

연속된 이틀 간의 순차적 대장 내시경 점막하박리술로 치료한 동시성 측방 발육형 종양 1예

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A Case of Synchronous Colonic Laterally Spreading Tumors Treated by Sequential Endoscopic Submucosal Dissection Performed on Two Consecutive Days

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Endoscopic submucosal dissection (ESD) is an useful therapeutic technique for large gastrointestinal epithelial tumors that it provides an en bloc resection. Although there is some controversy about the role of ESD for colorectal lesions, for large lesions in the distal rectum, ESD has the advantage of preserving anal function. However, the large amount of insufflating gas used during the procedure can cause severe abdominal pain and discomfort. Moreover, high intra-luminal pressure caused by a by large amount of gas can cause a micro-perforation. There is no consensus as to whether ESD is the optimal treatment for synchronous large colorectal laterally spreading tumors (LSTs) that cannot be removed en-bloc by conventional endoscopic mucosal resection. Here, a case with two neighboring synchronous large LSTs, one located in the rectum and the other in the distal sigmoid colon, were sequentially removed by separate ESD procedures performed on two consecutive days in a patient who could not tolerate a long procedure. (**Korean J Gastroenterol 2010;56:196-200**)

Key Words: Colon; Synchronous; Laterally spreading tumor; Endoscopic submucosal dissection

Introduction

Although endoscopic mucosal resection (EMR) is a useful therapeutic technique for colorectal laterally spreading tumors (LST),¹⁻³ en bloc resection with EMR is sometimes impossible if the tumor size is larger than 20 mm in diameter.³ To overcome this size limitation, endoscopic submucosal dissection (ESD) has recently been developed in Japan⁴⁻⁶ and is increas-

ingly being used in Korea.^{7,8} Although initially developed for gastric tumors, ESD has now been used for lesions in other parts of the gastrointestinal tract, including the colorectum.^{6,9} However, ESD for colorectal lesions has not been widely used because it is technically difficult and takes significantly longer than EMR.⁹ Moreover, the large amount of infused gas, during the long procedure, inevitably causes discomfort in the patient.¹⁰ To reduce bowel distension and discomfort caused by room air

접수: 2009년 12월 20일, 승인: 2010년 3월 26일
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insufflation, carbon dioxide (CO₂) has been used occasionally.¹¹ However, special equipment is needed, which is not available at many centers.

There is no consensus on the optimal treatment protocol for synchronous large colon LSTs that cannot be removed en-bloc by conventional EMR. Here, a patient with two neighboring synchronous large LSTs, one in the rectum and the other in the distal sigmoid colon that were sequentially removed by separate ESD procedures performed on two consecutive days, is reported in a patient who could not tolerate a long procedure.

Case Report

A 64-year-old man was referred for the treatment of two laterally spreading tumors in the rectosigmoid area. Prior to admission, the patient underwent colonoscopy at a local clinic due to a positive stool occult blood test. The patient was diagnosed with a tubulovillous adenoma. In addition, the patient had a 10 year history of hypertension and was taking an angiotensin converting enzyme inhibitor and a calcium channel blocker for treatment. There was no family history of colorectal cancer.

On admission, the blood pressure was 120/70 mmHg, the pulse rate 62 beats per minute, the respiration rate 20 breaths per minute, and the body temperature of 36.6°C. The physical examination revealed no specific abnormal findings. The laboratory tests showed a hemoglobin of 13.9 g/dL, a hematocrit of 39.6%, a white blood cell count of 5,060 cells/mm³, a platelet count of 278,000 cells/mm³, and a CEA level of 0.899 ng/mL.

