

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Background: Curability and function should be considered in resection of a rectal lateral spreading tumor (LST).

Methods: We performed endoscopic transanal resection for a rectal LST extending to the pectinate line to preserve anal function and avoid a colostomy in 1 case and describe our procedure below. An 80-year-old man with a group 5 adenocarcinoma tub1/2 and no metastasis was considered for transanal resection because of his refusal of a colostomy and for staging and preservation of anal function. A strategy involving endoscopic submucosal dissection for mucosal cutting at the proximal side and for submucosal dissection of the maximum area at the anal side of the tumor was chosen, considering the tumor size. With the patient in a jackknife position, the tumor was marked circumferentially with coagulation dots, after which MucoUp with bosmin was injected into the submucosa at the proximal side. Mucosal and submucosal dissection was performed using DualKnife to remove the largest possible area toward the anal side. Transanal resection was performed under direct vision using an anal retractor, wherein the mucosa was cut circumferentially by extending the existing resection line along with removal of the submucosa.

Results: En bloc resection with clear margins was achieved. Postoperatively, retroperitoneal emphysema was observed on a computed tomography scan, which resolved after 1 week of fasting. The patient was discharged 20 days postoperatively. Neither recurrence nor metastasis has been observed 1 year postoperatively.

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Conclusions: Our procedure enabled successful resection of a rectal LST with negative margins and preservation of anal function.

Key words: Rectal laterally spreading tumor – Transanal tumor resection – Endoscopic submucosal dissection

In determining the therapeutic strategy for tumors of the lower rectum, both curability of the disease and the patient's quality of life (QOL) should be considered. In general, it is reported that the lymph node metastasis rate of rectum cancer that has invaded the submucosa is approximately 10%.[1–3] This rate is not low enough to make lymphadenectomy unnecessary, but it is not high enough to require colostomy. However, when lymph node dissection is performed in radical resection of the rectum, defecation function is sometimes reduced or a colostomy is needed. We report a case of a rectal laterally spreading tumor (LST) extending to the pectinate line, which was successfully treated by endoscope-assisted transanal tumor resection combined with endoscopic submucosal dissection (ESD).

Case

The patient was an 80-year-old man who had been healthy with no pertinent medical history except for hypertension treated by oral medication. Following a positive fecal occult blood test, conducted as part of health screening in July 2014, colonoscopy was performed in September at our hospital. A rectal LST (40–50 mm) was found across the Rb and P regions. No abnormalities were found in the blood biochemical findings. Tumor markers CEA and CA19-9 were both within the reference range. Although the patient was initially referred to another hospital for consideration of ESD of the rectum, he returned to our hospital because it was not indicated. He was referred to our surgery department, and group 5 adenocarcinoma tub1/2 was diagnosed based on the findings of endoscopic biopsies (Fig. 1). A computed tomography (CT) scan and ^{18}F-fluorodeoxy glucose-positron emission tomography (FDG-PET) showed no obvious lymph node or other organ metastasis. Among the treatment options considered, including abdominoperineal resection and chemoradiotherapy (with/without intersphincteric resection [ISR]), transanal tumor resection was selected because the patient refused colostomy and for preservation of anal function and accurate cancer staging. However, an insufficient surgical field-of-view and difficulties in performing *en bloc* resection by transanal tumor resection were expected based on the large size of the tumor (approximately 3 cm in length from the anal verge and 5 cm in width). Thus, we opted for a strategy that involved ESD for mucosal cutting at the proximal side and for submucosal dissection of the maximum area at the anal side of the tumor.

Surgical procedures

After lumbar anesthesia, the patient was placed in the jackknife position. First, ESD was performed. The tumor was subcircumferentially marked by coagulation dots (mainly the proximal and lateral sides of the tumor) after careful examination of the superficial extension of the tumor (Fig. 2A). Next, MucoUp (Boston Scientific Co, Ltd, Tokyo, Japan) supplemented with bosmin was locally injected into the submucosa at the proximal side, and mucosal cutting and submucosal dissection using the needle devices (DualKnife, Olympus Co, Ltd, Tokyo, Japan) were performed to remove as large an area as possible (toward the anal side; Fig. 2B). Last, direct-vision transanal resection was performed. After exposing the surgical field using an anal retractor, the mucosal layer, which was subcircumferentially resected by ESD, was cut circumferentially by extending the existing resection line. Local injections were used when necessary. The submucosal layer was removed without damaging the tumor, and the lesion was recovered. Mucosal bleeding at the dissection site was treated by transanal z-suturing using 3-0 absorbable suture. Hemostasis was confirmed on transanal endoscopy before completion of the surgery.

