

Endoscopic Submucosal Dissection for Depressed-type Early Adenocarcinoma of the Terminal Ileum

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Abstract

We herein report a rare case of ileal adenocarcinoma that was completely removed by endoscopic submucosal dissection (ESD) without any complications. An 80-year-old man was referred to our hospital to undergo treatment for an ileal tumor. Conventional colonoscopy showed a reddish depressed lesion that was classified as type 0-IIc according to the Paris classification. The ileal tumor was successfully removed *en bloc* by ESD with a negative surgical margin. The histological findings showed a well-differentiated adenocarcinoma with no submucosal or lymphovascular invasion. Colonoscopy and CT performed one year after ESD showed no local recurrence, stenosis, or lymph node metastasis.

Key words: ileal adenocarcinoma, depressed-type, early-stage, terminal ileum, endoscopic submucosal dissection

(Intern Med 56: 1153-1156, 2017)

(DOI: 10.2169/internalmedicine.56.8101)

Introduction

Ileal adenocarcinomas are rare tumors. While video capsule endoscopy and double balloon enteroscopy have been used to observe the small intestine in the clinical setting, most cases of ileal adenocarcinoma are still detected at the advanced stage (1). There are a few reports of early-stage adenocarcinomas of the ileum (2-14) in which the lesions were removed by endoscopic procedures, including endoscopic mucosal resection (EMR) and endoscopic submucosal dissection (ESD). However, the efficacy and safety of these endoscopic procedures in the resection of ileal adenocarcinomas remain to be clarified. We herein report a case in which early-stage ileal adenocarcinoma was completely resected by ESD.

Case Report

An 80-year-old man underwent total colonoscopy due to a

positive fecal occult blood test that was performed by his primary care physician. Colonoscopy detected a flat lesion in the terminal ileum. The patient visited our hospital for the treatment of the ileal lesion. He did not have a history of Crohn's disease or hereditary non-polyposis colorectal cancer. Repeated colonoscopy was performed at our hospital. This time, a reddish lesion was detected at the ileum, 3 cm proximally from the ileocecal valve (ICV) (Fig. 1A). Chromoendoscopy revealed a slightly depressed area on the lesion without any invasive findings (Fig. 1B). Magnifying endoscopy with crystal violet staining showed an irregular arrangement of tubular and round pit patterns corresponding to Kudo's classification type VI (Fig. 1C). A colonoscopic biopsy specimen revealed well-differentiated adenocarcinoma. Based on these endoscopic findings, the tumor was diagnosed as an intramucosal cancer with a Paris classification of type 0-IIc, which was suitable for removal by ESD. A computed tomography (CT) scan showed no evidence of lymph node metastasis.

The tumor was removed by ESD using a FlushKnife BT

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Received for publication August 5, 2016; Accepted for publication September 5, 2016
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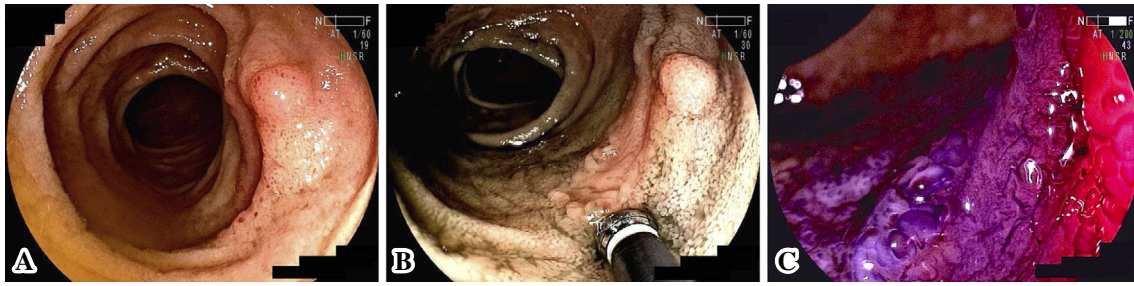


Figure 1. The conventional endoscopy findings. Conventional colonoscopy showed a reddish depressed lesion that was classified as type 0-IIc according to the Paris classification (A). Chromoendoscopy revealed a slightly depressed area on the lesion without any invasive findings (B). Magnifying endoscopy with crystal violet staining showed an irregular arrangement of tubular and round pit patterns corresponding to Kudo's classification type VI (C).

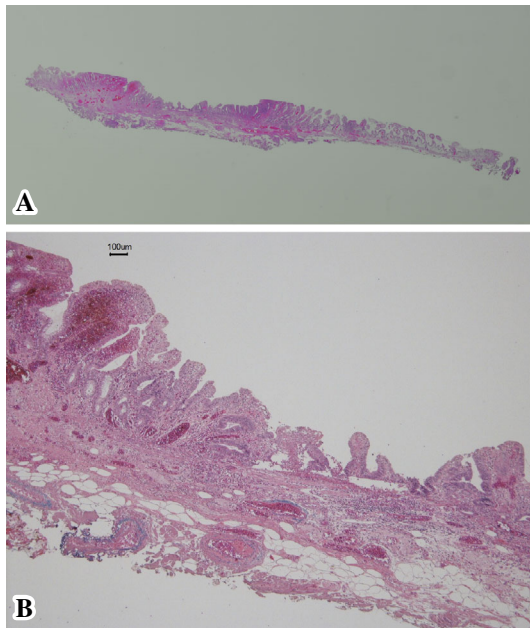


Figure 2. The histopathological findings. The histological findings showed that the tumor was a well-differentiated adenocarcinoma 13×7 mm in size (A). A high-power view revealed a well-differentiated adenocarcinoma with no submucosal or lymphovascular invasion (B) (Hematoxylin and Eosin staining).