The colonoscopy revealed a large multilobulated sessile polypoid mass at the rectosigmoid junction (Fig. 1A) and

another multilobulated LST in the distal rectum (Fig. 1B). The distance from the lower margin of the distal lesion to the anal verge was 2 cm. Based on their surface appearance both lesions could be classified as granular type LSTs.¹²

At first, the plan was to remove both lesions on the same day. The ESD procedure was performed at the hospital-based endoscopy unit. Pethidine 50 mg and midazolam 3.5 mg were used for sedation, and 30 mg of propofol was injected when the patient complained of pain. An Olympus GIF-Q260 (Olympus, Tokyo, Japan) upper scope was used. Mucosal markings were made 5 mm outside of the lesion using an argon plasma laser connected to an ERBE VIO 300D electrosurgical unit (ERBE USA, Marietta, Ga, U.S.A). The submucosal injection fluid was a mixed solution that contained 100 ml of 3% hypertonic saline, 1 ml of 1:1000 epinephrine, and 1mL of indigocarmine. A flex knife (KD-630L, Olympus, Tokyo, Japan) and a hook knife (KD-260R, Olympus, Tokyo, Japan) were connected to the ERBE VIO 300D electrosurgical unit (ERBE USA, Marietta, Ga, U.S.A) and were used for the mucosal incision and submucosal dissection, respectively. The endocut I mode (effect 2) was used for most of the procedure, and the forced coagulation mode (effect 1) was used intermittently for the vascular areas. A transparent cap from the Stiegmann rubber band ligator system (Bard, Covington, Ga, U.S.A) was placed on the tip of the scope to keep the tumor away from the cutting area. A hot biopsy forcep (FD-230U, Olympus, Tokyo, Japan) was used to control severe bleeding from exposed vessels.

During the first procedure for the rectosigmoid lesion, the patient had complained of severe abdominal pain and discomfort. In spite of several trials to reduce the pain including

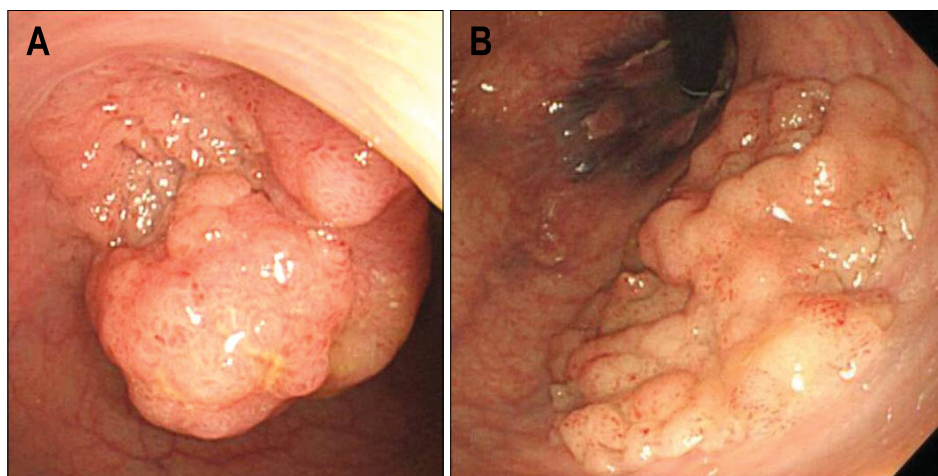


Fig. 1. Colonoscopy findings. (A) About a 3×4 cm glandular nodular type laterally spreading tumor was noted at the rectosigmoid junction. (B) About a 3×3 cm nodular type laterally spreading tumor was noted in the distal rectum, just above the dentate line.

air-suction and additional analgesic-injection, the patient could not endure the procedure any longer. Therefore, we decided to remove the other lesion the next day in the same manner because there was adequate distance between the lesions. The procedure time was 105 minutes on the first day, and 90 minutes the second day. The size of the en bloc specimen was 4.0×3.1 cm for the rectosigmoid lesion (Fig. 2A), and 4.0×3.7 cm for the distal rectal lesion (Fig. 2B). The histological examination of the rectosigmoid lesion showed a well differentiated adenocarcinoma developing from a serrated adenoma (Fig. 3A). The size of the adenoma was 3.3×2.7 cm and the size of the carcinoma portion was 1.0×0.5 cm. The histological examination of the distal rectal lesion showed a focal adenocarcinoma that developed from a tubulovillous adenoma with low grade dysplasia (Fig. 3B). The size of adenoma was

3.7×2.8 cm and the size of carcinoma portion was 0.4×0.4 cm. In both lesions, invasion was confined to the lamina propria and no lymphovascular invasion was noted. Both specimens had clear resection margins, and the procedure was considered a curative resection.