Pathologic findings

The tumor (50×35 mm^2) was removed *en bloc* (Fig. 3A). Adenocarcinoma with moderate atypia was mainly observed, together with papillary, tubular, and mucus-secreting carcinoma in the adenoma. The final pathologic findings were cancer in adenoma, pap-tub1>tub2>muc; rectum (L), IIa +

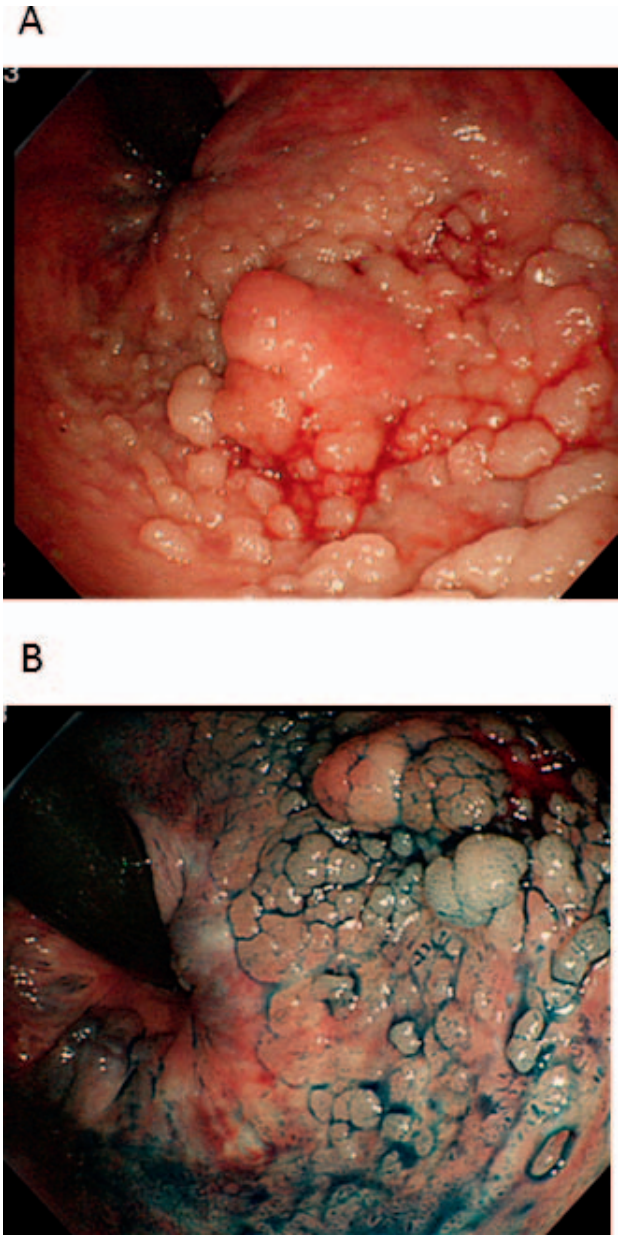

Fig. 1 (A) A rectal laterally spreading tumor. (B) Indigo carmine dispersal; a tumor was seen involving the dentate line.