15 device (FUJIFILM Medical, Tokyo, Japan) and a Clutch-Cutter (FUJIFILM Medical) with the submucosal injection of sodium hyaluronate solution. A CO₂ insufflation pump was used to reduce the intraluminal compression due to the excess pooling of air during ESD. Thereafter, *en bloc* resection of the tumor was successfully performed. The histological findings showed that the tumor was a well-differentiated adenocarcinoma of 13×7 mm in size with no submucosal or lymphovascular invasion (Fig. 2). No tumor cells were detected at the horizontal or vertical margins of the specimen. No complications (such as delayed bleeding or perforation) appeared after ESD. The patient was discharged 5 days after treatment. Colonoscopy and CT at one year after ESD revealed no local recurrence, stenosis, or lymph node metastasis (Fig. 3).

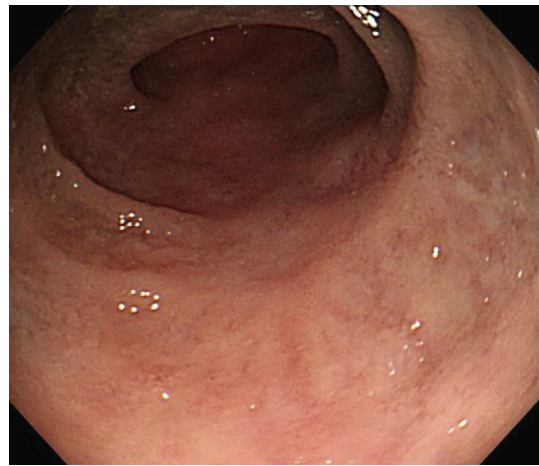


Figure 3. The conventional endoscopy findings at one year after ESD. Colonoscopy at one year after ESD revealed no local recurrence or stenosis.

Discussion

We herein report a rare case of ileal adenocarcinoma that was completely removed by ESD without complications, which suggests that ESD is a practical treatment option for early-stage ileal adenocarcinoma. Including the present case, only 17 cases of early-stage ileal adenocarcinoma were reported to have been treated by endoscopic resection from 1996 to 2016 (2-14) (Table). These include 15 male and 2 female patients (mean age, 66.1 years). Most lesions were detected at the ileum ≤10 cm from the ICV, suggesting that the careful observation of the terminal ileum is helpful for detecting early-stage ileal adenocarcinoma. According to the Paris classification, 12 lesions were morphologically classified as polypoid type lesions (0-I), 3 lesions were classified as non-polypoid type without mixed type (0-IIa or 0-IIc), and 2 lesions were classified as mixed type (0-IIa+IIc or 0-IIc+IIa). The median size of the lesions was 13 mm. Fourteen lesions were histologically classified as well-differentiated adenocarcinomas (tub1), and 3 were classified as moderately differentiated adenocarcinomas (tub2). Fifteen

Table. The Reported Cases of Ileal Adenocarcinomas Resected by Endoscopic Procedures.

Ref.	Age	Sex	Length from ICV	Macroscopic type	Tumor size	Histological type	Invasive depth	Resection procedure	Surgical margin
2	60	M	30 cm	Isp	22 mm	tub2	M	EMR	No description
2	73	M	0 cm	Is+IIa	18 mm	tub2	M	EMR	-
3	63	M	5 cm	Ip	10 mm	tub1	M	Polypectomy	-
4	83	M	3 cm	Is	5 mm	tub1	M	EMR	No description
5	73	M	0 cm	Is+IIa	18 mm	tub1	M	EMR	-
5	60	M	30 cm	Is	22 mm	tub2	M	EMR	-
6	63	M	2-3 cm	Isp	20 mm	tub1	SM2	EMR	+
7	55	M	10 cm	Is	9 mm	tub1	M	EMR	-
8	60	M	4 cm	IIa	8 mm	tub1	M	EMR	-
9	63	F	5 cm	Isp	15 mm	tub1	M	EMR	-
10	56	M	5 cm	IIa+IIc	12 mm	tub1	M	EMR	-
11	60	M	10 cm	Ip	10 mm	tub1	SM1	Polypectomy	-
12	62	M	-	IIc	5 mm	tub1	M	EMR	No description
13	67	M	4 cm	Is	20 mm	tub1	M	EMR	-
13	69	M	10 cm	Is	12 mm	tub1	M	EMR	-
14	76	F	8 cm	IIc+IIa	29 mm	tub1	M	ESD	-
this case	80	M	3 cm	IIc	13 mm	tub1	M	ESD	-

lesions were intramucosal cancers, while 2 lesions showed submucosal invasion. Two lesions were removed by polypectomy, and 13 were removed by EMR; only 2 cases (including the present case) were resected by ESD. In these cases, the rates of *en bloc* resection and histologically complete resection were 100% and 92%, respectively. No complications (such as bleeding or perforation) were found. These reports suggest the safety and feasibility of endoscopic resection, including EMR and ESD, in the treatment of ileal adenocarcinoma.

ESD has been reported to achieve higher rates of *en bloc* and histologically-complete resection than EMR (15), and ESD has been widely used to remove tumors of the esophagus, stomach, and colon. ESD has recently been used also for the resection of duodenal tumors (16). The present case and Sasajima's report suggest that ESD is useful for removing tumors of the ileum as well as other parts of gastrointestinal tract.

The authors state that they have no Conflict of Interest (COI).

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