The first day's procedure was performed without any complications. However, during the procedure on the second day, a small perforation developed. The opening was closed with clipping, and the patient did well with conservative management, which included broad-spectrum antibiotics and three days NPO. The patient was discharged five days after the procedure with no specific problems.

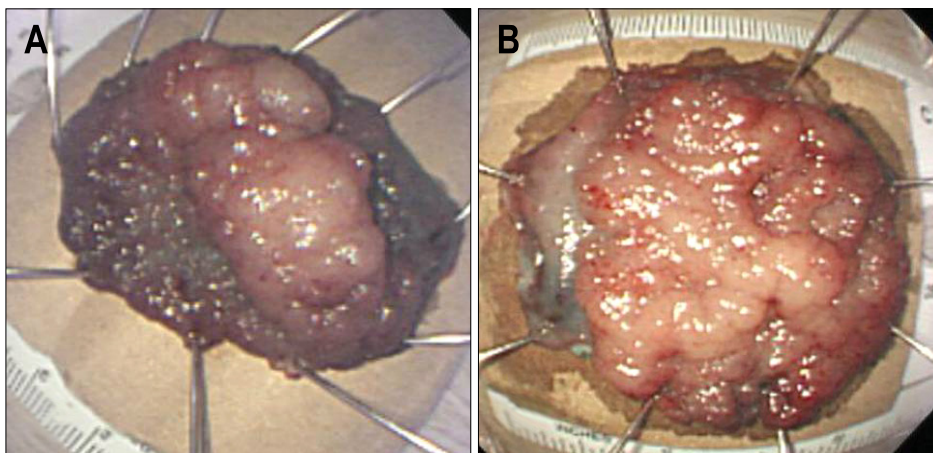


Fig. 2. Resected en bloc specimens. (A) The size of the rectosigmoid lesion was 4.0×3.1 cm. (B) The size of the distal rectal lesion was 4.0×3.7 cm.