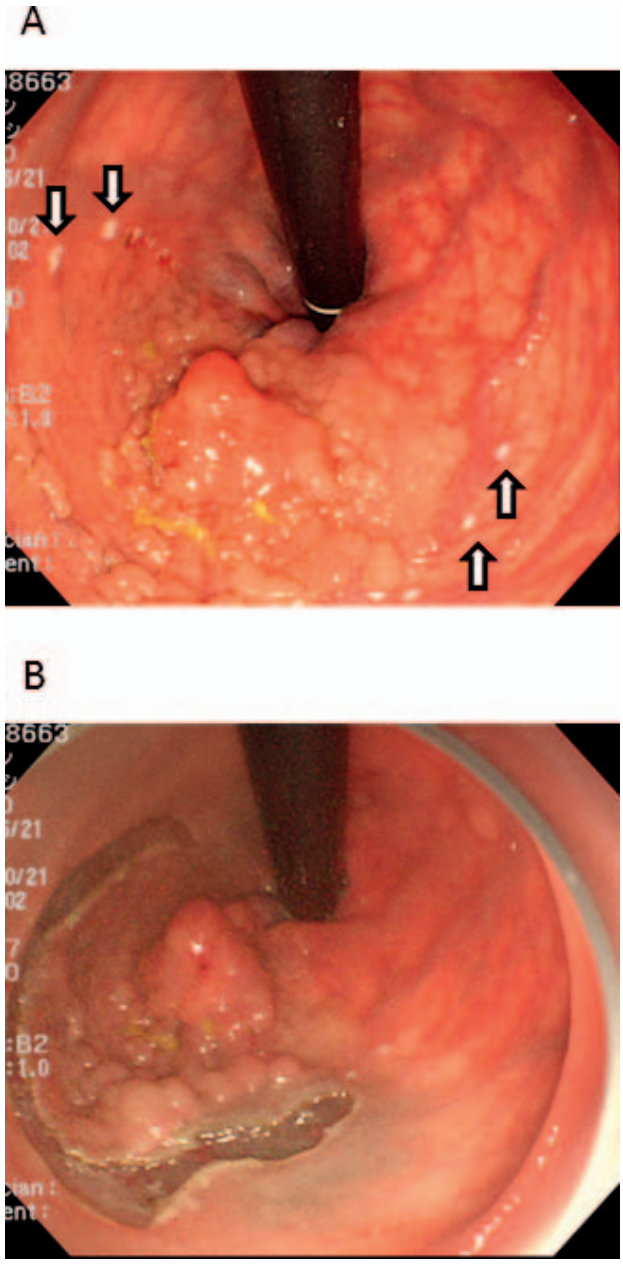

Fig. 2 (A) Arrows show the coagulation marks during ESD. (B) The mucosa on the proximal side of the tumor incised by ESD.

IIc, 1 × 2 cm, sm (4000 μm), cut end (–), ly0, v0 (Fig. 3B).

Perioperative follow-up

Bleeding was not observed the day after surgery, but a CT scan detected retroperitoneal emphysema (Fig. 4A). After 1 week of fasting, alleviation of emphysema and the absence of an abscess were confirmed on repeat CT scan. Oral intake was started, and a short colonoscopy confirmed epithelialization 1 week after resumption. After gradual introduction of a normal diet, the patient was discharged 20 days after surgery.

Postoperative follow-up

CT scans performed every 3 months after surgery did not show the presence of local lesions, lymph node metastasis, or distant metastasis. Aberrant

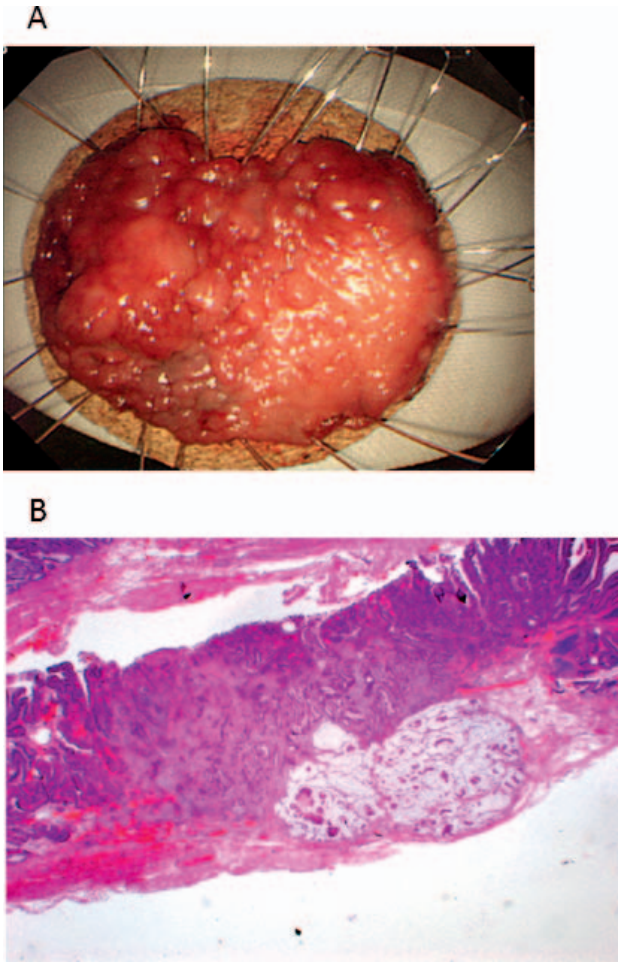

Fig. 3 (A) Tumor excised en bloc. Tumor size was 50 × 35 mm^2. (B) Negative horizontal and vertical margins.

rectal mucosa was not seen on colonoscopy in the first postoperative year (Fig. 4B).

Discussion

The treatment strategies for submucosal invasive carcinoma of the lower rectum are abdominoperineal resection, super low anterior resection, ISR, and local excision. Anal preservation is possible in super low anterior resection, ISR, and local excision of a tumor, and postoperative loss of evacuation function is rare with local excision. QOL deteriorates when the rectum is resected. Evacuation function also declines even if the anus is preserved in ISR. In relation to attainment of a complete cure, the frequency of lymph node metastasis from rectal submucosal carcinoma is reportedly approximately 10%.[1–3] This rate of 10% is not low, but anal preservation is

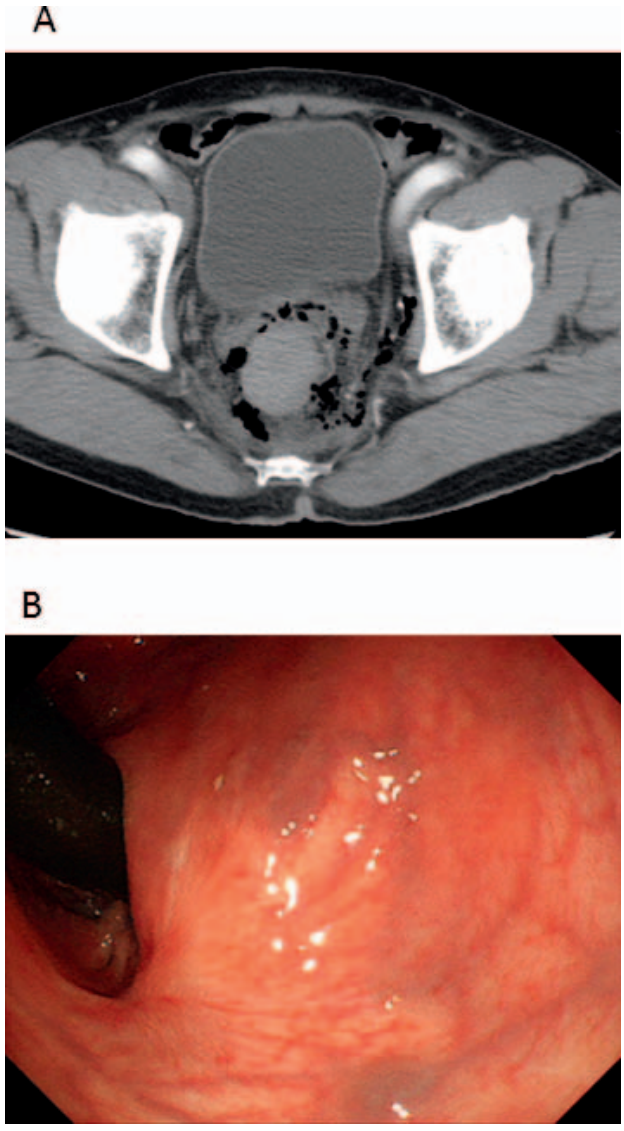

Fig. 4 (A) The day after the operation, the circumference of the rectum shows emphysema. (B) Colonoscopy in the first postoperative year shows no evidence of local recurrence.

difficult in an operation for a rectal tumor involving the dentate line, as was the case in our patient. Because submucosal cancer invasion within the range of 500 to 1000 μm is linked to minimal or no risk of lymph node metastasis,[4] it is important to determine the tumor stage preoperatively. Endoanal ultrasound is useful in the diagnosis of tumor depth of invasion and regional lymph node metastases.[5] However, we did not perform transanal ultrasound preoperatively. This is because we think that the resected rectum should be examined pathologically including checking for lymphatic invasion after local excision. Various minimally invasive local excision

procedures for early rectal cancer, such as transanal resection (TAR), transanal endoscopic microsurgery (TEM), and endoscopic resection techniques, including endoscopic mucosal resection (EMR) and ESD, are gaining acceptance in many countries.[4,6] Both ESD and TAR are effective for lower rectal cancer with few adverse events and a high *en bloc* resection rate.[7] In the same study, the extent of resection and adverse event rate were equal for the 2 treatments, but ESD had a low recurrence rate. With respect to local excision, TAR is comparatively easy to perform for rectal Rb lesions, but establishing adequate margins tends to be hard for wide-spreading tumors. TEM is a very useful method, but preparation for surgical instruments is necessary, and the procedure itself needs a high level of skill, particularly for the lower rectum.[8] The limit of the resection range is $<$20 mm in EMR in endoscopic treatment.[6] The degree of difficulty of ESD becomes high for a thin colon wall, but it is easy to perform at the low rectum with a low risk of intestinal perforation. TAR has a short operation time, but ESD has a high *en bloc* resection rate. In addition, the rate of recurrence after ESD is low.[6] After considering the merits and demerits of methods for local excision in our patient, we set the resection margin and performed excision of the tumor from the proximal side by ESD, and the tumor was resected from the anal side using TAR as it was easy to confirm by direct vision. This hybrid operation proved very useful.

Conclusions

We successfully performed endoscope-assisted transanal tumor resection for treatment of rectal LST. Test results for surgical margins were all negative without lymphatic or vascular invasion and the patient is currently being followed. Although the colorectal cancer treatment guidelines included submucosal invasion $\geq$1000 μm in depth in the expanded indications for endoscopic therapy, we opted for the strategy with an emphasis on the patient's QOL (avoidance of colostomy and preservation of the anal function). Careful follow-up needs to be continued.

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