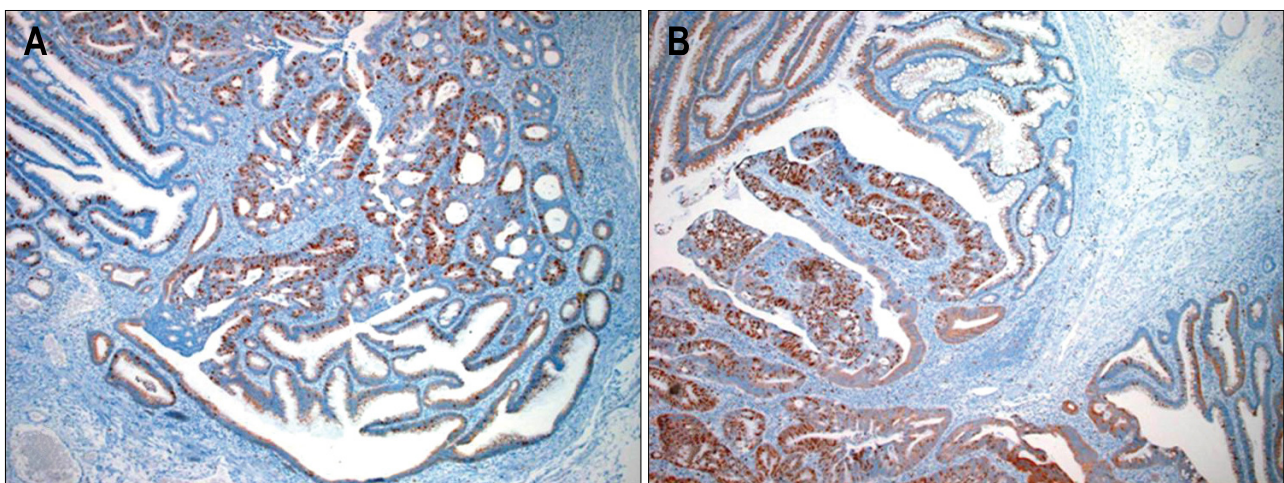


Fig. 3. Microscopic findings. (A) Histologic examination of the rectosigmoid lesion showed a well differentiated adenocarcinoma arising from a serrated adenoma (Ki-67 stain, ×40). (B) Histologic examination of the distal rectal lesion showed focal adenocarcinoma arising from a tubulovillous adenoma with low grade dysplasia (Ki-67 stain, ×40).

Discussion

En bloc resection of a tumor allows for accurate histopathologic evaluation.^{9,13} Therefore, EMR is being replaced by ESD for lesions larger than 2 cm in diameter because ESD allows for en bloc resection, regardless of the size of the lesion.⁴⁻⁶ In contrast to the stomach where ESD has been established as the standard therapeutic option for indicated lesions,^{4,6-8} there is some controversy with regard to the use of ESD for colon lesions. This is because surgical resection using the laparoscopic approach is possible.⁹ However, for large lesions that involve the distal rectum ESD has the advantage of preserving anal function.^{9,14} In this case, the distance between the distal lesion and the anal verge was only 2 cm. Therefore, ESD was considered the optimal approach to preserve anal function in this patient.

During the endoscopic procedure, luminal distension by insufflating gas is necessary to achieve optimal visualization of the mucosa. Usually room air is used as the insufflating gas. However, because room air is not well absorbed, it can cause severe bowel distension and abdominal discomfort. Especially with ESD procedure, a large amount of gas should be insufflated because this procedure takes a longer time than other routine diagnostic procedures. Moreover, high intra-luminal pressure caused by a large amount of gas can cause a micro-perforation.³ CO₂ has been used in several centers to reduce distension and discomfort; it is rapidly absorbed from the bowel.¹¹ Nevertheless, CO₂ insufflation has not been widely used because its safety or efficacy has not been confirmed and it requires special equipment.¹¹ In the case reported here, the patient complained of severe abdominal pain and discomfort during the procedure in spite of several trials to reduce the pain. Conversion to surgery could be considered. However, to minimize the organ injury, we decided to try additional ESD first. To minimize the patient's discomfort, separate procedures on different days with additional admission could be considered. However, such an approach requires additional time and cost. Because there was no available CO₂ insufflation equipment at the hospital-based endoscopy unit, and because there was adequate distance between the two lesions, we decided to remove the other lesion the next day and could be removed successfully. However, in synchronous lesions that are located near each other, separate procedures may be difficult to perform due to edema of the adjacent intestinal wall caused by the prior procedure.

In present case, because the pre-operative biopsy showed no malignant lesion, we did not perform endoscopic ultrasonography (EUS). However, considering the possibility of hidden malignant lesions, measurement of the depth of invasion by EUS would be preferred.

The risk of perforation associated with colorectal ESD procedures varies depending on the size of the resected specimen and the operator's experience;⁹ after colorectal ESD procedures the perforation rate has been reported as 0-10.4%.⁹ Nonsurgical management is usually provided after immediate and complete endoscopic closure of the perforation with endoclips.^{9,14} After closure of the perforation in this case the medical treatment was successful with no further complications.

In summary, a patient with two distinct large synchronous colorectal LSTs had them completely removed by ESD on two separate days. Further studies are needed to determine the use of ESD procedures for colorectal lesions.

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